INDIAN TARIFF BOARD

Written Evidence

recorded during the enquiry into the

SUGAR INDUSTRY

Volume III-A

Replies received from the Local Governments and Indian States

DELHI: MANAGER OF PUBLICATIONS
1939

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Hindu Library, 137/F, Balaram De Street, Calcutta.
H. L. College of Commerce Co-operative Stores, Ltd., Ahmedabad.
Hyderabad Book Depot, Chaderghat, Hyderabad (Deccan).
Imperial Book Depot and Press, near Jama Masjid (Machhliwalan), Delhi.
Indian Army Book Depot, Dayalbagh, Agra.
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Indian School Supply Depot, Central Avenue, South, P. O. Dharamtala, Calcutta.
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Oxford Book and Stationery Company, Delhi, Lahore, Simla, Meerut and Calcutta.
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Young Man & Co., Egerton Road, Delhi.

* Agents for publications on Aviation only.

Personnel of the Board.

President . Sir Geoffrey Bracken, K.C.I.E., C.S.I., I.C.S.

Members . { Mr. Fazal I. Rahimtoola.
Dr. L. C. Jain, M.A., LL.B., Ph.D., D.Sc. (London).

Secretaries { Mr. K. B. Bhatia, I.C.S. (up to 5th December, 1937).
Rai Sahib H. C. Sen (from the 6th December, 1937).

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Government of India, Department of Commerce, Resolution No. 127-T. (1)/37, dated the 27th March, 1937.

The amount of protection afforded to the Sugar Industry by the duties imposed by section 2 of the Sugar Industry Protection Act, 1932, will determine on the 31st March, 1938, and section 3 of that Act provides that the Governor General in Council shall cause to be made by such persons as he may appoint in this behalf an enquiry to ascertain if the protection of the Sugar Industry during the period from 31st March, 1938, to the 31st March, 1946, should be continued to the same extent or to a greater or lesser extent. The Government of India have decided that this enquiry should be undertaken by the Tariff Board and the following terms of reference have been framed for its guidance:—

(*a*) The Board is requested to examine the measure of protection now enjoyed by the Sugar Industry and to report whether it is necessary to continue protection to this extent or to a greater or lesser extent;

(*b*) In making its recommendations the Tariff Board will take all relevant considerations into account including that stated in part (*b*) of the Resolution adopted by the Legislative Assembly on the 16th February, 1923.

2. Firms and persons interested in the Sugar Industry or industries dependent on the use of sugar who desire that their views should be considered by the Tariff Board should address their representations to the Secretary of the Board.

ORDER.—Ordered that a copy of the above Resolution be communicated to all Local Governments and Administrations and the Political Officers, all Departments of the Government of India (except the Home Department), the Director-General of Commercial Intelligence and Statistics, the Central Board of Revenue, the Indian Trade Commissioners, London, Hamburg and Milan, the Secretary, Tariff Board, the High Commissioner for India, London, His Majesty's Trade Commissioner in India, the Canadian Trade Commissioner in India, all the Chambers of Commerce and Associations, the French Trade Commissioner in India, Burma and Ceylon, the Secretary, Imperial Council of Agricultural Research and the Chief Controller of Stores.

Ordered also, that it be published in the Gazette of India.

M. SLADE,

Joint Secretary to the Government of India.

Press Communiqué issued by the Tariff Board on the 5th April, 1937.

In the Government of India, Department of Commerce, Resolution No. 127-T. (1)/37, dated the 27th March, 1937, the Tariff Board has been directed to hold an enquiry to ascertain if the protection afforded to the sugar industry by the duties imposed by section 2 of the Sugar Industry Protection Act, 1932, should be continued to the same extent or to a greater or lesser extent during the period from the 31st March, 1938, to the 31st March, 1946. Those Associations, firms or persons interested in the sugar industry or industries dependent upon sugar who desire that their views should be considered by the Board are requested to forward their representations (with six spare copies) to the Secretary to the Board so as to reach its office at No. 1, Council House Street, Calcutta, not later than the 1st May, 1937.

No. 1.—General Questionnaire.

NOTE—1. Reply to this questionnaire, if possible with six spare copies, should reach the Secretary, Tariff Board, Ootacamund, before 25th June, 1937, at the latest.

2. The answers may be confined to matters with which you are directly acquainted and on which you are in a position to supply the Board with detailed evidence.

3. Unless otherwise required, it is requested that figures may be supplied from the working season of 1930-31 (or, if the factory started working after 1930-31, from the first year in which the factory started operation) up to the end of working season 1936-37.

4. Figures may kindly be given per acre or per standard maund (82$\frac{2}{7}$ lbs.) as the case may be.

5. It is suggested that a note may be made of any facts or figures which you will like to be considered as confidential. Such information will not be published. In no case will any indication be given in the Tariff Board Report of the source of information or the name of any individual or factory except with permission.

PRODUCTION OF SUGAR.

Introductory.

1. In what year did your factory begin the manufacture of sugar and what is its full capacity?

2. What has been the output of your factory for each of the last seven years? If different classes of sugar are produced, please state the output of each class separately.

3. Do you consider that your factory is advantageously situated in respect of—

(*a*) cane supply, other raw materials such as limestone, etc., and important markets,

(*b*) facility of rail, road and other communications, and

(*c*) other considerations, such as adequate labour supply?

4. What is the process of manufacture of your factory? What are the respective advantages and disadvantages of sulphitation, carbonitation and other processes?

5. What changes have been made in the lay-out of your factory and what extensions of plant or replacement of machinery have been made since 1930? Please state the amounts spent.

6. What further extensions or replacements are you in contemplation?

7. (*a*) What are the main factors which determine the size of an economic plant in the sugar industry?

(*b*) What, in your opinion, is the smallest unit of production which can be operated economically under present-day conditions?

8. To what extent is sugar factory equipment now obtainable in India?

9. Are you satisfied with the technical assistance given by—

(i) the Imperial Institute of Sugar Technology,

(ii) the Industries department of your Local Government?

Have you any suggestions to offer?

Raw Materials.

10. Do you undertake cultivation of sugarcane? If so, did you purchase your land outright or obtain it on lease? What difficulty, if any, did you experience in purchasing or leasing land?

11. Please give the following information:—

(*a*) total area held,

(*b*) average area under cane each year,

(*c*) varieties of cane grown,

(*d*) system of cultivation with special reference to fallows, rotation and manuring,

(*e*) average yield per acre for different varieties of cane and their sucrose content, and

(*f*) cost of cultivation per acre, in as much detail as possible.

12. What area have you set aside for—

(*a*) experiment in cane cultivation,

(*b*) production of seed for sale or free distribution to cultivators?

13. What experiments have you tried, specially in relation to early and late varieties of cane and manuring? How far has the Agricultural department of your province been of assistance in this respect?

14. What changes have taken place during the last seven years in—

(*a*) the quantity of cane available,

(*b*) the quality of cane?

15. To what extent is cane liable to damage from frost, disease or insect pest? Can you give an estimate of the percentage of loss through these causes?

16. Is your factory assured of a sufficient supply of suitable cane? What are the principal varieties of cane crushed in your factory? Please state the field yield and sucrose content of each.

17. To what extent and in what circumstances is the supply of cane and the price at which it can be obtained influenced by the competition of other factories?

18. (*a*) Has the area under cultivation from which you ordinarily obtain your supply been subject to considerable variations?

(*b*) If so, to what causes do you attribute such variations and in particular, what is the effect of—

(i) climatic conditions including excess or defect in rainfall,

(ii) prices obtainable for sugar,

(iii) prices obtainable for gur/jaggery,

(iv) prices obtainable for alternative cash crop?

19. The production of sugarcane in 1936-37 is the highest on record. Is it in excess of requirements in your area and do you consider any restrictions necessary?

20. Please supply information, if available, as to the cost of cultivating one acre of sugarcane by an average cultivator and the outturn per acre. The cost should be stated in as much detail as possible.

21. What are the main difficulties of cane-growers in the cultivation of cane and its delivery to the factory and have you any suggestions to make?

22. (*a*) The previous Tariff Board came to the conclusion that compulsory acquisition or leasing of land for cultivation of cane by factories was impracticable in Indian conditions (pages 101 and 102 of the report). What are your views on this subject?

(*b*) Failing compulsory acquisition and leasing, are you in favour of allotting special areas to different factories for their supply of sugarcane? How could a system of 'zones' be worked?

23. If a 'zone' system were introduced, to what extent would you be prepared to give assistance to cultivators in the form of advances of cash or supply of seed and manure, etc., or the development of feeder roads?

24. Are you in favour of—

(*a*) fixation of a quota for sugar manufacture by factories,

(*b*) licensing of—

(i) new factories,

(ii) extensions of existing factories?

Please state your reasons.

25. As regards your cane supply, what is the proportion of—

(*a*) gate cane,

(*b*) rail cane, and

(*c*) tram-borne cane?

Has the proportion varied from year to year and, if so, for what reasons?

26. Is your gate cane entirely transported by carts or are lorries also used? What is the average weight of cane carried per cart? To what extent is it possible to improve the type of country cart by the substitution of rubber-tyred carts or otherwise? If you have employed any improved type of cart, please state what additional maundage of cane can be carried.

27. Is the mileage of roads in your vicinity adequate? What is the condition of main and feeder roads?

28. From what distance is cane brought by road and what is the average time taken between cutting cane and delivery at factory? During road transport to what extent is cane protected from deterioration?

29. What is the average cost of transport of cane by cart per maund per mile? Do cane-growers employ their own carts or do they have to hire them? If they hire carts, what is the average cost of hiring?

30. Are any tolls or other dues levied on carts supplying your factory?

31. What are your arrangements for the continuous and uniform supply of gate-cane? What is the normal period of detention of a cart at your factory? What improvements in these arrangements have you made in recent years to ensure prompt delivery of cane and speedy release of carts?

32. From what distance is cane transported by rail to your factory? What is the average time taken between cutting of cane and delivery at factory? Are railway arrangements for transport of cane satisfactory?

33. On what basis are railway freights calculated? Have there been any changes in the rates in recent years? Would you prefer the substitution of a maundage rate per mile for a flat rate?

34. Have you any remarks to make on railway freight rates for other raw materials such as limestone or for manures?

35. What mileage of tramways serve your factory? What is the average cost of transport per maund? Is the charge borne by the factory or by the grower?

36. Do you consider a tramway system generally advantageous? Are there any special difficulties in laying out a tramway system?

37. Can you give an estimate of the extent of deterioration of cane owing to delay in delivery by road and rail?

38. What proportion of your cane is purchased—

(*a*) direct from cane-growers, and

(*b*) through contractors or agents?

39. Into what arrangement do you enter with cultivators for the supply of cane? Do you give advances in cash, or provide seed or manure or render any other assistance?

40. If your cane is not purchased direct from growers, what arrangements do you make and what commission do you pay?

41. Is any part of your cane supply obtained from cane-growing or cane-supplying associations and on what terms?

42. What are your arrangements for weighment of cane? Is payment made at the time of delivery of cane; if not, what is the normal interval between delivery of cane and payment?

43. Please state the prices at which you have purchased cane during the last seven years. Do prices tend to vary at different periods of the season?

44. Does the price at which you purchase sugarcane bear any definite relation to the price of sugar? If not, on what system are prices fixed?

45. To what extent and in what circumstances is the supply of cane and the price at which it is obtainable influenced by the price of gur/jaggery or khandsari sugar?

46. Have there been considerable variations in the price of gur/jaggery in the area in which you are principally interested? What are the causes of these variations?

47. If prices are fixed under the rules framed under the Sugarcane Act, XV of 1934, have you paid prices in excess of the minimum rate and, if so, to what extent and why?

48. Do you consider the basis on which minimum prices are fixed satisfactory? Have you any suggestions to make?

49. How far do you consider it feasible to introduce a system of "bonus" payments over and above the minimum rates for superior, early and late varieties of cane?

50. What has been the duration of the crushing season for each of the last seven years and what are the reasons for variations? Do you consider the period sufficiently long for economical working?

51. What are the possibilities of extending the crushing season by the introduction of early and late varieties of cane?

52. Are you satisfied with the assistance given by the Imperial Council of Agricultural Research, and the Agricultural and Co-operative departments of your Government? Have you any suggestions to offer?

Labour.

53. What labour (i) skilled, (ii) unskilled, do you employ in your factory in (*a*) the crushing and (*b*) the silent seasons?

54. To what extent is skilled labour imported from abroad or from other parts of India?

55. To what extent have you been able to replace skilled labour imported from abroad by Indian labour?

56. What arrangements have been made for housing your labour and for promoting its welfare?

Power.

57. Are you able to meet the whole of your requirements of fuel from the bagasse available in your factory? If not, to what extent is it necessary to supplement it and how? Please give figures for the amounts spent on fuel for the last seven years. Do you bale your surplus bagasse?

By-products.

58. What are the by-products produced in your factory?

59. Please give the outturn and price of molasses for the last seven years. What are the causes of variations?

60. What is the market for your molasses and what are your arrangements for transportation? Are railway facilities adequate? What are the freight rates from the factory to the market you supply?

61. If you do not sell your molasses, how do you dispose of them? Have you any other suggestions for the utilization of molasses?

62. Have you any outlet for your surplus bagasse if any, and have you any suggestions as to what uses bagasse can be put?

63. Have you any suggestions for the utilization of any other by-products?

Storage and Transportation of Sugar.

64. Please give figures of your stocks of sugar at the beginning and end of each crushing season since 1930.

65. What are your arrangements for the storage of sugar and what is the capacity of your godowns? Have you increased your storage capacity in recent years or do you contemplate doing so?

66. To what extent does your sugar deteriorate or suffer damage in storage? What are the causes of such deterioration or damage and how far do they depend on the quality of sugar?

67. What is your practice with regard to the disposal of damaged sugar? Is it sold outright or reconditioned?

68. To what extent is the keeping quality of sugar susceptible of improvement?

69. To what extent is sugar damaged in transit from factories and to what is the damage due?

70. Have you experienced any difficulty in obtaining wagons for the transportation of sugar or delay in the delivery of sugar in the markets you supply?

71. Have you any suggestions for improvement of rail transport of sugar as for example in the type of wagon?

72. Please prepare a statement showing the prices at which during the last seven years the products of your factory have been sold at (i) ports and (ii) up-country centres. What are the freight rates to the markets you supply?

Capital Account and Overhead Charges.

73. Please send copies of your balance sheets from 1930 or from the commencement of the operation of your factory. If you prepare no balance sheets please give particulars of the book value of your property as it stood at the end of the last complete year, under the following heads:—

(i) leases and concessions;

(ii) lands;

(iii) buildings;

(iv) plant and machinery;

(v) other assets.

74. Please state for each of the last seven years the particulars of the amount written off for depreciation. Are your rates for depreciation the same as allowed by the Income-tax Department? If not, state the difference.

75. Please state the amounts you have set aside for reserve fund during the last seven years.

76. Please prepare a statement for the last seven years showing the actual amount distributed as dividends on each class of capital (preferred, ordinary and deferred).

77. How is your working capital provided and at what rate are you able to borrow?

78. Please state the annual amount of your head office expenses and the managing agents' commission. How is the agents' commission determined?

79. What rate of dividend do you consider a fair return on capital?

Efficiency of Production.

80. In order to enable the Tariff Board to judge the extent of progress in efficiency attained by factories since 1930, the Board requires full information as to the cost of manufacture and recovery rate as far as possible in the annexed forms. (Forms will follow separately.)

81. What reductions have you been able to make in your works costs since 1930 by (i) extending your plant, (ii) installing more efficient machinery, (iii) reducing overhead charges and (iv) any other measures of economy?

82. To what extent is there room for further reduction of works costs or improvement in recovery rates?

Marketing.

83. What are the principal sugar marketing centres in which you deal?

84. What are the usual arrangements in the sale of sugar between (*a*) manufacturers and dealers, (*b*) dealers and retailers?

85. Is the present sugar contract form suitable in your opinion? Have you any suggestions?

86. What have been (*a*) the wholesale and (*b*) retail prices of sugar in the area covered by the distributing centres with which you are acquainted, for the last seven years? (Figures for Indian factory sugar and imported sugar may be furnished separately, with details as to quality.)

87. Does the difference between wholesale and retail prices tend to fluctuate widely? If so, what is the reason?

88. What are the storage arrangements made by dealers? To what extent does sugar deteriorate in storage?

89. Does Indian sugar deteriorate more rapidly than Java or other imported sugar? Has there been any improvement in the keeping quality of Indian sugar?

90. Is Java or other imported sugar preferred to Indian sugar? If so, by what class of consumers and why?

91. Do you consider the present quality of Indian sugar equal to the quality of Java or other imported sugar? If not, in what respects is Indian sugar inferior?

92. The sugar manufacturing season being limited to about one-third of the year, to what extent are stocks carried—

(*a*) by manufacturers,

(*b*) by dealers?

How is the carrying of stocks financed? What are the usual arrangements with banks or other financial agencies?

93. Do you consider that a marketing survey of the sugar industry would be advantageous?

94. Do you favour a central all-India selling organization?

95. Are you in favour of the standardization of Indian sugar? If so, on what basis would you suggest standardization?

96. (*a*) To what extent has actual business been done by you on the basis of the sugar standards prescribed by the Director, Imperial Institute of Sugar Technology?

(*b*) Has any use been made of these standards for grading purposes?

97. Have you any suggestions to offer for increasing the usefulness of these standards?

98. Have you any other suggestions for the improvement of sugar marketing in India, such as the establishment of a "futures" or "terminal" market?

99. What is your estimate of the normal consumption of sugar in India? What are the possibilities of increasing consumption?

100. To what extent is factory sugar replacing gur, specially in the sweetmeat trade?

101. Under what conditions is there a possibility of starting subsidiary industries, such as manufacture of sweets and syrups, fruit-preservation and canning, etc.?

102. Please state the price of imported sugar during the last seven years; if possible give f.o.b. prices with the following items separately:—

(*a*) freight,

(*b*) insurance and trade charges,

(*c*) customs duty, and

(*d*) landing charges.

If this is not possible, please give c.i.f. prices, customs duty and landing charges.

NOTE.—As far as possible, prices of different qualities of sugar should be shown separately.

103. Have you any reason to believe that imported sugar has been landed at unremunerative prices in any year since 1930? If so, please state your reasons.

104. Has there been any export of Indian sugar (*a*) by sea, and (*b*) by land? Under what conditions do you think such export is feasible?

105. What has been the effect of (i) the Sugar Excise Duty of 1934, (ii) the addition made in 1937?

106. What are the marketing arrangements for molasses?

107. Is there any export of Indian molasses and to what countries? Are there any possibilities of the development of export?

Claim for Protection.

108. Since 1932 the rates of duties on sugar, sugarcandy and molasses imported into India have been as follows:—

Sugar—

Rs. 9-1-0 per cwt. from April, 1932.

Rs. 9-4-0 per cwt. from March, 1937.

Sugarcandy—

Rs. 10-8-0 per cwt. from February, 1934.

Molasses—

31¼ per cent. *ad valorem* from April, 1932.

To what extent has the measure of protection enjoyed by the industry been effective?

109. The Board has been asked to consider whether it is necessary to continue protection to the present extent or to a greater or lesser extent. Please state your views, giving reasons for any rates you may suggest for the remaining period of protection, *i.e.*, from 1st April, 1938 to 31st March, 1946.

110. What forms of assistance other than a protective duty do you consider necessary for the development of the industry? Please give your reasons in full.

111. What has been the effect of import duty on molasses? Has the duty adversely affected any industry in India?

No. 2.—Questionnaire for Local Governments.

NOTE—1. Reply to this questionnaire, if possible with six spare copies, should reach the Secretary, Tariff Board, Ootacamund, before 25th June, 1937, at the latest.

2. Figures may kindly be given per acre or per standard maund (82⅔ lbs.), as the case may be.

1. What has been the area under sugarcane in your province during the last seven years? What improved varieties are grown and what has been the approximate acreage under each?

2. How would you classify the different areas in your province in respect of differences in climatic conditions, method of cultivation, etc. How much of the crop in each area is (*a*) irrigated (*b*) unirrigated?

3. What are the irrigation rates in your province and on what basis are they determined? How have they varied in the last seven years?

4. Can you give an estimate of the cost of cultivation of cane to the cultivator in different areas (irrigated and unirrigated separately)? Has there been any variation in the cost in the last seven years? What is the average yield per acre and the average sucrose content?

5. Under present conditions what would you consider a fair price of sugarcane to the growers?

6. Has there been a marked variation in sugarcane cultivation in any specific area during the last seven years? If so, what are the causes of variations and how far in your opinion are they due to—

(i) climatic conditions including excess or defect in rainfall,

(ii) prices obtainable for sugar,

(iii) prices obtainable for gur/jaggery, and

(iv) prices obtainable for alternative cash crops?

7. Do you consider that there was over-production of sugarcane in the season 1936-37 and in what areas? If so, would you suggest any scheme for restricting the area under cane?

8. What are the other cash crops in your province? How far do they form an alternative to sugarcane? If possible, please give an estimate of return per acre to an average cultivator from the various cash crops.

9. Can you give an estimate of the amount spent during the last seven years for the extension and improvement of sugarcane cultivation in your province?

10. What is the amount of contribution your province receives from the Government of India out of sugar excise or otherwise and how is it utilised? Do you consider it adequate?

11. Please give a brief account of—

(i) the research work that has been undertaken in regard to sugarcane and the control of disease,

(ii) measures adopted for the introduction of improved varieties of cane, improved methods of cultivation, use of manure, etc.

12. What assistance has been received from

(i) Imperial Council of Agricultural Research,

(ii) Coimbatore Sugarcane Research Station, and

(iii) Imperial Institute of Sugar Technology?

Are funds for research, both agricultural and technological adequate?

13. To what extent have factories co-operated with the Agricultural Department of your province in the introduction of new varieties of cane and improvement in methods of cultivation?

14. Of the sugarcane grown in your province how much do you estimate is—

(*a*) crushed in sugar factories,

(*b*) utilised by open pan factories and khandsaris,

(*c*) turned into gur, and

(*d*) used for chewing purposes and for seed?

15. What are the main difficulties of cane-growers in the cultivation of cane and its delivery to the factory?

16. To what extent is the Co-operative Department rendering assistance to cane-growers? How far have the cane-growers been organized and what cane-growing and cane-supplying societies are working?

17. Are minimum prices fixed for sugarcane in your province under the Sugarcane Act XV of 1934? If so, what is the basis of their fixation? Has the system worked satisfactorily?

18. To what extent is the price paid by the factories influenced by competition of other factories?

19. How far do you consider it feasible to introduce a system of bonus payments over and above the minimum rates for superior, early and late varieties of cane?

20. What is the average cost of transport of cane by carts per maund per mile in different areas of your province?

21. Do cane-growers employ their own carts or do they have to hire them? If they have to hire carts, what is the average cost of hiring?

22. Do you consider rail, road and tramway facilities for transport of cane adequate? What assistance has been given in your province towards the development of feeder roads and tramway systems?

23. What assistance has been rendered by the Industries Department to sugar factories?

24. What particular assistance has been rendered to any individual factory in your province by the provision of capital, concessions in regard to land, water rate charges, etc.

25. What co-operative sugar factories are there in your province and how are they working?

26. Are conditions of labour in factories satisfactory?

27. Please supply (i) the wholesale and (ii) the retail prices of sugar in the important markets of your province for the last seven years.

28. Has there been considerable variation between the wholesale and retail prices? If so, what are the reasons?

29. What is your estimate of the normal consumption of sugar in your province and what are the possibilities of increasing it?

30. What manufactories of confectionery are there in your province and in what places? What is the material used?

31. Do you consider the development of the sugar industry has reached a stage in your province to necessitate—

(i) introduction of "zone" system by allotting special areas to different factories for their supply of cane, or

(ii) fixation of a quota for sugar manufacture by factories, or

(iii) licensing of (*a*) new factories and (*b*) extensions of existing factories?

32. What are the possibilities of starting any subsidiary industry such as manufacture of sweets and syrups, fruit preservation and canning, etc., in your province?

33. What is your estimate of production of gur from sugarcane for the last seven years?

34. From what material, other than cane, *e.g.*, date, palmyra, cocoanut palms is gur/jaggery produced in your province and what is your estimate of production?

35. Please state the prices obtained for various kinds of gur/jaggery in different areas during the last seven years. What are the causes of variations and how far are they due to—

(i) changes in acreage under sugarcane;

(ii) climatic and other conditions affecting the crop;

(iii) competition from Indian factory sugar.

36. Please give an estimate of the total annual consumption of gur/jaggery in your province since 1930. To what causes do you attribute the variations?

37. From what areas is gur/jaggery imported into your province? Please give approximate figures of imports during the last seven years.

38. To what areas is gur/jaggery exported from your province? Please give approximate figures of exports during the last seven years.

39. Is there any relation between the price of gur/jaggery and Indian factory sugar?

40. To what extent is Indian factory sugar replacing gur/jaggery in your province?

41. Please give an account of any research work undertaken towards improvement in the methods of manufacture of gur/jaggery.

42. Can you give the number of (1) open pan factories and (ii) khandsars in your province, and an estimate of their outturn of sugar, gur, and molasses?

43. Please give an estimate of the cost of manufacture of sugar in open pan factories and khandsars.

44. To what extent has competition from factory sugar resulted in the closing down of open pan factories and khandsars in recent years?

45. The last Tariff Board was of opinion that an effort might be made to support the khandsari industry, both as holding an important position in the agricultural system and as constituting an outlet for surplus cane (page 51 of the Report). How have conditions changed since 1930? What are your views as to the future of the industry?

46. What research work has been undertaken in your province to improve the open pan system and the manufacture of rab?

47. To what extent, in your opinion, has (i) the Sugar Excise duty of 1934, and (ii) the additional duty imposed in 1937, affected

(*a*) the cane-grower,

(*b*) the manufacturer,

(*c*) the dealers, and

(*d*) the consumer?

48. From the point of view of the consumer, what has been the effect of protective duties?

49. Has any industry in your province dependent on the supply of sugar products or molasses been affected by the protective duties?

50. How are your statistics of acreage, production and prices of sugar and gur, etc., prepared and what is the degree of accuracy?

51. Have you any comments to make on any of the points raised in the other questionnaires?

No. 3.—Questionnaire for manufacturers of sugar by the open pan system and khandsars.

NOTE—1. Reply to this questionnaire, if possible, with six spare copies, should reach the Secretary, Tariff Board, Ootacamund, before 25th June, 1937, at the latest.

2. The answers may be confined to matters with which you are directly acquainted and on which you are in a position to supply the Board with detailed evidence.

3. Unless otherwise required, it is requested that figures may be supplied from the working season of 1930-31 (or, if the factory started working after 1930-31, from the first year in which the factory started operation), up to the end of working season, 1936-37.

4. Figures may kindly be given per acre or per standard maund (82⅔ lbs.) as the case may be.

5. It is suggested that a note may be made of any facts or figures which you will like to be considered as confidential. Such information will not be published. In no case will an indication be given in the Tariff Board Report of the source of information or the name of any individual or factory except with permission.

1. Do you manufacture sugar directly from cane, or from juice or from rab? What is your process of manufacture?

2. What are your arrangements for obtaining cane/juice/rab? If you do not deal directly with the grower, who is your intermediary and what commissions do you pay?

3. Please state the average prices paid during each of the last seven years for one standard maund (82⅔ lbs.) of cane/juice/rab.

4. How far are variations in price of cane/juice/rab accounted for by—

(*a*) prices obtained for cane supplied to vacuum pan factories in your vicinity;

(*b*) gur prices?

5. Please give the following data for your process:—

(i) the amount of juice extracted per 100 maunds of cane,

(ii) the amount of rab manufactured from 100 maunds of juice,

(iii) the amount of sugar extracted from 100 maunds of rab.

NOTE.—Figures may kindly be given in standard maunds of 82⅔ lbs.

6. How many qualities of sugar do you manufacture? What has been your output for each quality during the last seven years?

7. Please give in as much detail as possible your cost of manufacture of sugar during the last seven years.

8. What are the chief markets to which you supply sugar and what are your arrangements for distribution?

9. Please state the prices obtained for the various classes of sugar manufactured for the last seven years.

10. Is your sugar preferred to (i) gur, and (ii) Indian factory sugar? If so, why and by what class of consumers?

11. To what extent, if any, is Indian factory sugar replacing your sugar?

12. To what extent has competition from factory sugar resulted in closing down of open pan factories and khandsars in your neighbourhood in the last seven years?

13. How has (i) Sugar Excise Duty of 1934, (ii) addition imposed in 1937, affected you?

14. What are the main difficulties of the open pan/khandsari industry? Have you any suggestions for overcoming them?

No. 4.—Questionnaire for sugar refineries.

NOTE—1. Reply to this questionnaire, if possible with six spare copies, should reach the Secretary, Tariff Board, Ootacamund, before 25th June, 1937, at the latest.

2. The answers may be confined to matters with which you are directly acquainted and on which you are in a position to supply the Board with detailed evidence.

3. Unless otherwise required, it is requested that figures may be supplied from the working season of 1930-31 (or if the factory started working after 1930-31, from the first year in which the factory started operation) up to the end of working season 1936-37.

4. Figures may kindly be given per acre or per standard maund (82⅔ lbs.) as the case may be.

5. It is suggested that a note may be made of any facts or figures which you will like to be considered as confidential. Such information will not be published. In no case will any indication be given in the Tariff Board Report of the source of information or the name of any individual or factory except with permission.

1. In what year did your factory first commence manufacture and what is your maximum capacity? Does your factory refine only or does it also crush cane?

2. From what materials do you refine sugar? What qualities of sugar do you make?

3. What has been your output of sugar during the last seven years? To what causes do you attribute variations?

4. Are you able to obtain sufficient quantity of raw material and at what prices?

5. What are your sources of supply and what is the method of transportation?

6. What has been your average recovery of sugar during the last seven years? How far do you consider an improvement possible (*a*) in the method of manufacture of the raw material, (*b*) in the process of refining, to improve recovery rate?

7. Please state in as much detail as possible the cost of manufacture of one maund of sugar in your refinery during the last seven years. What are the causes of variations?

8. How does your sugar compare in quality with ordinary factory sugar? Please state the prices obtained for different qualities of sugar during the last seven years.

9. What are the markets you supply and what are the freight rates?

10. What has been your output for molasses and what prices were obtained during the last seven years?

11. What has been the effect of (*a*) the Sugar Excise Duty imposed in 1934, (*b*) the excess imposed in 1937?

12. Under what conditions can refineries continue to operate in competition with sugar factories?

No. 5.—Questionnaire for gur/jaggery merchants.

NOTE—1. Reply to this questionnaire, if possible with six spare copies, should reach the Secretary, Tariff Board, Ootacamund, before 25th June, 1937, at the latest.

2. Figures may kindly be given per standard maund (82⅔ lbs.).

3. It is suggested that a note may be made of any facts or figures which you will like to be considered as confidential. Such information will not be published. In no case will any indication be given in the Tariff Board Report of the source of information or the name of any individual except with permission.

1. What are the principal gur/jaggery marketing centres in which you deal?

2. What are the different kinds of gur/jaggery marketed by you?

3. What are the chief centres from which you obtain your supply and what is the quantity obtained from each during the last seven years? To what causes do you attribute variations?

4. Has there been any variation in the quality of gur/jaggery in recent years? If so, for what reasons?

5. Please state the prices of various kinds of gur/jaggery for the last seven years. To what causes do you attribute variations?

6. Is there any relation between the price of gur/jaggery and sugar?

7. How far is there competition between gur/jaggery and

(i) Indian factory sugar,

(ii) khandsari sugar?

Is sugar replacing gur/jaggery in your market?

8. How long will gur/jaggery keep in good condition. Is there any variation in the keeping qualities of different kinds of gur/jaggery?

(1) *Circular letter No. 147, dated the 30th April, 1937, from the Secretary, Tariff Board, to all Local Governments in India and the Chief Commissioner, Delhi.*

I am directed to invite a reference to the Government of India, Department of Commerce, Resolution No. 127-T. (1)/37, dated the 27th March, 1937, referring to the Tariff Board the question of the extent of protection required by the Indian Sugar Industry during the period from the 31st March, 1938, to 31st March, 1946. I am to say that the Board propose to issue a questionnaire in this connection shortly and take oral evidence in July-August on the basis of the replies received. A copy of this questionnaire will be forwarded to your Government in due course for favour of an expression of their views on it. If they are unable at this stage to express any opinion on the several points raised therein, I am to request that, with the permission of His Excellency the Governor in Council, the views of the Director of Industries, the Director of Agriculture and the Registrar of Co-operative Societies on the questions may be communicated to the Board. They would also like to examine them orally, in addition to any other representatives the Government of Madras, etc., may like to depute for giving evidence before the Board. Dates and place of such examination will be communicated to you later on.

2. In this connection I am to add that the Board will be glad to have figures regarding the retail prices of—

(*a*) Gur/jaggery and

(*b*) Sugar of different qualities.

They understand, however, that statistics of such prices are not available. If that is the case, the Board would be very grateful if the Government of Madras, etc., could undertake to collect some figures for recent years. They realise that bazaar prices for past years are difficult to obtain, but it is suggested that large European and Indian shops may be able to supply the information required. If possible, separate figures may be obtained for imported and Indian made sugar with an indication of the quality or qualities of sugar.

3. There is one further point which the Board consider is not suitable for inclusion in a questionnaire except in a general way, but on which they would like to have some information. In the course of their preliminary tour the Board were informed that, in some areas at least, cane-growers are imposed upon when they come to sell their cane. It was suggested that cane is underweighed, that, when there is a rush for the supply of cane, cultivators are induced to accept less than the standard price, false receipts of payments being issued, and that passes to bring cane to the factories are surreptitiously sold. The Board would be grateful if the Government of Madras, etc., would furnish, confidentially if so desired, such information as they are in a position to give of the extent to which these and similar malpractices prevail.

4. As the Board consider it of importance to examine a few representatives of cane-growers in this connection, I am to request that the Government of Madras, etc., may be pleased to suggest the names of a few suitable persons who, in their opinion, would be able to be of material assistance to the Board in their enquiry.

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(2) *Circular letter No. 172, dated the 11th May, 1937, from the Secretary, Tariff Board, to all Local Governments.*

In continuation of this office letter No. 147, dated the 30th April, 1937, I am directed to forward herewith a copy of the questionnaire to be answered by the Local Governments together with four spare copies of the same, and to request that the replies to the questionnaire may kindly be sent as early as possible and in any case not later than the 25th June, 1937.

2. I am also to enclose herewith two copies each of the following questionnaires—

(1) General questionnaire,

(2) Questionnaire for Sugar Refineries,

(3) Questionnaire for manufacturers of Sugar by the Open Pan system and Khandsaris,

(4) Questionnaire for Gur/Jaggery Merchants.

The Board will be glad to have any comments which the Government of Madras, etc., may like to make on any of the points raised therein.

3. I am also to forward* spare copies of the questionnaires referred to in paragraph 2 above. The general questionnaire has been distributed to all the sugar factories (vacuum pan) in India and to some of the cane-growers and merchants. The questionnaire for Sugar Refineries has also been sent to the factories concerned. Lists of cane-growers and merchants and sugar refineries to whom these questionnaires have been supplied are appended. It has not been possible, however, to send questionnaires to manufacturers of sugar by open pan system and khandsaris and to gur and jaggery merchants for lack of sufficient information. The Board will be grateful if the Government of Madras, etc., will undertake the distribution of the spare copies of the general questionnaire now forwarded to representative cane-growers or their associations and important sugar merchants, other than those mentioned in the list. Copies of the questionnaire for sugar refineries may likewise be supplied to any refineries not already included. I am further to request that copies of the other two questionnaires may be distributed to such manufacturers of sugar by open pan system and khandsaris and to gur and jaggery merchants as in the opinion of the Local Government would be able to be of assistance to the Board. Persons, firms or associations to whom the questionnaires are sent may kindly be informed that they need answer only such questions as refer to matters of which they have special knowledge. They may also be asked to send their replies, with six spare copies, if possible, direct to the Board as early as they can and in any case not later than the 25th June, 1937. It would be of assistance if, after distribution, a list of all those to whom these questionnaires have been distributed could be furnished to the Board.

4. If spare copies of the questionnaires enclosed with this letter are found to be insufficient for distribution, I am to request you to intimate to me by wire the number of additional copies required.

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(3) *Circular letter No. 171, dated the 11th May, 1937, from the Secretary, Tariff Board, to certain Indian States.*

I am directed to invite a reference to the Government of India, Department of Commerce, Resolution No. 127-T. (1)/37, dated the 27th March, 1937, referring to the Tariff Board the question of the extent of protection required by the Indian Sugar Industry during the period from the 31st March 1938, to 31st March, 1946, and to say that in connection with this enquiry the Tariff Board have now prepared a questionnaire to be answered by the Local Government setting out points on which detailed information is required. I am to forward herewith for information a copy of this questionnaire together with three spare copies. The Board will be grateful

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* Enclosures referred to in paragraph 3—

(1) General questionnaire— copies.

(2) Questionnaire for sugar refineries— copies.

(3) Questionnaire for manufacturers of sugar by the open pan system and khandsaris— copies.

(4) Questionnaire for gur/jaggery merchants— copies.

to have the views of the Government of Hyderabad, etc., on the various points raised therein in so far as they affect the Hyderabad, etc., State.

2. I am also to enclose herewith two copies of the following questionnaires—

(1) General Questionnaire,
(2) Questionnaire for gur refineries,
(3) Questionnaire for manufacturers of sugar by the open pan system and khandsaris,
(4) Questionnaire for gur/jaggery merchants,

and to request you to forward any comments which the Government of Hyderabad, etc., may like to make on the subjects dealt with therein.

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(4) *Circular letter No. 181, dated the 15th May, 1937, from the Secretary, Tariff Board, to all Local Governments.*

In continuation of this office circular letter No. 172, dated the 11th May, 1937, I am directed to say that in calculating the cost of cultivation of sugarcane the Board may find it necessary to make an allowance for the interest on the money borrowed by the cultivators in the purchase of seeds, etc. I am therefore to request you to be so good as to let me know the prevailing rate of interest at which cultivators can borrow money in your Province.

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(5) *Circular letter No. 303, dated the 18th June, 1937, from the Secretary, Tariff Board, to all Local Governments and Indian States.*

In connection with the Sugar Tariff Inquiry, the Board are anxious to obtain information about molasses consumed by Distilleries and other concerns manufacturing rectified and denatured spirit. I am, therefore, directed to request that the following information about Provinces/States may kindly be obtained and supplied to Secretary, Tariff Board, as early as possible. Figures may kindly be given for each of the last 3 years.

A. (1) The number of distilleries.
(2) Total quantity of molasses consumed and the sources of their supply.
(3) The price paid for molasses.

B. (1) The number of concerns manufacturing rectified or denatured spirit other than distilleries.
(2) Total quantity of molasses consumed and the source of their supply.
(3) The price paid for molasses.

Replies from the Government of Assam.

(1) *Letter dated the 26th June, 1937, from the Government of Assam, Education Department, Agriculture Branch, Shillong.*

With reference to your circular letter No. 172, dated the 11th May, 1937, I am directed to say that it is impossible in the time allowed for the Government to express their considered views on various matters raised in the questionnaire.

2. I am, however, to forward for the information of the Board a copy of the following letters:—

(i) Letters Nos. 1633 and 1634, dated the 18th June, 1937, from the Director of Agriculture, Assam, with enclosure.
(ii) Letter No. 1-M.-68/1917, from the Director of Industries, Assam.

Copy of letter No. 1633, dated the 18th June, 1937, from the Director of Agriculture, Assam, to the Secretary to the Government of Assam in the Education and Local Self-Government Departments.

With reference to Mr. Saleh's Memo. No. 1392-93, dated the 5th instant, I have the honour to enclose herewith my replies to the questionnaire for Local Government. The time at my disposal and the want of spare copies of the questionnaire did not permit of any replies being obtained either from any private persons or from any of my own officers. There is a small vacuum-pan sugar factory run by Mr. Withers at Naojan. A copy of the General Questionnaire may be sent to him. There are hardly any regular open pan factories in the province although sporadic efforts are being made from time to time. The main difficulties of these enterprises appear to be—

(1) Want of technical knowledge.

(2) Want of compact blocks of sugarcane.

(3) Want of transport facilities.

A list of such concerns are enclosed herewith.

List of existing sugar concerns in Assam.

1. Bogidhola Sugar Factory at Deopani.
2. Lakshmi Sugar Syndicate at Margherita.
3. The Nalimi Estate of Naojan.
4. Baidiha Sugar Plantation at Nakachari.
5. The Gurjogonia Sugar Concern at Dergaon.
6. The Noandi Tea and Sugar Estate, P. O. Kalaigaon (Darrang).

REPLIES TO QUESTIONNAIRE IN CONNECTION WITH DUTY ON SUGAR.

1. The enclosed statement shows the area under sugarcane in Assam during the last seven years. The following improved varieties were grown:—

B. 147, B. 376, Co. 205, 213, 219, 305 and 343; P.O.J. 1507, 2714 and 2878.

It is not possible to give the acreage under each improved variety separately but the total acreage under all the above varieties during 1935-36 estimated to be 14,500 acres. The figures for 1936-37 are not yet available.

2. Except in the district of Sibsagar, sugarcane is not grown on any compact blocks or distinct areas and no separate classification is possible in accordance with the climatic conditions, methods of cultivation, etc. The only classification possible is between the practice of the settled cultivators and of immigrants like Nepalis. The latter plants sugarcane on virgin soil hoed up, give little or no manure and ratoons even for five or six years. The land is then kept fallow for three or four years or even longer and used for grazing. Sugarcane is not grown in Assam under irrigation.

3-5. The questions do not arise.

The average yield per annum of gur during the last seven years was 918,440 mds. It is not possible to estimate the sucrose content of the cultivators' canes. The following statement shows the average yield of cane gur and the sucrose content at the Jorhat Experimental Station for the last three years:—

Average yield of improved canes (stripped) varies round about—

30 tons per acre (plant).

26 tons per acre (ratoon).

Average yield of sucrose content from improved canes as ascertained by laboratory tests round about—

2·3 tons per acre (plant).

2·0 tons per acre (ratoon).

6. There has been no marked variation in sugarcane cultivation during the last seven years except a gradual increase. This is due mainly to the general increase in cultivation due again mainly to the increase in population.

7. No.

8. The main cash crop of the ordinary cultivator of the province is paddy. Next in importance come Rape, Mustard and Jute. Potato also is not an insignificant cash crop.

The normal outturn of jute per acre is 3·5 bales of 400 lbs., each or approximately 17 mds., per acre which may be valued at Rs. 77 at Rs. 4-8 per md. The normal outturn of Rape and Mustard is estimated at 5·6 mds. per acre valued at Rs. 24 at Rs. 4-4 per md. The normal outturn of gur is estimated at 32·8 mds. per acre valued at Rs. 115 at Rs. 3-8 per md. None of these can be said to be an alternative to sugarcane although in some localities some of the jute is being replaced by sugarcane to some extent. Similarly sugarcane is grown instead of Rape and Mustard occasionally.

9. The statement enclosed herewith gives the approximate amount spent by the Government for the extension and improvement of sugarcane cultivation in Assam.

10. The province of Assam receives no cultivation from the Government of India out of sugar excise.

11. (i) Experimental work for the improvement of sugarcane has been carried out for over thirty years. This has been directed mainly to the trial of various improved varieties and of various manurial and cultural experiments. Since 1933-34, research on sugarcane has been carried out in a more systematic manner with the financial assistance of the Imperial Council of Agricultural Research. These are directed mainly towards the trial of various Coimbatore varieties and a few manurial experiments. Apart from observations on the Jorhat farm on sugarcane disease and advising cultivators on the control of diseases in specific cases, no research work along this line has been done in Assam where the Mycological staff consists only of one Mycological Assistant.

(ii) All the demonstration work of the department including the introduction of improved varieties of sugarcane and improved methods of cultivation, etc., is in charge of the Deputy Directors of Agriculture of whom there are three in Assam. They are assisted by Agricultural Inspectors and Demonstrators. Sugarcane setts of improved varieties are issued free on the return system or at reduced cost for trial. The use of manures is also demonstrated similarly. About fifteen lakhs of sugarcane setts of improved varieties are estimated to have been issued by the Department during the last seven years.

12. (i) The Imperial Council of Agricultural Research sanction Rs. 48,000 for a five years' scheme on sugarcane research at the Jorhat farm. A sum of Rs. 31,025 has been spent out of this during the last three years. (ii) The Coimbatore Sugarcane Research Station has supplied seedlings from time to time for trial. (iii) No assistance has been received from the Imperial Institute of Sugar Technology. I would appreciate some help from the Institute of Sugar Technology but their assistance is probably guided by the area under sugarcane in each province.

13. Does not arise.

14. Only one small sugarcane factory working with vacuum pan is known to exist in Assam. There are also a very small number, hardly

exceeding half a dozen of open pan factories which are also not worked regularly. A small quantity is used for chewing and only tops of canes are used for seed. The bulk of the cane is converted into gur.

15. The main difficulties of the cane-growers in the cultivation of cane are damages by insects, diseases, high cost of labour and the difficulty of obtaining enough setts for planting.

16. I am not aware of any co-operative organisations of cane-growers.

17-21. The questions do not arise.

22. There are no tramways in the province but contributions have been received, I believe, from the Road Board for developing the feeder roads. Facilities for transport are not adequate. With better facilities small open pan factories may be expected to run profitably.

23 & 24. I am not aware of any such help.

25. None so far as I am aware.

26. Does not arise.

27. These figures are not available.

28. Does not arise.

29. The average annual import of sugar during the years 1933-34 to 1935-36 for which figures are available was 352,060 mds., and the average annual export during the same period 3,224 mds. leaving a net available supply of 348,386 mds. which may be taken as the figure for consumption of sugar in Assam. The quantity produced in Assam is negligible.

30. There are no such manufactories excepting ordinary sweetmeats prepared in each town.

31. Does not arise.

32. There is a fairly good prospect of starting a Subsidiary Industry for fruit preservation and canning mainly with oranges and pineapples.

33. A statement is enclosed herewith.

34. A small quantity of gur is produced from date palms. I am not in a position to give any estimate of production.

35. A statement is enclosed herewith showing the wholesale price of gur in a few markets during the last seven years. Figures were compiled only for ordinary gur. There is no very large variation except a sudden drop in 1930-31 due to a general fall in price from which there has been recently a slight recovery.

36. The enclosed statement shows the total annual consumption of gur in the province, since 1933-34 previous to which figures of import and export were not available. There has been no marked variation.

37. Gur is imported mainly from Bengal, Bihar and the United Provinces. The imports of gur, rab, molasses, jaggery, etc., are grouped together and were as follows:—

1933-34—255,332 mds.
1934-35—239,262 mds.
1935-36—255,740 mds.
1936-37—272,335 mds. (up to February).

It is not possible to ascertain the import of molasses separately but some quantity is imported mainly for mixing with tobacco.

38. The export of gur, etc., is practically only to Bengal. Figures were as follows:—

1933-34—4,125 mds.
1934-35—7,432 mds.
1935-36—5,989 mds.
1936-37—5,279 mds. (up to February).

39. As the price of sugar is not available, it is difficult to make a comparison but the price of gur would naturally go down with the reduction in the price of Indian factory sugar.

40. Not to any appreciable extent, so far as can be judged by the area planted under sugarcane during the last seven years.

41. No such research work has been undertaken in the province.

42-44. There are no regular open pan factories or khandsaris in the province. A few sporadic efforts have been made from time to time in this direction by different parties whose names are enclosed herewith. None of the factories, however, have worked systematically and it is not possible to give any figures.

45. I think, in Assam at least there is a future for the khandsari industry if properly worked.

46. No such work has been undertaken. A small installation has been recently set up at the Jorhat farm to find out what is the actual cost of making sugar by the process under local conditions and also to find out what improvement is possible over the ordinary method of making gur.

47. This question does not arise in this province.

48. Presumably the consumer has to pay higher price for his gur and sugar on account of the protective duties; but as in many cases the consumer depends for his income on the growers of sugarcane this is partly counter-balanced.

49. Not to my knowledge.

50. The statistics of acreage and production are supplied by the Deputy Commissioners. In the temporarily settled districts of Assam Valley these are based largely by on the figures of the Land Revenue staff, and are believed to be fairly accurate. In the district of Sylhet, however, the figures are prepared mainly on the basis of figures supplied by the Police Officers which are only approximate. The prices of gur are supplied by the Deputy Commissioners and by our Agricultural Inspectors, from enquiries made in the market and are believed to be fairly accurate.

(Questions 1 and 33.)

Area under sugarcane in Assam for the last seven years ending 1935-36.

	Area.	Production.
		Mds.
1929-30	29,500	722,810
1930-31	32,900	857,893
1931-32	31,400	885,210
1932-33	32,100	947,083
1933-34	35,400	1,090,771
1934-35	34,800	924,000
1935-36	36,800	1,001,307

Average per year—918,440 maunds.

Amount spent for extension and improvement of sugarcane.

	Rs.		Rs.
1929-30	17,825	1933-34	13,987
1930-31	24,613	1934-35	14,297
1931-32	14,874		
1932-33	14,193	1935-36	16,975

In addition to the above the general demonstration staff spent considerable time in the extension of the cultivation of sugarcane among the cultivators, the expenditure for which cannot be separately assessed.

The Imperial Council of Agricultural Research has sanctioned Rs. 48,000 for conducting a five years Sugarcane Research Scheme which has been started at the Joint Farm since August, 1933. The grant received is as follows:—

	Rs.
1933-34	15,078
1934-35	8,692
1935-36	7,255
Total	31,025

Prices of sugar, raw (gur) in the four wholesale markets of Assam for the last 7 years ending 1935-36.

(Wholesale price per maund of 40 seers.)

	Balaganj.	Goalpara.	Gauhati.	Dibrugarh.
	Rs. A.	Rs. A.	Rs. A.	Rs. A.
1929-30	7 11	8 0	7 2	9 0
	Karimganj.	Goalpara.	Gauhati.	Dibrugarh.
	Rs. A.	Rs. A.	Rs. A.	Rs. A.
1930-31	4 2	5 7	4 13	7 8
1931-32	3 13	5 0	4 12	7 12
1932-33	3 7	4 1	3 15	4 7
1933-34	3 3	4 3	4 6	3 7
1934-35	3 3	4 4	4 11	3 14
1935-36	4 13	5 6	4 12	3 15

The annual consumption of gur during each of the three years beginning from 1933-34 is given below:—

	Production + Import — Export = Consumption.
	Mds.
1933-34	1,090,771 + 255,332 — 4,125 = 1,341,978
1934-35	924,000 + 239,262 — 7,432 = 1,155,830
1935-36	1,001,307 + 255,740 — 5,989 = 1,251,058

Copy of letter No. 1634-Ag., dated the 18th June, 1937, from the Director of Agriculture, Assam, to the Secretary to the Government of Assam, Education and Local Self-Government Departments.

With reference to Mr. Saleh's Memo. No. 1297, dated the 24th May, 1937, I have the honour to state that in view of the comparatively small area of sugarcane in Assam it is hardly worth while examining any other Government representative than the Director of Agriculture. The following non-officials may, however, be examined:—

(1) Mr. D. S. Withers, Daklongia Tea Estate, P. O. Mariani.

(2) Srijut Tankeswar Barua, Proprietor, Lakshmi Sugar Estate, P. O. Rehabari, Dibrugarh.

Both of them have grown large areas of sugarcane.

Mr. Withers have got a small vacuum pan sugar factory and Mr. Barua an open pan factory.

2. A statement of the wholesale prices of gur is enclosed herewith. It has not yet been possible to obtain retail prices either of gur or sugar.

3 & 4. As there are no large factories the question do not arise.

Prices of sugar, raw (gur) in the four wholesale markets of Assam for the last 7 years ending 1935-36.

(Wholesale price per maund of 40 seers.)

	Balaganj.	Goalpara.	Gauhati.	Dibrugarh.
	Rs. A.	Rs. A.	Rs. A.	Rs. A.
1929-30 . . .	7 11	8 0	7 2	9 0
	Karimganj.	**Goalpara.**	**Gauhati.**	**Dibrugarh.**
	Rs. A.	Rs. A.	Rs. A.	Rs. A.
1930-31 . . .	4 2	5 7	4 13	7 8
1931-32 . . .	3 13	5 0	4 12	7 12
1932-33 . . .	3 7	4 1	3 15	4 7
1933-34 . . .	3 3	4 3	4 6	3 7
1934-35 . . .	3 3	4 4	4 11	3 14
1935-36 . . .	4 13	5 6	4 12	3 15

Copy of letter No. I. M.-68/1917-Ind., dated Shillong, the 16th June, 1937, from the Director of Industries, Assam, to the Secretary to the Government of Assam, Education and Local Self-Government Departments.

With reference to the Education Department Memo. No. 1392-93-E., dated the 5th June, 1937, forwarding for my advice copies of letters from the Secretary, Tariff Board, in connection with their enquiry into the question of protection required by the Indian Sugar Industry, I have the honour to say that there are a few sugar factories working on a cottage scale in the province. I visited most of them during 1935-36 and submitted my inspection notes to Government. None of these factories, except the factory at Noajan in the Golaghat Sub-Division, produce white sugar. It appears from the records in the office of the Commissioner of Excise, Assam, that the factory at Noajan produced the following quantities of sugar other than khandsari and palmyra sugar during the last three years:—

Year.	Quantity.
1934-35	147¼ Cwt.
1935-36	88¼ ,,
1936-37	79⅛ ,,

It is understood that this factory has since been closed. As there is no factory now producing white sugar, we are not at present interested in the incidence of the tariff notes.

As regards the questionnaire, the Agricultural Department in my opinion, is in a better position to answer the question and supply the figures wanted by the Board. I have not got the figures and other particulars asked for by the Tariff Board and there is no agency under me through which I can collect them.

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(2) *Replies to questions 3, 4, 5 and 34 of the questionnaire for Local Governments, forwarded with the letter dated the 13th December, 1937, from the Government of Assam. Education Department, Agriculture Branch.*

3-5. Average—

Area under sugarcane for the last 7 years is 33,300 acres.

Production of gur per year 34,000 tons.

Average—

Yield per acre—cultivators' condition—2,596 lbs.

Yield per acre—Government Farm—4,320 lbs.

Cost of cultivation of Government Farm—220 per acre.

Cost of cultivation by cultivators is estimated at Rs. 130 per acre.

Yield of sucrose content from improved cane as ascertained by laboratory tests round about—

2·3 tons per acre (plant).

2·0 tons per acre (Ratoon).

34. Date palm gur is manufactured in the District of Kamrup on a small scale.

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(3) *Letter dated the 1st July, 1937, from the Government of Assam in the Education and Local Self-Government Departments, Shillong.*

Subject:—INFORMATION ABOUT MOLASSES CONSUMED BY DISTILLERIES AND OTHER CONCERNS MANUFACTURING RECTIFIED AND DENATURED SPIRITS.

I am directed to refer to your circular letter No. 303, dated the 18th June, 1937, and to say that there are no distilleries or concerns manufacturing rectified or denatured spirit in this province.

Replies from the Government of Bengal.

(1) *Letter dated the 29th June, 1937, from the Government of Bengal, Agriculture and Industries Department, Calcutta.*

Subject:—QUESTION OF THE EXTENT OF PROTECTION REQUIRED BY THE INDIAN SUGAR INDUSTRY DURING THE PERIOD FROM 31ST MARCH, 1938, TO 31ST MARCH, 1946.

I am directed to refer to the correspondence resting with your circular letter No. 172, dated the 11th May, 1937, on the subject mentioned above, and to forward herewith copies of replies furnished by the Director of Agriculture and the Registrar, Co-operative Societies, Bengal, to the Questionnaire for Local Governments. These replies represent the views of the officers concerned and not those of Government.

I am to say that the views of the Director of Industries, Bengal, will follow shortly and the views of Government on material points will be sent in later.

REPLIES BY THE REGISTRAR, CO-OPERATIVE SOCIETIES, BENGAL, TO QUESTIONNAIRE ISSUED BY THE TARIFF BOARD REGARDING SUGAR INDUSTRY.

1-6. No reply.

7. There was overproduction in the districts of Malda, Dinajpur, Rajshahi, Mymensingh, Murshidabad, Midnapore and 24-Parganas where the cultivators experienced great difficulty in disposing of their produce. The price obtained in many cases was therefore unsually low.

I am not in favour of restriction in the area under cane as private sugar mills are springing up rapidly in these localities and an attempt is being made to organise co-operative societies for the marketing of sugarcane.

8 & 9. No reply.

10. The allotment made by the Government of India to this Province out of the sugar (excise) duty for the year 1936-37 is Rs. 25,500. A scheme for utilising this grant by the formation of co-operative societies in two

typical cane-growing areas, *viz.*, Setabganj (Dinajpur) and Gopalpur (Rajshahi) is under the consideration of the Local Government.

11-14. No reply.

15. The main difficulty is that of transportation. For want of good roads, most of the sugarcane has to be railed by circuitous routes instead of by carts or lorries. The railway freight and the delay in delivering thus caused become a source of loss to the grower.

16. So far, only two co-operative societies have been dealing with the sugarcane produced by the members of co-operative societies. No society has, however, been formed among cane-growers but a scheme for the formation of two co-operative Unions with a complement of 33 primary growers societies is under consideration. The Unions will previously undertake sale of sugarcane to the best advantage of the growers by entering into contract with the mills, regulate the cultivation and harvesting of sugarcane, supply cuttings of improved type as well as manure, implements, etc.

17. No. But the question is under consideration along with the scheme.

18. No such competition has come to the notice of the department. On the contrary, a combination of mills to keep down the price is apprehended.

19. Obviously such a system will be desirable. It is yet premature to hazard any opinion as to its feasibility before giving the scheme a trial. A provision for the payment of such bonuses in the bye-laws of the co-operative societies when formed will be made if profits would admit.

20 & 21. No reply.

22. In the areas visited by me, I have found transport facilities quite inadequate.

23 & 24. No reply.

25. There are four registered co-operative societies for crushing sugarcane of which three, *viz.*, Malda Sugar Mills, the Naogaon Co-operative Agricultural Association and the Lalgarh Krishi Samiti are more or less equipped. The first two are manufacturing sugar but at present only the Malda Sugar Mill is working (see Question 42).

26-30. No reply.

31. No. The industry has not developed to such extent in this province.

31-41. No reply.

42. (i) See reply to Question 25. The outturn of the Malda Sugar Mill is reported to be 900 mds.

43-51. No reply.

REPLIES BY THE DIRECTOR OF AGRICULTURE, BENGAL, TO THE QUESTIONNAIRE OF THE SUGAR TARIFF BOARD.

1. Area under sugarcane in Bengal:—

	Total area in acres.	Area under improved varieties (Co. 213, 90 per cent. & Yellow Tanna, 10 per cent).
1930-31	198,500	...
1931-32	233,400	100,000
1932-33	233,200	125,000
1933-34	256,600	117,415
1934-35	274,900	130,838
1935-36	325,400	244,326
1936-37	354,800	290,359

2. Two broad divisions—acid red soil and grey silt soil: system of cultivation mostly the same all over the province: setts planted shallow in plough furrows: trenching recently introduced and adopted mostly in big plantations.

Irrigation not in vogue.

3. *Nil.*

4. Cost of cultivation including gur-making per acre (non-irrigated) varies from Rs. 100 to Rs. 150 (including cultivators' own labour and bullocks).

Difference in the cost of cultivation during the last 7 years—not appreciable.

Average yield of cane per acre—560 mds. (approximate).

Sucrose content:—

Silt soil—16 to 18 per cent.

Red soil—13 to 16 per cent.

5. Fair price for sugarcane-growers—As. 4 per maund of cane.

6. Areas under sugarcane (marked variations are noted below):—

	1930-31.	1936-37.
	Acres.	Acres.
Rajshahi	6,300	20,500
Dinajpur	31,200	52,700
Rangpur	21,000	30,000
Dacca	18,000	43,400
Mymensingh	16,000	50,000

Variation due mainly to:—

(i) Fall in price of jute (main cash crop of Bengal);

(ii) Establishment of sugar factories (there were none before) and consequent sale of canes to the factories.

7. No overproduction in 1936-37, on the whole, but some plots were not harvested in certain areas.

8. *Cash crops.*—Jute, Aus paddy, Tobacco.

Jute, paddy—alternative to sugarcane.

Outturn of jute—about 18 maunds per acre—Rs. 108 (present rate).

Outturn of Aus paddy—about 16 maunds per acre—Rs. 32 (present rate).

Outturn of Potato—about 100 maunds per acre—Rs. 200 (present rate).

Outturn of Tobacco—about 10-12 maunds per acre—Rs. 100 to Rs. 120 (present rate).

9. 1931-1937.

From the grants for jute restriction propaganda Rs. 18,100.

From Departmental and various other grants Rs. 1,09,000.

10. *Contribution from the Government of India out of Sugar Excise.*—No money has yet been spent.

11. (i) *Research work.*—A small testing station has been started in November, 1931, at the Dacca Farm, to quicken up the work with a grant from the Imperial Council of Agricultural Research, where improved varieties of canes from Coimbatore and other places are tested against the standard variety Co. 213. Studies are made under the heads—germination, field-habit, pest and disease, growth performance, chemical analysis, tonnage of canes, and end products with a view to find out canes suitable for Bengal.

(ii) *Measures for the introduction of improved varieties.*—Free distribution and sale of cuttings, demonstration in cultivators' plots, propaganda

by means of leaflets, magic lantern lectures, radio talks and participation in agricultural exhibitions.

12. (i) Pay of one Assistant and a Mali for the Cane Testing Station:—
1935-36—Rs. 2,026.
1936-37—Rs. 2,055.

(ii) Free supply of cuttings of improved varieties of canes.

(iii) *Nil.*

Money urgently needed for research in diseases.

13. Sugar factories are in touch with the Department regarding research and cultivation of improved varieties and collaborate for manurial and cultural experiments in their lands whenever necessary.

14. (*a*) Crushed in sugar factory—5 per cent.
(*b*) Crushed in open pan—3 per cent.
(*c*) Utilised for gur-boiling—90 per cent.
(*d*) Utilised for chewing and seed—2 per cent.

15. Want of funds for proper manuring and purchase of seeds.

Want of good roads and transport facilities.

High transport cost in Railways.

16. *Nil.*

17. No.

18. Seems to be not much competition as far as is known.

19. 25 per cent. premium for early and late improved varieties should be given. This could be done through the factories' Agents.

20. Practically no cost—see (21).

21. Use their own carts.

22. Facilities inadequate; no tramways available for transport of canes.

No assistance given as yet for road development, etc.

23 & 24. Not known.

25. No co-operative vacuum sugar factory, but 2 open pan co-operative factories are working well.

26. No information.

27. Wholesale price of sugar (retail price not available):—

	1934.	1935.	1936.
Calcutta .	Rs. 9-4 to 10-0	Rs. 9-4 to 11-4	Rs. 7-8 to 10-8
Burdwan .	Rs. 9-0 to 10-0	Rs. 9-4 to 9-14	Rs. 8-8 to 10-0
Dacca . .	Rs. 10-0 to 10-4	Rs. 10-0 to 12-0	Rs. 8-0 to 10-2

28. Variations due to increased production and intensive interfactory competition.

29. Consumption per head is estimated as:—
Sugar—6 lbs. per annum
Gur—28 lbs. per annum
} approximately.

Gur is the main product required and consumption of sugar will increase slowly.

30. Rasgolla, Sandesh, Moa, Laddu, etc., throughout the province as a village industry.

Sugar and gur used.

31. A few more factories required in the province.

(i-iii) No.

32. Many possibilities.

33. Outturn of gur from cane:—

	Mds.		Mds.
1930-31 . .	6,701,400	1934-35 . .	13,286,700
1931-32 . .	6,965,600	1935-36 . .	13,598,280
1932-33 . .	12,263,444	1936-37 . .	15,897,060
1933-34 . .	12,344,400		

34. *Date-palm.*—Outturn of gur from date-palm:—

	Mds.		Mds.
1930-31 . .	2,799,900	1934-35 . .	2,694,600
1931-32 . .	2,791,800	1935-36 . .	2,586,600
1932-33 . .	2,778,300	1936-37 . .	2,853,900
1933-34 . .	2,697,300		

35. *Price of cane-gur per maund.*—Varies according to quality and season.

Maximum and minimum prices given below:—

——	1930.	1931.	1932.	1933.	1934.	1935.	1936.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Calcutta . .	8½—9	5—8	4½—7½	3—3-15	3½—4¾	3⅜—4⅞	2¼—4½
Rajshahi . .	5½—10	4—6	3½—4½	2½—3½	2½—4½	2—3¼	1½—3¼
Dacca . .	9½—12½	3¾—4½	4¾—7½	3—5	3—5	3½—4¾	3½—4½

Variations are partly due to changes in acreage, climatic conditions and economic depression, and not due to competition from the Indian Sugar Factories.

36. See answer to Question 33. All gur consumed and, in addition, there is a large import—see Question 37.

37. From Bihar and United Provinces.

Import from outside Bengal (previous 4 years' figures are not available):—

1934—1,645,694 maunds.
1935—1,660,284 maunds.
1936—2,101,692 maunds.

38. Gur export from Bengal to Assam and outside:—

1934—58,094 maunds.
1935—69,584 maunds.
1936—127,626 maunds.

39. Not much.

40. Not appreciable.

41. A one ton per hour mill was designed, made and tested and put on the market for sale. This mill crushes from 27 to 30 maunds of cane per hour with an average extraction of 70 per cent. and requires 12 H.P. to drive. The mill costs only Rs. 750.

One improved furnace has been designed, tested and put out on the market for sale and produces 2 maunds of gur. Two others designed and being tested give 1 maund and ½ maund per hour. They cost Rs. 700, Rs. 200 and Rs. 100 each respectively. The gur manufactured is of excellent quality and the juice can be treated during manufacture in all

three furnaces. They are all much superior in every respect to any other furnaces on the market. The first has been designed for use with the above power mill, the other two for use with several cattle mills worked co-operatively for economy and improved quality of gur.

The improvement in the method of manufacture consist firstly in much reduced inversion in the three abovementioned furnaces, due to rapidity in concentration, reduced fuel consumption and reduced cost of labour, thereby reducing the cost of production to Rs. 1-4 to Rs. 1-6 per maund of gur.

The quality of the gur is improved due to reduced inversion and treatment of the juice during manufacture by Soda Ash, Hydros, Skimming and straining. An excellent quality of gur results.

42. Khandsari factories working in Bengal—24.

Departmental type gur factories—4. From 18 to 90 maunds gur per day.

Departmental type open pan white sugar factories—12½-ton and 25-ton, old and more improved types—

6 of 12½-ton old type, from 16 to 25 maunds sugar and from 14 to 21 maunds of second gur.

3 of 25-ton in Bengal.

1 of 25-ton in Assam.

1 of 25-ton in Nepal.

50 maunds sugar and 44 maunds second gur by older process.

43. Khandsari factories—Rs. 6-6 per maund not including depreciation, interest on capital, supervision, etc.

Departmental type—Rs. 5-8 per maund by the older processes including all costs. By the latest process of filtering and refining Rs. 4-12 per maund.

44. During 1934-35 to 1935-36, when the vacuum pan factories commenced working in Bengal, there was severe competition for cane, this affected the Khandsari and open pan factories as the latter types were unable to pay the same price for the cane with lower prices for sugar. To this was added the sugar excise duty which resulted in five Khandsari factories closing down and the others working more or less at a loss.

No Departmental type of open pan factory closed down, although they were badly hit by the high price of cane and the sugar excise duty.

45. Small but efficient open pan factories should certainly be encouraged. They encourage the cultivation of sugarcane as a revenue crop, both in the interior of the districts, too far removed from railways to be influenced by the large vacuum pan factories, and also along railways outside the zones of influence of the larger factories. The better and more efficient types of open pan factories have good possibilities, provided they are not interfered with by the larger factories, for their supply of cane. The larger factory being wealthier and in a better position than the small open pan factory, might interfere, in case of shortage of their own supply of cane to advance growers in the vicinity of the small factory.

46. Considerable research work has been carried out since the year 1930 to improve open pan system, firstly in connection with the designing and making of more economical and efficient machinery, secondly by designing and installing of new and original power driven machines to do away with some manual labour and make the several operations of manufacture more automatic and economical; and, thirdly, in improving the processes of manufacture to obtain better sugar and a better recovery of sugar from the cane.

47. (*a*) The price of cane is standing to decrease rather than increase, so that the grower is being affected by this. The price of gur is also very low, and the result will be a definite decrease in the cultivation of cane.

(*b*) The price the manufacturer can obtain for his sugar has reduced in proportion to the sugar duty levied, resulting in lower profits. The

manufacturer will have to increase the efficiency of his factory to compete under existing circumstances or go to the wall.

(*c*) Not known.

(*d*) The consumer is the party who, with the grower, in my opinion, is the most affected, because he has to pay a higher price.

48 & 49. Not known.

50. The figures for acreage are obtained through the Collectors and are anything but accurate.

The figures for price of gur are obtained from the Commissioner of Police, Calcutta, and from various District Agricultural Officers, and are reliable.

51. No comments.

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(2) *Letter dated the 12th July, 1937, from the Government of Bengal, Agriculture and Industries (Department, Agriculture Branch, Calcutta.*

Subject:—QUESTION OF THE EXTENT OF PROTECTION REQUIRED BY THE INDIAN SUGAR INDUSTRY DURING THE PERIOD FROM 31ST MARCH, 1938, TO 31ST MARCH, 1946.

In continuation of this department letter dated the 29th June, 1937, I am directed to forward herewith a copy of the reply furnished by the Director of Industries, Bengal, to the Questionnaire for Local Governments. This reply represents the views of the Director of Industries and not of this Government.

REPLY TO THE QUESTIONNAIRE ISSUED BY THE TARIFF BOARD REGARDING PROTECTION TO THE INDIAN SUGAR INDUSTRY.

20. The Bengal Mills are labouring under great difficulties due to inconvenient, inefficient and costly system of rural transport. In certain places, specially in Eastern Bengal, sometimes a cargo of sugarcane has to undergo two or three transhipments in course of its conveyance from the field to the factory, thereby raising the cost of transport abnormally and to the point of making it uneconomic. It has been reported by certain mills that they have to incur a cost of transport which, not unoften, is as high as As. 1-6 to As. 2 per maund. The minimum transport cost is 6 pies per maund, but this advantage of a low transport charge is enjoyed only by 2 or 3 mills and the rest have to incur comparatively heavy expenses in the transport of canes from the purchasing centre to the factory. In Eastern Bengal, where large tracts of land are submerged under periodical floods, the rural transport system is so bad that during the rains the local mills have to close up their season by the end of March at the latest, though they could have worked for some months more. The Deshabandhu Sugar Mills and the East Bengal Sugar Mills of Dacca report that they can manage to have an abundant supply of late riping varieties of cane, but owing to transport difficulties, and consequent lack of supply of canes they have to cease working much earlier although they can continue crushing till a later date.

It may be mentioned that the transport of cane in certain places takes unusually long time which results in the deterioration of the canes and comparatively lower recovery of sucrose contents.

As the transport of cane from the field to the factory is not carried on by carts alone and involves two or three transhipments in almost all cases, it is feared that statistics about the average cost of transport by carts per maund per mile in different areas may not be of any real use in assessing the incidence of cartage on manufacturing costs or any other factor for that matter.

21. Except in very few cases the cane growers do not themselves possess carts, which they have often to hire. The average rate is As. 2 to As. 3

per mile for a maximum fixed load. The rate varies widely in different areas and in certain places where they are not available at all canes have to be carried by man-labour.

22. The rail road facilities at present available in this Province are far from adequate. Much improvement seems to be possible and desirable in this direction, specially in the districts of Rajshahi and Dinajpur. In places, however, where such facilities are available the railway freight charges appear to be rather high and railway authorities should be persuaded to offer special concession at reasonable rates for sugarcane and sugar in large loads. The province possesses no tramway facilities for transport of cane. As regards the feeder roads, no substantial assistance appears to have been given to their development, with the idea of helping the development of the sugar industry in Bengal.

23 & 24. The Managing Agents of two of the largest sugar mills in Bengal approached the Industries Department for facilities of transport by construction of roads in the factory areas and reduction of the railway freights. The Department of Industries, in compliance with their request made a representation to the Agent of the Eastern Bengal Railway and the Government of Bengal. The Railway authorities however reduced the enhanced freights to their former level. The construction of roads does not fall under the purview of this Department.

Mr. S. N. Roy, Zaminder of Kanchantala in the district of Murshidabad, who is organising a large scale sugar mill at Dhulian Ganges on the East Indian Railway approached this Department for help in connection with the acquisition of a plot of land for his mills. The Department is doing the needful in this regard. Strictly speaking the Industries Department renders such assistance to the Mills as is possible within its obviously limited scope.

25. During the session 1936-37, seven sugar mills worked in Bengal, but none of these mills is organised on co-operative basis. The Co-operative Department may furnish particulars about factories working on co-operative principles.

26. In the North Bengal Sugar Mills, Ltd. (at Gopalpur), and the Setabgunj Sugar Mills, Ltd. (at Setabgunj), mostly United Provinces and Behari labour is employed and housing arrangements are made for them. But in most of other mills local labour is employed with a few exceptions and no housing accommodation is provided save for the technical staff that is recruited from neighbouring towns or distant places.

The wholesale prices of No. 1 Crystal Sugar in Calcutta, as obtained from a mill, are given below:—

Year.	F.o.r. Calcutta price.	Year.	F.o.r. Calcutta price.
1934.	Rs. A.	*1935.*	Rs. A.
January	9 4	January	8 8
February	9 4	February	8 10
March	9 4	March	8 8
April	9 4	April	8 11
May	9 6	May	9 3
June	9 6	June	9 4
July	9 6	July	9 2
August	9 6	August	9 2
September	9 6	September	9 0
October	9 6	October	10 4
November	8 11	November	9 2
December	8 8	December	9 0

Year.	F.o.r. Calcutta price.	Year.	F.o.r. Calcutta price.
1936.		*1936*—contd.	
	Rs. A.		Rs. A.
January . . .	8 6	September . .	7 8
February . . .	8 6	October . . .	7 5
March . . .	8 4	November . .	7 5
April . . .	8 3	December . .	7 1
May . . .	8 4	*1937.*	
June . . .	8 2	January . . .	6 10
July . . .	7 8	February . . .	6 14
August . . .	7 10	March . . .	6 8*

We do not possess the statistics of wholesale rates obtaining in different markets of the Province. At present, the average retail price in Calcutta varies between Rs. 7-12 and Rs. 8 per maund. It may, however, be noted here that the retail price varies considerably in different areas, even in the different markets of Calcutta, different prices prevail on the same day. In the mofussil markets generally the retail price is considerably higher than the wholesale price and there the retail price is manipulated by the middlemen who get the advantage of limited competition.

29 & 30. The amount of normal consumption in Bengal has been roughly estimated at above 130,000 tons per annum. The consumption of sugar is gradually increasing in Bengal due to increasing habits of tea drinking. The Tea Cess Committee is conducting intensive propaganda with a view to increasing the consumption of tea and along with it, it is expected, the consumption of sugar will also increase considerably. Another possible means of increasing the consumption of sugar is to encourage, by State help, the various of confectionery. Confectioneries such as, lozenges, sweets, syrups, chutneys, biscuits and cakes are consumed in large quantities in Bengal and as a matter of fact there are number of firms in different parts of the Province. But in view of the huge consumption of foreign confectioneries, it may very reasonably be expected that by proper State backing their number may considerably be added to and this will substantially increase the consumption of sugar for commercial purposes. For most of the ordinary qualities of confectioneries, sugar is one of the chief ingredients.

31. (1) No.

(2) Certainly not.

(3) (*a*) & (*b*) The question does not arise in the present circumstances of the sugar industry in Bengal.

It appears from our information that the production of sugar is very small in Bengal, especially in view of its large consumption. While the amount of annual consumption of sugar in Bengal is about 130,000 tons, the production does not exceed 23,000 tons, *i.e.*, $\frac{1}{6}$th of the consumption-figure approximately. This shows the backward condition of the sugar industry in Bengal. In this province however there are at present only 7 mills of which three may be said to be large scale concerns, all others taken together have an average daily crushing capacity below 150 tons. The situation in Bengal may easily be studied by comparing with conditions prevailing in the United Provinces where there are about 71 mills with an average daily crushing capacity of about 700 tons. The problems raised in the question No. 31 of the present questionnaire do not exist in Bengal.

32. Discussed in paragraph 29.

33. This Department does not possess the relevant statistics.

* Certain other mills quoted lower rates, the lowest quotation being Rs. 6-4 per maund.

34. Considerable amount of gur is produced in Bengal from date juice, and it is largely consumed in rural areas, the actual quantity of annual production cannot be estimated.

35 & 36. A statement is appended showing the wholesale price of "Gur" per maund in the different districts during the years 1930 to 1936 (*vide* Appendix I).

37. *Veli* Gur is imported into Bengal from the United Provinces and Bihar. This quality is generally meant for consumption by the non-Bengalee inhabitants. In some parts of the Burdwan district gur is imported from Bihar in quite large quantities and this depresses the price of locally made gur. It may also be noted that the North Bengal Sugar Mills Ltd., imported large quantities of gur from Bihar and the United Provinces for the purpose of refining. This Department is in possession of no figures shewing the imports during the last seven years.

38. Very small amount to Bihar to satisfy the quality-taste of gur of the Bengalee inhabitants therein. No figures of exports are available.

39. The relation, if there be any, does not seem very clear. This Department is rather inclined to uphold the view of the Tariff Board (1931) on this matter.

40. There is not any great possibility of replacement of gur by sugar. As a matter of fact over 70 per cent. of the rural population prefer gur to sugar and usually they are used for different purposes. Sometimes gur is used as an article of direct consumption. The consumption of sugar has increased to some extent with the popularity of tea-drinking habit, but it does not seem probable that sugar can be substituted for gur to any large extent.

45. I do not think that the future of Khandsari industry is in any way encouraging. It involves a huge loss of the sucrose content of the cane and the cost of production is much higher in these indigenous processes. Of course it can be said with some amount of plausibility that the Khandsari industry provides an outlet for the consumption of canes of which only small percentage is absorbed by the modern sugar factories. But any State aid to the indigenous sugar industry will be an ultimate loss to the country. It will be nursing the baby that shall never be able to take care of itself.

(*a*) In Bengal the increase of excise duty has not had a favourable effect upon the cane-growers. As the situation stands now it does not seem that the market price of sugar has appreciated to any considerable extent and as such the enhanced excise duty, at least the major part of it if not the whole, has had to be borne, by the manufacturers. The result is a pressure upon the agriculturists. In Bengal, there is no fixed minimum price of sugarcane. The manufacturers, it appears, have naturally taken advantage of it and tried to purchase sugarcane as cheap as possible.

(*b*) There is verily a depression in the Indian sugar market. All the important markets are over-stocked with unsaleable sugar and the prices are falling continually. As a matter of fact the price level has apparently reached an uneconomic point. This shows the evil of rate cutting competition amongst the manufacturers themselves and it has already imposed a severe burden upon the manufacturers who are conducting business on a small margin of profit. The enhancement of excise duty at this critical moment has adversely affected the manufacturers. As a matter of fact the enhancement of excise duty has created a panic in business circles and all the new projects and expansion schemes have been temporarily suspended. The manufacturer has had to bear a greater burden of excise duty without having had the advantage of a fair margin of profit. Under these circumstances the effect of enhanced duty has been all the more severe upon the manufacturers in Bengal.

(*c*) The middleman has not been in any great disadvantage because of the enhanced duty on sugar.

(*d*) The tax on necessaries of life, specially food articles, falls not upon production but upon consumption, *i.e.*, the tax is ultimately shifted to the consumer either in part or in whole. But it is evident from the existing conditions of the sugar industry that the tax cannot, for a considerable period of time, be shifted to the consumer, and as such will have to be borne by the manufacturers. The rate-cutting competition among the manufacturers has resulted in abnormal reduction of price and this situation will continue for some time to the advantage of the consumers at large.

48. The protective duty has not only helped the prospective manufacturers, but it has also been a great advantage to the consumers of sugar. In the case of protection to the Indian Sugar Industry the consumer had to make little sacrifice and because of the considerable fall in price due to internal competition he has been all the while getting sugar at a cheaper rate. First of all Java resorted to dumping with a view to maintain her position in the Indian market and as such the sale price of Java sugar was continually lowered in spite of higher tariff duties. On the other hand the keen competition among the Indian manufacturers depressed the sugar market and the Indian consumer, as a matter of fact, is now getting sugar at a cheaper rate than at any other time in the past.

49. Only high class confectionaries to some extent.

APPENDIX I.

Statement showing the wholesale price of "Gur" (per maund) in the districts as noted below during the years 1930-1932.

District.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November	December.
1930.	Rs. A.	Rs. A.	Rs. A.	Rs. A.	Rs. A	Rs. A.	Rs. A.	Rs. A.	Rs. A.	Rs. A.	Rs. A.	Rs. A.
Calcutta .	9 0	9 0	8 12	8 8	8 8	8 8	8 8	8 8	8 8	..	..	..
Burdwan .	10 0	9 8	8 8	7 0	7 4	7 4	8 0	8 0	8 0	..	..	..
Midnapur .	7 4	7 8	..	7 8	7 4	7 8	7 12	7 12	7 12	..	..	..
Chittagong .	10 0	10 0	11 0	11 8	10 0	10 0	11 0	11 0	12 0	..	..	..
Dacca . .	12 8	12 8	11 0	11 0	11 0	11 0	9 8	9 8	9 8	..	..	..
Pabna . .	7 0	7 0	7 0	6 8	6 8	6 8	6 8	6 8	6 8*	..	..	..
Rangpore .	12 0	9 8	9 0	9 0	9 0	10 8	11 0	10 0	10 0	..	..	..
1931.												
Calcutta .	..	..	..	..	5 8 to 6 8	6 8	6 4	6 4	6 8	8 0	7 8	7 8
1932.												
Calcutta .	7 0	7 0	6 0	6 0	5 4	5 4	5 8	5 8	..	..	4 8	5 8
Burdwan .	..	..	5 4	5 4	5 0	5 4	5 5	5 8	5 6	5 6	5 2	5 4

Midnapur .	..	..	5 8	5 12	5 14	6 0	6 0	6 0	6 8	6 0	5 0	5 0
Chittagong .	..	..	6 8	6 0	6 0	6 0	6 0	6 10	6 8	5 8	6 0	5 8
Dacca . .	..	..	7 0	6 0	5 0	4 12	5 8	6 0	6 0	6 8	7 0	6 4
Pabna . .	..	..	4 8	4 12	5 0	5 0	5 0	5 0	5 0	5 0	5 0	5 0
Rangpur .	..	..	4 4	4 6	4 6	4 8	4 8	4 8	4 8	5 8	6 0	6 0
1933.												
Calcutta .	4 8	4 8	4 0	4 0	3 8	4 4	4 4	4 4	5 8	5 8	5 8	5 0
Burdwan .	5 4	5 0	4 12	4 14	4 12	5 0	5 0	5 0	5 8	5 8	5 8	5 8
Midnapur .	5 0	5 0	3 8	4 0	4 8	4 8	5 0	5 0	4 8	3 8	3 4	3 8
Chittagong .	5 8	4 8	4 0	4 4	4 12	4 8	4 8	5 0	5 0	6 0	6 0	5 12
Dacca .	4 8	4 8	3 12	4 0	5 0	5 8	5 8	5 8	6 8	6 0	5 0	5 0
Pabna . .	5 0	3 4	3 0	2 8	3 0	3 0	3 4	3 8	3 8	3 8	3 8	2 12
Rangpur .	4 0	4 0	3 8	3 8	3 12 to 4 0	3 12 to 4 0	3 12 to 4 8	4 0 to 4 8	4 0 to 4 8	4 0 to 4 8	4 0 to 4 8	4 0 to 4 8
1934.												
Calcutta .	4 4	3 12	4 4	4 4½	4 10½	4 12	5 0	5 0	4 14	4 14	7 8	4 0
Burdwan .	4 8	4 4	4 4	4 6	4 0	4 8	4 8	4 8	5 0	5 0	5 0	4 8
Midnapore .	3 4	3 8	3 12	3 12	3 10	3 8	4 0	4 8	4 8	4 8	4 8	4 8
Chittagong .	5 0	5 0	4 8	5 0	5 0	5 8	6 4	6 12	7 8	7 8	8 0	8 0

* At Pabna the measure is cacha seer. 1 seer = 60 tolas; to other places 1 seer = 80 tolas.

APPENDIX I—*contd.*

District.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
	Rs. A.	Rs. A.	Rs. A.	Rs. A.	Rs. A.	Rs. A.	Rs. A.	Rs. A.	Rs. A.	Rs. A.	Rs. A.	Rs. A.
1934—*contd.*												
Dacca . .	4 14	4 12	4 6	5 4	5 8	4 12	5 8	5 8	5 8	5 8	5 0	5 0
Pabna . .	3 6	3 8	3 12	3 12	4 8	4 4	4 4	4 4	4 8	4 0	4 0	4 0
Rangpur .	4 0 to 4 8	3 4 to 3 8	3 4 to 3 8	3 8 to 4 0	3 12 to 4 2	3 12 to 4 2	3 14 to 4 8	3 14 to 5 0	3 14 to 5 0	3 14 to 5 0	4 0 to 5 4	4 0 to 5 4
1935												
Calcutta .	4 8	4 8	4 4	4 4 to 4 8	4 8	4 8	4 10	4 10	4 14½ to 5 0	5 4	4 8	3 12
Burdwan .	5 0	5 0	4 8	4 8	4 8	4 8	4 4	4 4	4 8	4 8	4 8	4 8
Midnapore .	4 8	4 8	4 8	4 8	4 8	4 8	4 8	4 8	4 8	4 8	4 8	4 8
Chittagong .	7 12	6 4	4 8	5 0	5 0	5 8	6 0	6 0	7 0	7 0	6 8	5 0

Dacca . .	4 12	4 8	5 0	4 12	5 0	5 8	5 8	5 8	6 0	6 0	5 0	4 8
Pabna . .	4 0	4 0	4 0	3 4	4 0	4 0	4 2	4 10	4 0	4 0	4 0	4 0
Rangpur .	4 12 to 5 0	4 2 to 5 0	3 12 to 4 0	2 1 to 3 8	3 0 to 3 8	3 0 to 3 8	3 0 to 3 4	4 7 to 4 11	5 0 to 5 4	.. to 4 6	.. to 4 4	4 2 to 4 4
1936.												
Calcutta .	4 0	3 8	3 0	3 0	3 4	3 0	3 0	3 8	3 8	4 0	4 8	4 8
Burdwan .	4 8	4 0	4 2	4 6	4 6	4 6	4 6	4 6	4 6	4 0	4 0	4 0
Midnapore .	4 8	4 8	4 8	4 8	4 0	4 0	4 0	4 0	4 0	4 0	4 0	4 0
Chittagong .	5 0	4 8	4 0	3 8	3 12	3 12	4 0	4 0	4 6	4 8	4 8	4 8
Dacca . .	4 8	4 0	4 0	4 0	4 0	3 14	3 12	3 12	3 12	3 12	4 6	4 8
Pabna . .	3 8	3 0	3 0	3 0	2 6	2 6	2 4	3 0	3 0	2 8	2 8	2 0
Rangpur .	3 14 to 4 0	3 14 to 4 0	3 14 to 4 0	3 0 to 3 4	2 8 to 3 0	2 8 to 3 0	3 0 to 3 4	3 0 to 3 4	4 4 to 5 4	4 4 to 5 4	4 0 to 5 0	4 0 to 5 0

(3) *Letter dated the 29th October, 1937, from the Government of Bengal, Agriculture and Industries Department, Agriculture Branch, Calcutta.*

Subject:—QUESTION OF THE EXTENT OF PROTECTION REQUIRED BY THE INDIAN SUGAR INDUSTRY DURING THE PERIOD FROM 31ST MARCH, 1938, TO 31ST MARCH, 1946.

In continuation of this Department letter dated the 12th July, 1937, on the subject mentioned above, I am directed to say that this Government endorse the replies given by the Director of Agriculture, Bengal, to questions 1-6, 8 & 9, 11-14, 17, 19, 27, 30, 33-46, 47 (*a*) & (*b*), 50 & 51; by the Registrar of Co-operative Societies, Bengal, to questions 10, 16 & 25; and by the Director of Industries, Bengal, to questions 23, 24, 26, 28, 31, 47 (*c*), 48 & 49 of the questionnaire for Local Governments.

As regards the remaining questions, I am to communicate the views of this Government as follows:—

7. There was some overproduction in the districts of Malda, Dinajpur, Rajshahi, Mymensingh, Murshidabad, Midnapore and 24-Parganas. No restriction in these areas is necessary as sugar mills are rapidly growing up in these localities and it is in contemplation to organise co-operative sugar unions to facilitate marketing of sugarcane.

15. The main difficulties are:—

(*a*) Want of funds for proper manuring and purchase of seeds;

(*b*) Want of good roads and transport facilities and high transport cost on railways.

18. As far as is known there is no such competition.

20. The average cost is As. 1-3 per maund per mile roughly.

21. Some but not all cane-growers have their own carts. The average cost per mile for a full load is about As. 2-6.

22. There are no tramways for transport of canes at all whereas rail and road facilities for the same are hopelessly inadequate. Where railway facilities for the same are hopelessly inadequate. Where railway facilities exist the freight is high. No assistance has so far been given for the development of feeder roads or tramway systems in sugarcane areas.

29 & 32. The normal annual consumption of sugar has been roughly estimated at above, 130,000 tons. With the growth of the habit of tea-drinking the consumption of sugar in Bengal is gradually increasing. The intensive propaganda carried on by the Tea Cess Committee for increased consumption of tea will also have the effect of increasing the consumption of sugar. But the largest use of sugar is made in the manufacture of various kinds of confectionery and the best and most effective means of the increase in the consumption of sugar will be to encourage by State help the manufacture in Bengal of such confectioneries as lozenges, sweets, chutneys, biscuits and cakes which have good possibilities in this province, so as to obviate the present large import of foreign confectioneries.

47. (*d*) The consumer has not been affected on the other hand the low price is to his advantage.

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(4) *Letter dated the 26th July, 1937, from the Government of Bengal, Agriculture and Industries Department, Agriculture Branch, Calcutta.*

With reference to your letter No. 181, dated the 15th May, 1937, regarding the calculation of cost of cultivation of sugarcane, I am directed to say that the rate of interest at which cultivators can borrow money from private persons varies from Rs. 12 to Rs. 37-8 per cent. per annum and from Banks from Rs. 9$\frac{3}{4}$ to Rs. 14-1 per cent. per annum.

(5) *Letter dated the 17th August, 1937, from the Government of Bengal, Forest and Excise Department, Calcutta.*

MOLASSES—CONSUMPTION OF—BY DISTILLERIES AND OTHER CONCERNS MANUFACTURING RECTIFIED AND DENATURED SPIRIT. SUPPLY OF INFORMATION TO THE TARIFF BOARD REGARDING ——.

I am directed to refer to your letter No. 303, dated the 18th June, 1937, on the subject mentioned above and to furnish below the information asked for therein so far as this Presidency is concerned:

A. (1) The number of distilleries—4.

(2) Total quantity of molasses consumed during—

	Mds.	
1934-35	236,379	approximately.
1935-36	289,760	
1936-37	313,320	

Source of supply—

Messrs. Kaitan Sons and Co., Calcutta.
,, Haroon Tar Muhammad, Calcutta.
,, Ramdas Mahadeo Prosad, Calcutta.
,, Mangal Chand Mahabir Prosad, Calcutta.
,, Sedhmull Singhania Kakor Kothi, Cawnpore.
Sugar Works of Messrs. Kattic Bose, Ltd., and also from Ramkola and Sidhwalia in Central Provinces.

(3) The price paid for molasses per maund during—

1934-35—As. 11 to Rs. 1-2, 1935-36—As. 11-8 to Re. 1 and 1936-37—As. 8-6 to As. 14

inclusive of freight to either Asansol or Calcutta.

B. There are no concerns manufacturing rectified or denatured spirit other than distilleries.

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(6) *Letter dated the 17th August, 1937, from the Government of Bengal, Agriculture and Industries Department, Calcutta.*

I am directed to refer to paragraph 3 of your letter No. 147, dated the 30th April, 1937, regarding the unfair treatment by the sugar factories to the growers of sugarcane, and to forward herewith an extract from the letter of the Director of Agriculture, Bengal, dated the 16th July, 1937, on the subject.

Extract from letter No. 11003, dated the 16th July, 1937, from the Director of Agriculture, Bengal, to the Secretary to the Government of Bengal, Agriculture and Industries Department.

2. The reports so far received indicate that the Sara-Gopalpur Mill-owners and the Beldanga Sugar Mills Company have been indifferent to the interest of the growers. The Collector of Pabna opined that it has become highly imperative to extend the provisions of the Sugar Act to this Province because of the unfair treatment to the growers of Sugarcane; the Sub-Divisional Officers, Murshidabad, reported that the growers were not getting proper weight of their canes at the hands of the mills people of Beldanga. It is reported from Bogra that the local Agent of the Mills was not regularly paying the price to the growers and some times cartloads of canes had to be taken back from the Railway Station. The Collector of Dacca has also reported unfair dealings on the part of the Mill-owners.

(7) *Letter dated the 8th September, 1937, from the Director of Industries, Bengal, Calcutta.*

With reference to the enquiry by the Tariff Board referred to this Department by the Government in their letter dated the 23rd July, 1937, I have the honour to forward herewith the statistics of retail prices of sugar and gur in different districts of Bengal during the years mentioned against each district. It has not, however, been possible, within this short time, to collect information from all the districts but as the Board will be visiting Calcutta on 16th instant, I am sending the figures obtained in this office up to this day. Any further information that will be available in the next few days will be forwarded to you.

STATISTICS OF RETAIL PRICES.

(Price per maund.)

——	Sugar.	Gur.
	Rs. a. Rs. a.	Rs. a. Rs. a.
District 24-Parganas—		
1936	7 14 to 9 0	3 12 to 4 0 (in handies) 4 8 (in tins)
Java No. 1	10 4	
1937	6 14 to 7 12	
Rampur Sugar sometimes recorded a sale price of Rs. 8-0 per maund.	....	4 0 to 4 8 (in handies). 3 8 (in tins).
Java No. 1	12 0	
District Pabna—		
1933-34—		
(Crystallised)	12 8	
(Reddish)	11 4	3 12
(Peti)	12 8	
1934-35—		
(Crystallised)	11 4	
(Reddish)	10 10	3 12
(Peti)	11 4	
1935-36—		
(Crystallised)	10 0	
(Reddish)	9 6	2 8
(Peti)	10 0	

——	Sugar.		Gur.	
	Rs. a.	Rs. a.	Rs. a.	Rs. a.
District Pabna—*contd.*				
1936-37—				
(Crystallised)	8 12			
(Reddish)	8 2		2 8	
(Peti)	8 12			
District Malda—				
1936	6 0 to	6 12	2 8 to	2 12
1937	6 8 to	7 4	3 1 to	4 7
District Mymensingh—				
1933	8 9 to	9 8	3 12 to	4 0
1934	9 3 to	10 1	4 0 to	4 8
1935	9 6 to	9 8	4 0 to	5 4
1936	9 8 to	10 0	3 8 to	4 4
District Chittagong—				
1933	9 8 to	10 0	4 8 to	5 0
1934	9 0 to	9 8	4 8 to	5 0
1935	8 12 to	9 0	3 8 to	4 8
1936	8 12 to	9 0	3 8 to	4 8

(8) *Statement showing the retail prices of Sugar and Gur in the different districts of the Province Supplied by the Director of Industries, Bengal, in continuation of letter dated the 8th September, 1937.*

(Price per maund.)

——	Sugar.		Gur.	
	Rs. a.	Rs. a.	Rs. a.	Rs. a.
1. District Nadia—				
(*a*) Sub-Division Ranaghat—				
1935—				
(Cawnpuri) . . .	10 0 to	10 8	3 0 to	4 8
(Java)	11 8			
(Dobara)	13 0			
(Madrasi)	11 0			

	Sugar.		Gur.	
	Rs. a.	Rs. a.	Rs. a.	Rs. a.
1. District Nadia—*contd.*				
(*a*) Sub-Division Ranaghat—*contd.*				
1936—				
(Cawnpuri)	9 0	to 9 8	2 8	to 3 0
(Java)	10 8			
(Dobara)	12 0			
(Madrasi)	10 0			
1937—				
(Cawnpuri)	7 0	to 7 8	2 8	to 3 0
(Java)	9 8			
(Dobara)	11 0			
(Madrasi)	9 0			
(*b*) Sub-Division Chuadanga—				
1935	9 12	to 10 0	4 0	
1936	9 0	to 9 12	2 8	to 3 0
1937	7 0	to 9 8	2 4	to 3 0
(*c*) Sub-Division Meherpur—				
1935	10 8		3 8	
1936	10 0		3 0	
1937	9 0		3 12	
(*d*) Sub-Division Kusthia—				
1935—				
(Poti)	7 7		3 4	to 3 8
(Java)	8 3	to 8 6		
(Benares)	10 9			
(Indian)	7 9			
(Dob)	4 9			

——	Sugar.	Gur.
	Rs. a. Rs. a.	Rs. a. Rs. a.
1. District Nadia—*concld.*		
(*d*) Sub-Division Kusthia—*contd.*		
1936—		
(Peti)	8 13	1 2 to 2 0
(Java)	9 0 to 9 12	
(Benares)	12 0	
(Indian)	9 0	
(Dob)	5 8	
1937—		
(Peti)	7 6	2 8 to 3 0
(Java)	8 2 to 8 5	
(Benares)	10 8	
(Indian)	7 8	
(Dob)	4 8	
(*e*) Sub-Division Sadar—		
1935	Not available.	4 0 to 5 0
1936	Not available.	3 0 to 5 0
1937	Not available.	2 8 to 3 12
2. District Hooghly—		
(*a*) Sub-Division Arambagh—		
1933-34	10 8 to 10 12	4 4
1934-35	9 12 to 10 8	4 8
1935-36	9 8 to 10 4	5 0
1936-37	9 0 to 10 0	3 0
(*b*) Sub-Division Sadar—		
1933-34	10 10 to 11 14	3 12 to 7 8
1934-35	10 0 to 11 4	5 0 to 6 10
1935-36	10 0 to 11 4	5 0 to 6 4
1936-37	8 2 to 10 0	3 12 to 5 10

—	Sugar.	Gur.
	Rs. a. Rs. a.	Rs. a.
3. District Birbhum—		
1933-34	10 0	4 6
1934-35	10 0	4 6
1935-36	9 6	3 12
1936-37	8 12	3 12
4. District Noakhali—		
(*a*) Sub-Division Sadar—		
1933—		
(Peti)	10 0	6 0
(Java)	9 12 to 11 0	
1934—		
(Peti)	10 0	7 0
(Java)	10 0 to 11 0	
1935—		
(Peti)	10 8	6 0
(Java)	11 0 to 12 0	
1936—		
(Peti)	9 0	5 0
(Java)	8 4 to 9 0	
(*b*) Sub-Division Feni—		
1934—		
(Peti)	10 0	6 4
(Java)	11 4 to 12 8	
1935—		
(Peti)	10 0	6 4
(Java)	11 6 to 12 8	
1936—		
(Peti)	8 12	5 10
(Java)	10 0 to 11 4	

——	Sugar.	Gur.
	Rs. a. Rs. a.	Rs. a. Rs. a.
5. District Khulna—		
1933—		
(Peti)	9 12	3 4 to 3 8
(Java)	9 6 to 10 0	
1934—		
(Peti)	9 14	3 6 to 3 8
(Java)	9 8 to 9 12	
1935—		
(Peti)	9 3	2 8 to 3 0
(Java)	9 2 to 9 6	
1936—		
(Peti)	7 8	3 0 to 3 12
(Java)	6 10 to 7 0	
6. District Dinajpur—		
1934	9 8	2 8 to 3 0
1935	9 4	2 8 to 3 0
1936	8 14	2 8 to 3 0
1937	7 0	2 8 to 3 0
7. District Rajshahi—		
(*a*) Sub-Division Sadar—		
1934	9 0 to 10 0	3 0 to 3 4
1935	9 0 to 10 0	3 0 to 3 4
1936	8 8 to 9 0	3 0 to 3 4
1937	6 12 to 6 14	4 0 to 4 12
(*b*) Sub-Division Natore—		
1934—		
(Dobara)	9 8	2 10
(Dust)	10 8	

——	Sugar.	Gur.
	Rs. a.	Rs. a.
7. District Rajshahi—*contd.*		
(*b*) Sub-Division Natore—*contd.*		
1935—		
(Dobara)	9 6	2 6
(Dust)	9 0	
1936—		
(Dobara)	8 0	2 14
(Dust)	8 6	
1937—		
(Dobara)	8 0	2 8
(Dust)	8 0	
(*c*) Sub-Division Naogaon—		
1934—		
(Dobara)	10 0	3 12
(Peti)	8 8	
1935—		
(Dobara)	8 8	3 12
(Peti)	8 8	
1936—		
(Dobara)	7 8	3 2
(Peti)	7 8	
1937—		
(Dobara)	6 4	2 8
(Peti)	6 4	

(9) *Note on the position and prospect of the Confectionery Industry in Bengal supplied by the Director of Industries, Bengal, Calcutta.*

Confectionery Industry being rather of recent development has not yet been able to record any satisfactory progress in Bengal. As a matter of fact, even now, large quantities of confections, such as chocolates, lozenges, toffees, caramels and nestles, etc., are imported annually from foreign countries as well as other provinces. A good deal of these classes of confections have been recently arriving from Japan and the consumption of the articles are steadily growing among the higher and middle class people.

In Bengal, the various kinds and qualities of confections that are generally consumed may be classified under following groups:—

(*a*) Deshi sweets and sweetmeats.

(*b*) Modern confections, such as lozenges, toffees, etc.

(*c*) Cakes, biscuits and other bakery products.

(i) *Deshi sweets and sweetmeats.*—In Bengal, specially in towns and cities, people take sweetmeats as a part of their daily food and as such there is a very large number of such sweet manufacturers all over Bengal. Large quantities of sugar are annually consumed by these indigenous confectioneries.

(ii) *Modern confections.*—Modern confections like lozenges, toffees and caramels, etc., are becoming very popular in Bengal. As a matter of fact in every town and city of this Province the general population consume large quantities of such articles. A number of industries producing various confectionery articles have been started in different parts of the province. A few of them, however, are named below:—

1. A. Firpo, Ltd., 18/2, Chowringhee, Calcutta.
2. Army and Navy Preserves Co., 10, Ezra Street, Calcutta.
3. Balakhana Confectionery, 31/22, Lower Chitpur Road, Calcutta.
4. Chowdhury Confectionery Works, 17, Peary Mohan Sur Lane, Calcutta.
5. Fine Confectionery Works, 22/1, Cornwallis Street, Calcutta.
6. Happy Boy Ice Cream, 87, Lower Circular Road, Calcutta.
7. Karnua Industries, 2, South End Park, Calcutta.
8. Sen Gupta Bros., 32/7, Beadon Street, Calcutta.
9. Sen Brothers, 78/79, Beadon Street, Calcutta.
10. A. C. Wallace, Station Road, Chittagong.

(iii) *Cakes and Biscuits, etc.*—Bakery is also another developing industry of Bengal. The large consumption of bakery products is evident from the fact that numerous big and small industries are working in different parts of the province. The names of the important industries are given below:—

1. Bengal Biscuit Factory, Ltd., 2-B, Bagmari Lane, Calcutta.
2. Bharat Biscuit Factory, 55, Canning Street, Calcutta.
3. Bombay Biscuit Co., 99/3, Canning Street, Calcutta.
4. Britannia Biscuit Co., Berpara First Lane, Dum Dum.
5. Calcutta Crown Biscuit Co., 99/3, Canning Street, Calcutta.
6. Kohinoor Biscuit Co., Tiretta Bazar, Calcutta.
7. Lily Biscuit Co., 3, Ramkanta Sen Lane, Calcutta.
8. T. P. Bose & Co., Ltd., 13/2, Paikpara Raja Manindra Road, Calcutta.
9. A. C. Wallace, Station Road, Chittagong.
10. B. Banerjee & Co., 222, Grand Trunk Road, Sibpur, Howrah.
11. Gandaria Bakery, Faridabad, Dacca.
12. Md. Hasib and Seik Gunja Hussain, Lloyds Road, Darjeeling.
13. A. Firpo, Ltd., 18/2, Chowringhee Road, Calcutta.
14. Arya Bakery, 8-A, Rammoy Road, Calcutta.
15. Barua Bakery, 7, Wellington Square, Calcutta.
16. Dutta Bakery, 133, Cornwallis Street, Calcutta.
17. Great Eastern Hotel, Old Court House Street, Calcutta.
18. Minor Industries Ltd., 20, Lake View Road, Ballygunge, Calcutta.
19. Swar Bakery, 243, Upper Circular Road, Calcutta.
20. Grand Hotel, Chowringhee, Calcutta.

Sugar Candy.—The manufacture of sugarcandy and modern confections is quite a new line in Bengal. These lines, for economic working, generally form essential adjuncts of sugar factories where the raw material as well as the fuel (in the shape of surplus bagasse) are available on the spot, saving thereby a lot in transportation expenses. By economic utilisation of the sugar mill bye-products, the working cost of sugar also can be minimised to some extent. The confectionery plant can be run by steam produced with the bagasse of the sugar mill, which would otherwise waste away in the off season. Thus the adjunct of a confectionery plant alongside a sugar factory, not only serves to provide a profitable line of a bye-product industry but it also economises considerably the overhead running expenses of the sugar mill itself.

Why Confection manufacture has not developed.—The sugar mill industry is yet in its infancy in Bengal and there are only three economic working units, *i.e.*, Gopalpur, Setabganj and Beldanga, who took the past few seasons in consolidating their respective positions and coping with the initial difficulties. It is only from the 1935-36 season that they are in a position to divert their attention in finding out other channels of profitable utilisation of the sugar mill bye-product or erection of allied industrial lines. As a matter of fact, the Gopalpur Factory has installed a confectionery plant in the last season. They are also manufacturing very good quality of sugarcandy on a commercial scale in their factory compound.

The capital of the Beldanga mills has also been increased last year with a view to the erection of bye-product industries, namely, Distillery and Confectionery.

From the foregoing it will appear that the large economic sugar factories in Bengal are already seriously contemplating to take to the line of confectionery.

With further expansion of the Bengal Sugar Industry the position of the confectionery manufacture is sure to change in the near future and several confectioneries are likely to come into being before long. If this expectation proves true, there is every reason to believe that the development of the subsidiary confectionery industry will help the sugar mills to further reduce the cost of production.

Sugar Factories in Bengal.

	Daily crushing capacity.
	Tons.
1. North Bengal Sugar Mills Co., Ltd. . . .	800
2. Setabganj Sugar Mills, Ltd.	400
3. Radhakrishna Sugar Mills, Ltd.	550
4. Deshabandhu Sugar Mills, Ltd.	200
5. East Bengal Sugar Mills, Ltd.	100
6. Shikarpur Sugar Mills, District Jalpaiguri (reported not to have crushed in 1936-37 season)	75
7. Rajlakshmi Sugar Mills, Bashirhat . . .	100
Total .	2,225

Calculating the recovery at the minimum rate of 9 to 9½ per cent. for 100 to 120 working days, the sugar produced in the season amounts to 23 to 25,000 tons, *i.e.*, 675,000 maunds of sugar. Taking into consideration the factories at Ramnagar and Kishoreganj (Jayanti) projected to work in this season (1937-38), the production of Bengal would hardly exceed 1,000,000 maunds of sugar annually.

Against this, the marketing capacity can be taken at 5,000,000 to 5,500,000 maunds of sugar as follows:—

	Tons.
Figure of consumtion estimated by the experts for 1936-37 for Bengal	150,000
Estimated consumption of Assam	30,000
Estimated annual increase in consumption . .	10,000
Marketing outlet in Orissa and Burma at least .	10,000
Total .	200,000

i.e., over 5,400,000 maunds.

Taking 10 per cent. of this for confection manufacture in Bengal to meet the provincial demands, it comes to about Rs. 4,000,000 worth of sugar in raw materials, that might be consumed by the Bengal Confectionery Industry, should it get proper scope to develop along with the expansion of the Bengal Sugar Industry.

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(10) *A Memorandum to the Tariff Board on Sugar forwarded by the Director of Industries, Bengal, Calcutta.*

In continuation of my evidence before the Tariff Board on 21st September, 1937, I am sending this memorandum in which are discussed certain important problems of the sugar industry in India with particular reference to Bengal. The purpose of presenting this memorandum is to place before the Board certain broad facts and statistics, which though helpful in assessing the present position and future prospects of the industry in this country, could not be discussed in course of my evidence which was restricted to the specific items in the questionnaire.

Protection and the development of the Sugar Industry in India.—Since the enforcement of the Sugar Industry Protection Act of 1932 and the consequent imposition of tariff duty on imported sugar the indigenous industry has recorded a striking progress. The theory of proverbial shyness of Indian Capital, specially in the field of promising industrial enterprises does not now stand and the very fact that within a short period of seven years no less than 20 crores of rupees have been sunk in the Indian Sugar Industry unmistakably indicate that under favourable conditions Indian capital is susceptible to mobilisation. The progress and development of the sugar industry in India during the last seven years have not only justified the protective measure accorded to it but has exceeded also the anticipation of the Tariff Board (1932) as the following table goes to show:—

TABLE I.

Year.	Number of sugar factories in India.	Amount of sugar produced in India.
		Tons.
1931-32	32	478,120
1932-33	57	645,283
1933-34	112	715,059
1934-35	130	767,218
1935-36	137	1,087,167
1936-37	146	1,229,800

Thus, in 1931-32 there were only 32 sugar factories in India but by 1936-37 the number increased to 146. The total production of white sugar in India also shows a corresponding increase and the country that seven years back was entirely dependent on foreign supplies of sugar, valued no less than 15 to 16 crores of rupees annually, is at present not only independent of

foreign imports for internal consumption, but is also in a position to produce an exportable surplus.

Centralisation of the industry.—It is significant that the industry has so far concentrated itself within the narrow "white belt" of Upper Indo-Gangetic Valley extending from the United Provinces to northern Bihar, although it is contended that this zone of concentration is not possibly the most suitable area for cane cultivation and that certain other Provinces, still under-developed as they are, are equally rich or even richer in land-potentialities and other resources. Mr. R. C. Srivastava, Deputy Director of Industries, United Provinces (now Director, Imperial Institute of Sugar Techonology, Cawnpore), commenting on the sugar industry in the United Provinces writes, "It is a remarkable fact that the greatest extension of cane cultivation is found in parts which would not be selected as being most suitable* ". This artificial concentration of a particular industry at a particular zone which might not be its natural economic centre of gravity, is not a healthy development. In case of a protected industry, it may defeat the end of protection itself and ultimately impose on the consumer a burden which in fairness, he should not be called to bear. Hence, in the best interest of the country as a whole the Indian Sugar Industry should be allowed to shift itself to its natural centre of gravity. Such "centre-shifting" is not new in India. For instance, in the late 19th Century Ahmedabad was believed to be the economic centre of the Indian Textile Industry, but by the beginning of this century the industry shifted its centre from Ahmedabad to Bombay and at present Bengal is also making a headway in this line.

Position of Bengal.—The following table shows the distribution of the sugar industry in India; province by province:—

TABLE II.

Province.	Number of Mills.	Sugar produced in tons.	Percentage of total production in India.
United Provinces . .	71	565,000	52·7
Bihar and Orissa . .	36	319,000	29·8
Punjab	6	13,900	1·3
Madras	10	22,600	2·1
Bombay	6	37,700	3·5
Bengal	6	23,600	2·3
Burma	3	18,000	1·6
Indian States . . .	8	71,800	6·7
Total .	146	1,072,500	100·0

The table shows that the United Provinces and Bihar possess between them 107 mills, out of a total of 138 mills in British India and that these two provinces are responsible for more than 82 per cent. of the total production of sugar in India. In the past, the under-developed provinces, specially Bengal had had but little share in the development of the Indian Sugar industry. In 1936-37 she had only 6 mills (most of them were small and uneconomic units) and her share of production was as low as 2·3 per cent. of the total Indian production. Thus it is evident that Bengal, during the last 7 years could not take proper advantage of the Protection with a view to developing her own industry. But this failure is not a reflection of any inherent natural disadvantage militating against the development of the sugar industry. The result of careful investigations

* Note on the Sugar Manufacturing Industry in the United Provinces—R. C. Srivastava (1929), page 33.

very forcibly suggest that Bengal, far from being under any natural disadvantage, is possessed of abundant land resource which under proper treatment, is very likely to prove itself most suitable for cane cultivation. This point was referred to by Sir Stanley Jackson, then Governor of Bengal, who in course of his speech at the Annual Meeting of the Associated Chambers of Commerce in Calcutta, on the 14th December, 1931, observed " Large areas in four out of five divisions in Bengal are eminently suited for growing sugarcane. It is reasonable to expect that the rapid adoption of the Bengal Agricultural Department's high yielding strains of jute must not only limit the expansion of the area under jute but, even in normal times, may bring about a reduction of that area. The Agricultural Department envisages that eventual reduction from this cause by as much as 25 per cent. of the area normally under jute or about 500,000 acres. If even half of the area thus liberated could be put under sugarcane and if that sugarcane could be locally converted into gur for transportation to a refinery we should not need to import a single ton of the 325,000 tons which we are now importing annually into Calcutta alone. We have the market, we have suitable land, we have the cane, the hybrid known as Co. 213 from the Government of India breeding nursery at Coimbatore which has been found admirably suited to Bengal, although I am informed that the Agricultural Department is confident of producing an even better cane in the near future ".

In support of the contention raised in the foregoing paragraph, I refer to the following few points as well:—

(1) The subtropical climate in Bengal is quite favourable for the growth of sugarcane. The luxuriant development of this crop in the islands of Java, Cuba, Hawaii, Porto Rico, Virginia Islands and in the sea coasts of South Africa, naturally leads to the supposition that sugarcane grows best in a warm climate, charged with moisture and sea breeze. Bengal, with a warm subtropical climate and wide sea coasts, provides a congenial condition for cane cultivation. In this connection Mr. R. C. Srivastava writes, " A Survey of Sugarcane tracts (in Bengal) has shown that compact areas can be found in various parts of the districts of Rangpur, Bogra, Rajshahi, Dinajpur and Malda in the Rajshahi Division; Faridpur, Dacca and Mymensingh in the Dacca Division; Nadia, Jessore, Murshidabad and the 24-Parganas in the Presidency Division; and Burdwan in the Burdwan Division ".*

(2) The grey-silt areas, usually found in large tracts almost all over the Province, consist of fairly rich soil which makes it possible to produce a heavier yielding crop than in any other Province. Though much agricultural improvement has not yet been effected in Bengal, specially in the matter of cane cultivation, the following table compiled and estimated from official reports shall prove Bengal's superiority to United Provinces and Bihar, in " per acre " yield of cane:—

TABLE III.—*Acreage of cane and yield of raw sugar in India.*

(Figures for 1935-36.)

Province.	Area in (1,000) acreas.	Total yield in (1,000) tons.	Yield per acre (in lbs.)
United Provinces . .	2,519	3,894	3,463
Punjab	551	434	1,764
Bihar	460	675	3,287
Bengal	355	654	4,127
Madras	122	339	6,224
Bombay	126	305	5,422

* Review of the Sugar Industry of India—by R. C. Srivastava (1933-34), page 10.

There is every reason to hope that this yield (per acre) in Bengal will go up if along with the development of the sugar industry better farming, improved manuring and extensive irrigation are introduced in the country. From Table No. III, it will appear that the per acre yield of raw sugar in Bengal is lower only than that in Bombay or Madras. But in both these Provinces cane cultivation is very costly (as it has been admitted by the Indian Tariff Board of 1932) and as such Bengal with heavier crop yield and comparatively low cost of production is likely to be only the most suitable centres for sugar industry in India.

(3) Irrigation, usually an expensive proposition in other Provinces, is not generally required over the major part of Bengal where there is sufficient natural flushing system. Moreover, the rainfall, both in incidence and amount is quite enough for the needs of the crop. This is admittedly a specific natural advantage which will substantially reduce the production-cost of cane in Bengal, as compared to other Provinces in India, where such natural advantages do not exist.

(4) Government reports indicate that every year the cane crop in the United Provinces and the Punjab is extensively damaged by frost and drought. These natural calamities are much less severe in Bengal and the cultivation of cane is, therefore, much safer than in United Provinces, the present centre of sugar industry.

(5) The Tariff Board (1932) had not had sufficient authentic information in regard to Bengal (*vide* page 15 of the Report) which perhaps prejudiced some of its conclusions. As a matter of fact subsequent developments have shewn that in certain cases, the anticipations of the Board have not proved true. In 1932 the Tariff Board envisaged, for instance, that the duration of the cane crushing season would be shorter in Bengal than in most of the other Provinces and that this might constitute a vital drawback in the economic working of the sugar mills in Bengal. But the facts go to prove just the contrary. The average duration of the cane crushing season is at least 10 to 15 days longer in Bengal than in any other part of India; and the maximum extension of the season achieved in Bengal sets forth a new record for the whole of India.

TABLE IV.—*Average duration of cane-crushing season in India.*

	Days.
(*a*) Average duration of the season for all-India	126
(*b*) Maximum for all-India	179
(*c*) Average for United Provinces	137
(*d*) Average for Bihar	124
(*e*) Average for Bengal	150
(*f*) Average for "Other Provinces"	112

The usual crushing season in Bengal extends from December to April, but certain mills appear to have begun earlier and continued later. It is reported that in 1935-36 the East Bengal Sugar Mills (Dacca) began operations early in November and continued crushing up to the 23rd of May. The North Bengal Sugar Mill has reported the following duration of the crushing seasons:—

Year.	Duration of the crushing season.
	Days.
1933-34	125
1934-35	145
1935-36	192*

* In 1935-36 the North Bengal Sugar Mills continued crushing up to 31st May.

Thus, in Bengal the cane crushing season may profitably be extended by about 2 months over the normal season in the United Provinces and Bihar. Even at present, some of the mills in Bengal (*viz.*, the Deshabandhu Sugar Mills, Dacca) report that when they stop their milling operations early in April, there remain plenty of cane crop in the field and if the rural transport system is improved, they can quite easily extend the crushing season to over a month. In the Annual Report (1935) of the Deshabandhu Sugar Mills it is stated that " By taking advantage of the fact that the Coimbatore canes in the Vikrampur areas can easily grow under water and are matured in October, we began our manufacturing works from the 1st week of October last. The commencement of crushing, as early as October, is an extremely novel idea in as much as due to the fact that nowhere in any part of India canes can be crushed in so early part of the year ".

It will be clear then that in Bengal the average duration of the cane-crushing season is and will always be much longer than that in any other part of India. By the introduction of improved early and late riping varieties the present duration can possibly be further extended. In this respect, too, Bengal is most suitable for the economic working of sugar mills.

(6) It has been suggested in certain quarters that the quality of sugar-cane in Bengal is inferior specially in sucrose value. But the following results obtained by the Imperial Council of Agricultural Research (India) from an analysis of the primary juice from the canes grown in different parts of India shew that such a suggestion is hardly tenable:—

TABLE V.*

The percentage of sucrose content in the primary juice is:—

(A) For the Punjab, Sind and West United Provinces—	
Maximum	15·77
Minimum	13·24
Average	14·5
(B) For Central United Provinces—	
Maximum	15·84
Minimum	14·12
Average	15·0
(C) For Eastern United Provinces—	
Maximum	16·18
Minimum	14·24
Average	15·21
(D) For North Bihar—	
Maximum	15·86
Minimum	13·61
Average	14·7

* Calculated on figures given in the " Consolidated Statement of Monthly Manufacturing Data from Central Sugar Factories in India " for the month of January, 1937.

(E) For South Bihar and Bengal—	
Maximum	16·37
Minimum	13·55
Average .	15·0
(F) For Madras, Bombay and Central India—	
Maximum	16·60
Minimum	12·94
Average .	14·3

Thus, the figures for Bengal is higher than that of West United Provinces, equal to that for Central United Provinces, and only slightly lower than the figure for Eastern United Provinces.

(7) Taking into account the fact that in Bengal the sugar industry is still in a preliminary stage of development the annual improvement of the percentage of sucrose recovery is quite satisfactory. The following table gives the detail:—

TABLE VI.—*Average percentage of recovery of sugar in factories in India.*

Year.	India average.	United Provinces average.	Bihar average.	Bengal average.
1935-36	9·29	9·60	8·93	8·23
1936-37	9·47	9·56	9·29	9·07

In view of the fact that the sugar mills of Bengal, with a few exceptions, are all small units and as such have not much funds to devote for research works, it is evident from the above table that the progress made by the Bengal Mills in the matter of sucrose recovery is quite satisfactory. It is reported that the North Bengal Sugar Mill (Gopalpur) and the Deshabandhu Sugar Mills have obtained percentage of sucrose recovery as high as 10·57 and 10·3 respectively. It should be noted that in Bengal the improved varieties of cane specially suited to the climate, have not as yet become very popular. With the growing popularity of Co. and P.O.J. varieties the sucrose recovery will, in all probability, go up further.

(8) Another specific advantage of the Bengal Mills is the ready market for molasses in this province. It is reported that under the present circumstances the sugar factories in Central India and the United Provinces are faced with the problem of molasses. Far from realising any price for this bye-product, which is obtained in each factory in huge quantities, the mills have often to undergo additional expenses in removing this obnoxious material from the farm area. But in Bengal there is a ready market for the molasses bye-product and the additional income received from this source is about As. 8 per maund. This will help the Bengal mills in further reducing the cost of production of sugar.

(9) Then again "another incidental advantage of the establishment of sugar factories in Bengal will be a better distribution of the profits arising from the protected industry in the various provinces and the elimination of any feeling about a disproportionate burden of protection being felt by consuming provinces for the sake of manufacturing provinces".*

* M. P. Gandhi: Possibilities of the Development of the Sugar Industry in Bengal (Ed. 1935), page 9.

The development of sugar industry is a vital problem in Bengal, with which is linked up the fate of her millions. Since the calamitous depression in the jute market the Government of Bengal have been carrying on an intensive propaganda for the restriction of jute acreage and the cultivation of sugarcane *vis-à-vis* jute. Under the influence of this Government propaganda the acreage under cane crop in this province has been increasing year after year. But if no outlet for this heavy cane crop is provided by the establishment of sugar factories in suitable areas, this will ultimately precipitate heavy difficulties.

The problem of over-production.—The Indian sugar market seems to have been seized in the panic of over-production; but closer investigation appears to indicate that over-production is more apprehended than real. In 1935-36 the actual production of sugar by the Indian Mills was 1,087,167 tons; while the amount of consumption was 1,010,000 tons thus over-production, if any, amounted to 77,167 tons. This too is not a real over-production as Java imports continued in 1935-36. This amount of extra-production, if at all, is not too much to be apprehended, especially in view of the fact that India has still the right to export sugar to Burma.* In truth in 1935-36, India exported 26,225 tons of sugar; this export trade, specially the trade with Burma, may possibly be expanded.

Moreover India may very conveniently take the advantage of the market in her neighbouring countries with whom she has had age-old trade relations. Every year large quantities of foreign sugar are imported to these countries. The following table gives the detail:—

TABLE VIII.—*Quantity of sugar imported to the countries.*

Country.	1934-35.	1935-36.	1936-37.
	Tons.	Tons.	Tons.
1. Ceylon	65,715	69,323	75,994
2. Arabia† . . .	2,295	1,533	9,404
3. Iran	39,103	43,807	59,932
4. Aden†	14,153	8,375	12,505
5. Somaliland† . . .	1,684	946	51
6. Mesopotamia† . .	...	2,729	7,854
7. British East Africa† .	3,532	2,814	4,000
8. Siam†	32,008	32,365	33,055

The quantities of sugar almost all of which is foreign sugar re-exported, transported from India to the neighbouring countries across the land frontiers, for the last 3 years, are given in the table below:—

TABLE IX.

Destination.	1934-35.	1935-36.	1936-37.
	Tons.	Tons.	Tons.
Group (*a*)	6,124	3,809	4,371
Group (*b*)	24,083	18,121	22,424
Group (*c*)	3,500	3,563	3,555
Total .	33,706	25,493	30,350

* Even if the International Sugar Agreement (1937) be enforced on India, which prohibits the export of Indian sugar to overseas markets.

† Figures show the quantities imported from Java only.

Group (*a*) includes trade with Iran and Western and Southern Afghanistan; Group (*b*) includes trade with Northern and Eastern Afghanistan, with Kashmir and through them with Central Asia and Turkistan; and Group (*c*) comprises the trade with Tibet, Nepal, Sikkim and Bhutan.

The figures given above indicate the scope for marketing of Indian sugar in the neighbouring countries which at present draw their requirements from foreign sources, mainly Java.

In India the *per capita* consumption of sugar is only 6·2 lbs., whereas the *per capita* consumption of gur is 25·1 lbs. This shows that there is every possibility of increasing the consumption of sugar in the country, by suitable propaganda in the lines of the Indian Tea Cess Committee. As a matter of fact, the consumption of sugar in India, is increasing every year at an average rate of approximately 10 per cent. per annum.

The progressive development of confectionery industry in India will provide in near future a new outlet for the consumption of home made sugar. At present a number of such confectionaries are working in different provinces of India. In consideration of the facts and circumstances mentioned in the foregoing paragraphs, it appears that the fear of over-production in the Indian factories is more apprehended than real.

Quota and licensing System.—In apprehension of over-production it has been suggested in some quarters that production of sugar by the Indian mills and the erection of new factories should be restricted by quota and licensing system. Such a scheme of adjusting total production to total possible requirements is not a new experiment in the field of industries. For the last two years the Indian Sugar market has been suffering from a depression. From Rs. 9 per maund in December 1935, the f.o.r. Calcutta price of Indian sugar, went down to Rs. 7 in December 1936, and by March, 1937, the price was further depressed to Rs. 6-8 or Rs. 6-4 an almost uneconomic level. The continued depression in the sales market and the downward tendency of the price-level naturally created a panic amongst the mill-owners, who had invested crores of rupees capital in sugar industry. In certain quarters this unusual depression in the Indian sugar market was interpreted as the inevitable result of over-production. But as has been shewn previously, there is no substantial reason to believe that really there has been any over-production. Even if there were any over-production at all the amount has been so small, specially as compared with the prospective internal and external markets, that it does not seem to call for any restrictive measure being adopted forthwith. In the interest of the sugar industry itself and of the progressive industrialisation of the country as a whole, the quota system should not be imposed just at this moment. The depression in the Indian sugar market was presumably more due to an unhealthy rate-cutting competition amongst the manufacturers themselves than to any real over-production, and to improve this situation a scheme of rationalisation would be most appropriate. To introduce any quota system, just at this moment, would be prejudicial to the wider interests of the country for reasons stated below:—

(*a*) The industry, if it is to develop in the best manner, should be allowed to choose its own centre of gravity. At present the industry is concentrated in the United Provinces and Bihar, *i.e.*, within a narrow sugar belt of Central India. But this does not prove that other provinces may not prove to be better economic centres for the industry. The present concentration of the sugar industry in the United Provinces may not have been so much due to any natural advantages as due to greater mobilisation of industrial finance in that Province.

(*b*) Quota system at this stage will restrict the growth of the industry in under-developed provinces, where inspite of sufficient natural potentialities the industry has not been able to make headway due mainly to financial and other reasons.

(c) The quota system, if introduced just at this moment, will probably help the marginal and uneconomic units at the cost of better economic units in less developed provinces.

(d) It will hamper the natural development of the industry. The ultimate aim of tariff protection is to stabilise the Indian sugar industry on the maximum efficiency level. But if quota system is introduced just at this hour, it will stabilise even the existing uneconomic units and may thereby tend to defeat the purpose of protection. This will be an ultimate burden upon the consumer, who expect in future lower prices of sugar as a result of greater industrial efficiency of the Indian mills.

Effects of Excise Duty.—All over India the market was extremely dull and the price level was continually sliding down so much so that by March, 1937, the price of Indian sugar stood between Rs. 6-8 to Rs. 6-4 hardly a remunerative point. But at this time the excise duty was increased from Rs. 1-5 to Rs. 2 per cwt. and the import duty on foreign sugar was reduced from Rs. 7-12 to Rs. 7-4 per cwt. with effect from 28th February, 1937. This enhancement of the excise duty will have a far reaching effect upon the indigenous industry as a whole. As matter stands now, the Indian sugar market is rather unsteady, with the average price-level considerably fluctuating from week to week. This shows the evil of rate-cutting competition amongst the manufacturers themselves and it has already imposed a severe burden upon the manufacturers who are conducting business on a small margin of profit. The enhancement of excise duty at this initial moment is sure to adversely affect the manufacturers. As a matter of fact the enhancement of the duty has created a panic in business circles and all the new projects and expansion schemes have been temporarily suspended. In the circumstances, there is little possibility of the sugar market being stabilised at a remunerative price-level, at least in the near future, and the manufacturer shall have to bear the major portion of the increased excise duty for some time to come. This will involve a strain on them. Of course the "Sugar Selling Syndicate" has been organised with the purpose of attaining price-stability, but it is too premature to comment on the activities of this organisation. Since the inauguration of the Syndicate, it seemed as if the downward tendency of the price-level was stopped at last. In the month of August, 1937, the wholesale price of *Crystal I* Indian sugar in the Calcutta market was fairly stabilised at Rs. 7-4 per maund but by the middle of September it had again gone down to Rs. 7 per maund. Hence it seems that the Syndicate will take a considerable time to obtain real control over the price and so long this condition continues to prevail the enhanced excise duty will put a strain upon the manufacturers.

The enhanced excise duty will have a more severe effect upon the newly established factories (specially in under-developed provinces like Bengal) which will perhaps find it impossible to continue operations, particularly at the beginning and towards the end of the season when the percentage of sucrose recovery naturally falls low. If, therefore, these factories close down earlier and open later, it will also have an unhealthy effect on the agriculturists at large, who will find no paying outlet for their cane crop. Thus the enhanced excise duty will affect not only the industrialists but also the agriculturists.

The protective duty.—The most important question that is now under consideration of the Tariff Board is whether the protective duty should be maintained as such or it should be increased or decreased. At present the wholesale price of Indian sugar in the Calcutta market is Rs. 2 to Rs. 3 lower than that of the corresponding quality of Java sugar. Thus the Indian sugar as compared to foreign imports, stands on a fair margin of competition. But on the other hand the Indian mills have to pay an excise duty of about Rs. 1-7 per maund. If this excise is at last wholly shifted to the consumer, the present price will go up considerably and the margin of competition still left will be much narrowed; under such a condition, it

is not very unlikely that foreign dumping would again jeopardise the interest of the Indian sugar industry. As a matter of fact, when the protective duty was imposed on imported sugar in 1932, Java resorted to dumping. A careful investigation into the sugar trade of Java with India clearly indicates that as the import duty was increased Java lowered continually the ex-duty price quotation. But in Java, after the severe crisis in the sugar industry, about 70 per cent. of the factories have been stopped and only 30 per cent. of them are working at 50 per cent. of their capacity. Under this circumstances, there is no ground to believe that the actual cost of production in Java has gone down. On the contrary there is every possibility of the cost of production having been increased. This shows that Java tried her best to dump the Indian market though to no effect. If at present, however, the protective duty is further lowered (it has already been lowered from Rs. 7-12 to Rs. 7-8 with effect from 28th February, 1937), the manufacturers in Java will be put in an advantageous position and Java may again resort to dumping, knowing fully well that the protective duty may entirely be withdrawn after a few years. Thus any substantial reduction of the protective duty may jeopardise the very interest of the Indian industry, which will mean a huge national loss and an industrial retrogression. So, for the remaining 8 years of protection it seems advisable to continue the protective duty at least at its present level.

Utilisation of molasses and other by-products.—Molasses is the most important by-product in the sugar factories. At present about 146 sugar mills are working in India, and by the coming season this number is likely to go up. In all these factories and in the Khandsari industries very large quantities of molasses are obtained every year as bye-product, but unfortunately none of the Indian mills has been able to make any commercial utilisation of it. As a matter of fact 80 per cent. of the mills now regard the molasses produced as mere wastage and instead of obtaining any return from them, they have not unoften to incur considerable expenses for removing them from the factory area. Only in Bengal there is a market for molasses and here too the factories do not receive more than 4 to 8 annas for one maund of molasses which if commercially utilised for manufacturing power alcohol would have yielded a much better return.

The production of molasses from various sources in India is as follows:—

TABLE XI.

Year.	From Cane Factories.	From Gur Refineries.	From Khandsaries.	Total.	Import.	Export.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
1931-32 . .	69,208	46,600	250,000	365,808	40,191	740
1932-33 . .	139,419	56,239	275,000	461,658	31,991	819
1933-34 . .	190,384	39,770	200,000	430,154	2,401	1,201
1934-35 . .	233,882	26,000	150,000	409,882	415	1,153
1935-36 . .	274,000	26,000	125,000	425,000	*Nil*	1,026
1936-37 . .	300,000	26,000	100,000	426,000	*Nil*	24,195

Thus, at present, an average of 426,000 tons of molasses are obtained per annum by the Indian mills; but of this only a minor fraction is consumed internally for the preparation of "rab" while a few hundreds of tons are exported to Ceylon, and for the rest which constitutes the major part of the

total production no process of commercial utilisation has as yet been provided. But it cannot be over-emphasised that the success of the Indian Sugar Industry, or for that matter of the very purpose of the protective duty, depends upon the proper utilisation of molass by-product.

On experiment it has been found that molasses may best be utilised in manufacturing denatured power alcohol, which serves very satisfactorily as fuel for internal combustion engine. As a matter of fact, in the continental countries large quantities of molasses are utilised in manufacturing power alcohol. In France and Germany State legislation has been resorted to for introducing compulsory admixture of denatured alcohol with all saleable petrol. In India also something in the line needs be done so that the molasses manufacturing factories may soon develop.

Besides molasses, bagasse is another important by-product which at present is used as fuel. But much better return may be obtained if this fibrous material be utilised in manufacturing paper, packing paper and card board. In many foreign countries the bagasse is being utilised in this way, and in India, too, industrial enterprise should be encouraged in the line.

Lastly, there is another by-product, though of lesser importance, namely the press-mud. The manurial value and the utilisation of press-mud cake for fertilising different types of soil is being studied in the United Provinces and Bihar, in selected factory estates as well as in the agricultural farms and research stations. Similar investigations should also be made in Bengal on Government initiative.

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(11) *Letter dated the 9th October, 1937, from the Director of Agriculture, to the President, Tariff Board.*

I enclose herewith, for your information, a copy of a scheme which is now proposed to be started in connection with the utilization of the Government of India grant from the Sugar Excise tax.

Some time ago I had a long discussion with the Secretary of the Co-operative Credit Department, and pointed out to him the difficulties in the way of success of such a scheme from the co-operative point of view. The chief is that the factories have the whole province to buy from, if they wish, and there is no lack of supplies of cane. At the same time, there has not as yet been fixed any minimum price. The only real hope of success will be dependant on the agricultural side, that is to say, whether we shall be able to induce cultivators to grow cane of a sufficiently high quality to induce the mills to buy at a reasonable price. The two places more or less selected are one near Gopalpur in Rajshahi and the other near Sitabganj in the Dinajpur district.

There is one point, however, in the establishment of these two Unions, and that is that we shall be able to make a good start in improving the present methods of cane cultivation, which, I think you will agree, is badly needed.

As regards the supply of cuttings, I think the Department has reached a stage where little further distribution of cuttings is needed as far as Co. 213 is concerned. The only requirements now are special in nature, such as arranging for certain areas under early ripening canes for the mills, and the supply of a good salt resistant variety for the Sunderban area when it has been thoroughly tested. As there is every hope also that the district staff will be considerably increased in the near future, and a very considerable enhancement in the Demonstration grant, which, up to the present, has only been some Rs. 6,000 for the whole province, there is every hope that we shall be able to do far more work on the improvement of cane cultivation than we have done in the past. We are also being helped by the Jute Committee, who are appointing special staff for the jute crop under my control. This will relieve the present district staff of this Department from work on this crop.

Summing up the position as regards this province, we should be able in the next few years to make considerable improvement in the cultivation of sugarcane with the consequent betterment of the quality.

I hope this information will be of use to you.

UTILIZATION OF GOVERNMENT OF INDIA GRANT FROM SUGAR EXCISE TAX.

Two Unions to be started—33 Village Societies in each.

Estimated expenditure for each Co-operative Union per annum.

AGRICULTURE.	Rs.
Pay of 1 District Agricultural Officer at Rs. 125 per mensem	1,500
Pay of 1 Peon at Rs. 13 per mensem	156
Travelling allowance at Rs. 75 per mensem	900
Office-rent at Rs. 10 per mensem	120
Pay of 3 Demonstrators at Rs. 30 per mensem each *plus* Rs. 10 per mensem (consolidated allowance)	1,440
Contingencies at Rs. 5 per mensem	60
Seeds, Manures and Implements	2,264
	6,440

CO-OPERATIVE.	Rs.
Pay of 1 Auditor (Manager) at Rs. 75 per mensem	900
Pay of 1 Office Clerk at Rs. 30 per mensem	360
Pay of 3 Supervisors at Rs. 30 per mensem each	1,080
Pay of 2 Peons at Rs. 13 per mensem each	312
Travelling allowance of Manager and Supervisors at Rs. 60 per mensem	720
Contingencies at Rs. 5 per mensem	60
Office-rent at Rs. 15 per mensem	180
Seeds and Manures	728
Contribution to primary societies towards their cost of establishment per year at Rs. 20 (20 × 33)	660
	5,000

	Per annum. Rs.
Total for one Union	11,440
Total for two Unions	22,880

Replies from the Government of Bihar.

(1) *Letter dated the 19th August, 1937, from the Government of Bihar, Revenue Department, Patna.*

Subject:—PROTECTION OF SUGAR INDUSTRY.

I am directed to forward a copy of each of the replies given by the Director of Industries, the Director of Agriculture and the Registrar, Co-operative Societies, to the questionnaires for Local Government together with the views of the Government of Bihar on questions Nos. 1, 3, 4, 5, 7, 10, 16, 17, 18, 19, 22, 24, 26, 31, 47, 48 and 49. They have no remarks or comments to make on the replies to the other questions given by the Director of Agriculture, the Director of Industries or the Registrar, Co-operative Societies.

REPLY OF THE GOVERNMENT OF BIHAR TO THE SUGAR TARIFF BOARD'S QUESTIONNAIRE FOR LOCAL GOVERNMENT.

1. The statistics required, as far as they are available, have been furnished in the reply given by the Director of Agriculture, Bihar. But it is necessary to add that all figures of acreage under cane in Bihar must be taken with reserve because there is no proper agency for collecting these statistics. The year-to-year variations in the acreage under cane are based on the reports of village *chaukidars* which are submitted to Sub-Divisional Officers and District Officers through Sub-Inspectors.

3. Regarding irrigation rates in this province, the *relevant part of Rule 36 (1) of the Revised Son and Champaran Canals Irrigation Rule showing the rates payable for the supply of water for the purpose of flow irrigation is reproduced below. For the supply of water for lift irrigation except in the case of a long term lease water rates are to be payable at one-half the rates for flow irrigation.

The rates are determined according to the money value of the produce that is crop raised. For instance, the percentage the water rate bears to the value of the irrigated crop is only 12 per cent. on the Son Canals.

There has been no change in the rates for the last seven years.

Class of lease.	Water supplied		Rate per acre.	To be paid on or before
	From	To		
1	2	3	4	5
		(*a*) SON CANALS.		
			Rs. A.	
Hot weather .	26th March .	24th June .	7 8	5th August.
Ditto .	25th February .	25th May .	7 8	Do.
Hot weather Single watering.	26th March .	24th June .	2 8	Do.
		(*b*) CHAMPARAN CANALS.		
		Tribeni Canals.		
Hot weather .	1st April . .	1st June .	2 2	5th August.
Hot weather Single watering.	Do. .	Do. . .	0 12	Do.
		Dhaka and Teur Canals.		
Hot weather .	1st March .	15th June .	5 0	5th August.
Hot weather Single watering.	Do. .	Do. .	2 8	Do.

4. The Director of Agriculture in his reply to this question has given figures based on the economic enquiry into the cost of cultivation of sugarcane in both North Bihar and South Bihar. It is, however, difficult to give any accurate estimates of the average cost of cultivation of cane or of the

* Only rates for sugarcane.

average yield per acre. The figures vary from plot to plot and from season to season. As will be apparent from the Director of Agriculture's memorandum, with the introduction of improved methods of cultivation the cost of cultivation should be capable of reduction and the provincial Government are inclined to believe that generally speaking the cost is now lower than what it was seven years ago. Judging from the experience in the year of the earthquake and the two subsequent crushing seasons it would appear that a rate of four annas a maund might repay the cultivator the cost of cultivation, but it would leave no margin of profit. If the industry is to be placed on a sound footing, it is necessary that the cost of cultivation should be reduced still further to about three annas a maund, but this is only possible if the cultivators can be given suitable advances to enable them to purchase manure and improved varieties of seed and to adopt better methods of cultivation.

The average yield from cultivator's fields is usually estimated at 250 maunds per acre in North Bihar and 350 maunds per acre in South Bihar.

5. The determination of the "fair price" of sugarcane to the growers is one of the most difficult problems with which the Provincial Government have had to deal since the passing of the Sugarcane Act of 1934. The Act provides for a *minimum* price, *i.e.*, the price which all factories must pay for their cane. The "minimum" price, however, is not always the "fair" price. For instance, the minimum price may be a fair price in the case of a new or a comparatively inefficient factory, but not in the case of a more efficient one. A fair price should be such as would distribute the profits of the sugar industry equally between growers and millers, but as the cost of production varies from factory to factory, it is impracticable to determine a fair price applicable to all factories in Bihar. It is generally recognised that the price of sugarcane should vary with the price of sugar and the Provincial Government have laid down a scale of minimum prices varying with the price of sugar. It is believed that this scale is on the whole satisfactory except when the price of sugar rises beyond Rs. 7-8 or Rs. 8 a maund in which case the scale is perhaps more in favour of the miller than of the grower. The revision of the existing scale is under consideration in connection with the proposals of the recent Nainital Sugar Conference which was convened by the Government of the United Provinces.

A "fair price" to the grower should—

(*a*) recoup the full cost of cultivation and cartage to the weighbridge, and

(*b*) secure him an equal share with the miller of the profits of the industry.

When the average price of sugar is less than Rs. 6-8 a maund the minimum price of sugarcane is only four annas a maund, which barely covers the cost of cultivation. At present a "fair" price to the grower should not be less than four annas and three pies a maund.

7. There was undoubtedly over-production of sugarcane in 1936-37. This was due to the following causes:—

(*a*) increase of area under cane,

(*b*) sugar factories started later than usual,

(*c*) exceptionally good cane crop owing to favourable climatic conditions, and

(*d*) low price of gur. (The cultivators, specially in South Bihar, found it unprofitable to convert their cane into *gur* and were left with the only alternative to dispose of it to the sugar factories for whatever price it would fetch.)

Although the sugar factories started late, they crushed about 28 per cent. more cane than in the previous crushing season. In spite of this there was a large surplus of sugarcane in Muzaffarpur, Darbhanga, North Bhagalpur, North Monghyr and Purnea districts which was left standing in the fields when the crushing season came to a close. It is difficult to

estimate the exact amount of this excess. From all accounts, the effect on the cultivators has been reduced plantings and it is estimated that the reduction is between 30 and 35 per cent. If this is correct, there is likely to be competition between mills during the next crushing season for the supply of cane. For the present, therefore, there is no need to consider any scheme for restricting the area under cane. Unless, however, there is some better system of regulating the production of sugarcane for supply to sugar factories the industry is likely to be faced with the problem of alternate over-production and under-production of sugarcane. Proposals in this connection are under the consideration of the provincial Government. The restriction of the areas under cane does not appear to be practicable in view of the fact that cane is grown not only for supply to sugar factories, but also for other purposes, *e.g.*, manufacture of gur and private consumption.

10. From the sugar excise fund the provincial Government have received the following allotments from the Government of India:—

	Rs.
(*a*) 1934-35 and 1935-36	2,90,000
(*b*) 1936-37	2,46,500
	5,36,500

Out of the above allotments a sum of Rs. 2,19,047 has already been placed at the disposal of the provincial Government.

The following three schemes are being financed from the sugar excise fund:—

(*a*) scheme for the working of the Sugarcane Act and the Rules framed thereunder in Bihar,

(*b*) scheme for the improvement of sugarcane cultivation in Bihar, and

(*c*) scheme for the organisation and operation of Cane-growers' Co-operative Societies.

The particulars regarding these schemes will be found in the papers detailed below, copies of which are enclosed:—

(1) Letter No. 559-D, dated the 3rd February, 1936, from the Secretary to the Government of Bihar and Orissa, Education and Development Department, to the Director of Industries, Bihar and Orissa.

(2) Letter No. 577-D., dated the 3rd February, 1936, from the Secretary to the Government of Bihar and Orissa, Education and Development Department, to the Director of Agriculture, Bihar and Orissa.

(3) Letter No. 582-D., dated the 3rd February, 1936, from the Secretary to the Government of Bihar and Orissa, Education and Development Department, to the Registrar of Co-operative Societies, Bihar and Orissa.

Recently the Government of Bihar submitted proposals for the extension of the scheme for the improvement of sugarcane cultivation, details of which will be found in the enclosed memorandum. The Government of India have sanctioned these proposals with the exception of the Mycological section.

16. The memorandum of the Registrar of Co-operative Societies, Bihar, gives an account of the Cane-growers' Co-operative Societies which have been organised by the Co-operative Department. The success of these societies is entirely dependent on the patronage of sugar factories. Although in Bihar the attitude of the factories has been to some extent helpful, it may change into one of hostility as has apparently happened in the United Provinces judging from the report of the proceedings of the recent Nainital Conference. In Bihar we have had one bad instance in which a promise to purchase cane

from Cane-growers' Co-operative Societies was not kept and purchases were made, without apparent justification, through other agencies, *e.g.*, licensed purchasing agents. It is feared that the sugar factories are not genuinely interested in the co-operative organisation of cane-growers as this would strengthen their bargaining power. Cane supply to sugar factories involves complicated arrangements and in spite of all efforts, mistakes are bound to occur. The sugar factories are likely to magnify these mistakes in the case of co-operative societies so that they may have some good excuse for not dealing with them. The policy of the Registrar and of officers under him who are engaged in the organisation of Cane-growers' Co-operative Societies is to proceed cautiously and to do everything that is possible to give satisfaction to sugar factories on whose patronage the Cane-growers' Co-operative Societies are entirely dependent. So far there has been no complaint against Cane-growers' Co-operative Societies, but it is not unlikely that the infection from the United Provinces will spread to Bihar. If sugar factories assume a hostile attitude to Cane-growers' Co-operative Societies, there is no hope for them unless some form of compulsion is introduced which will force factories to take cane from Cane-growers' Co-operative Societies where such societies have been properly organised by the Co-operative Department.

17. Minimum prices have been fixed in this province under Sugarcane Act XV, 1934. The scale of the minimum price was laid down in Notification No. 2284-D., dated the 10th December, 1934 (copy enclosed). Last year, however, with the increase in the excise duty, the scale was revised in Notification No. 516-D., dated the 27th March, 1937 (copy enclosed). The principle in Bihar is to link the price of sugarcane with the price of sugar, but whatever the price of sugar, the minimum price was not to fall below annas four and pies three a maund according to the original notification, which, however, was subsequently lowered to three annas and six pies in Notification No. 516-D., dated the 27th March, 1937. In Bihar the only deduction allowed is on account of advances to cultivators. No reduction is admissible on account of dryage or distance. It was thought that any system of deductions would enhance the difficulties of enforcement and by prescribing the same minimum price for near as for distant cane, it was hoped that factories would gradually tend to buy their cane from their own natural areas instead of going to distant areas which could more conveniently provide for the requirements of other factories. Unfortunately this hope has not materialised and factories continue to buy cane from distant areas though nearer cane may be available.

The minimum price worked satisfactorily until the last crushing season when on account of the heavy surplus of sugarcane the minimum price had to be specially reduced in order to induce the sugar factories to continue crushing as late as possible. Government were, therefore, compelled to abandon their notification regarding the minimum price. From the second fortnight in April the minimum price was fixed as follows:—

> From the 16th April, 1937, to the 30th April, 1937, at As. 3-3 a maund for vacuum pan factories.
>
> From the 1st May, 1937, to the 15th May, 1937 (with a further reduction at 3 pies a maund for rail cane from the 10th May, 1937), at As. 3-3 a maund for vacuum pan factories.
>
> From the 16th May, 1937, to the 15th June, 1937 (with a further reduction at 6 pies a maund for rail cane), at As. 3 a maund for vacuum pan factories.

One great difficulty in regard to the minimum price is that one province might be adversely affected by a lower minimum price in an adjoining province. Unless the minimum price is the same, there is a marked tendency for sugar factories near the border to divert their cane supplies from the province with the higher minimum price to the province which allows a lower minimum price. During the earlier part of the last crushing season the minimum price in Bihar was three pies higher than in the United Provinces and it was found that many

sugar factories in Saran district were purchasing more cane from the United Provinces than in previous years. Similarly, the Sitabganj factory in Bengal which started taking cane from the Purnea district ever since the the earthquake stopped doing so this season because of the minimum price in Bihar which is not in force in Bengal. In view of this difficulty it is under consideration whether the United Provinces and the Bihar Governments should not adopt a formula which will give the same minimum price for both provinces. At present, apart from a minor variation in the scale, the United Provinces Government take into account the sale price of sugar sold by the United Provinces factories in the Cawnpore market, whereas the Bihar Government take into account the sale price of sugar sold by the Bihar factories in all markets. This is mainly responsible for the occasional variations in the minimum price fixed by the two Governments. From the point of view of the grower, the minimum price as fixed by Government is open to one serious objection, namely, the amount is the same for early mid-season and late cane. It is contended that late cane should be paid for at a higher rate than mid-season cane because of the loss on account of dryage and the greater damage caused by animals as the crop has to be kept standing for a very much longer period. The possibility of a sliding scale which would give a higher minimum price for late cane was considered at the Sugarcane Conference which was held in Patna in September, 1936. In this connection a reference is invited to the memorandum which was prepared for this Conference, a copy of which is enclosed. Unfortunately, the representatives of the sugar factories and the growers could not come to any agreement and in the circumstances, Government decided not to make any change in the principles for determining the minimum price. As a matter of fact, on account of the heavy surplus of sugarcane during the last crushing season, the enforcement of a higher minimum price for late cane would have been quite impracticable.

On the question of the minimum price of sugarcane it is difficult to secure any substantial agreement between growers and millers. The former maintain that the minimum price as fixed by Government is too low, whereas the latter argue that it is too high having regard to the fall in the price of sugar. In determining what should be the fair price the provincial Government have tried to take into account the usually accepted formula, namely

$$C = \frac{S \times P}{200}$$

where C represents the price that should be fixed for sugarcane per maund, S is the average percentage of extraction and P is the price of sugar per maund less the excise duty. The principle underlying this formula is that the price of sugarcane should represent half the selling price of the sugar that is manufactured from it. The possibility of evolving a better formula has been considered on various occasions, but without success. The main difficulty is that the provincial Government have not been able to secure any reliable figure of the average cost of manufacture of sugar, nor is there any agreement as to the average cost of cultivation of sugarcane.

18. Competition between factories has in the previous years helped the grower to secure a favourable price for his sugarcane, but only towards the close of the season. This competition is, however, rapidly weakening owing to two causes, namely,

(*a*) increased production of cane, and
(*b*) zoning by private agreements between factories.

During the last crushing season there was such a heavy surplus of sugarcane that the factories experienced no difficulty in their cane supply. There was, therefore, no competition among them to raise the price of sugarcane. The system of boundary agreements between factories is also extending and complaints have been received that it is operating against the growers. Two factories agree to a fixed boundary line between their cane areas, but there is no obligation on a factory to purchase all the cane growing within its own

boundary line. The grower is in a weaker position because on account of the boundary agreement he cannot enter into negotiations with the rival factory even when his own factory refuses to take his cane.

19. It is only fair that cultivators should be given something more than the minimum price for superior, early and late varieties of cane which involve a higher cost of cultivation. A premium to be paid along with the minimum price would, however, be more practicable than bonus payments. Even in the case of a premium there will be considerable difficulties in regard to enforcement, specially in the case of *khuski*, cane, *i.e.*, cane that is offered for sale without any bond or agreement with the factory. A premium on special varieties of cane could perhaps be enforced without much difficulty in zoned areas, if a system of zoning is introduced.

22. Tramway facilities have not been developed to any large extent with the result that considerable damage is caused to roads by the heavy cane traffic during the crushing season. A factory wishing to develop a tramway system for the transport of its cane can move the provincial Government for the acquisition of land under the Land Acquisition Act, but apart from this no further assistance is given. The roads are under the control of local bodies whose resources for their development is limited.

24. No particular concession has been given to any sugar factories in regard to land, water rate charges, provision of capital, etc.

26. No absolute criterion for judging labour conditions in factories in this province is possible. It may be said, however, that with the recent change in labour legislation the conditions of labour in factories have improved. Allowing for varying conditions the conditions of labour as far as these come within the scope of the Factories Act may be said to be satisfactory.

31. (i) The stage has certainly been reached for the revision and improvement of the existing system of cane supply to sugar factories. At present sugar factories are taking little or no interest in the development and improvement of cane cultivation. The haphazard extension of cultivation, the absence of any definite agreements between the sugar factories and the growers for the supply of cane and the reliance which continues to be placed on middlemen are unsatisfactory features of the existing system. The grower is in a state of insecurity with no inducement or encouragement to improve his cultivation, while the only concern of the factory is that there should be a plentiful supply of cane which can be purchased at cheap rates. The result is unhealthy competition between growers and between mills. Three proposals have been suggested for improving the existing system of cane supply to sugar factories. The first is the establishment of a semi-official cane-marketing board through which alone factories will be able to obtain their supplies of cane This experiment was tried with conspicuous success immediately after the earthquake for the disposal of "distress" cane, but the conditions were special. The second proposal is the adoption of a system of zoning on the lines contemplated by the Sugar Committee of the Imperial Council of Agricultural Research while the third is a system of compulsory bonding whereby factories will be compelled by law to enter into bilateral agreements with growers for the supply of cane to the extent of at least 60 or 70 per cent. of their cane requirements during the crushing season. The object of this last proposal is to reduce the amount of *khuski* cane which is responsible for most of the evils in the existing system. The provincial Government have not yet arrived at any decision on the merits of these three alternative proposals.

(ii) *Fixation of a quota for sugar manufacture by factories.*—It is doubtful if anything can be done in this direction, unless the sugar industry throughout India can put forward proposals which are likely to be acceptable to the vast majority of sugar factories. The fixation of a quota would have to be done on an all-India basis, and as far as can be seen this is a matter in which there is little likelihood of agreement among sugar factories in different provinces.

(iii) The same remarks as in (ii) apply to the licensing of new factories and extensions of existing factories. The introduction of a system of zoning would check the erection of sugar factories near existing factories, which is not desirable in the interests of the industry.

47. The Sugar Excise Duty of 1934 did not affect the cane-grower or the consumer. Possibly the dealer was also not affected, but the profits of the manufacturer were certainly reduced and this was on the whole not a bad thing because the industry was expanding far too rapidly and the manufacturer was looking more to immediate profits than to the future. The additional duty imposed in 1937 came at a very unfortunate moment when the grower was in a critical position on account of the heavy over-production of cane. As a result of the excise the scale of minimum prices had to be reduced and eventually further reductions were necessary in order to induce the sugar factories to prolong their crushing season. The growers undoubtedly did suffer to an appreciable extent on account of the additional duty. As far as can be seen the consumer was practically unaffected. The manufacturer recouped the full amount of the additional excise duty from the lower price of sugarcane.

48. The protective duties have not worked against the interests of the consumer.

49. So far as the provincial Government are aware no other industry dependent on the supply of sugar products or molasses has been adversely affected by the protective duties.

REPLIES TO SUCH PORTION OF THE QUESTIONNAIRE WHICH CONCERNS THE DEPARTMENT OF INDUSTRIES.

14. (*a*) Sugarcane crushed in factories:—

	Maunds.		Maunds.
1930-31 . .	14,336,013	1934-35 . .	56,926,444
1931-32 . .	20,524,244	1935-36 . .	76,241,600
1932-33 . .	40,651,134	1936-37 . .	97,700,000 (provisional).
1933-34 . .	45,771,643		

15. The reply to the second point is as follows:—

(1) Unsatisfactory and uncontrolled distribution of "purjis" (requisition for supply of cane), sometimes through unreliable middlemen or low paid staff.

(2) Absence of legal contract for supply of cane. (The present "Satta" or bond executed by the growers is not legally binding on the factory nor does it specify any date by which supply will be taken.)

(3) Detention of carts at weighbridges, through insufficient arrangement.

(4) Bad communication.

(5) Lack of suitable and sufficient loading and unloading space at certain railway station.

(6) Unsatisfactory allotment of wagon.

(7) Dearth of carts in the latter part of the season.

(8) The mill draws its supply from outstation when the gate cane diminishes. This makes the growers at a distance uncertain about the disposal of their cane.

17. Yes.

The minimum price is determined according to the following scale fixed by Government:—

Average price of sugar per maund.		Corresponding minimum price of sugarcane per maund.	
		Vaccum pan factories.	Open pan factories.
Rs. A.	Rs. A.	As. P.	As. P.
Below—			
6 0	...	3 6	2 0
Above—	But not above—		
6 0	6 8	3 9	2 2
6 8	7 0	4 0	2 4
7 0	7 8	4 3	2 6
7 8	8 0	4 6	2 8
8 0	8 12	4 9	2 10
8 12	9 4	5 0	3 0
9 4	9 12	5 3	3 2
9 12	10 4	5 6	3 4

The old scale was revised in April, 1937, and the price reduced all round by 3 pies per maund for vacuum pan factories and 2 pies per maund for open pan factories to allow for the increased Excise duty. The scale was so worked out as to devide the profit equally between the miller and the grower. It is, however, more favourable to the factory when sugar sells above Rs. 7-8 and is more favourable to the grower when sugar sells below Rs. 7.

The system worked fairly satisfactory on the whole. During the last season, however, on account of abnormally low price of sugar and large excise production of sugarcane specially reduction in the minimum price had to be allowed towards the end of the season to enable the factories to continue longer and clear the surplus sugarcane.

18. In previous years towards the end of the season the price paid by factories used to go up in some areas well above the minimum price fixed by Government as a result of competition. But this year there was no such tendency on account of excess sugarcane in all the controlled areas and the low price of sugar.

19. The Director of Agriculture will be in better position to answer the question. I am personally not in favour of a bonus and would prefer a premium of say 6 pies per maund for superior variety of cane which the Agricultural Department may be anxious to introduce in the interest of the Industry.

20. The average cost of transport is reported by the Sugarcane Inspector as below:—

Name of district.	Cartage.	Average lead.	Remarks.
	Pies per maund per mile.		
Purnea . .	1½	Not reported .	Average cost of hiring a cart is 3 pies per maund per mile.
North Bhagalpur	1½	Do. .	Ditto.
North Monghyr .	1½	Do. .	Ditto.

Name of district.	Cartage.	Average lead.	Remarks.
	Pies per maund per mile.		
Patna Division .	3	Not reported .	Average cost of hiring a cart is 6 pies per maund within 4 miles and one anna per maund for over 4 miles and within 7 miles.
Darbhanga .	1½	8 miles.	
Saran . .	3 This is an average, which roughly works within a radius of about five miles. The increase in distance, however, is not accompanied by a proportionate increase in the cost of transport. The maximum in no case exceeds two annas even if the distance be be 15 miles or so.	Not reported.	
Champaran .	2	10 miles . .	2 pies per maund per mile on the average.
Muzaffarpur .	6 pies per maund from 1 to 5 miles. 9 pies per maund from 6 to 9 miles. 1 anna per maund from 10 to 12 miles. 1 anna 3 pies per maund from 13 to 15 miles. 1 anna 6 pies to 2 annas per maund from 16 to 20 miles.	12 miles in case of 75 per cent. of cane growers. 13 to 16 miles in case of 20 per cent. and 17 to 20 miles in case of 5 per cent.	

21. They employ their own carts as well as hire carts. The percentage distribution in some districts is reported as below:—

	Own cart.	Hired cart.
	Per cent.	Per cent.
Darbhanga	25	75
Saran	60	40
Champaran	40	60

The rate of cart hire is reported against No. 20 above.

22. Rail and road for transport are adequate but in Purnea, North Bhagalpur and Saran roads are not in good order. Tramway and trolley system are prevalent in Darbhanga, Saran, Champaran and Muzaffarpur. No particular assistance has been rendered for development of feeder roads and tramway system.

23. The Industries Department has had occasion to help the factories in the matter of supply of wagons, and also in obtaining reduction in railway freight. The department also helped in the erection of some open pan factories.

24. No assistance has been rendered or asked for.

25. No remarks.

26. Yes.

27 & 35. I submit below five following statements of prices in reply to Question No. 27 and to the first part of Question No. 35. The figures of prices for the years and the centres other than those mentioned in the statements are not available.

1. *Wholesale Price per maund of two kinds of sugar and Valley gur at Patna.*

—	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
1931.	Rs. A.	Rs. A.	Rs. A.	Rs. A.	Rs. A.	Rs. A.	Rs. A.	Rs. A.	Rs. A.	Rs. A.	Rs. A.	Rs. A.
Dobarah . .	9 4	9 14	10 0	10 0	10 0	10 0	10 0	10 0	10 0	12 0	12 0	12 0
Beet Root . .	9 10	..	9 12	9 12	10 4	9 14	10 2	9 12	10 4	11 0	11 8	11 0
Magahi . .	9 8	9 12	9 4	9 10	10 0	10 0	10 0	10 0	10 0	10 8	11 0	10 8
Valley Gur . .	..	..	..	..	..	..	..	..	..	..	..	..
1932.												
Dobarah . .	12 0	12 0	11 8	10 8	11 0	10 14	10 13	11 0	11 0	11 0	11 0	11 0
Beet Root . .	11 8	11 8	11 12	10 4	10 12	10 8	10 0	10 8	10 8	10 8	10 8	10 8
Magahi . .	10 12	11 0	10 8	10 0	10 9	10 0	9 12	10 0	10 0	10 0	10 0	10 0
Valley Gur . .	..	..	..	..	..	..	..	..	..	..	..	..
1933.												
Dobarah . .	10 12	10 4	9 8	10 0	10 0	10 0	10 0	10 0	10 4	10 0	10 0	10 0
Beet Root . .	10 4	9 12	..	..	..	..	..	..	..	..	..	..
Magahi . .	10 0	10 0	8 8	9 0	9 4	9 0	9 0	9 8	9 4	9 0	9 0	9 0
Valley Gur . .	..	..	..	..	..	..	..	..	..	..	..	..

1934.													
Dobarah . .	10 0	10 0	9 8	10 0	9 8	10 0	9 8	9 8	9 8	9 8	9 8	9 0
Beet Root . .	..	..	..	..	..	..	..	..	..	..	..	..
Magahi . .	9 0	8 8	8 4	8 12	8 8	9 0	8 12	8 8	8 8	9 0	8 12	8 0
Valley Gur . .	..	..	..	..	..	..	..	..	..	..	..	..
1935.												
Dobarah . .	9 4	9 4	9 3	9 2	9 4	9 0	9 0	9 2	10 8	10 12	10 12	9 0
Beet Root . .	..	..	..	..	..	..	..	..	..	..	..	..
Magahi . .	8 8	8 8	8 8	9 0	8 0	8 0	8 0	9 0	9 0	11 0	11 0	8 12
Valley Gur . .	..	3 4	3 12	4 6	4 4	4 4	4 4	5 0	5 8	4 0	4 0	3 8
1936.												
Dobarah . .	9 0	9 0	8 14	8 14	8 8	8 8	8 8	8 8	8 8	8 8	8 0	7 8
Beet Root . .	..	..	..	..	..	..	..	..	..	..	..	..
Magahi . .	8 12	8 12	8 8	8 8	8 4	8 4	8 4	8 4	8 5	8 5	8 5	8 0
Valley Gur . .	3 8	3 8	3 4	3 4	3 0	3 0	3 0	3 0	3 2	..	..	..
1937.												
Dobarah . .	7 4	7 4	7 4	6 14	6 14	..	..	..	..	..	..	..
Beet Root . .	..	..	..	..	..	..	..	..	..	—	..	..
Magahi . .	8 0	7 4	7 2	6 12	6 12	..	..	..	..	..	..	..
Valley Gur . .	..	..	..	..	..	..	..	..	..	..	..	..

2. *Retail prices per seer of gur at 6 centres in Bihar.*

—	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
	As. P.	As. P.	As. P.	As. P.	As. P.	As. P.	As. P.	As. P.	As. P.	As. P.	As. P.	As. P.
1931.												
Patna . . .	1 6	1 3	1 6	1 9	1 9	2 0	2 0	2 3	2 0	2 0	2 0	1 6
Muzaffarpur . .	1 6	1 6	1 6	1 6	1 6	1 6	1 6	1 6	1 6	1 6	1 6	1 0
Monghyr . .	2 0	2 0	2 6	2 6	2 6	2 6	2 6	2 6	2 0	2 0	1 9	1 9
Jamshedpur . .	2 0	2 0	2 0	2 6	2 6	2 0	2 6	2 6	2 6	2 6	2 6	2 6
Jharia . . .	2 6	2 0	2 0	2 0	2 0	2 6	2 0	..	3 0	4 0	3 0	2 0
Ranchi . .	1 9	1 6	2 0	2 0	2 0	2 0	2 0	2 0	2 3	2 0	2 0	1 9
1932.												
Patna . . .	1 3	1 3	1 3	1 3	1 3	1 3	1 3	1 3	1 3	2 0	1 6	1 3
Muzaffarpur . .	1 6	1 6	1 6	1 6	1 6	1 6	1 6	1 6	1 6	1 6	1 6	1 6
Monghyr . .	1 9	1 9	1 9	1 6	1 6	1 6	1 6	1 6	1 6	1 6	1 6	1 6
Jamshedpur . .	2 0	2 0	2 0	2 0	2 0	2 0	2 0	2 0	2 6	2 6	1 9	1 9
Jharia . . .	2 0	2 0	2 0	2 3	2 3	2 3	2 3	2 3	2 0	2 0	2 0	2 0
Ranchi . .	1 6	1 6	1 6	1 6	1 9	1 9	1 9	1 9	1 9	1 9	1 9	1 6
1933.												
Patna . . .	1 3	1 3	1 3	1 3	1 6	1 6	1 6	1 6	1 6	1 6	1 0	1 0

Muzaffarpur . .	1 6	1 3	1 3	1 3	1 3	1 3	1 3	1 9	1 9	1 9	1 9	1 6
Monghyr . .	1 6	1 6	1 6	1 6	1 6	1 6	1 6	1 3	1 3	1 3	1 3	1 3
Jamshedpur . .	1 6	1 9	1 6	1 9	2 0	2 6	2 0	2 0	2 0	2 0	2 0	2 0
Jharia . . .	2 0	1 6	1 3	1 6	1 6	1 6	2 0	1 9	1 6	1 9	1 3	1 6
Ranchi . .	1 6	1 3	1 3	1 3	1 3	1 9	1 9	2 0	2 0	1 9	1 6	1 6
1934.												
Patna . . .	1 3	1 9	1 9	1 9	1 9	2 0	2 0	2 0	2 0	2 0	1 6	1 6
Muzaffarpur . .	1 6	1 6	1 6	1 6	1 6	1 6	1 6	1 6	1 6	1 9	1 9	1 9
Monghyr . .	1 3	1 3	1 3	1 3	1 3	1 3	1 3	1 3	1 3	1 6	1 6	1 6
Jamshedpur . .	2 6	2 0	2 0	2 0	2 0	2 0	2 0	2 6	3 0	2 6	2 0	2 0
Jharia . . .	1 6	1 9	1 9	1 9	1 9	1 9	1 9	2 0	2 0	2 0	2 0	2 0
Ranchi . .	1 3	1 6	1 6	1 6	1 9	1 9	1 9	1 9	2 0	2 0	2 0	2 0
1935.												
Patna . . .	1 9	1 9	1 9	1 9	1 9	1 9	1 9	2 0	2 0	1 9	1 6	1 6
Muzaffarpur . .	1 9	1 9	1 9	1 9	1 9	1 9	1 9	2 0	2 0	2 0	2 0	2 0
Monghyr . .	1 6	1 6	1 6	1 6	1 6	1 3	1 3	1 3	1 3	1 6	1 6	1 3
Jamshedpur . .	2 0	2 0	2 0	2 0	2 0	2 0	2 6	2 6	2 3	3 0	2 0	2 0
Jharia . . .	2 0	2 0	1 9	2 0	2 0	2 0	2 0	2 6	2 6	2 6	2 0	2 0
Ranchi . .	2 0	1 9	1 9	1 9	2 0	2 0	2 3	2 6	2 3	3 0	1 9	1 9

2. *Retail prices per seer of gur at 6 centres in Bihar*—contd.

—	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
	As. P.	As. P.	As. P.	As. P.	As. P.	As. P.	As. P.	As. P.	As. P.	As. P.	As. P.	As. P.
1936.												
Patna . . .	1 6	1 6	1 3	1 9	1 3	1 3	1 3	1 6	1 6	1 6	1 6	1 3
Muzaffarpur . .	2 0	1 9	1 9	1 9	2 0	2 0	1 9	1 9	1 9	1 9	1 3	1 0
Monghyr . .	1 3	1 3	1 3	1 3	1 3	1 3	1 6	1 3	1 3	1 3	1 3	1 3
Jamshedpur . .	2 0	2 0	2 0	2 0	2 0	2 0	2 0	2 0	2 0	2 0	2 0	1 9
Jharia . . .	1 9	1 9	1 9	1 9	1 9	1 9	1 9	2 0	2 0	2 0	2 0	1 9
Ranchi . .	1 6	1 6	1 6	1 9	1 6	1 6	1 6	1 6	1 6	1 6	1 3	1 3
1937.												
Patna . . .	1 3	1 3	1 0	1 0	..	..	..	..	..	..	..	..
Muraffarpur . .	1 6	1 6	1 3	1 3	..	..	..	..	..	..	..	..
Monghyr . .	1 3	1 3	1 3	1 3	..	..	..	..	..	..	..	..
Jamshedpur . .	1 9	1 9	1 6	1 9	..	..	..	..	..	..	..	..
Jharia . . .	1 9	1 6	1 6	1 6	..	..	..	..	..	..	..	..
Ranchi . .	1 0	1 0	1 0	1 0	..	..	..	..	—	..	..	..

3. *Retail Prices per seer of Country Sugar month by month since January, 1935, at Jamshedpur.*

Month.	1935.	1936.	1937.
	As. P.	As. P.	As. P.
A.—*Country White*—			
January	4 6	4 0	4 0
February	4 6	4 0	4 0
March	4 6	4 0	3 6
April	4 6	4 0	3 3
May	4 6	4 0	3 3
June	4 6	4 0	3 3
July	4 6	4 0	...
August	4 3	3 9	...
September	4 3	3 9	...
October	4 3	3 9	...
November	4 3	3 9	...
December	4 3	3 9	...
B.—*Country Red*—			
January	4 3	3 9	3 6
February	4 3	3 9	3 3
March	4 3	3 9	3 3
April	4 3	3 9	3 0
May	4 3	3 9	3 0
June	4 6	3 9	3 0
July	4 6	3 9	...
August	4 0	3 6	...
September	4 0	3 6	...
October	4 0	3 6	...
November	4 0	3 6	...
December	4 0	3 6	...

4. *Statement of Retail Prices per seer of Sugar of different qualities at Muzaffarpur town.*

Month.	1934.		1935.		1936.	
	Crystal.	Crushed.	Crystal.	Crushed.	Crystal.	Crushed.
	As. P.	As. P.	As. P.	As. P.	As. P.	As. P.
January	3 6	3 3	3 6	3 3	3 6	3 6
February	3 6	3 3	3 6	3 3	3 6	3 6
March	4 0	3 6	3 0	3 3	3 6	3 6
April	4 0	3 0	3 6	3 6	3 6	3 6
May	4 0	3 6	4 0	4 0	3 6	3 6
June	4 0	4 0	4 0	4 0	3 6	3 6
July	4 0	4 0	4 0	4 0	3 6	3 6
August	4 0	4 0	4 0	4 0	3 3	3 3
September	4 0	4 0	4 0	4 0	3 3	3 3
October	4 0	4 0	4 0	4 0	3 3	3 3
November	4 0	4 0	4 6	4 0	3 0	3 0
December	4 0	3 3	4 0	3 6	3 0	3 0

5. *Retail Price List of Sugar per seer of Jharia Market for 1934-35-36-37.*

—	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
1934.	As. P.	As. P.	As. P.	As. P.	As. P.	As. P.	As. P.	As. P.	As. P.	As. P.	As. P.	As. P.
Indian Made Sugar	4 0	..	..	..	..	4 0	4 0	4 0	4 0	4 0	4 0	4 0
Imported sugar (Java).	..	..	..	..	..	5 0	5 0	5 0	5 0	5 0	5 0	5 0
1935.												
Indian Made Sugar	4 0	4 0	4 0	4 0	4 0	4 0	4 0	4 0	4 0	4 6	4 3	4 0
Imported sugar (Java).	5 0	5 0	5 0	5 0	5 0	5 0	5 0	5 0	5 0	5 0	5 0	5 0
1936.												
Indian Made Sugar	4 0	4 0	4 0	4 0	3 9	3 9	4 0	4 0	4 0	3 6	3 6	3 6
Imported sugar (Java).	5 0	5 0	5 0	5 0	4 9	4 9	4 9	4 9	4 9	4 9	4 9	4 6
1937.												
Indian Made Sugar	3 6	3 0	3 0	3 0	3 0	..	..	..	..	..	..	..
Imported sugar (Java).	4 6	4 6	4 6	4 6	4 6	..	..	..	..	..	..	..

The Director of Agriculture, who deals with cane cultivation and the manufacture of gur, will be better able to answer the second part of Question No. 35.

29. The following estimate is in respect of Bihar and Orissa and is compiled from the Inland (Rail and River-borne) Trade of India and Frontier's Trade Statistics:—

	Maunds.
1933-34	234,000
1934-35	1,653,000
1935-36	3,138,000

30. (1) Messrs. C. & E. Morton (India), Ltd., Marhowrah, Saran—
Sugar, Glucose, Condensed milk, Vegetable fat, Strapping (steel), Seals (steel), Gum Tragacanth, Essences, Salt, Wax wrapping paper (printed and plain), Component parts for tins, Soldering fluid, Packing case timber, Nails, Starch, Gelatine, Gum, Arabic, Corn flour, Colours (powder), Tartaric acid, Tin plates, and Solder.

(2) Messrs. Patna Confectionery Works, Patna City—
Sugar of best quality, Glucose, Tartaric acid, Cream of tarter, Starch, Gelatine, Edible essences and colours, and Gum and flour, etc., etc.

(3) The Poor Boys' Industrial School, Patna City—
Sugar and Glucose.

32. There are apparent possibilities but this requires further investigation.

37-38. Gur, rab, molasses, jaggery, etc.—

Year.	Import.	Exports.
	Mds.	Mds.
1933-34	138,477	2,058,223
1934-35	186,325	2,157,376
1935-36	674,872	1,666,397

Exported to Assam, Bengal including Calcutta, United Provinces, Punjab, Central Provinces and Berar.

Imported from Bengal including Calcutta, United Provinces and Madras.

39. We have not got complete data to draw any conclusions.

40. No information.

42. (i) There are 7 open pan factories including one managed by a Co-operative Society.

(ii) No information is available.

43. I have no materials to furnish this information, except that given by Mr. R. C. Srivastava, Sugar Technologist, at page 63 of his book "The Open Pan System of White-Sugar Manufacture", an extract from which is placed below. This is based on the report of the last Tariff Board. Allowing for the lower price of molasses, the cost of production comes to about Rs. 3 besides the price of sugarcane. The Agricultural Engineer might be able to supply more correct information.

TABLE XXVII.—*Cost of production per maund of sugar in an average Indian factory.*

	Rs.	A.	P.
1. Cane at As. 6 per maund	4	2	7
2. Other raw materials (including sulphur, filter cloth, etc.)	0	2	0
3. Labour	0	8	0
4. Power and fuel	0	1	3
5. Supervision, office charges, etc. (including pay and travelling allowance of European and Indian Supervising and Technical staffs, head office expenses, clerical establishment, Directors' and Auditors' fees, etc.)	0	11	3
6. Current repairs	0	7	0
7. Packing	0	2	9
8. Depreciation	0	8	0
9. Miscellaneous (including Managing Agents' commission at 7½ per cent. on profit)	0	10	0
Total	7	4	10
Deduct for molasses at Rs. 1-8 per maund at 4 per cent. on cane	0	10	8
Net cost per maund of sugar	6	10	2

NOTES.

(i) This statement is based on figures given in Chapter V of the Report of the Indian Tariff Board on the Sugar Industry.

(ii) The price of cane usually paid by the factories is about As. 8 per maund (including delivery charges) but as a price of As. 6 has been allowed for cane at Bilari, the above statement has also been based on this price.

(iii) The above figures are for a factory crushing 1,300,000 maunds of cane per season and yielding 9 per cent. sugar and 4 per cent. molasses.

(iv) Interest on working capital has usually to be paid by factories but it has not been allowed in the above statement as no provision for this has been made in the costs at Bilari.

(v) Item No. 5 (supervision and office charges) includes salaries of Manager and other expert staff. Nothing has been provided in Bilari costs for these. An allowance of As. 4 to 6 per maund will be necessary for this difference.

44. The records in my office show that there were 29 open pan factories in Bihar, of which 15 were working in 1934-35 and only 7 in 1936-37. These figures give an idea of the extent to which competition from vacuum pan factories has resulted in the closing down of open pan factories.

47. (*a*) Cane-growers are getting proportionately less price for sugarcane.

(*b*) The manufacturer is left with a less margin of profit.

(*c*) No remark.

(*d*) The burden of the excise duty naturally falls on the consumers in the shape of increased price of sugar, but in this case as a result of competition a portion of the duty is borne by the factory and the grower.

48. The effect of excise duty is explained above. The protective duty has raised the price of sugar, although the competition among Indian mills has helped to reduce this burden.

49. There is no such big industry in Bihar.

REPLIES BY THE DIRECTOR OF AGRICULTURE, BIHAR, TO THE QUESTIONNAIRE OF THE TARIFF BOARD FOR LOCAL GOVERNMENTS.

1. The acreage under sugarcane in the province varied but slightly prior to the protection local causes, mainly the nature and distribution of rainfall, being responsible for this slight variation. Post protection period has, however, recorded a very big increase in acreage under cane in the province.

Table below shows acreage under sugarcane during the last seven years:—

Years.	Acreage.	Years.	Acreage.
1930-31	267,800	1934-35	426,500
1931-32	265,200	1935-36	447,200
1932-33	284,700		
1933-34	401,000	1936-37	500,000

Co. 213, Co. 210 and Co. 214 were the three varieties that established themselves in the tract north of the river, the former two as main season varieties and the latter as an early variety. The area under Co. 210 and Co. 213 fluctuated considerably from year to year. Co. 210 grows better under conditions of light rainfall and light type of soil while Co. 213 grows best with high soil moisture content on comparatively heavier soils. In areas south of the river Co. 213 has been the predominant and exclusive variety.

More recently three more varieties, namely, Co. 299, Co. 313 and Co. 331 have been distributed in North Bihar.

The first lot of new improved varieties were given out to the growers on any large scale by the department in 1925 in North Bihar and in 1927-28 in South Bihar and acreage under the improved varieties has progressively increased year after year.

Table below shows percentage acreage under improved varieties of sugarcane:—

Year.	Percentage on total area under cane.	Year.	Percentage on total area under cane.
1930-31	49·3	1934-35	89·0
1931-32	73·4	1935-36	96·1
1932-33	80·8		
1933-34	84·9	1936-37	97·2

It is not possible to give acreage under individual varieties. The varieties distributed recently are fast getting into the agricultural system of the tract. The extension of Co. 331 has been held up as indications are that it may not be a universal late cane for the whole of North Bihar tract.

2. The areas can be broadly classified under three main divisions, namely—

(i) Those north of the Ganges—here the predominant soil type is light alluvium, in places under-laid with sand, its capacity to retain moisture is high and the movement of water in the soil is sufficiently quick to keep pace with the moisture losses that result from surface evaporation and through plants. The soils are generally alkaline in reaction and tend to be "Usar"

in some places, sugarcane in the tract is grown without irrigation except a very insignificant area in the Tribeni canal section and in the diaras. The cane crop therefore, is entirely dependant upon rainfall. The varieties to be successful under these conditions must necessarily possess wide powers of adaptation. The methods of cultivation within the tract do not vary much although a considerable variation exists between the soil-moisture relations and its consequent effect on cane growth and juice quality.

(ii) Those south of the Ganges—here the predominant type is heavy clay. When irrigated these soils keep loose and plastic but the permeability and rate of movement of soil moisture is much slower than in soils north of the Ganges. In this area cane is grown under irrigation except a little in the Ganges diara and given adequate cultivation and manuring high yields can be obtained. The amount of rainfall is slightly less than that in North Bihar. Here also significant variation in the juice quality in different section exists.

(iii) Comparatively hilly and plateau sections. Here flat lands are scarce, soil type is red clay often mixed with stone and is acid in reaction. Rainfall is usually early and more in quantity but the cane can only be grown with irrigation because of the low retentivity of soils. From the sugar industry point of view this section is not as important as the first two.

The manurial survey has brought out different manurial requirements of cane in different sections and detailed study of weather—soil—cane quality relations is revealing very interesting features.

The entire area in North Bihar may be taken as unirrigated and that in South Bihar as irrigated.

Table showing the irrigated and un-irrigated acreage under cane in Bihar in 1935-36:—

	Acres.
Irrigated	158,635
Un-irrigated	288,565

This means that 35 per cent. of the total area is under irrigation and 65 per cent. is un-irrigated.

3. The annual canal rates vary between Rs. 8 in the case of Dheka and Teur canals to Rs. 12 in the case of Sone canals where irrigation is stabilized. In the case of Tribeni canal in Champaran the rate charged is Rs. 5 but it is understood that this rate has been pitched at a specially low level in order to encourage hot weather irrigation of sugarcane.

According to a very conservative calculation the rates in the case of Sone canals do not in any way compare unfavourably with the expenditure that a cultivator has to incur irrigating sugarcane from wells. A cultivator rarely gets more than 5 irrigations in the season from the canal. On the same basis the cost to him of irrigating an acre of cane from a surface percolation well where rahat pump is used for lifting water would amount to Rs. 11-11-6. This figure is based on a rate of As. 4-3 per day per pair of bullocks, As. 4 per day per adult labourer to attend to the distribution of water and As. 3 per day per labourer to drive the bullocks. It may be noted that proposals have recently been put forward to introduce irrigation from tube-wells driven by electricity on the lines of the Grid system in the Western United Provinces. It has now been definitely ascertained that energy in bulk can be had at the generating station at 6 pies per unit.

On this basis the cost per acre of irrigating sugarcane allowing for five irrigation up to mid-June would be Rs. 12-3. This figure allows for a small margin of profit on the capital invested which would enable future developments and the figure compares very favourably with the existing canal rates.

On what basis the canal authorities have fixed the existing rates is not possible for me to state but presumably these rates are based on the yield of cane per acre and the prevalent gur prices. It cannot however be said that in the case of sugarcane at least these rates are excessive. If the cultivator was to grow his crop reasonably well he would be able to get not less than 33 per cent. more yield per acre with the same amount of water which he is using at present.

The canal rates have not varied during the last seven years.

The institution of an economic enquiry into the cost of cultivation of sugarcane in both North and South Bihar has afforded the following figures (Table I) over a large number of holding under study for the last 3 years:—

TABLE I.—*Showing cost of cultivation of sugarcane in North (Saran district) and South Bihar (Patna district).*

1. NORTH BIHAR.

Crop.	Year.	Cost of cultivation per acre.	Cost of cane per maund.
		Rs. A. P.	As. P.
Plant crop .	1934-35 . . .	65 1 0	3 2·9
	1935-36 . . .	64 9 7	3 1·4
	1936-37 . . .	61 0 0	3 8

Some holdings show an abnormally high cost per maund of cane owing to the destruction of crop through various causes like floods, pests and diseases and consequently abnormally low yields of cane.

Crop.	Year.	Cost of cultivation per acre.	Cost per maund of cane.
		Rs. A. P.	As. P.
Ratoon . .	1934-35 . . .	43 10 2	2 10
	1935-36 . . .	22 11 6	1 11
	1936-37 . . .	18 14 0	2 0

2. SOUTH BIHAR.

Year.	Cost of cultivation per acre.	Cost per maund of cane.
	Rs. A. P.	As. P.
1933-34	59 1 0	2 11
1934-35	76 12 4	3 3·3
1935-36	64 13 6	2 11

Quite reliable figures have obtained (Table II) over a period of seven years on a large sugarcane farm of 300 acres run by the Department of Agriculture on commercial lines. The cost of cultivation has varied from As. 1-10 per maund to As. 3¾ per maund and the average over seven years works out at As. 2-5·5 per maund.

During the last two years two more similar farms aggregating in area to about 1,000 acres have been taken up and are being run on similar lines. During these two years of work the cost of cultivation of sugarcane (Table III) has averaged As. 2-6·5 per maund.

TABLE II.—*Showing cost of cultivation of sugarcane at the Byreah Farm.*

Serial No.	Years.	Total acreage.	Details of expenditure.						Cost of production per maund.	Cost per acre.	Outturn per acre in maunds.
			Cost of manure.	Cost of cultivation and seed.	Rent for 2 years.	Management charges, *i.e.*, pay of staff.	Total cost.	Total maundage.			
			Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.		As. p.	Rs.	Rs.
1	1930-31	81·67	240 5 9	3,907 14 6	612 2 3	1,143 6 0	5,803 13 0	43,936 25	2 0	67	536
2	1931-32	85·75	672 13 0	3,702 12 0	643 2 0	1,372 0 0	6,390 11 0	37,941 23	2 8	74	441
3	1932-33	87·93	1,118 8 0	3,235 5 9	659 7 0	1,406 14 0	6,420 2 9	54,879 10	1 10	71	623
4	1933-34	85·94	1,137 11 3	2,980 5 9	647 2 9	1,380 10 3	6,145 14 0	52,592 8	1 10	70	611
5	1934-35	85·75	1,100 4 9	4,353 1 0	643 1 0	1,757 14 0	7,854 4 0	40,841 38½	3 ¾	91	475*
6	1935-36	85·91	1,239 14 3	5,009 6 9	644 5 6	2,147 12 0	9,041 6 6	49,978 25	2 11	106	581
7	1936-37	80·31	1,375 8 3	4,238 9 9	602 5 0	1,646 5 6	7,862 12 6	44,475 39½	2 10	98	554
	Total .	593·26	6,885 1 3	27,427 7 6	4,451 9 6	10,854 13 9	49,519 0 6	324,646 9	Re. 1-1-1¾	577	3,821
	Average .	84·75	983 9 4	3,918 3 4	635 15 0	1,550 11 0	7,074 2 4	46,378 1	2 1	82-7	545

* Owing to earthquake the yield was low.

TABLE III.—*Showing cost of cultivation of sugarcane at the Lalsariya and the Madhopur Farms.*

Name of the farm.	Years.	Total acreage.	Details of expenditure.					Total maundage.	Cost of production per maund.	Cost per acre.	Outturn per acre in maunds.
			Cost of manure.	Cost of cultivation and seeds.	Rent for two years.	Management charges. i.e., pay of staff.	Total cost.				
			Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.		As. p.	Rs.	Rs.
Lalsariah	1935-36	246·40	2,828 4 3	12,252 7 0	1,848 0 0	3,943 3 0	20,871 14 3	131,472 0	2 6	83	534
	1936-37	209·40	4,000 0 0	12,593 1 0	1,570 8 3	3,483 14 9	*21,647 8 0	107,590 0	3 0	96	514
Madhopur	1935-36	72	865 0 0	2,843 0 6	540 0 0	1,152 0 0	5,400 0 6	40,807 0	2 1½	76	566
	1936-37	113	1,500 0 0	5,120 5 9	847 8 0	1,808 0 0	*9,275 13 9	58,154 30	2 6	80	514

*The high cost is due to the spreading of sand in the plots after the Earthquake.

From the tables above it will be noted that in addition to the usual cultivation charges, overhead expenses including supervision charges as well as rent of the land have been taken into consideration. When cost of cultivation per acre from these farms is compared with the cost per acre incurred by the cultivator it becomes apparent that with very slight extra expenditure of Rs. 15 to Rs. 20 per acre the cultivator, under North Bihar conditions at least where major portion of the industry is concentrated, can increase his yields by almost 100 per cent. which means a net extra profit per acre of Rs. 50 to Rs. 60. How this extra cost necessary to increase this yield can be placed within the reach of the cultivator is dealt with in reply to a subsequent question.

The cost of cultivation of cane is more or less inversely proportional to the yield per acre. When large areas under indigenous canes used to be grown the yield per acre from these varieties was in the neighbourhood of 150-175 maunds per acre. The cultivator used to incur no less cost in those days than he is doing now when the average yields from improved varieties have risen to 250-270 maunds per acre. The cost per maund therefore was higher by about 50 per cent. in the former case. It is however not possible to give exact figures which will indicate the variation in the cost during the last seven years as no reliable data is available from which any conclusion can be drawn. A scrutiny of the cost figures from the Byreah Farm will show that the cost of cultivation varies not only with the higher yielding varieties but also with the weather conditions and other factors such as the efficiency of cultivation, the timely planting of cane and the uniformity and timely application of manure. In the years 1932-34 the cost of cultivation was down to As. 1-10 per maund whereas in the year 1934-35 the cost of cultivation jumped up to As. 3¾ due to lower yields brought about by earthquake sands and consequent flooding of cane plots as also by less intensive cultivation during the year. In subsequent years the cost has fallen again becomes of the more efficient attention to the details of cultivation operations.

Average acre yield from cultivators fields as ascertained during the economic enquiry ranges between 250-270 standard maunds per acre in the North Bihar and 350-400 maunds per acre in the case of South Bihar.

Similar soils when properly cultivated and adequately manured are capable of yielding 550 maunds per acre in North Bihar and 650-700 maunds in South Bihar. The sucrose content of juice of the varieties now in cultivation varies from year to year. The average for North Bihar in the case of Co. 213 which is now the predominant variety may be taken as 14·8 for the season, the corresponding figure for South Bihar is 15·7. If details of variation are required these will be submitted during oral evidence.

5. Taking into consideration the present yield per acre and the cost that is incurred to obtain that yield by the cultivator I consider that As. 4-6 per maund net on the field would be a fair price to the grower. It must be noted that the fair price for cane is entirely different from the minimum price. Unfortunately, however, since the introduction of the minimum price regulation the minimum price has become the maximum price. If and when the cultivator begins to grow his crop properly and obtains the yields which have been demonstrated to be practical thereby reducing his cost per maund to the average figure as attained at the Byreah Farm, the fair price for the crop would in my opinion be As. 4 a maund net on the field. Certain vocal sections of the growers allege that the minimum price for cane should be As. 8 a maund. No evidence, however, has ever been put forward to show the basis for this demand whereas the fairly accurate data collected by the department during three seasons of the working of the economic enquiry into the costs of cultivation of sugarcane definitely supports my contention. The figure of As. 4-6 a maund applies to main mid-season varieties which are ready for crushing from mid-January to end of March. A suitable premium, in my opinion

ought to be paid for both early and late varieties or for cane which the cultivators is obliged to keep standing in the field for later crushing. In one case it is almost impossible for an early variety to yield the same tonnage per acre as a mid-season variety. Whereas in the other case a late variety or a mid-season variety which has to be kept in the field for a longer time handicaps the cultivator in keeping his land occupied for a much longer time resulting in loss in weight.

6. (*a*) Up to the year 1932 the cane area statistics as supplied by the District Officers were accepted as correct although the department from its observation know that the area was much more than what was being reported. In 1933 an effort was made to check up the figures supplied by the District Officers by a 5 per cent. random sampling check by the limited staff of the department that was then available.

The survey was undertaken in view of the sudden expansion of the industry which necessitated having figures which were nearer the actuality than those being reported by the District Officers. The check survey showed that the actual area under crop was not less than 75 per cent. in excess of the figures reported by the District Officers. From that year onwards there has been every year a steady though comparatively small increase in area under the crop. In 1936-37 the areas showed a considerable jump again particularly in parts of the Districts of Champaran, North Bhagalpur, Purnea and Gaya (Table I).

TABLE I.—*Showing area under sugarcane in different districts.*

	1930-31.		1931-32.	1932-33.	1933-34.	1934-35.	1935-36.	1936-37.*
	Normal.	Actual.						
Patna	16,100	16,600	16,700	15,700	21,800	18,500	19,500	18,000
Gaya	32,400	32,700	32,900	38,100	37,000	44,300	48,300	52,000
Shahabad	42,900	38,000	38,000	38,300	35,900	39,800	45,100	46,500
Patna Dn.	..	87,300	87,600	92,100	94,700	102,600	112,900	116,500
Saran	59,500	59,400	59,400	59,400	64,700	62,600	67,800	67,700
Champaran	21,100	21,100	21,100	33,000	63,000	83,800	86,700	91,900
Muzaffarpur	22,000	24,800	22,100	23,400	49,400	52,000	50,000	50,000
Darbhanga	21,100	19,000	19,400	22,200	67,400	65,000	57,100	57,100
Tirhut Dn.	..	124,300	122,000	138,000	244,500	263,400	261,600	266,700
Monghyr	..	8,000	7,900	7,900	7,900	7,900	17,800	17,200
Bhagalpur	..	12,700	12,900	13,200	15,700	14,300	12,500	14,000
Purnea	..	10,000	9,500	8,600	13,100	15,700	19,300	23,000
Santal Parganas	..	6,500	6,500	6,300	5,800	3,400	3,400	3,400
Bhagalpur Dn.	..	37,200	36,800	36,000	42,500	41,300	53,000	57,600
Hazaribagh	..	10,000	10,000	10,000	10,000	10,000	10,000	10,000
Ranchi	..	200	200	200	200	200	400	400
Palamau	..	4,900	4,900	4,900	5,400	5,400	5,400	5,400
Manbhum	..	3,600	3,400	3,300	3,500	3,400	3,500	3,500
Singhbhum	..	300	300	200	200	200	400	400
Chota Nagpur Dn.	..	19,000	18,800	18,600	19,300	19,200	19,700	19,700

* The total area under cane during 1936-37 is estimated or reaching 500,000 acres. The area in Champaran and Darbhanga appears under estimates.

(b) The main cause of the variation in the acreage under cane is the increased demand on the part of the Mills and the ready cash that the crop brings in. During the years 1932-35 every other agricultural commodity was the victim of a depressed market. Cane was the only crop which has a ready cash sale and the proceeds from the crop enabled the cultivator to meet his cash liabilities. The variation therefore may be attributed in so far as North Bihar is concerned to low prices obtainable for alternative cash crops and to the increased demand on the part of the mills.

The sudden increase in area in 1936-37 was due to a large extent to the irresponsible propaganda carried out by the middlemen of the factories who are the main suppliers of cane to the mills. I do not think that prices obtainable for sugar or for gur have had any effect whatsoever on increasing the area under the crop. In fact the gur prices have ruled at a comparatively lower level during the last five years against those that used to be obtained before 1930-31. Climate has had a certain amount of effect not so much on the area under cane as on the yield of cane. The year 1936-37 was one of the most favourable years climatically for the growth of the crop, the resulting harvest has therefore been a bumper one. This coupled with an increase of 30-35 per cent. in the area over the 1935-36 crop has naturally resulted in large surpluses. There are other reasons for this surplus of cane and these will be dealt with elsewhere. The increase in the area under cane during the last five years also indicates that the minimum price of cane although it may not be a fair price is attractive enough for the grower to induce him to put larger area under this crop than any other crop. This of course does not apply to what has happened in the season 1936-37 and the repurcussions that the surplus cane and reduced minimum prices have had on the planting during the current year. This is a further argument against those who have agitated during the last five years for a very much higher price for cane the basis of which is at least not known to me.

7. That there was overproduction in the year 1936-37 is an established fact. This surplus was throughout the province and particularly throughout the North Bihar and in the districts of Gaya and Bhagalpur in South Bihar. The result of this overproduction has been a large surplus of cane and although the mills continued to crush far beyond the normal date of closure, there are still large quantities of cane left standing particularly in South Muzaffarpur, South Darbhanga, North Bhagalpur, North Monghyr and in parts of Purnea districts. Some of the reasons for this overproduction and surplus have already been stated in reply to Question No. 6.

The other important reasons are:—

(i) The mills started a fortnight later than usual.

(ii) The prevailing gur prices were very much lower than in the previous years and the cultivator did not wish to convert his cane to gur as it was definitely an uneconomic proposition. The resultant overproduction of cane and consequent lower prices to get rid of cane crop have led to (i) reduced plantings and (ii) smaller areas under ratoons. I estimate that this reduction is of the nature of 30-35 per cent. This means that during the crushing season 1937-38, the cane supplies to the factories in North Bihar would be just about sufficient if not actually short. Towards the end of the season there is likely to be a severe competition amongst the mills to secure the crop accompanied by higher prices and it will be humanly impossible for the grower to resist the temptation of increasing his plantings or keeping a larger area under ratoons. If this happens the year following will place the cultivator in more or less the same difficult position as he has experienced during 1936-37. A victims' circle will thus have come into operation and unless steps are taken—and taken immediately—to regulate

the area under sugarcane consistent with the normal requirements of the factories the position will result in chaos. I have submitted to my Government a proposal for ratoonalization of cane cultivation by introducing a system of "Controlled zones". This proposal was also placed before the sugar committee at its last meeting on 3rd May, 1937, and has met with the general approval of that committee. In so far as the Provincial Government are concerned, the proposal I understand, is still under consideration. I am definitely of the opinion that unless some method of controlling cane areas intended for supply to mills is introduced, the unchecked cultivation of sugarcane in the province will result in very great hardship to the grower and the position will be something similar to what is obtainable in Bengal in the case of jute crop.

The Department of Agriculture has definitely proved that the per acre yield of cane in Bihar can be increased by at least 50 per cent. with very little extra cost. If therefore, 60 per cent. of the normal requirements of a factory are brought under controlled zones, we can reasonably hope to have these zones not only properly developed within the course of the next 5 years so as to yield the full requirements of the factory but we will also ensure the disappearance of the element of uncertainty under which the cultivator lives at present. The areas outside the controlled zones would then ultimately become gur areas provided the manufacture of gur remains an economic proposition. Otherwise the cultivators in those areas would turn their energies to growing other cash crops the prices of which are beginning to allow an upward trend.

8. The cash crops that can replace sugarcane are:—

(i) Wheat.
(ii) Tobacco.
(iii) Chillies.
(iv) Turmeric to a certain extent.

There are of course other alternative crops but they cannot be called cash crops, as for example, paddy in South Bihar, maize and rahar over large parts of North Bihar.

The conditions in Purnea District are different to elsewhere in the Province. There jute during the monsoon and mustard and rape during the cold weather are alternative cash crops. In very limited tracts in South Bihar particularly in parts of Shahabad, Patna, Gaya and Bhagalpur districts, potatoes are also an alternative cash crop. The return to the cultivator from these cash crops depends upon the market and the prevailing prices. During the year 1931-32 to 1935-36 all these crops were under the dark cloud of depression and such crops as Tobacco, Chillies and turmeric were showing signs of going out of cultivation in certain areas and they were being replaced by sugarcane. From last year the prices have shown an upward trend and it would not now be difficult for the cultivator and provided the prices keep up, to put such area as is released from cane under these crops. No other data except that which has been collected during the course of the economic enquiry into the costs of cultivation of sugarcane is available which can give any reliable indications of the returns per acre from those various cash crops to an average cultivator. The economic enquiry figures show the following net returns:—

Serial No.	Crop.	Yield per acre	Price per maund.	Cost of cultivation per acre.	Net profit per acre.
		Mds. Srs.	Rs. A.	Rs. A.	Rs. A.
1.	Wheat . .	10 0	3 12	23 8	14 0
2.	Tobacco .	10 5	8 0	55 0	29 0
3.	Chillies .	8 5	7 8	50 0	13 12
4.	Jute . .	15 0	4 8	...	...
5.	Mustard .	7 0	5 0	19 8	15 8

9. The expenditure on the extension and improvement of sugarcane cultivation is incurred under four heads, namely:—

I. *Research and Experiments conducted at the Departmental Farms in the Province.*—This expenditure has varied from Rs. 8,000 per annum to Rs. 12,000 per annum in different years from 1932 to 1936.

II. *Research Scheme on Sugarcane financed by the Imperial Council of Agricultural Research.*—The total grant of Rs. 21,05,847-12 (Recurring Rs. 1,11,888 *plus* Non-recurring Rs. 93,959-12) has been spread over five year period ranging from 1932 to 1937. A further contribution of Rs. 84,446 has been received for extension of the scheme for a further period of three years.

III. Recently the Bihar Government have incurred a capital expenditure of about Rs. 2,32,000 to acquire Pusa to devote it mainly for purposes of Sugarcane Research. The recurring expenditure on this mainly Sugarcane Farm is sanctioned at Rs. 40,000 a year. One of the chief aims of acquiring this area was to have a large enough estate in the heart of the white sugar belt of North Bihar to select and multiply on a large scale the improved varieties of sugarcane and work out improved methods of cane cultivation.

IV. The grant from the Excise Duty allotted to the Agricultural Department has been Rs. 46,967 in 1935-36 and Rs. 97,454 in 1936-37.

From the figures noted above it is evident that although sugarcane is the most important money crop of the province, the expenditure incurred by the local Government apart from the Capital Cost on account of the acquisition of Pusa is incommensurate with the importance of the crop.

Sugarcane crop is one of the most if not the most important feature of the agricultural economy in the province. Research and experiments on the crop as also demonstration and propaganda directed towards the improvement of the cultivators' crop must continue to form one of the most prominent activities of the Department of Agriculture. There is no finality to research and experiments and also to propaganda and demonstration; and to ensure continuity of both these it is essential that the Local Government should grant increased funds on permanent basis.

10. The total amount received by the Provincial Government from the Excise fund is Rs. 2,19,047. Of this sum the Department of Agriculture got Rs. 80,000 in 1935-36 and Rs. 1,00,004 in 1936-37. Recently proposals have been submitted to increase expenditure on this account by Rs. 70,000 per year which will enable the Department not only to slightly intensify its propaganda work in the villages but will also provide with the bare minimum staff for a survey of sugarcane pests and diseases—a subject of vital importance to the industry but which due to lack of funds has not been undertaken so far.

It is understood that these proposals with the exception of those dealing with the disease part have been sanctioned by the Government of India. It is further understood that the question of the employment of Mycological staff proposed by this Department will be referred to the Sugar Committee of the Imperial Council of Agricultural Research for their opinion and if that Committee approves of the proposal, funds will be allotted. It is hardly necessary to stress the very great necessity of carrying out intensive study on the insects and diseases of the crop. Dr. Halder of Messrs. Begg Sutherland & Co. has after a very careful survey reached far-reaching conclusions in this connection. He estimates that the loss to the industry from pests in Bihar alone amounts to about Rs. 80 lakhs per season.

The Department's observations lead me to believe that Fungus diseases are on the increase particularly top rot, amut and red stripe. To an extent these diseases are affecting the crop must be investigated immediately and such steps as are practicable must be taken to prevent the spread if not the entire elimination of the diseases. The seriousness of both the pest and disease situation cannot be stressed too strongly and

a very strong and adequate staff and funds are essential if the Department is to render the service which the industry rightly expects and demands. Repeated requests for these have not met with any response from the Provincial Government on financial grounds. A modest request from the Government of India Sugar Excise fund has only partly been sanctioned and the department therefore cannot be held responsible if it is unable to render the service expected of it.

It is true that the Local Government derive practically no direct benefit from the protection afforded to the Sugar Industry and it is therefore only right that a part of the Sugar Excise should be utilised towards affording the minimum necessary facilities to the Department of Agriculture to deal with the serious problem of pests and diseases until such time that the finance of the Provincial Government will enable the Department to have a permanent staff.

In addition to the grant from the Sugar Excise fund the Provincial Government have received a grant of about Rs. 30,000 on an average per year during the last five years for purely research work on sugar.

The funds have been allotted by the Imperial Council of Agricultural Research. I have already pointed out in reply to Question 9 the amount which is being spent by the Provincial Government on experimental work on sugarcane. The grant from the Sugar Excise has uptil now been entirely utilised on demonstration and propaganda work for the improvement of sugarcane cultivation. A staff of 3 Assistant Directors of Agriculture, 33 Overseers and 99 Kamdars have been engaged. Each Overseer with a party of three Kamdars has been provided with one peripatetic demonstration set consisting of a cart, a pair of bullocks and a set of nproved implements for the cultivation of sugarcane. In addition a sum of Rs. 430 is allotted for each of these parties for the distribution of healthy seed of recommended cane varieties as also for the distribution and demonstration of the necessary recommended manures. On an average each kamdar is expected to carry out at least 20 demonstrations on the cultivation and manuring of sugarcane and at least 10 demonstrations on the manufacture of compost manure from vegetable wastage. During the year 1936-37 total number of such demonstrations on sugarcane alone was 3,610. In other seasons the staff is utilised in demonstrating other recommendations of the Department, which are so closely inter-related to the cultivation of cane. There are 450,000 acres under cane mainly in Bihar where there are 44,235 villages, over which this area is distributed. It is therefore obvious that the staff is totally inadequate and therefore incapable of reaching any large body of growers within a limited period. The grant received from the Imperial Council of Agricultural Research is utilised entirely on sugarcane work. The programme of this research is approved periodically by that Council. The work used to be carried out at Musheri and is now carried out at Pusa with a substation at Patna.

Both staff and funds at present allotted to the Department of Agriculture for work on sugarcane whether experimental or demonstrations are totally inadequate. For Research work we want at least an additional amount similar to what we have got at present in order to enable us to have a number of more subsidiary experimental and testing stations. It is only then that it will be possible to evaluate new types and new methods within a comparatively short time to make them available to the industry in as short a period as possible. As it is, it takes 6-8 years to make available a variety on a method to the industry. The results obtained at the main station and the sub-station can only be generalised when they have been confirmed under a larger environment than the limited one obtained at the main testing station. This requires subsidiary work of testing which involves a period of another three years. This is necessary because there are no suitably located subsidiary testing stations at which field trial can be started simultaneously with the main station. If and when these are provided it would be possible to start simultaneous experiments at all these stations including the main stations from the second

year onward and it would therefore be possible to give out results in four years instead of seven years.

For purposes of demonstration and propaganda and for quick dissemination of new cane varieties as also for the renewal of seed from vigorous and disease free stock it is essential that there should be at least one seed nursery for each mill area. These nurseries in addition to supplying the requirement noted above will perform the duties of subsidiary testing stations and will act as centres of demonstrations and propaganda from which new methods will flew out year after year. In order therefore to fulfill all these functions adequately the area of such nurseries should be such as to ensure at least 33 acres of seed cane every year which at the rate of 500 maunds to the acre would enable the station to supply seed to about 300 acres every year within their zone of operation. A factory in Bihar requires on an average 25-30 lakhs maunds of cane per year. This supply it draws from some 10,000 acres. If zoned and properly developed it would be able to draw this quantity from some 6,000-6,500 acres. The 33 acres of sugarcane from nursery areas would therefore be able to completely renovate the seed of the whole area once in five years. The cultivation of 33 acres of cane every year of which about 5-7 acres will be under experimental work would necessitate having a nursery with a total area of at least 100 acres, assuming that the land is suitable for a 3 years rotation. The purchase of this area of land would cost roughly Rs. 30,000. The non-recurring equipment including "Kacha" buildings would cost another Rs. 8,000 and the recurring expenditure excluding the pay of staff would amount to another Rs. 4,000. The staff would cost another Rs. 1,000 to Rs. 1,200 bringing the total recurring expenditure to about Rs. 5,200.

In all therefore every such nursery would mean a capital expenditure of Rs. 38,000 and an annual recurring expenditure of Rs. 5,200. The receipt from such an area would amount to about Rs. 6,000.

The nurseries would therefore be self-supporting without any burden to the Provincial Government. There are in this province some 33 large sugar factories and only 3 large experimental and seed farms which can and are to a certain extent performing the function of nurseries. We must therefore have at least another 30 nurseries to meet the very necessary requirements of the industry. It is realized that it may be impossible for the Provincial Government to provide the necessary funds for the purchase of the land. The obvious solution is either for the factories with large estates to place this area at the disposal of the Department free of cost or to lease the necessary areas from the cultivators. There are 12 factories in the province who have large estates of their own and in their own interest they ought to place the requisite quantity of land at the disposal of the Department. The balance of 18 factories will have to be provided with nurseries by leasing the land. The rent of the land would perhaps amount to average of Rs. 6 and Rs. 7 per acre or an additional expenditure of Rs. 600 per nursery. The capital expenditure excluding price of land required for the starting of these 30 nurseries would thus amount to Rs. 2,58,000 and this sum should come out of Sugar Excise. The working expenses would amount to a sum of Rs. 1,56,000. But all nurseries would be self-supporting at the end of two years from the date of their start and it would therefore be necessary to provide the amount for the two years only. Considering that the Province would produce in a normal year some 70 lakhs maunds of sugar from which the Government of India would realise an excise duty of about Rs. 100 lakhs at the present rate, it appears reasonable to request for a non-recurring expenditure of Rs. 2,58,000 and a recurring expenditure of Rs. 1,56,000 for 2 years only. If the sum could not be granted in one year the expenditure could perhaps be spread over two or three years.

It has been indicated that the present staff for demonstration and propaganda consists of 3 Assistant Directors of Agriculture, 33 overseers and

99 kamdars and with the extension which it is understood has been sanctioned it will amount to 4 Assistant Directors of Agriculture, 33 overseers and 165 kamdars in 1938. This staff is inadequate for the intensive and extensive demonstration work that the industry of this magnitude requires.

The average requirements of the factory are at present being met from 10,000 acre of land. This means an area of at least 30,000-35,000 acre fit for cultivation of sugarcane on a 3 years rotation basis. Sugarcane is not the only crop being grown in the village and a much larger area is under crops. Assuming that sugarcane occupies only $\frac{1}{10}$th the area of the total cropped land, and this in my opinion is an over estimate the total area in which the 10,000 acre being grown will certainly be not less than 300,000 (three lakhs) acres. Actually if a survey was carried out the area would be found to be considerably more. A party of one overseer and 5 kamdars is expected to get over this area of roughly 500 sq. miles in extent. It is obviously an impossible task. It becomes still more impossible when one Assistant Director of Agriculture is required to control and supervise in detail the work in a whole district. Intensive and extensive propaganda can therefore be only done by a very large increase in the field staff. For development during the next five years the minimum staff required would be 3 times the existing staff. The present expenditure on the staff and their contingencies is about Rs. 1,00,000.

This must therefore be increased to Rs. 3,00,000. No effort so far been made to bring into use more modern and advanced methods of publicity and propaganda in connection with Sugarcane Improvement Work. I believe that a good deal of good work can be done in pushing forward our demonstration and propaganda work by the provision of mobile publicity units consisting of a motor van properly equipped with a substandard Cinematograph apparatus, magic lantern and slides, radio receiver and charts, diagrams and leaflets, etc. Four such vans would I consider meet the requirement in this direction. Capital expenditure on these vans would be of the nature of Rs. 10,000 each and annual recurring expenditure would amount to Rs. 2,000 per van.

The improvement of sugarcane cultivation does not end with demonstration and propaganda. In order to adopt the department's recommendations the cultivator will need a certain amount of cash for purchasing seeds and manures every year and for incurring the necessary capital expenditure on the purchase of improved implements. Whereas the industry can rightly demand that the Government of India should provide necessary funds (i) for purposes of research, (ii) for the establishment of seed nursery and (iii) for demonstration and propaganda it can not expect any Government to finance the requirement of the individual cultivator also. This must be done by the industry itself. At present the industry is very reluctant to do this because there is no guarantee of the recovery of advances made for this purpose and because also there is every possibility that an adjoining mill who may have incurred no expenditure may benefit from any such improvement brought about as a result of the efforts of another concern. If however, a system of "Controlled Zones" for supply of cane to the factories is introduced and from which other factories are legally debarred from purchasing sugarcane, it would be only right and proper that the factory concerned should make necessary advances to the grower for the improvement of cane supplies. There would be no difficulty in recovering these advances together with reasonable interest at harvest time.

The suggestions put forward by me are essentially modest. These are based on the demands of the industry itself and it is only by sanctioning the requisite funds that, in my opinion, any quick and lasting improvement in the cultivation of sugarcane in the province can be brought about, otherwise with our present resources it will take years before any improvement on any extensive scale will become apparent and that only if and when the factories assist the cultivators in adopting these methods by making necessary advances both in cash and kind.

11. (*a*) Sugarcane Research in the province has been directed towards—

I. The improvement of varietal position in the province particularly in the direction of discovering desirable varieties (i) early and late to extend the factory crushing season, (ii) mid-season to replace Co. 213, (iii) to suit intensive cultivation and special conditions of growth such as water logging, " Usar " and flooding, (iv) with special reference to disease resistance and ratooning.

II. The improvement in cultural methods (i) to cut down costs of cultivation and enable maximum returns being obtained from the existing and improved varieties, (ii) to work out the manurial and water requirements of different varieties in North and South Bihar.

The varietal position five years ago when the Sugarcane Research Scheme started working was as follows:—

Co. 214.—An early variety suiting heavy land, low yielder and decidedly bad habit, grown on account of premium being paid for it, mainly for November and December supplies.

Co. 210.—An early mid-season variety hardly suiting highlands and light rainfall, for early January to March supplies.

Co. 213.—A second mid-season or main season variety suiting heavy lands and adequate rainfall, suffering from both " Usar " and flooding, for January to March supplies.

The factory crushing season extended from 105 to 120 days and recoveries towards the beginning and end of crushing season were definitely lower than the peak mid-season ones. Also that the cane growers lost between 16 to 26 per cent. of tonnage chiefly as dryage losses by keeping mid-season varieties Co. 210 and Co. 213 in the field late in the season.

The present varietal position as a result of giving out new varieties may be summarised as:—

Co. 299.—A variety as early as Co. 214 higher yielding and more satisfactory habit, suiting heavy well drained soils, fast replacing Co. 214 in North Bihar.

Co. 313.—A second early variety preferring loam and slight loam soils, ripening in December and likely to serve the mills from mid-December to mid-January (X'mas best); almost as high yielding as Co. 213 on loam.

Co. 210 & *Co. 213.*—Stay as first and a second mid-season varieties.

Co. 331.—A late variety, very heavy yielder; its mill qualities are under detailed study both by the Department and the factories. The variety is rather mid-season in South Bihar and likely to replace Co. 213 in course of time.

With the getting into the agricultural system in North Bihar of Co. 299, Co. 313 and Co. 331 the supplies of desirable raw material are likely to be ensured from about the middle of November to the beginning of May thus extending the factory crushing season by a month and eliminating dryage losses to the grower. Co. 331 has been found to stand " Usar ", water logging and flood conditions admirably.

And there is a further lot of exceptionally promising varieties in Co. 508 an early variety (mid-November), Co. 371 a medium early variety (December) high yielding and suiting diverse condition of growth; Co. 421 and Co. 513 mid-season varieties (January-March) former capable of withstanding extreme droughty conditions and yet responding highly to intensive cultivation. The new varieties appear more resistant to borers and top rot. Co. 520 and Co. 523 of the recent arrivals from Coimbatore are outstanding as also some of Bihar's own productions. The varietal position may therefore be regarded encouraging indeed.

III. Research work on cultural aspect has brought out the following points of interest to the industry:—

(*a*) Soaking of setts before planting stimulates quick and full germination and results in heavier subsequent growth. After January early planted cane scores an advantage over the late planted one so that where large areas have to be planted under cane it is best to start earlier rather than go into late March when soil moisture conditions in North Bihar are far from adequate for good germination. Application of Castor cake to light soils deficient in moisture is detrimental and it is necessary before applying cake in such soils to compost it (keep it moist by spinkling water) to counteract this harmful effect. The viability of buds is adversely affected whenever they come into direct contact with the artificial manures. It is therefore, advisable to mix manure well with soil in the opened furrows before planting setts. Coaltarring of setts affords little protection against white ants while it adversely affects its germination.

(*b*) The optimum planting distance between rows is 2½ ft. in the case of early variety, Co. 299 and 3 ft. in the case of mid-season and late varieties. Wider spacing though results in larger number of stalks is found uneconomical from the point of view of acre yield and sugar.

(*c*) Planting of cane in trenches results in no better cane or sugar yield than the ordinary furrow planting and the former is definitely costlier.

(*d*) To maintain soil fertility and ensure high cane and sugar yields manuring schedule for North Bihar consists in the application of 40 lbs. N. *plus* 50 lbs. P. 205 per acre on the top of green manure. The plan recommended is to apply half the quantity at planting and the other half at earthing just with the break of monsoon. Although slow acting organic manures can be used at planting it is desirable to apply quick acting artificials at the time of earthing up to ensure immediate supplies of food to the fast growing cane crop. In South Bihar 60 to 100 lbs. N. is necessary in different areas, and investigations to work out the standard schedules are in progress.

(*e*) Experimental work on the value as manure of molasses and Press cake derived from both sulphitation and carbonitation has shown that the products from sulphitation factories are beneficial to cane crop on light well-drained soils, while those from carbonitation process were found to be definitely harmful and depressed cane yield. These results are being verified at a few of the large factory estates and at Pusa to be in a position to generalise. The effect of such applications on the physico-chemical properties of soil and on juice quality are also being investigated. Further experiments are in hand to study their value under conditions south of the river where the soil type is so prominently different from that of North Bihar.

(*f*) It has been found out that Sannai (*Crotolaria juncea*) is best suited as green manure crop to high lands, which are well-drained. For low lands and places liable to floods, Dhaincha (*Sesbania aculeata*) is a more suitable green manure crop.

(*g*) Irrigation of cane during hot weather both in North and South Bihar has resulted in enhanced acre yields of cane and sugar, the cost of production per maund of cane being 11 to 17 per cent. lower in the case of the irrigated crop than in that of the unirrigated one. No weather irrigation is essential for maintaining high growth level and any schemes to very appreciably increase the production per acre of good quality cane must take this fact into account.

(*h*) Studies into deterioration and dryage suffered by varieties after being cut have been carried out to find out (1) comparative losses suffered by different varieties, (2) likely factors responsible for such losses, and (3) means if any to minimise them. Results show that (i) varieties with hard and high fibre deteriorate more rapidly. Similarly those that split and possesses pith and cavity suffer more damage, (ii) high atmospheric

temperatures, low humidities, still air and low moisture-content of cane are conducive to deterioration and dryage, (iii) losses are more pronounced during spring and hot weather than they are during the winter months, (iv) there is a strong indication that cane from certain areas show more pronounced deterioration in transit than those from others due likely to high fluctuations of soil moist in the feeding zones in different sections, (v) losses during haulage are considerably more in closed wagons than in the open ones. In closed wagons deterioration was found to be more pronounced at the bottom and at the top of the wagons, (vi) keeping canes moist and in shade considerably lessened dryage and prolonged the keeping qualities and sprinkling with water of loaded wagons at the starting stations should be tried as a means to lessen these losses during the three months of March, April and May.

(*i*) The practice of setting fire to fields before harvest is to be discouraged as it results in considerable sugar loss particularly when the practice is resorted to in spring. Similarly topping of canes (removing the tuft of green leaves) for fodder purposes should only be indulged in when such topped canes are ensured of immediate harvest and despatch to the mill within 48 hours otherwise dryage and deterioration sets in.

(*j*) Apart from the above mentioned studies surveys with special reference to (i) soil-weather-juice quality relationships, (ii) incidence of pests and diseases and (iii) causes responsible for wide yearly fluctuation in different areas in sucrose content have been attempted with interesting results. This in brief describes what has been achieved from the practical point of view while details of fundamental work on different aspects of sugarcane plant will be found in the scientific reports of the station.

Disease position in the province.—New varieties are found less affected with fungus or insect pests in their early history. Borer trouble is almost universal. Studies at the station have shown that the trouble is more acute in alternate years. Ratoons have been found worst affected in this respect. Damage done by top shoot borer year after year is considerably more than either by stem or root borer. Choto Nagpur is comparatively more free from the ravage of borers than South or North Bihar. White ant trouble is more acute in parts of Chota Nagpur, Arrah and almost everywhere in North Bihar. In parts of Arrah and in North Bihar at places the infestation is so high as to make the growing of the crop difficult. Experience shows that leaf hoppers become very active in a year when monsoon ceases early and during such years their distribution is fairly extensive.

Of the fungus diseases top rot is on the increase. It does more damage to the varieties susceptible to top borer attack where it find a suitable host. Of the other fungus disease red rot is rare while smut exists in Shahabad, Patna and North Champaran.

Varietal resistance to borers on the basis of percentages damage (Cane stalks bored) suffered by varieties is being worked yearly for all the varieties under trial. Certain of the varieties, namely Co. 331, Co. 373 and Co. 213 have been found to give out new tillers soon after a dead heart is produced; their number being significally higher in the bored than in the unbored plants in these varieties and the yield data has corroborated the existence of such a "Compensation". The loss from top rot in cane and sugar yield found to be about 11·3 per cent. and 9·6 per cent. respectively. No attempt has been made to work out the control measures and to conduct the detailed yearly survey in different sections as the necessary technical staff for the purpose is not provided at the station.

Control of pests and diseases.—As has been pointed out elsewhere in the replies, the Department of Agriculture has so far done nothing on the control of pests and diseases. Not only that no work has been done on the control aspect but the Department of Agriculture has not detailed yearly survey figure on the present position of pests and diseases of the crop. As

has been indicated under (*a*) above an effort has been made by the Research Station Staff to collect some data on one of the fungus diseases and the varietal resistance to borers but this staff is totally inadequate and do not possess the requisite qualification for undertaking entomological and mycological work.

In the extension scheme to be financed by the sugar excise grant it is understood that a nucleus staff for the survey of pests has been provided but the proposal for the disease aspect of the question, namely, the provision of a nucleus mycological staff has for the present been postponed for the consideration of the Sugar Committee. That the pest and disease position in the provision is serious cannot be denied. That both these are causing serious loss to the industry as a whole is well supported by the excellent work done by Dr. Haldane of Messrs. Begg Sutherland & Co. As I have pointed out elsewhere, according to the data collected by Dr. Haldane the industry is sustaining an annual loss of about Rs. 80 lakhs. This is an alarming situation and it is essential that both the Provincial and Central Governments should take cognizance of the situation and should provide the necessary staff and funds to the province to undertake the necessary work in the survey and control of pests and diseases. The industry expects such service and Government should therefore provide the necessary means to protect both the grower and the miller against this serious menace.

2. I have indicated under questions 9 and 10 some of the activities of the Department of Agriculture with regard to the measures adopted for the improvement of sugarcane crop in the province. In addition to the staff financed from the Sugar Excise grant for the improvement of sugarcane cultivation, the Department has, in the main sugarcane tracts, 3 Assistant Directors, 40 Overseers and 109 Kamdars for demonstration and propaganda work on all crops including sugarcane. 50 per cent. of activities of this staff and the funds indicated in reply to No. 9 are at present spent on the improvement of sugarcane. The method adopted in introducing an improvement whether cultural or manurial is the one that has proved most successful during the last 20 years. This consists in carrying out actual demonstrations on the cultivator's own fields through the agency of trained Kamdars. Seeds and manures are supplied free for such demonstrations. Implements and in some cases bullocks are lent for the duration of the demonstration. The staff, however, is admittedly inadequate and it may be hoped that when the financial conditions justify, the Provincial Government will increase this staff suitably. I would, however, like to emphasise the fact that the Provincial Government does not directly gain anything from the protection given to the sugar industry and it is therefore only right that most of the expenditure, which is essential for increased propaganda and for the improvement of the crop, should come out from the Sugar Excise Fund.

I should like to mention here the valuable co-operation received by the Department from some of the large Estates in the Province in multiplying improved varieties of cane and in supplying the seed on reasonable prices to the growers. Although a number of them are willing to continue co-operating with the Department in this direction, the only sound basis of having an assured supply of recommended varieties is the establishment of seed nurseries as suggested under Question No. 10.

12. The Imperial Council of Agricultural Research has financed the following schemes on Sugarcane Research in the Province. These schemes are:—

1. Sugarcane Research Scheme at a total cost of Rs. 2,05,847-12 (Recurring Rs. 1,11,888 *plus* non-recurring Rs. 93,959-12) for five years from 1932 March. This scheme has been recently extended for a further period of three years at a total cost of Rs. 84,446. This scheme has enabled work on the important problem facing the industry being taken up [Reference—Reply Question No. 11 (i)].

2. Research scheme to improve the open pan system and the manufacture of rab at a total cost of Rs. 6,000 for three years from 2nd January, 1935. The scheme has enabled useful work having been done for the cultivators in South Bihar (Reference—Reply Question No. 46).

3. Research into the designing of small power crushers at a total cost of Rs. 8,000. This enabled two sugarcane power driven crushers to be successfully designed, one of these has a capacity of one ton per hour, the other's capacity is half ton per hour. They are both 3 rollers mills and give an average extraction 68-70 per cent. The cost of the larger machine is slightly more than Rs. 1,000. The smaller model is being marketed at Rs. 750. Their manufacture has been entrusted to a reliable local engineering firm. The demand for these mills has not been very great as they are beyond the reach of the small grower and the large growers usually manage to get rid of their cane to the factories that have largely come into being after this research was completed.

(ii) The Coimbatore Sugarcane Research Station has been and is mainly responsible for the sending out of large number of seedling varieties to the Province to be tested under local conditions and in the event of their proving desirable to be given out to the industry. To expedite the pace of selection and afford better chances of finding desirable varieties Coimbatore Station is now sending out seeds of desired Combinations and Crosses to raise seedlings in the Province. The Department of Agriculture is in addition raising very large number of seedlings itself.

(iii) No special assistance except literature and occasional enquiries have been asked for from the Imperial Institute of Sugar Technology.

I have already indicated under 10 that funds for research work on agricultural side are inadequate. I have also indicated under that head what extra funds are necessary for this work. I should like to emphasize the fact that the problem of sugar industry in India has been and remains to-day purely on agricultural problem. Adequate funds are essential to solve this problem and it must be realised that they cannot be solved in a short time. The Agricultural Research work must be placed on a permanent footing in order not only to ensure continuity of the work which is so essential but also to give a fixity of tenure to the young workers in order that they may give of their best. The Sugarcane Research Scheme in the Province was originally sanctioned for five years. It has now been extended for another 3 years. Such temporary sanctions are not conducive to the best interests of the industry. It is realized that the Imperial Council of Agricultural Research cannot make any permanent commitments on this account, but the Central Government should assure the Province that so long the Excise Duty continues research work will be financed.

13. The co-operation and assistance afforded by the factories having estates of their own during the first two years of protection was most inadequate and although improved varieties before they were finally declared "passed", by the Department were indented for by these factories the detailed supervision and recording as per schedule drawn up by the Department were not given due attention. More recently, however, the factories have started evincing keener interest in the research work being done by the Department and some of them have come forward to try out new varieties and improved methods on the lines laid out by the Department on their estates. This appears a move in the right direction and will enable the results of research percolating to the cultivating classes in a shorter period than hitherto. A scheme of nurseries establishment has been envisaged in another section and this outlines what can be achieved through co-operation within the next five years. An Advisory Sugarcane Committee consisting of representatives of growers and millers with expert official members has recently been formed by the local Government and dissemination of improved varieties and dissemination of improved methods and to bring all the interests closer together by affording them all opportunities to discuss the

merits of varietal and cultural improvements discovered by the Department before a final decision is taken whether a variety or a method is to be released for general adoption.

14. The information asked for in the question is given in the table below:—

——	1931-32.	1932-33.	1933-34.	1934-35.	1935-36.
	Mds.	Mds.	Mds.	Mds.	Mds.
Cane crushed in sugar factories (Actual).	22,582,360	40,681,000	45,805,300	56,968,200	76,297,700
Cane utilised in open pan factories and Khandsari.	..	..	..	..	..
Cane turned into gur. (Estimated).	50,646,040	35,616,500	65,747,300	63,122,700	49,042,300
Cane used for chewing, for seed and other purposes. (Major portion being for seed) (Estimated.)	12,971,600	16,228,000	17,788,000	18,612,000	25,000,000

The Khandsari industry as such does not exist in Bihar and it therefore does not hold that important position in the agricultural system of this province as it does in the neighbouring United Provinces. The only outlet for the surplus cane in this province is the manufacture of gur. In my opinion there is no future for the real Khandsari industry in this province. The Khandsari plant forms a sort of a half way house between the cultivators outfit for gur manufacture and the white sugar factory and as such requires the investment of capital of at least Rs. 5,000. There are few growers in this province who can afford this capital unless assured of a decent return which is very doubtful in the face of falling prices of white sugar. In view of these considerations the Agriculture Department started experiments to evolve a process of single pan method of manufacturing Khandsari sugar so that, if the experiment proved successful, the cultivator would be able to manufacture rab in a simple furnace similar to the gur "chula" he is accustomed to use. The rab could be sold either to a small merchant or a Co-operative Society. The results of this experiment are discussed in reply to Question No. 46.

15. Speaking for the province as a whole the main difficulties of the cultivator in growing sugarcane are:—

(*a*) The crop occupies the land for 12-14 months thereby depriving the cultivator of at least one additional crop—usually two.

(*b*) The resources of the cultivator are inadequate to enable him to grow a decent crop which his land is quite capable of yielding.

(*c*) The great uncertainty of the possibility of disposing of his crop to a factory in time.

(*d*) The great harassment that he has to undergo at the hands of middlemen.

(*e*) The refusal of majority of factories to deal directly with the cultivator.

As regards the difficulties of the cultivator with regard to the delivery of his crop to the factories, although a number of these have been lessened

by the measures adopted under the Sugarcane Act they still continue to a certain extent. The more prominent amongst these are:—

(*a*) The congestion of carts at factory gates and the time this involves. I have personally observed that in a large number of cases the carts have to wait at the factory gate for a period of 48 hours as the factories want to make sure of a continued supply of cane at their corner. In the event of breakdown in a factory, carts have necessarily to wait for a longer period. It has also been observed that the factories prefer to have major portion of their requirements as gate cane in order to reduce their transport expenses and it therefore follows that the carts have to wait for a much longer time than would otherwise be the case.

(*b*) The malpractices about the short weighment of cane although have been reduced considerably, still continue to be practised surreptitiously. The culprits in this direction are more the contractors than the factories.

(*c*) The inadequacy of communications in certain parts of the province particularly in South Bihar, South Darbhanga, North Bhagalpur and North Monghyr.

17. Yes—The basis of the fixation of this price is the formula—

$$C = \frac{S \times P}{200}.$$

Where C = Price of cane in annas per maund.

S = Average extraction of sugar per cent. cane for the tract.

P = Price of first grade sugar in annas per maund in the Cawnpore market for the previous fortnight.

The system as it goes has worked satisfactorily but I consider that it does not provide for a minimum price for cane to the grower on the basis of the quality of his crop. A more equitable basis would be the seasonal sucrose content of the cane but this under the conditions prevailing at present in the main sugar belt appears to offer a number of difficulties, the most important of which is the illiteracy of the average grower and his inability to understand this basis. The system of allowing rebate on the close of the crushing season on the basis of recovery figures of the factory would probably be more workable, provided of course the "controlled zones" as suggested elsewhere come into being. This would have the advantage of bringing the two interests nearer each other as at present the cultivator attaches greatest value to the cane weight while the factory does to the sucrose content.

18. In the beginning of the season there is practically no competition between the factories for cane supplies and therefore the prices paid are not affected in any way. The other factor which works against an enhanced price in the beginning of the season is the anxiety of the cultivator to get rid of his crop as early as possible. This state of affairs usually prevails up to about the end of March. From then onwards the factories begin to experience shortage in their supplies and the neighbouring factories begin to compete with each other for securing adequate quantities for their daily crush. Major portion of the crop has by then been cleared and factories have to pay higher prices than the minimum fixed by Government. In 1935-36 some factories were actually paying As. 7-6 per maund during the second and third week in April when the minimum price was only As. 5.

19. Ever since the introduction into the Agricultural system of North Bihar—the major white tract in the province—of improved varieties, namely, Co. 210, Co. 213 and Co. 214, premium ranging from being anna 1 to As. 1-6 per maund was being paid for the supply to the mills of Co. 214—an early ripening variety, during the first two months of the crushing season.

This was necessary to induce the cultivator to grow this low yielding cane variety. With the distribution recently of better yielding early variety Co. 299 and medium early variety Co. 313 the area under Co. 214 has largely dwindled and the mills have in general shown a considerable reluctance to the payment of any premium for the early varieties, although it is abundantly clear that without this inducement a cultivator would not take to these varieties to any large extent and this, the department has been emphasizing ever since its decision to distribute these varieties. During the last two years, however, large scale mill tests of Co. 299 have established its superiority as an early cane and the mills have now agreed to the payment of a premium of 6 pies per maund and have thereby greatly encouraged cultivators to take up the growing of this variety on a large scale to ensure mills early supplies. Payment of a premium for late varieties, however, has not yet, found favour mainly because no really late variety suitable to the whole of white sugar tract is yet available. In view, however, of the loss in weight that a cane variety suffers during the latter part of the crushing season and the longer period over which the cane stands in the field, some sort of encouragement will be necessary. As, however, a late variety is comparatively a higher yielding variety, the amount of premium to be paid could be comparatively lower. In my opinion the system of payment of premium has a better chance to succeed than that of the bonus system, since the latter is rather uncertain and indefinite. If, however, the scheme of "controlled zone" outlined elsewhere in the replies is adopted, the latter system will have a chance.

It may be pointed out that till such time that the payment for cane is made on sugar basis, encouragement in the form of premium is essential to establish early and late varieties.

20. The average cost of transport of cane by cart per maund per mile varies from 1 pie to 1·5 pies in different parts of the province. The department has been paying Rs. 4 per hundred maunds carting of cane over a distance of about 6 miles.

21. Small cultivators usually cart their own cane. Substantial growers as a rule have to hire carts.

The hire price varies but an average of 1 to 1½ pies per maund is a reliable figure to go upon.

22. The rail and road facilities over major portions of North Bihar are adequate. Tramway facilities have been provided by a few factories. Road facilities in South Bihar are totally inadequate. As far as I know, no assistance has been given towards the development of feeder roads and tramway system.

24. As far as is known to me no particular assistance has been rendered to any individual factory with regard to the items mentioned in this question.

25. There are no Co-operative Sugar Factories in this province.

27. No data existed in this Department which would have given the figures required. Special efforts have therefore had to be made to get the figures through the marketing staff of the Department. Figures have been collected from the following markets:—

1. Maharajganj
2. Bakerganj
3. New Capital
4. Bhagalpur.

} Patna.

5. Bikram—a secondary market in the interior of the Patna District.

Tables I to VI show these prices. The figures have been collected from the Account Books of the dealers concerned and the tables show both the wholesale purchase price and the retail sale price, as also the margin of the retailer over the wholesale price.

TABLE I.—*Wholesale and retail prices of dobara (Factory) and deshi sugar.*

Months.	1930-31.				1931-32.				1932-33.	
	DOBARA.		DESHI.		DOBARA.		DESHI.		DOBARA.	
	Purchase per maund.	Retail per seer.	Purchase per maund.	Retail per seer.	Purchase per maund.	Retail per seer.	Purchase per maund.	Retail per seer.	Purchase per maund.	Retail per seer.
	Rs. A.	Rs A. P.	Rs. A. P.	Rs. A. P.	Rs. A.	Rs. A. P.	Rs. A.	Rs. A. P.	Rs. A. P.	Rs. A. P.
April	10 0	0 4 6	9 4 0	0 4 3	10 2	0 4 6	9 0	0 4 3	..	..
May	9 14	0 4 3	10 4 0	0 4 6	10 2	0 4 6	8 10	0 4 3	..	..
June	9 10	0 4 3	9 12 0	0 4 6	10 0	0 4 3	8 10	0 4 0	..	..
July	9 14	0 4 6	9 14 0	0 4 6	10 1	0 4 6	8 14	0 4 0	..	..
August	9 6	0 4 6	10 4 0	0 4 6	9 14	0 4 9	8 14	0 4 6	..	..
September	9 10	0 4 6	10 4 0	0 4 9	11 12	0 5 0	9 12	0 4 6	..	..
October	9 5	0 4 6	9 12 0	0 4 9	12 0	0 5 6	9 11	0 4 6	..	..
November	9 0	0 4 0	9 6 0	0 4 3	11 14	0 5 3	9 12	0 4 6	..	..
December	8 8	0 4 6	9 8 0	0 4 6	11 8	0 5 3	10 3	0 4 6	..	..
January	8 14	0 4 3	9 4 0	0 4 6	..	..	..	..	10 6 0	0 4 9
February	9 12	0 4 6	9 8 0	0 4 6	..	..	..	..	10 11 0	0 4 9
March	10 0	0 4 6	9 0 0	0 4 3	..	..	..	..	9 14 0	0 4 9
Average per maund	9 8	0 4 1 10 3 0	9 10 8	0 4 6 11 4 0	10 13	0 4 10 12 1 0	9 4	0 4 3 10 13 0	10 5 0	0 4 9 11 14 0
Margin of profit	7·2		16·1		11·6		16·9		15·1	

TABLE I.—*Wholesale and retail prices of dobara (Factory) and deshi sugar*—contd.

Months.	1932-33.		1933-34.				1934-35.			
	DESHI.		DOBARA.		DESHI.		DOBARA.		DESHI.	
	Purchase per maund.	Retail per seer.	Purchase per maund.	Retail per seer.	Purchase per maund.	Retail per seer.	Purchase per maund.	Retail per seer.	Purchase per maund.	Retail per seer.
	Rs. A.	Rs. A. P.	Rs. A.	Rs. A. P.	Rs. A.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A.	Rs. A. P.
April	..	..	9 9	0 4 6	8 9	0 4 6	..	..	8 12	0 4 0
May	..	..	9 10	0 4 6	8 14	0 4 6	9 14 0	0 4 3	8 6	0 4 0
June	..	..	9 13	0 4 6	8 13	0 4 6	..	..	..	..
July	..	..	9 15	0 4 6	8 14	0 4 0	9 7 0	0 4 3	8 10	0 4 0
August	..	..	10 5	0 4 6	9 12	0 4 3	9 15 0	0 4 6	9 6	0 4 3
September	..	..	10 4	0 4 6	8 12	0 4 0	9 9 0	0 4 3	9 2	0 4 0
October	..	..	10 1	0 4 6	..	..	9 9 0	0 4 3	9 1	0 4 3
November	..	..	10 1	0 4 6	8 4	0 4 6	9 6 0	0 4 3	8 12	0 4 0
December	..	..	10 2	0 4 3	9 9	0 4 0	9 5 0	0 4 3	8 9	0 4 0
January	9 7	0 4 6	9 6	0 4 0	8 2	0 4 0	8 13 0	0 4 0	8 6	0 4 0
February	9 8	0 4 6	9 8	0 4 3	8 6	0 4 0	9 0 0	0 4 0	8 10	0 4 0
March	9 8	0 4 6	9 14	0 4 3	8 6	0 4 0	8 11 6	0 4 0	8 12	0 4 0
Average per maund	9 8	0 4 6 11 4 0	9 14	0 4 3 10 1 0	8 12	0 4 2 10 7 0	9 6 0	0 4 3 10 1 0	8 12	0 4 0 10 0 0
Margin of profit	18·4		7·6		19·3		13·3		14·3	

TABLE I.—*Wholesale and retail prices of dobara (Factory) and deshi sugar*—concld.

Months.	1935-36.				1936-37.				1937-38.			
	DOBARA.		DESHI.		DOBARA.		DESHI.		DOBARA.		DESHI.	
	Purchase per maund.	Retail per seer.	Purchase per maund.	Retail per seer.	Purchase per maund.	Retail per seer.	Purchase per maund.	Retail per seer.	Purchase per maund.	Retail per seer.	Purchase per maund.	Retail per seer.
	Rs. A.	Rs. A. P.	Rs. A.	Rs. A. P.	Rs. A.	Rs. A. P.	Rs. A.	Rs. A. P.	Rs. A. P.	Rs. A.	Rs. A. P.	Rs. A. P.
April	9 0	0 4 0	8 12	0 4 0	8 6	0 3 9	8 7	0 4 0	8 11 0	0 3	6 9 0	0 2 9
May	9 2	0 4 6	8 14	0 4 0	8 3	0 3 9	8 4	0 3 9	6 8 0	0 3	6 6 0	0 2 9
June	9 1	0 4 0	8 11	0 4 0	8 2	0 3 9	8 3	0 4 0	..	..	..	..
July	9 1	0 4 0	8 14	0 4 0	8 1	0 3 9	8 1	0 3 9	..	..	..	..
August	9 0	0 4 0	8 13	0 4 0	8 10	0 4 0	8 4	0 4 0	..	..	..	..
September	9 4	0 4 5	8 15	0 4 0	8 10	0 4 0	8 2	0 4 0	..	..	..	..
October	10 12	0 4 6	9 12	0 4 3	8 6	0 4 3	7 11	0 4 0	..	..	..	..
November	10 6	0 4 6	9 14	0 4 6	8 8	0 3 9	7 10	0 3 6	..	..	..	..
December	10 8	0 4 6	10 0	0 4 3	7 14	0 3 6	7 11	0 3 6	..	..	..	..
January	9 9	0 4 5	9 0	0 4 0	..	..	..	..	..	..	..	..
February	8 12	0 4 0	8 10	0 4 0	7 2	0 3 6	6 14	0 3 6	..	..	..	..
March	8 14	0 4 0	8 10	0 4 0	6 12	0 3 0	6 12	0 3 0	..	..	..	..
Average per md.	9 7	0 4 3 10 10 0	9 1	0 4 1 10 3 0	8 1	0 3 8 9 3 0	7 13	0 3 8 8 9 0	6 9 6	0 3 7 8	6 7 6	0 2 9 6 14 0
Margin of profit.	12·6		12·4		13·9		16·7		14·3		6·8	

TABLE II.—*Wholesale and retail prices of dobara (Factory) sugar at Bikram.*

Months.	1932-33.		1933-34.		1934-35.		1935-36.		1936-37.		1937-38.	
	Wholesale per maund.	Retail per seer.	Wholesale per maund.	Retail per seer.	Wholesale per maund.	Retail per seer.	Wholesale per maund.	Retail per seer.	Wholesale per maund.	Retail per seer.	Wholesale per maund.	Retail per seer.
	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.
March	10 4 0	0 4 6	9 8 0	0 4 0	9 4 0	0 4 0	8 12 0	0 3 9	8 10 0	0 3 9	7 0 0	0 3 0
April	10 4 0	0 4 6	9 4 0	0 4 0	9 0 0	0 3 9	9 0 0	0 4 0	8 12 0	0 3 9	6 12 0	0 2 9
May	10 0 0	0 4 6	9 8 0	0 4 0	9 8 0	0 4 0	9 6 0	0 4 0	8 8 0	0 3 9	6 12 0	0 2 9
June	10 4 0	0 4 6	9 4 0	0 4 0	9 8 0	0 4 0	9 4 0	0 4 0	8 7 0	0 3 9	..	..
July	10 12 0	0 5 0	9 4 0	0 4 0	9 4 0	0 4 0	9 6 0	0 4 0	8 8 0	0 3 9	..	..
August	10 4 0	0 4 6	9 8 0	0 4 0	9 4 0	0 4 0	9 3 0	0 4 0	8 6 0	0 3 9	..	..
September	10 4 0	0 4 6	9 8 0	0 4 6	9 4 0	0 4 0	9 4 0	0 4 0	7 12 0	0 3 6	..	..
October	9 12 0	0 4 0	10 3 0	0 4 0	9 10 0	0 4 0	10 0 0	0 4 6	7 12 0	0 3 6	..	..
November	9 4 0	0 4 0	9 12 0	0 4 0	9 0 0	0 3 6	10 4 0	0 4 6	7 12 0	0 3 6	..	..
December	8 8 0	0 3 9	9 8 0	0 4 0	8 8 0	0 3 6	9 0 0	0 4 0	7 4 0	0 3 6	..	..
January	9 4 9	0 4 0	9 4 0	0 4 0	9 4 0	0 4 0	9 0 0	0 4 0	7 0 0	0 3 0	..	..
February	9 8 0	0 4 0	9 4 0	0 4 0	9 0 0	0 4 0	8 8 0	0 3 9	7 0 0	0 3 0	..	..
Average per maund.	9 13 8	0 4 3 10 10 0	9 7 7	0 4 0 10 0 0	9 3 2	0 3 11 9 13 0	9 3 11	0 4 0 10 0 0	7 15 7	0 3 6 8 12 0	6 13 4	0 2 10 7 1 0
Margin of profit	7·6		5·3		6·8		8·1		9·4		3·7	

TABLE III.—*Wholesale market rate of sugar and gur from the year 1923 to 1937 at the Bhagalpur market.*

Date.	Rate of white sugar per maund.	Rate of Gur per maund.
	Rs. A. P.	Rs. A.
11th September, 1923 . . .	16 3 0	6 4
25th August, 1924	16 0 0	6 4
29th July, 1925	11 12 9	6 4
18th May, 1926	13 6 5	7 0
19th September, 1927 . . .	12 3 3	5 4
10th June, 1928	...	5 8
8th April, 1929	10 4 0	5 0
3rd August, 1930	9 8 0	5 0
18th May, 1931	9 12 9	4 0
17th June, 1932	11 0 0	5 0
29th June, 1933	10 3 3	3 2
14th June, 1934	9 0 0	2 8
17th June, 1935	9 3 3	2 8
9th June, 1936	8 12 9	2 8
30th May, 1937	6 9 9	2 0

TABLE IV.—*Statement showing retail prices of sugar (dobara) at Bakerganj.*

Month	1935-36.	1936-37.	1937-38.
	Rs. A. P.	Rs. A. P.	Rs. A. P.
April . . .	8 13 0	8 11 0	6 12 0
May . . .	9 3 3	8 7 0	6 11 0
June . . .	9 3 0	8 8 0	...
July . . .	9 2 0	8 8 0	...
August . . .	9 2 0	8 11 0	...
September . .	9 3 0	8 12 0	...
October . . .	10 4 0	8 11 0	...
November . .	10 8 0	8 10 0	...
December . .	9 1 6	7 11 0	...
January . . .	8 11 6	7 3 6	...
February . .	8 9 6	7 0 0	...
March . . .	8 10 0	7 13 0	...
Average	9 3 3	8 3 6	6 11 6

TABLE V.—*Price of sugar from a large consuming establishment at Patna which obtained its supply from contractors on annual contract.*

Year.	Price per maund.	Year.	Price per maund.
	Rs. A.		Rs. A.
1930-31 . . .	9 3	1934-35 . . .	10 12
1931-32 . . .	9 4	1935-36 . . .	9 4
1932-33 . . .	12 0	1936-37 . . .	10 0
1933-34 . . .	10 14		

TABLE VI.—*Statement showing wholesale and retail prices of sugar (Pisan) at Patna.*

Months.	Wholesaler's price at Marufganj.	Retailer's price at Bakerganj.	Wholesaler's price at Marufganj.	Retailer's price at Bakergunj.	Wholesaler's price at Marufganj.	Retailer's price at Bakerganj.
	Rs. A. P.	Rs. A. P.	Rs. A.	Rs. A. P.	Rs. A.	Rs. A.
Apr. .	8 10 0	8 12 0	8 10	8 9 0	6 12	6 9
May .	8 14 0	8 14 6	8 11	8 6 0	6 12	6 9
June .	8 15 0	8 15 0	8 5	8 4 0	...	...
July .	8 14 0	9 2 0	8 10	8 3 6	...	...
Aug. .	9 0 0	9 2 0	8 0	8 1 0	...	...
Sep. .	8 13 0	9 2 0	8 10	8 0 0	...	...
Oct. .	9 4 0	8 12 0	8 10	7 14 0	...	...
Nov. .	9 4 0	9 0 0	8 9	7 9 0	...	...
Dec. .	8 14 0	8 11 0	8 2	7 6 0	...	...
Jan. .	8 11 9	8 11 0	7 2	6 14 0	...	...
Feb. .	8 9 0	8 12 0	6 12	6 14 0	...	...
Mar. .	8 8 0	8 10 0	6 11	6 11 6	...	...
Average	8 13 9	8 13 10	8 1	7 11 8	6 12	6 9

28. This question may mean two things—variation in the margin between the wholesale and retail prices and variation in wholesale and retail prices themselves. The Tables I to VI already appended with reply to Question No. XXVII serve the purposes of reply to this question. Table I gives the margin between the purchase prices and sale prices at a good retail stores. Table II gives the margin between wholesale and retail prices. And both show variations in the wholesale and retail prices in the last seven and six years respectively. In Table I the purchase and retail rates are for the same quality of sugar, that is, the shop purchased consignments of sugar and retailed them. Therefore the rates are strictly comparable and show the retailers margin. This margin varies from 6·8 to 19·3 per cent. on the purchase price. The detailed figures show that a retailer does not alter his retail rates for small reductions in his purchase prices. Also the retail rate has to be fixed in round figures at so many pice per seer and this also causes variations in the percentage of profit. Similarly Table II gives the wholesale and retail prices at a shop at Bikram. This shows the margin between wholesale and retail rates in the same shop for the same quality of sugar. This shows a variation from 3·7 to 9·4 per cent. The reasons are the same as above.

Table VI gives the wholesale and retail prices obtained from a wholesale shop at Marufganj and a retail shop at Bakerganj. It may be seen that often the retail prices are lower than wholesale prices. This is because the prices refer to different qualities which it was not possible to ascertain because of the absence of quality grades and standards of sugar. It was reported that each mill has its own price within limits.

In the course of the past five years the wholesale and retail prices of sugar have gone down considerably inspite of the protective duty and this is evidently due to the over-production to some extent but mainly to defective marketing organisation as will be evident from Graph I showing the trend of exports from Bihar. This curve shows that at one time in the season from January to March there is a tremendous rush for sale which surely places the factories at the mercy of distributors. This fact is well known in the marketing of the cultivators produce. Immediately after harvest there is a rush for sale of his produce compelled by demands of payments from Mahajans and Zemindars and the price goes down. I fancy a similar condition may be prevailing in the marketing of sugar, at least the figures point towards that.

29. It is not possible to give any accurate estimate of normal consumption of sugar in the province. It is also not possible to state the probable increase in this consumption. The Senior Marketing Officer, Bihar, however, has estimated the normal consumption of sugar as also the trend in the increase of sugar consumption. His remarks are reproduced below along with Tables to show the basic of his conclusions. These figures can not be said to give any indication of the consumption of this sugar or the possibilities of increasing the consumption until and unless we have accurate data on the stocks held by the various mills in the province as also the stocks held by the merchants in the important markets.

In the absence of informations on stocks held by the Sugar Factories and the merchants in the important markets in the province and in the absence of separate rail and river borne trade statistics for Bihar and for Orissa as well as of frontier trade, it has not been possible to ascertain the consumption of sugar in Bihar with any degree of accuracy. An attempt however, has been made to estimate the net available supply including stock left in Bihar and Orissa for each of the years 1933-34, 1934-35 and 1935-36. This is given in Table I. The figures for import and export of sugar include both refined and unrefined sugar. The net export of sugar given in the table may not therefore be all factory sugar. No attempt has been made to calculate the *per capita* consumption of sugar in this province as there are backward tracts in the province where white sugar has not yet penetrated. The figures, however, indicate that the consumption of sugar is steadily increasing.

TABLE I.—*Statement showing estimated consumption of sugar in Bihar.*

	1933-34.	1934-35.	1935-36.
	Mds.	Mds.	Mds.
Total estimated quantity of sugar produced in the factories in Bihar and Orissa	3,809,630	5,009,514	6,810,444
Net export of sugar	3,138,086*	3,215,680	3,517,816*
Net available supply, including stock for consumption in Bihar and Orissa	671,544	1,793,834	3,292,628
Net available supply including stock for consumption in Bihar . .	604,390	1,614,451	2,963,365

TABLE II.—*Statement showing estimated consumption of gur in Bihar and Orissa.*

	1933-34.	1934-35.	1935-36.	Remarks.
Area under cane in Bihar and Orissa in Acres . .	418,000	444,700	465,300	Estimated.
	Mds.	Mds.	Mds.	
Total yield of cane . .	136,432,000	145,416,900	152,153,100	Do.
Cane crushed in factories . .	45,805,300	56,968,200	76,297,700	Actual.
Cane used for miscellaneous purposes as chewing Khandsari, etc. .	8,000,000	6,000,000	6,000,000	Estimated.

* Includes both refined and unrefined sugar.

TABLE II.—*Statement showing estimated consumption of* gur *in Bihar and Orissa*—contd.

	1934-34.	1934-35.	1935-36.	Remarks.
	Mds.	Mds.	Mds.	
Cane used for seed and other purposes . .	17,788,000	18,612,000	25,000,000	Estimated.
Cane crushed for gur . . .	64,838,700	63,836,700	44,855,400	Do.
Yield of gur .	6,483,870	6,383,670	4,485,540	Do.
Net export of gur	1,919,746	1,971,051	991,525	Actual.
Net available supply for consumption in Bihar and Orissa . .	4,564,124	4,412,619	3,494,015	
Net available supply for consumption in Bihar . .	4,107,712	3,971,357	3,144,613	

30. As far as I know there is only one concern which manufactures confectionery. This is located at Marharah in conjunction with Cawnpore Sugar Works under the management of Messrs. Begg Sutherland and Company. The details are not known to me.

31. I consider that the development of the sugar industry in this province has reached a stage where it is absolutely essential to introduce a system of controlled zones for the supply of cane to all factories. I reproduce below a note which was submitted to Government on this point in April last. This sums up my views on the subject.

"Protection to the sugar industry brought about the establishment of a fairly large number of sugar factories in the province; which has been and continues to be the second largest sugar producing province in the country. Simultaneously with the erection of the factories the area under sugarcane in Bihar proper started increasing. Whereas in 1929-30 there were, excluding Orissa division, only 262,800 acres under sugarcane, in 1936-37 the area under the crop in Bihar was not less than 500,000 acres. The prosperity and stability of the industry is entirely dependent on an assured supply of high yielding and high quality cane varieties but whereas the area under the cane has expanded considerably and amlost the whole of it is under improved varieties, selected and distributed by the Department of Agriculture, the per acre yield has not increased for the reason that small cultivator who grows the bulk of the crop has not the means to invest the small amount required for properly manuring and cultivating the crop. In order to do this and bring about closer relations between the grower and the miller it has been repeatedly urged upon the factories at the various sugarcane conferences that have been held, to deal directly with the individual cultivator, to bond his crop early in the season and to give out necessary cash advances for the better cultivation and adequate manuring of the crop. And inspite of the assurance given by the factory representatives that this would be done it has, with very few honourable exceptions, never ever been attempted in the majority of cases. The raw material is still purchased through contractors who are known by many honorific titles of 'Canvassers", 'Guarantee Growers', 'Agents', etc., and the factory owners and the mass of growers are to-day as far apart as the poles. There is no sign of that healthy relationship between the two main parties concerned which is so very essential to the prosperity and stability of the largest industry in the province and the second largest

in the country. It is therefore essential that Government should now step in and take such action as is necessary to ensure this.

" 2. During the 1936-37 season which is now coming to a close the area under he crop increased considerably. This coupled with an exceptionally favourable growth season resulted in a bumper crop. The factories started their crushing season a fortnight later than usual and with very weak gur market there has resulted a surplus crop. Special measures have been necessary to ensure that major portion of the surplus crop is crushed by the factories. Seeing the difficulties in disposing off their standing crop the growers have reduced the new plantings by at least 30 per cent. and there is a similar, if not greater, reduction in the area under ratoon crop. This means that there is likely to be a short crop next crushing season. The factories then compete with each other to secure the raw material and to do this they will have to offer higher prices for their cane supplies. This of course will be good for the cultivator but only temporarily. Because of these high prices the average cultivator will find it impossible to resist the temptation of increasing the area under the crop and in the year following he is likely to find himself in conditions more or less similar to those that have prevailed in 1936-37 season. A vicious circle is thus beginning to operate and I submit that immediate steps are necessary to ensure that:—

(1) The area under sugarcane crop in any year will have some relationship with the raw material needs of the sugar factories in the area in which they are located;

(2) the per acre yield and quality of the crop is improved as quickly as possible;

(3) the factories are assured of a normal crush over a period of 150 days;

(4) the cultivator gets a fair deal;

(5) the middle-man who has no stake and is a parasite is eliminated as far as practicable; and

(6) the miller and the grower have direct dealings. A method designed to ensure these should have the co-operation of both parties with as little official interference as possible.

" 3. The method in my opinion which will achieve the desired results is what be called a ' controlled ' or guaranteed ' Zones ' system of cane cultivation coupled with the enforcement of a minimum price for the crop and other safeguards already in force to check the malpractices.

" 4. ' Controlled ' Zones may be described thus. After ascertaining the total requirements of every factory and the areas from which they draw these supplies at present a map will be prepared showing these areas. In many cases it will be found that the areas overlap to a certain extent where two or more factories are located in close proximity to each other. In consultation with factories an area capable at present of supplying not more than 60 per cent. of the total requirements of every factory will be marked and designated as ' Controlled ' Zones for that particular factory and that factory alone will be allowed to draw upon this area. In its turn the factory will be required not only to pay the minimum prices, which incidentally may or may not be the fair price, but will also be required to clear the crop from this area before taking the balance of its requirements from the areas which I call free Zone but which really will be an overlapping Zone. I have suggested that the controlled Zone should be such as that it is capable at present of supplying 60 per cent. of the requirements. This is because this area is more than ample to provide the full requirements of the factory provided the crop is cultivated and manured adequately. It will be to the interest of the factory to develop this area by getting into direct relations with every grower, by making large advances for improved seeds, manures and implements for

the better cultivation of the crop and which will be recouped at the time of harvest and generally to adopt such other measure as would ensure an all round improvement in the per acre yield and quality of the crop. No middleman will be allowed to operate in this controlled Zone and it will be obligatory on the part of the mills to deal directly with all cane growers within this zones.

" 5. The improvement of the crop within the controlled Zone cannot be brought about within one season but it ought not to be difficult to do this within 5 years. During this development period the factories will have to get the balance of their requirements amounting to 40 per cent. This they will do from an area outside the controlled Zone which may be called a free Zone. Such free Zones may or may not overlap in the case of two or more factories. The chances, however, are that there is more likely to be overlapping than otherwise. Although the minimum price and other safeguards to check malpractices will also be enforced in these free Zones the growers in this area will be at a disadvantage as compared to those in the controlled Zones. They will in the first place not be able to secure the advances for improving their crop and secondly they will have to keep their crop standing much longer in the field. In order to compensate them for these it is suggested that they may be assured of a higher price for their crop by a 10 to 15 per cent. increase in the minimum price prevailing at the time. Where the free Zones overlap the law of supply and demand will come into operation and the cultivators are likely to benefit therefrom.

" 6. Some system on the above basis will ensure a steady area under the crop, a quick all round improvement in the per acre yield, a normal crushing period of 150 days, a fair deal to the grower and the elimination of the middleman. The result will be a stable industry. I have discussed ' controlled ' Zone plan with a large number of factories during my recent tour in Tirhut Division and almost all of them are agreed that this is the only practical solution of the problem.

" 7. If unfortunately it is found that factories are not prepared to co-operate in a scheme of controlled Zones then I suggest the following alternative. I may state at the outset that this alternative scheme is rather drastic in character as it envisages a complete control by official agency which will have to compel the factories to fall in line for the good of the industry as a whole. Furthermore, the factories will have to foot the whole bill.

" 8. Having fixed the controlled and free Zones Government should enforce these by setting up official Control Boards. Factories will not be allowed to purchase a stick of cane except through this authority who will control all distribution. The cost on account of these Boards will be recovered from factories by levy of a suitable cess on every maund of cane supplied. Factories would further be required to make adequate advances to the Boards for the improvement in the yield and quality of the crop. These advances will be distributed by the Board to cultivators and will be adjusted by the Board at harvest. The Control Boards I have in mind will be somewhat like the Control Board which was set up after the earthquake and which worked so extremely satisfactorily. There will, however, be this big difference that the cost on account of these Boards will be paid by factories instead of by Government.

" 9. In conclusion I should like to emphasise the fact that the only problem of the sugar industry has been and is to-day purely an Agricultural problem. Its solution is of urgent necessity in the interests of all concerned and immediate action is indicated ".

(*b*) It has been estimated that in 1933-37 factories in India will have produced slightly over 1,000,000 million tons of sugar. The peak of sugar requirements in so far as internal market of the country is concerned has therefore been reached if these estimates are found to be correct. Further increase in the production of sugar is, therefore, bound to have serious

effect on price levels in the country and it is for the industry itself to consider if in their own interest quota fixation for individual factory will not be desirable for stabilizing the internal market.

(c) I consider it essential to license all new factories as also the extension of the existing factories with immediate effect. If this is not done the industry which has been established in Northern India stands on rather unstable foundation. The tendency on the part of other provinces to be more or less self-supporting is extremely undesirable in the larger interest of the industry as a whole. For the purposes of licensing of new factories or for the extension of existing factories I consider that the final decision should rest with a central authority which alone can safeguard the interest of the country as a whole. Licensing of new factories or extension of existing factories should not be left to provinces.

32. Preliminary experiments carried out by the Department of Agriculture have indicated that there is ample scope for the manufacture of syrups as also for the preservation of fruits. Fruits that are grown in abundance in the province are Mangoes and Lichies. Oranges, Guavas and Ber are also grown. Amongst the wild fruits "Bel" is very common. All of these can be utilised in making syrups and for canning, etc. It must, however, be noted that any such industry will have to compete with imported articles. It must therefore be started on modern lines and turn out the articles not only under absolutely sanitary conditions but must be prepared to market these in an attractive manner in order to be able to compete successfully.

33. The data on the production of gur from sugarcane in Bihar is given in the table below:—

Year.	Gur (Standard Maund).
1931-32	5,064,604
1932-33	3,561,650
1933-34	6,574,730
1934-35	6,312,270
1935-36	4,904,230

34. There is no other source than sugarcane for the production of gur in this province.

35. No data is available of prices obtained for various kinds of gur in different areas. Reliable data can only be collected after a very careful survey. This requires time and could not be done.

It is not possible to analyse the factors which affect any variation in prices in the absence of data with regard to the prices of different kinds of gur.

36. No reliable data is available regarding the consumption of gur in the province. It is also not possible to state causes of variation in the quantity available for consumption within the province from year to year. The Table II already given under Question No. 29 gives estimates of the quantities available for consumption within the province after allowing for the quantities exported. Presumably these quantities were consumed, but why there has been such variation is not possible to state at present.

37. When dealing with this question it is necessary to deal with Bihar and Orissa as there are no separate figures available for the two provinces. It must, however, be noted that Bihar excluding Chota Nagpur and Orissa is mainly an exporting area and practically no gur is imported into this tract. Chota Nagpur and Orissa, however, are mainly importing tracts. The figures of import therefore given in Table I should be read in the light of these remarks. The import of gur into Chota Nagpur and Orissa province is from Bihar proper, United Province and primarily Calcutta market in Bengal.

TABLE I.—*Showing the Annual net Export of Sugar and Gur from Bihar and Orissa.*

Year.	Sugar.			Gur.		
	Export.	Import.	Net Export.	Export.	Import.	Net Export
1933-34 .	3,450,960	312,874	3,138,086	2,058,223	138,477	1,919,746
1934-35 .	349,556	279,876	3,215,680	2,157,376	186,325	1,971,051
1935-36 .	3,785,497	267,681	3,517,816	1,666,397	674,872	991,525
1936-37 .	4,280,830	234,383	4,045,447	1,607,270	1,401,478	285,792

38. The reply to this question has been indicated under Question No. 37. In the old province of Bihar and Orissa, Bihar proper is the exporting area. Since the separation of the two provinces, the Patna, Tirhut and Bhagalpur divisions of the province of Bihar are the main exporting areas. It has only been possible to collect figures of export for the last four years because the collection and publication of rail and river-borne trade statistics were suspended from 1922 to 1933. Gur is exported mainly to Assam, Bengal, the United Provinces and the Central Provinces and occasionally to distant markets of Bombay, the Punjab and Madras. Table I already given under reply to question No. 37 shows that the increased net export of sugar has resulted in a decreased net export of gur. This may be attributed to two causes, namely:—

(i) Larger quantities of cane are being diverted to factories for the manufacture of white sugar.

(ii) The importing provinces are taking steps to become increasingly less dependent upon exporting provinces.

39. A series of gur prices are given in Tables 1 to 8. Table I gives the price of gur in five representative villages of the Patna District at a distance varying from 6 to 30 miles. Table 2 gives the wholesale price at the wholesale golas at Maharajganj market in Patna and Table 3 gives the purchase and sale price of a retail store at the New Market. The margins in the sale prices in different stages may be seen. It should, however, be understood that the cost of transport and storage and wastage, which is considerable in storing gur through any length of time, are all included in these margins. In the short time available it was not possible to ascertain these factors but without them no definite conclusion can be drawn.

With regard to the relation between the price of gur and the Indian Factory Sugar, it appears necessary to ascertain the relationship in prices of sugar, gur and food grains before the development of the sugar industry in order to bring out if the price of gur moved with sugar or with the general price level. It is therefore desirable to deal with the problem for two distinct periods, namely, the period prior to the development of the sugar industry and that after the development of the industry. In Table 7 are given monthly prices of Chaki (solid) gur and Java white T. M. O. sugar from 1908 to 1923 at Calcutta extracted from the market quotations regularly published in the "Capital". This was the most reliable record of prices that could be referred to because the sugar prices published by the Director General of Commercial Intelligence and Statistics are not suitable as prices of different kinds of sugar are given in different years by his office. The prices for Ballam rice (Table 8) for the same period were extracted from the "Index Numbers of Indian Prices". *These are plotted in Graph I.* Price relations were violently disturbed during and after the War, particularly, in 1920 when price of sugar went up to Rs. 39 per maund for a time. It is therefore difficult to draw any definite conclusions from the facts; but there appears to be a clear indication for

an independent demand for gur which controlled its price irrespective of the price of sugar. For example, during the normal period of 1908 to 1914 it appears that the gur behaved quite independent of sugar but with a definite negative relation with rice—when rice went down gur went up and *vice versâ*. It is quite probable that the class of people who prefer to use gur, were able to go in for more gur and sweets made from it when their income left enough margin after their requirements of food grains were satisfied. During these years the price of gur went up at times to within a rupee of the price of sugar and all through the seven years the price of gur was independent of its value in terms of its sugar equivalent. One of the reasons for this was the prejudice against imported sugar among a class of orthodox Hindus.

The position appears to have altered after the development of the Indian Sugar Industry. The development of the Sugar Industry may be dated from the 1929-30 when 110,918 tons of white sugar was produced from cane and gur in Indian factories. The prices of sugar and gur in this period, obtained from the Bhagalpur market and given in Table 1 show a comparatively more complete relationship not only in their movement but also in its value in terms of sugar equivalent. The period, however, is too short and of abnormal price relation due to economic depression to warrant a definite conclusion. The indications are however clear that gur lost its old independent position. Whether it will again ever recover that position will be known when rising prices of other agricultural produce will restrict sugarcane cultivation for production of gur as it is almost certain that gur at its present price will cease to attract the cultivator when the prices of other crops go up to anything like their normal level.

TABLE 1.—*Statement showing average rates of gur obtained by cultivators in the villages in the Patna District.*

Village.	1933-34.	1934-35.	1935-36.	1936-37.
	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.
Nawada . .	3 3 0	3 12 0	3 0 0	2 0 0
Gorakhi . .	2 9 6	3 9 0	2 15 0	2 7 0
Madhopur .	2 14 3	3 10 3	3 3 9	...
Amerpura .	2 14 0	3 9 6	3 3 9	2 7 0
Sikaria . .	3 1 0	3 12 3	3 3 0	3 0 3
Average	2 14 9	3 10 7	3 1 11	2 7 7

TABLE 2.—*Wholesale* Gur *Prices at Maharajganj, Patna.*

Months.	1933-34.	1934-35.	1935-36.	1936-37.	1937-38.
	Rs. A. Rs. A. P.	Rs. A. P. Rs. A. P.	Rs. A. P. Rs. A. P.	Rs. A. P. Rs. A. P.	Rs. A. Rs. A.
April	..	3 3 0 to 3 8 0	3 15 6 to 4 1 3	2 14 6	1 8 to 2 0
May	..	2 13 0 to 3 7 0	4 13 0	2 14 0	1 8 to 1 12
June	..	3 2 0 to 4 3 0	4 5 6	3 2 0 to 3 4 6	..
July	..	4 3 0 to 3 2 0	4 8 0 to 4 10 0	3 3 3 to 3 5 9	..
August	..	4 0 0 to 4 6 0	4 9 0 to 5 3 0	3 3 3 to 3 6 0	..
September . . .	..	4 12 9	5 0 0 to 5 5 0	3 5 6 to 3 9 3	..
October	..	4 12 0 to 5 2 6	4 11 6 to 5 3 0	3 4 6 to 3 9 3	..
November . . .	3 0 to 3 9 0	4 4 0 to 4 7 0	4 10 0 to 4 14 3	2 9 3	..
December	2 14 to 3 4 3	3 4 9 to 3 7 6	3 8 0 to 3 15 0	2 10 6 to 2 12 0	..
January	2 4 to 2 11 0	3 7 0 to 3 10 0	3 3 6 to 3 9 6	2 6 0 to 2 9 0	..
February	2 9 to 2 14 0	3 11 0 to 4 4 0	2 15 0 to 3 4 0	2 2 0	..
March	3 4 to 3 12 0	3 15 6 to 4 1 3	3 2 0	2 0 0 to 2 2 0	..
Average	3 0	3 14 0	4 4 6	2 15 0	1 11

TABLE 3.—*Statement showing Purchase and Retail Price of Sugar at a Retailer's Shop, Patna.*

Months.	1934-35.		1935-36.		1936-37.		1937-38.	
	Purchase.	Retail. Per Md.	Purchase.	Retail. Per Md.	Purchase	Retail. Per Md.	Purchase.	Retail. Per Md.
	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.
April.	4 8 0 to 4 12 0	5 14 0	4 8 0	5 0 0	3 3 0	5 0 0	2 3 0	3 8 0
May	5 2 0	6 0 0	..	5 0 0	..	4 4 0	..	3 8 0
June	4 14 0	6 4 0	..	5 0 0	..	4 2 0	..	..
July	4 14 0	6 2 0	4 14 0	6 0 0	..	4 0 0	..	..
August.	..	6 2 0	..	7 8 0	3 7 0	4 8 0	..	..
September	..	6 4 0	..	7 0 0	3 8 0	5 0 0	..	..
October	..	6 8 0	..	6 11 0	..	4 8 0	..	..
November	..	5 0 0	..	6 0 0	..	4 0 0	..	..
December	..	4 14 0	..	5 5 0	..	4 8 0	..	..
January	3 10 0	4 14 0	..	5 0 0	..	3 12 0	..	..
February	..	4 8 0	..	4 8 0	..	3 8 0	..	..
March	3 4 0	4 8 0	..	5 0 0	2 2 0	3 8 0	2 3 0	3 8 0
Average	4 6 4	5 9 2	4 2 6	5 10 0	3 1 0	4 2 0	..	..
Margin of profit	26·7		35·7		34·6		60	

TABLE 4.—*Price of gur from a large consuming establishment which obtained its supply from contractors on annual contract.*

Years.	Price per Maund.	Years.	Price per Maund.
	Rs. A.		Rs. A.
1930-31 . . .	6 8	1934-35 . . .	4 8
1931-32 . . .	4 0	1935-36 . . .	4 2
1932-33 . . .	5 2	1936-37 . . .	5 4
1933-34 . . .	4 6		

TABLE 5.—*Statement showing harvest price of* gur *as given in the Season and Crop Report of Bihar and Orissa.*

District.	1929-30.	1930-31.	1931-32.	1932-33.	1933-34.	1934-35.	1935-36.
	Rs. A.	Rs. A.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.
Patna . .	6 15	3 13	3 4 0	2 4 0	2 8 0	5 0 0	3 6 0
Gaya . .	5 0	3 2	2 12 0	2 8 0	2 8 0	3 4 0	2 8 0
Shahabad .	8 4	4 10	2 10 0	2 9 0	3 6 0	3 4 0	2 15 0
Saran . .	4 9	3 9	4 0 0	2 14 0	3 4 0	3 8 0	3 3 0
Champaran .	4 6	2 14	3 0 0	2 6 0	2 8 0	2 12 0	3 6 0
Muzaffarpur .	5 10	4 9	3 10 0	3 7 0	3 11 0	4 1 0	3 14 0
Darbhanga .	5 13	3 10	2 9 0	2 4 0	2 3 0	3 10 0	3 3 0
Monghyr . .	6 8	4 0	4 0 0	4 0 0	4 0 0	4 0 0	4 0 0
Bhagalpur .	8 8	4 8	4 0 0	2 10 0	3 6 0	3 8 0	2 12 0
Purnea . .	8 0	4 4	4 1 0	3 0 0	2 8 0	3 12 0	2 12 0
Santal Parganas	5 10	3 8	3 6 0	2 12 0	2 12 0	3 6 0	3 5 0
Cuttack . .	7 1	4 1	4 3 0	3 10 0	2 10 0	2 15 0	2 15 0
Balasore . .	9 8	5 10	4 12 0	4 0 0	3 8 0	4 8 0	4 8 0
Angul . .	4 11	2 14	3 2 0	5 0 0	3 2 0	3 2 0	5 10 0
Puri . .	7 8	3 13	4 0 0	3 12 0	2 15 0	3 5 0	4 12 0
Sambalpur .	5 8	3 8	3 8 0	3 4 0	3 0 0	3 0 0	4 8 0
Hazaribagh .	6 0	4 3	3 9 0	2 7 0	3 0 0	3 9 0	3 8 0
Ranchi . .	..	..	..	..	..	..	..
Palamau . .	6 10	4 0	3 4 0	2 8 0	3 10 0	3 5 0	3 5 0
Manbhum .	9 0	4 14	3 14 0	4 0 0	3 8 0	4 0 0	4 0 0
Singhbhum .	7 8	5 4	6 8 0	4 2 0	3 8 0	4 8 0	4 0 0
Average . .	6 10	4 0	3 11 2	3 2 7	3 1 1	3 9 10	3 9 10

TABLE 6.—*Wholesale market rate of sugar and* gur *from the year 1923 to 1937 at the Bhagalpur market.*

Date.	Rate of Sugar white.	Gur.
	Rs. A. P.	Rs. A.
11th September, 1923 . . .	16 3 0	6 4
25th August, 1924	16 0 0	6 4
29th July, 1925	11 12 9	6 4
18th May, 1926	13 6 5	7 0
19th September, 1927 . . .	12 3 3	5 4
10th June, 1928	...	5 8
8th April, 1929	10 4 0	5 0
3rd August, 1930	9 8 0	5 0
18th May, 1931	9 12 9	4 0
17th June, 1932	11 0 0	5 0
29th June, 1933	10 3 3	3 2
14th June, 1934	9 0 0	2 8
17th June, 1935	9 3 3	2 8
9th June, 1936	8 12 9	2 8
30th May, 1937	6 9 9	2 0

TABLE 7.—*Price of* gur *and sugar in Calcutta (from the "Capital").*

Months.	1908.		1909.		1910.		1911.		1912.	
	Valley gur.	Java white sugar.	Valley gur.	Java white sugar.	Valley gur.	Java white sugar.	Valley gur.	Java white sugar.	Valley gur.	Java white sugar.
	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.
January	..	..	4 8 0	7 7 0	7 4 0	8 3 0	6 4 0	7 0 0	*Nil*	9 8 0
February	..	..	4 8 0	7 10 6	7 4 0	8 6 0	6 4 0	7 0 6	..	10 1 0
March	..	..	4 8 0	7 12 0	7 4 0	8 11 0	6 4 0	7 4 6	..	9 15 0
April	..	..	4 8 0	7 11 0	7 4 0	8 8 0	6 4 0	7 3 0	..	10 3 0
May	..	..	7 8 0	7 10 0	7 0 0	8 9 0	6 4 0	7 3 0	..	1 7 0
June	..	..	7 8 0	7 11 0	7 0 0	8 10 0	6 4 0	7 3 0	..	9 7 0
July	4 8 0	8 4 0	7 8 0	7 10 6	7 0 0	8 3 6	6 4 0	7 1 6	..	8 2 0
August	4 8 0	7 8 0	7 8 0	7 3 0	7 0 0	8 5 6	6 4 0	8 5 0	..	6 14 0
September	4 8 0	7 8 0	7 8 0	7 6 0	7 0 0	8 2 0	6 4 0	9 1 0	..	7 4 0
October	4 8 0	7 2 0	7 8 0	7 9 0	6 8 0	7 5 0	6 4 0	9 2 0	..	7 2 6
November	4 8 0	7 6 0	7 8 0	7 13 6	6 8 0	7 4 0	6 6 0	9 4 0	5 0 0	6 15 6
December	4 8 0	7 5 0	7 4 0	7 15 0	6 8 0	7 0 0	6 4 0	9 3 0	4 12 0	7 2 0

Months.	1913.		1914.		1915.		1916.		1917.	
	Valley gur.	Java white sugar.	Valley gur	Java white sugar.	Valley gur.	Java white sugar.	Valley gur.	Java white sugar.	Valley gur.	Java white sugar.
	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a.
January	4 4 0	7 6 0	4 4 0	6 12 6	4 0 0	11 2 0	7 0 0	12 11 0	6 4 0	14 1 0
February	3 8 0	7 5 6	3 12 0	6 11 0	4 0 0	11 10 0	6 0 0	12 2 0	7 4 0	13 14 0
March	4 0 0	7 7 0	3 12 0	6 15 0	5 0 0	11 13 0	6 0 0	12 4 0	7 4 0	14 5 0
April	4 0 0	7 9 0	3 12 0	7 1 0	5 12 0	12 6 0	6 0 0	12 7 0	7 0 0	14 3 0
May	4 0 0	8 8 0	4 8 0	7 0 0	5 12 0	12 5 0	6 4 0	13 8 0	5 12 0	13 12 0
June	4 0 0	7 15 6	5 0 0	7 2 0	6 4 0	12 4 0	6 4 0	13 7 0	5 12 0	12 4 0
July	4 8 0	7 3 0	5 8 0	6 13 0	6 4 0	12 1 0	6 4 0	13 4 6	5 12 0	12 10 0
August	5 0 0	7 1 0	7 4 0	7 14 0	6 8 0	12 4 0	6 0 0	13 10 3	7 0 0	13 14 6
September	5 12 0	6 14 0	7 0 0	9 8 0	8 0 0	12 2 0	6 12 0	13 14 0	7 4 0	13 14 0
October	5 8 0	6 15 0	7 0 0	9 1 0	8 0 0	11 9 0	6 12 0	13 12 0	7 8 0	13 10 0
November	4 8 0	6 12 6	7 0 0	10 10 0	8 8 0	11 10 0	7 4 0	15 7 0	8 0 0	12 15 0
December	4 4 0	6 12 0	4 12 0	10 10 0	7 0 0	12 3 6	7 4 0	14 11 6	8 8 0	11 10 0

Months.	1918.				1919.				1920.				1921.				1922.				1923.			
	Valley gur.			Java white sugur.			Valley gur.			Java white sugar.			Valley gur.			Java white sugar.			Valley gur.			Java white sugar.			Valley gur.			Java white sugar.		
	Rs.	a.	p.	Rs.	a.	p.	Rs.	a.	p.	Rs.	a.	p.	Rs.	a.	p.	Rs.	a.	p.	Rs.	a.	p.	Rs.	a.	p.	Rs.	a.	p.	Rs.	a.	p.
January . .	7	0	0	10	8	0	7	4	0	12	13	0	13	6	0	25	1	0	11	8	0	22	8	0	10	0	0	12	3	0	9	0	0	14	5	0
February . .	6	12	0	9	11	0	7	4	0	14	2	0	12	8	0	26	14	0	11	0	0	24	6	0	10	0	0	14	6	0	9	0	0	15	11	0
March . . .	7	0	0	10	8	0	8	12	0	14	3	0	12	0	0	22	6	0	11	0	0	27	2	0	9	8	0	15	11	0	8	0	0	18	2	0
April . . .	8	0	0	11	4	0	9	4	0	16	12	0	12	0	0	28	12	0	11	0	0	27	8	0	9	8	0	14	14	0	8	0	0	18	14	0
May . . .	8	0	0	12	6	0	9	0	0	17	12	0	13	8	0	34	0	0	11	0	0	23	14	0	9	8	0	15	0	0	..			..		
June . . .	7	0	0	9	14	0	10	8	0	18	9	0	13	8	0	36	8	0	11	0	0	20	4	0	9	8	0	15	10	0	..			..		
July . . .	6	8	0	9	12	0	11	0	0	24	8	0	12	0	0	39	8	0	11	0	0	28	10	0	9	8	0	15	6	0	..			..		
August . .	6	8	0	11	6	0	10	8	0	21	2	0	13	0	0	39	12	0	11	0	0	16	2	0	9	8	0	16	1	0	..			..		
September . .	6	8	0	11	5	0	10	0	0	18	10	0	11	0	0	35	0	0	10	0	0	15	15	0	9	8	0	15	14	0	..			..		
October . . .	7	8	0	11	12	0	10	0	0	21	0	0	13	0	0	31	2	0	10	0	0	14	0	0	9	8	0	15	4	0	..			..		
November . .	7	8	0	11	15	0	10	6	0	23	6	0	14	0	0	25	0	0	10	0	0	12	8	0	9	8	0	14	12	0	..			..		
December . .	5	0	0	11	10	0	10	8	0	24	0	0	14	0	0	20	4	0	10	0	0	12	10	0	9	0	0	14	13	0	..			..		

TABLE 8.—*Table showing the annual average prices of* gur, *Java sugar and Ballam Rice from 1908 to 1923 at Calcutta (from the "Capital").*

Year.	Valley Gur.	Java Sugar.	Ballam Rice.
	Rs. A. P.	Rs. A. P.	Rs. A. P.
1908 . . .	4 8 0	7 8 2	6 2 9
1909 . . .	6 7 8	7 9 10½	5 13 0
1910 . . .	6 15 4	8 1 7	3 15 0
1911 . . .	6 4 2	7 14 6½	4 2 6
1912 . . .	4 14 0	8 9 5	4 13 6
1913 . . .	4 7 0	7 5 1	5 14 0
1914 . . .	5 4 4	8 6 1½	5 11 0
1915 . . .	6 4 0	11 14 7½	6 0 0
1916 . . .	6 8 6	13 6 10½	6 4 0
1917 . . .	6 15 0	13 6 8½	5 11 0
1918 . . .	6 15 0	10 15 11	4 12 0
1919 . . .	9 8 8	18 14 5	7 8 6
1920 . . .	12 13 4	30 5 7	9 8 0
1921 . . .	10 11 4	19 9 11	8 3 0
1922 . . .	9 8 8	14 15 10	7 2 0
1923 . . .	8 8 0	16 12 0	6 6 6

TABLE 9.—*Prices of gur and sugar in Calcutta (from the "Indian Trade Journal").*

Months.	1931-32.		1932-33.		1933-34.		1934-35.		1935-36.		1936-37.	
	Valley gur.	Java white sugar.	Valley gur.	Java white sugar.	Valley gur.	Java white sugar.	Valley gur.	Java white sugar.	Valley gur.	Java white sugar.	Valley gur.	Java white sugar.
	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.
April . .	6 4 0	8 15 3	5 0 0	10 10 0	4 4 0	10 3 0	3 14 0	10 1 0	3 14 0	9 14 0	3 6 0	9 14 0
May . .	6 0 0	9 1 3	5 0 0	10 9 9	4 0 0	10 6 0	4 8 0	10 0 0	4 8 0	9 14 0	3 0 0	9 14 0
June . .	6 0 0	9 3 6	5 0 0	10 8 9	4 4 0	10 6 6	4 8 0	9 14 0	4 12 0	9 11 0	3 0 0	9 14 0
July . .	5 12 0	9 4 6	5 2 0	10 7 0	4 12 0	10 7 9	4 12 0	9 14 0	4 8 0	2 11 0	3 6 0	9 14 0
August .	6 0 0	9 1 3	5 4 0	10 11 3	5 4 0	10 8 6	5 0 0	9 13 0	4 5 0	9 6 6	3 8 0	9 14 0
September .	6 0 0	9 0 3	5 0 0	10 9 0	5 8 0	10 8 0	5 0 0	9 10 6	4 8 0	9 8 6	3 12 0	9 14 0
October .	6 8 0	11 2 6	5 4 0	10 11 6	..	10 7 6	5 4 0	9 10 0	4 8 0	10 11 0	3 14 0	9 12 0
November .	6 0 0	10 14 0	5 8 0	11 1 0	4 4 0	10 7 6	4 12 0	9 6 0	4 6 0	10 3 0	3 2 0	9 11 0
December .	5 12 0	10 14 0	4 8 0	10 15 6	3 4 0 4 4 0	10 0 0	4 5 0	9 6 0	4 8 0	9 14 0	3 4 0	9 9 0
January .	5 8 0	10 15 6	4 6 0	10 6 0	2 8 0 4 0 0	10 0 6	4 14 0	9 9 0	3 12 0	9 14 0	3 0 0	9 9 0
February .	5 4 0	10 15 3	4 2 0	10 6 0	3 0 0 4 0 0	10 1 0	4 10 0	9 8 0	3 4 0	9 14 0	2 10 0	9 9 0
March . .	5 0 0	10 10 3	4 0 0	10 5 0	3 12 0	10 1 0	3 15 0	9 9 0	3 4 0	9 14 0	..	..
Annual average price.	5 13 4	10 0 1	4 13 6	10 9 8	4 2 2	10 4 9	4 10 4	9 11 1	4 2 9	9 13 1	3 4 2	9 12 2

40. Indian Factory Sugar is not replacing gur to any large extent in this province. Enquiries carried out by the marketing staff have elicited that the old prejudice against the use of imported factory white sugar has disappeared to a large extent but the resultant substitution of sugar for gur has not been commensurate with the disappearance of this prejudice. Gur is a commodity which has an independent market of its known amongst a certain class of people and for special purposes and it is doubtful if it will be even either entirely or to a very large extent, replaced by factory white sugar.

41. The Department of Agriculture works continuously on improvement in the methods of manufacturing gur. This research works is mainly directed towards the simplification of the furnace which will lead to a lower consumption of fuel, to the preservation and clarification of juice by simple and inexpensive methods, and to the production of the final product by determining more or less fairly accurately the striking point of rab for the setting of gur. A further step has recently been taken in producing brown sugar which is very closely alike the "Shakkar" produced in the Punjab. This raw sugar is produced directly from juice without the use of crystalliser or a centrifugal machine. It fetches better price than gur because it has the appearance of sugar. The methods which have been so far perfected in the production of gur and in the production of raw brown sugar are being demonstrated in the gur areas and are being increasingly adopted by the cultivators.

45. There is no Khandsari industry in the province and the conditions during the last seven years have changed so much towards the further development of the factory white sugar industry that they do not justify any support being given to the organising of this industry.

The Khandasari at the most can recover 50 per cent. of first sugar which is inferior to even the lowest standard of the factory sugar and as such can not fetch anything like the factory sugar price. The research work carried out by the Department has shown that it is not economical to convert molasses left after making first sugar, into second sugar. With the present prices for factory white sugar it is doubtful if Khandasari sugar can be an economical proposition.

46. The problem has been under investigation for several years and during the last three years has been financed by the Imperial Council of Agricultural Research. The main lines of enquiry and the conclusions arrived at are:—

Furnace.—A single pan furnace has been devised. It differs from the ordinary country furnace only in so far that the provision has been made for draught and a flue and chimney have been added. It is easy to make and is cheap and simple in working. The cost of making one furnace would be less than Rupees seven only. The furnace has been standardised with the distance between the pan and the grating to be 2'-6" and the height of the seat of the pan from the ground level to be 9". This furnace has proved very efficient taking 45 minutes only for boiling 1½ maunds of juice to the rab stage. It requires 30 seers of fuel, consisting of 20 seers of bagasse and 10 seers of leaves.

Clarification.—Single superphosphate and "bhind" mucilage combination proved to be the best clarifying medium. Less than ¼th of each is required per charge. These are added to the juice as it is poured into the pan and the clarification is quick and thorough.

Rab-making.—It has been established that rab with the brix value of 86-87 was the best for the production of Khandasari sugar. In order to obtain an approximately uniform product at each boiling a small float, on the principle of hydrometer, has been devised and is named the "Rabometer". The striking point, *i.e.*, the stage when the rab should be taken off the fire, is quickly determined by dipping this float in a

small quantity of rab. The rabometer costs only three annas and is simple enough to be used by the cultivator.

Storage.—Seven to ten days have been found to be the optimum period of storage before centrifuging. During this period, the rab should be periodically stirred.

Sugar Recovery.—The rab is centrifuged to obtain Khandasari sugar. The percentage of sugar on cane varied from 5 to 6 per cent., depending upon the seasons and the quality of the juice. The sugar analyses was over 98 per cent. sucrose and has a good crystalline structure.

Molasses.—The waste molasses from the centrifuge is boiled to make gur. In the process of gur making, it was found that a small amount of crushed Khandsari sugar if sprinkled on the pan after it has been taken off the furnace helped considerably to give a crystalline texture to the gur. The percentage of this second gur on cane varied from 4·5 to 5·5.

47. I do not think that the sugar excise duty of 1934 affected the grower in any way. It certainly affected the manufacturer in so far as it reduced his profits per maund to the extent of the duty. What effect it has on the dealer is not known but it certainly did not affect the consumer.

The additional duty imposed in 1937 has affected no one except the grower. The moment the additional duty was announced, the millers threatened to close their mills early in the season. With an over production of the crop in the province the cultivator and the Government had to face a serious situation. The only way to get the millers to continue crushing for a longer period was to offer them the incentive of a reduced minimum price for their raw material which in practice meant that practically the whole of the additional excise and more was passed on to the growers.

48. The effect of the protective duties on sugar on the consumer has been, thanks to the bad marketing organisation of the manufacturers, a decreased price as compared to what he paid for imported sugar before the industry was established as a result of protection. The consumer to-day is getting his sugar comparatively cheaper than what he would have had to pay if the revenue duties which were in force before the protection had continued on imported sugar assuming that the industry had not been established in the country as a result of protection.

49. None that I know of

50. In Bihar there is no Government Revenue Agency as exists in some other provinces. In the absence of a village revenue official the reporting of agricultural statistics devolves on the village chowkidar. This individual supplies the information which is usually purely guess work to the Sub-Inspector of Police in charge of the Thana. The Sub-Inspector in turn sends up thanawari figures to the Sub-Divisional Officer, who supplies these to the district officer. The collection and preparation of district figures is usually entrusted by the district officer to a deputy magistrate. The figures so reported by the Sub-Divisional Officers are checked by the staff concerned with the Survey and Settlement figures which are in some cases, over 30 years old. Any large variations between the figures reported and the Survey and Settlement figures are usually manipulated in the district office. These figures are then sent in to the Director of Agriculture who is finally responsible for issuing the crop forecasts and for preparing the crop statistics. Under the existing system it is absolutely impossible to check the figures at any stage. The process from one end to the other is purely guess work and as such little if any reliance can be placed on the statistics published. I would cite two instances to support my contention. Up till the year 1931 a more or less uniform figure ranging between 27,800 to 284,000 acres was reported year after year as the area under cane in the province. A 5 per cent. random check carried out by the Department of Agriculture in the year 1933 showed that these figures were

very wide of the mark and that the actual area under cane was not less than 400,000 acres. Again area under jute in Purnea district alone used to be reported as 117,574 acres. An actual field to field survey carried out in 1936 crop season showed that the area was 211,000 acres, an increase of about 80 per cent. In order to ascertain correct figures it is essential to carry out a actual survey of the area under sugarcane crop as also under other important crops. In order further to find out average yield per acre it is also essential to carry out random crop cutting experiments over a series of years. Until this is done the crop statistics of Bihar will not be reliable. I have submitted a scheme for such a survey to the Provincial Government. It has been proposed to carry out a random survey of the sugarcane and wheat areas over a period of 3 years. Simultaneously with the survey it has been proposed to carry out crop cutting experiments on both these crops. If the survey is carried out, we shall know exactly the area under cane both plant and ratoon as also the yields per acre in both cases. The total cost involved will amount to Rs. 1,16,490 and it has been suggested that the Imperial Council of Agricultural Research may be requested to finance the proposal. The ascertaining of accurate figures both in the case of sugarcane and wheat is of fundamental importance and I hope that the necessary funds would be forthcoming to enable the Agricultural Department to have accurate figures for at least these two crops.

No statistics are at present being collected for the price of sugar and gur.

51. Comments on some of the points raised in the other questionnaire are given separately below.

REPLIES TO FACTORY'S QUESTIONNAIRE.

7. (*a*) Generally speaking the economic size of a factory is determined by—

(i) the quantity of raw material, its quality and adequacy as also its price,

(ii) close proximity of sugar markets,

(iii) Rail-road facilities,

(iv) possibility of disposal of waste products,

(v) duration of cane supply season,

(vi) the availability of both skilled and unskilled labour.

(*b*) By "economic size" of the factory I understand that the invester should get at least 10 per cent. return on the capital investment. Taking the price of cane at As. 5 per maund *ex*-factory and price of sugar at Rs. 6 per maund *ex*-factory and an average recovery of 9·4 per cent., the smallest unit which can be operated economically under present day conditions would be 650-800 tons daily capacity.

8. Except the prima movers like steam engines pumps, compressors, vacuum engines, etc., and the heavy equipment like boilers, evaporators, vacuum pans and centrifugal machines the rest of the equipment can be fabricated in India and this is being done by some of the Engineering Firms in Calcutta, Cawnpore and Saran Engineering Works, Marhawrah, etc.

It is suggested that concerns who are undertaking at present the fabrication of sugar factory equipment in the country should be given every possible encouragement. With such an encouragement it ought not to be difficult to manufacture a large part of the sugar factory equipment within the country. The prices would thus be very much lower and this would be a considerable help to the industry.

15. Frost is rare in Bihar and it is only in a few years that minimum temperatures drop below 38° F. Damage from insect pests, particularly borers, is however, appalling and is estimated as per figures supplied by

Dr. Haldane of Messrs. Begg Sutherland and Company at Rs. 80 lakhs per annum. Of the fungus diseases, toprot is assuming seriousness and studies conducted at the Sugarcane Research Station have shown loss in weight and sugar as compared to sound crop to be 11·3 per cent. and 9·6 per cent. respectively. Dr. Haldane estimates loss due to borer infestation in yield of sugar from cane and sugar per cent. at 34·1 and 25·4 respectively.

22. I still agree with findings of the first Tariff Board regarding the compulsory acquisition and leasing of land for sugar factories. If the system of controlled zones suggested by me is given effect to and if the factories take active steps in improving the yield and quality of cane within their zones the problem of the supply of raw material of high quality to the factories will be solved within a very short time. It is also necessary to make adequate provisions for intensive research work on sugarcane agriculture including control of diseases and pests as also adequate provision for the supply of disease free healthy seed. The problem of manures also requires serious consideration. At present the prices charged for artificial manures are rather high and every possible encouragement should be given to Indian Industrialists to organize manufacture of nitrogenous and phosphatic manures within the country in order to lower the price.

23. When a system of controlled zone is introduced it would be essential for a factory to make adequate advances both in kind and cash to its growers within the zone for the supply of improved seed canes, necessary quantities of organic and inorganic manures, purchase of improved implements for cultivation and arrangements for the proper irrigation of cane in order to improve the per acre yield and quality of cane. No other agency including Government will ever be in a position to help the cultivator in improving his per acre yield and quality of cane. Factories alone can do this and no amount of research and propaganda on the part of the Department of Agriculture will be able to produce the desired results within the short time the industry expects. For improving the per acre yield from 250-270 to 400-500 maunds the amount of money required is about a lakh of rupees for manuring per year and about a lakh and fifty thousand rupees once for the purchase of improved implements. In addition to the manure which must be provided every year, it is necessary to provide good healthy seed once in five years. The expenditure on this account would be of the nature of Rs. 20,000 per year. If therefore, every factory sets apart a lakh and a quarter of rupees every year to be given out as advance for seeds and manures and another Rs. 50,000 for the purchase of implements, the per acre yield from these areas would without doubt reach the figures stated above.

So far as the feeder roads in North Bihar are concerned the existing ones are quite adequate to meet all traffic requirements of the factories. When the zones have been formed the factories may find it to their advantage to lay down Tramways. In such cases they could reasonably expect Government assistance in acquiring or leasing the necessary land for laying their tracks.

26. Gate cane is entirely transported by carts. Only one factory in the Province (Bikramganj) uses a very small number of lorries to transport its own estate cane from a distance of about 30 miles.

The average weight carried per cart is 17 maunds. To a very great extent the country cart can be improved by the substitution of rubber tyred carts. Such rubber tyred carts are capable of carrying at least three times the eight carried by the present country carts. This holds good with good bullocks carts but experience shows that the country bullocks can only carry a weight of about thirty maunds (approximately double that of the country cart) with the Pneumatic equipment. The only drawback in the large scale adoption of rubber tyred carts is the heavy initial expenditure amounting to about Rs. 200 per cart. I must frankly state that I consider the prices at present being charged by the manufacturers very high and unless they bring down the cost very considerably, there is little

hope of these finding favour with the average cultivator. Factories, however, can do a great deal in assisting those growers who are willing to adopt the new carts with necessary cash advances recoverable over a number of years. The opening of service stations at the factory sites from where free air for inflating the tyres would be available and which would also be equipped for rendering the necessary service to the equipment at nominal rates would also help to popularise these carts.

The cost of transport from the employment of rubber tyred carts because of their increased carrying capacity can be out down by at least 50 per cent. and what is far more important the wear and tear on the road would be reduced to a minimum. The strain on bullocks would also be minimized.

38. With a few honourable exceptions most of the factories in Bihar purchase their cane through middlemen who are designated as "guarantee growers", "contractors" "commission agents", "propaganda suppliers", etc. These people have no stake whatsoever in the industry. They have in the past done great disservice to the growers and they have so far managed to keep the miller and the grower apart. They are parasites who must be eliminated at any cost and it is only then that we can hope to have direct relations between the grower and the miller which is the only sound foundation for a stable industry.

39. Here again with a few honourable exceptions majority of the factories do not at present enter into direct relations with the growers. It is said that the factories give certain amount of advances to their growers but this is always done through the middlemen who usually do not pass on the whole of these advances to the growers. By making advances through the contractors the grower is forced to depend upon the mercy of the contractor who can and does swindle him in many ways. It is a system for which I have no use. The factories have necessarily to safeguard themselves under the present system of cane supplies. In order to ensure the recovery of their advances they necessarily have to put these out through men whom they know. It is only when a system of controlled zones is brought in that a factory will be able to deal directly with the grower and will be certain of recovering its advances at harvest time.

61. Apart from using the molasses in the production of industrial and power alcohol it can be used in the manufacture of other alcohol products, by-products and fertilisers suitable for Indian markets. It is proposed that alcohol be converted into solvents suitable for the manufacture of Nitrocellulose Lacquers and Varnishes which are being imported into India in increasing quantities. Ether and Acetic Acid should also be manufactured to meet the Indian requirements. Carbon-dioxide gas both in the liquid and solid state can be recovered as a by-product at a trifling cost. From the wash water Fertilisers like Vegetable Potash and Ammonium Sulphate can be manufactured.

110. In addition to the protection so far afforded to the industry further assistance on the following points is necessary to develop the industry. These are:—

(i) Intensive research work on the agricultural aspect of sugarcane cultivation.

(ii) Extensive and intensive propaganda and demonstration to bring home the results of research to the cultivators.

(iii) Supply of disease free and healthy seed and the necessary manures, etc., to ensure better quality of raw material to the industry.

The problem of the sugar industry has been and remains today an agricultural problem. Until and unless steps are taken on the lines indicated in these notes the problem will never be solved and the industry will not be stabilized. It is therefore hoped that the Tariff Board will lay stress upon the immediate necessity of intensifying work on the agricultural aspect of the industry and Government must be asked to help much more liberally agricultural research and propaganda.

Expansion of the Sugarcane Improvement Scheme.

A scheme for the improvement of the Sugarcane Crop in Bihar financed from the Sugar Excise Grant was started in November, 1935. The staff sanctioned for the work consists of 3 Assistant Directors of Agriculture, 33 Agricultural Overseers and 99 Kamdars in addition to the necessary ministerial and menial staff. The main work of this staff is to show the cane cultivator the approved methods of improving the yield and quality of his crop by actual demonstrations in the cultivators' fields. Proper cultivation with the aid of cheap improved implements, selection of disease free healthy seed of early, mid season and late cane varieties, the manufacture of artificial composts from cane trash and the adequate manuring of cane crop with organic and chemical manures, adequate and timely irrigation and proper drainage of sugarcane are the main items of work. There is evidence to show that the sugar industry has appreciated the work done by this staff on the lines indicated above during the first 12 months of the working of the scheme.

2. Experience shows that an agricultural overseer can effectively supervise the work of 5 Kamdars each one of whom is required to work at least 20 demonstration plots. The present scheme provides for only 3 Kamdars per overseer. To expand the work it is necessary to provide another two Kamdars per overseer or 66 men in all. The department has not got any trained men which could be made available immediately. It is, therefore proposed to recruit 34 men in the year 1937-38 and put them through a short intensive course of training at Pusa Farms so that these men will be available for demonstration work within the year 1937-38. Provision for the purchase of bullocks and equipment for these 34 men has also been made in 1937-38. As bullocks will not be required till October or November, 1937, provision has been made for their maintenance for 6 months only. The second lot of 32 men will be recruited early in 1938 trained and made available for field work within the same year. Provision for the purchase of bullocks and equipment as also for the maintenance of the animals for 6 months in 1938 has meen made. It is proposed to provide only one such set per pair of Kamdars. A small provision has been made for the free distribution of seeds and manures for demonstration purposes in the two years for which the scheme is submitted for the present.

3. Two of the three Assistant Directors of Agriculture are posted in Tirhut Range (one each in Champaran and Darbhanga Districts) and one in the Patna Range. One more Assistant Director of Agriculture is necessary for Muzaffarpur District where work is suffering for want of adequate supervision and guidance. Provision has been made accordingly for one such officer and his staff. As Range Officers will have to deal with increased clerical work on account of one additional Assistant Director of Agriculture and 66 additional Kamdars extra clerical assistance in the range offices will be necessary. Provision has therefore been made for two junior clerks for this purpose.

4. It is to be noted that even if this scheme is not extended beyond 1938-39 the trained personnel will be useful not only for the department's expansion programme which may hereafter be decided upon but this personnel would easily find employment with sugar factories who need such trained hands but whom the department is unable to supply at present because there are no spare trained men available.

The cost of the bullocks has been estimated at Rs. 200 a pair because our recent experience in purchasing suitable animals is that good stock cannot be had at prices lower than this figure. The price of carts has been estimated at Rs. 260 each and is based on recent quotations of the manufacturers' local representatives.

5. It seems necessary to point out that the success of this work depends entirely on the detailed day to day supervision and guidance of overseers and Kamdars by an Assistant Director of Agriculture. There is, however,

no such officer for Muzaffarpur District and the work in that district has to be managed partly by the Assistant Director of Agriculture, Champaran and partly by the Assistant Director of Agriculture, Darbhanga. This is unsatisfactory as neither of these officers can devote the necessary time or detailed attention to the work of either the overseers or kamdars in that district. To do the work properly one more Assistant Director of Agriculture is therefore absolutely essential.

6. The work of agricultural field staff can only be carried out really effectively if the Range Officers have the help and advice of a specialist staff of entomologists (and mycologists). The survey of the present pests and diseases in the province, the selection and maintenance of disease free healthy seeds, study of control measures and co-ordination of work with the Central Research workers will be the main function of the staff now proposed.

7. In the entomological section provision has been made for a Sugarcane Entomologist in Class II Agricultural Service for a period of 2 years in the first instance. Two scientific assistants have been provided—one for the whole of North Bihar and one for areas south of the Ganges. These officers will be in charge of 7 fieldmen in Subordinate Agricultural Service. Five of these will be allocated to North Bihar and 2 to South Bihar. Necessary provision for non-recurring expenditure on an entomological laboratory and recurring expenditure on account of contingencies and travelling allowance has been provided for.

8. In the Mycological Section provision has been made for one Sugarcane Mycologist in Class II Agricultural Service. He will be assisted by one scientific assistant and three fieldmen. Necessary provision for the setting up of a Mycological Laboratory and for working the section has been made.

9. Both these sections will be located at Pusa where there are adequate buildings for housing the staff and laboratories. There they will be in close touch with the Sugarcane Research Station and the Sugarcane Specialist as also the Deputy Director of Agriculture.

10. I should like to stress the fact that the proposed Entomological and Mycological Staff is meant solely for work on sugarcane crop. This staff which is the bare minimum for work on sugarcane cannot possibly deal with any other crop. Their first and most important duty will be a complete survey of all sugarcane pests and diseases in the province. Without this essential preliminary information the department cannot proceed further in any work of controlling these pests and diseases and which are causing serious losses to the sugar industry as a whole. Given the staff proposed I expect to be able to complete this survey work in two seasons (1937-38 and 1938-39). The second most important duty of this staff will be the assistance they will be able to render to the Deputy Director of Agriculture and his staff and the Sugarcane Specialist in selecting disease free cane seed for distribution and extension work.

The provision of a Sugarcane Entomological and Sugarcane Mycological Section has nothing whatever to do with the provision of these sections by the Local Government for dealing with pests and diseases of other crops. The consideration of that question has been postponed till the next financial year and I propose to revive it in due course as the Department of Agriculture cannot function properly without those sections. Even if the Sugarcane Scheme is not extended beyond 1938-39 we shall have trained personnel and will have collected a mass of most important data which will be of immense assistance to our own Entomological and Mycological sections in dealing with sugarcane problems.

11. The total cost on account of the present proposals will be Rs. 73,810 in the year 1937-38 and Rs. 66,526 in 1938-39. A financial statement showing details of expenditure is attached. It is requested that this expansion scheme may be sanctioned at a very early date in order to increase the usefulness of the existing scheme as early as possible.

Expansion of the Sugarcane Improvement Scheme.

Details.	First year 1937-38.	Second year 1938-39.	Total.
1	2	3	4
	Rs.	Rs.	Rs.
A.—*Entomological Section.*			
1 Entomologist (Rs. 200) .	2,400	2,400	4,800
2 Senior Scientific Assistants (Rs. 130 each) .	3,120	3,120	6,240
7 Fieldmen (Rs. 49 each) .	4,116	4,116	8,232
2 Laboratory Assistants each on Rs. 20 a month .	480	480	960
1 Clerk (Rs. 35) . .	420	420	840
4 Peons at Rs. 8 each .	384	384	768
Total staff .	10,920	10,920	21,840
Travelling Allowance .	2,000	3,500	5,500
Contingencies—			
Non-contract—			
Recurring . . .	8,500	4,000	7,500
Non-recurring* . .	9,000	...	9,000
Total A. .	25,420	18,420	43,848
B.—*Mycological Section.*			
1 Mycologist (Rs. 200) .	2,400	2,400	4,800
1 Senior Scientific Assistant (Rs. 130) . .	1,560	1,560	3,120
3 Fieldmen (Rs. 49 each) .	1,764	1,764	3,528
2 Laboratory Assistants (Rs. 20) . . .	480	480	960
1 Clerk (Rs. 35) . . .	420	420	840
8 Peons on Rs. 8 each .	288	288	576
Total staff .	6,912	6,912	13,824
Travelling allowance . .	1,000	2,500	3,500
Contingencies—			
Non-contract—			
Recurring . . .	4,000	4,000	8,000
Non-recurring† . .	10,800	...	10,800
Total B. .	22,712	13,412	36,124

* Laboratory equipment Rs. 8,000, Office equipment Rs. 1,000.

† Laboratory equipment Rs. 10,000, Office equipment Rs. 800.

Expansion of the Sugarcane Improvement Scheme—contd.

Details.	First year 1937-38.	Second year 1938-39.	Total.
1	2	3	4
	Rs.	Rs.	Rs.
C.—*Additional Kamdars and equipment for sugarcane improvement.*			
Tho number of existing overseers is 33 and Kamdars is 99. Each overseer requires 2 additional Kamdars—hence 66 Kamdars are required.			
Pay and travelling allowance of Kamdars . .	7,344*	15,480†	22,824
Equipment (33 sets) . .	8,500‡	8,000§	16,500
Each set consisting of—			
1 cart . . . 260			
1 pair of bullocks . . 200			
Implements . 40			
500			
Feed of bullocks at Rs. 10 per pair per month .	1,020‖	3,000¶	4,020
Contingencies—Non-contract—Recurring—Sugarcane seed and manures for demonstrations by the additional staff . . .	2,500	2,500	5,000
Total C. .	19,364	28,980	48,344

		Rs.
* 34 × 15 × 12		6,120
Add travelling allowance for 6 months 34 × 6 × 6 .		1,224
		7,344
	Rs.	
† 34 × 15-8 × 12	6,120	
Travelling allowance at Rs. 6 each	2,448	
		8,568 First batch.
32 × 15 × 12	5,760	
Travelling allowance for 6 months .	1,152	
		6,912 Second batch.
		15,480
‡ 17 × 500		8,500
§ 16 × 500		8,000
‖ 17 × 10 × 6		1,020
¶ 17 × 10 × 12		2,040
16 × 10 × 6		960
		6,000

Expansion of the Sugarcane Improvement Scheme—concld.

Details.	First year 1937-38.	Second year 1938-39.	Total.
1	2	3	4
	Rs.	Rs.	Rs.
D.—*Additional Staff for Sugarcane Improvement Scheme.*			
1 Additional Assistant Director of Agriculture for Muzaffarpur area (Rs. 200) . . .	2,400	2,400	4,800
1 Clerk for the Assistant Director of Agriculture (Rs. 35) . . .	420	420	840
2 Peons on Rs. 8 each .	192	192	384
2 Clerks for the Range Offices	840	840	1,680
Total Staff .	3,852	3,852	7,704
Travelling allowance of Assistant Director of Agriculture and peon at Rs. 120 and Rs. 6 each a month . . .	1,512	1,512	3,024
Contingencies—			
Non-contract—			
Recurring . . .	350	350	700
Non-recurring . .	600	...	600
Total D. .	6,314	5,714	12,028
Grand Total .	73,810	66,526	1,40,336

LIST OF ANSWERS TO THE QUESTIONNAIRE FOR LOCAL GOVERNMENT GIVEN BY THE REGISTRAR, CO-OPERATIVE SOCIETIES, BIHAR.

4. Full information about the estimated cost of cultivation of cane throughout the Province is not available. The remarks, which I propose to make, have been based on cane-growers' societies, which have been organised mostly in North Bihar—the few societies organised in South Bihar being only in the Patna Division. My predecessor (Y. A. Godbole, Esq., I.C.S.) conducted a special enquiry in July, 1936, at six centres in the district of Saran and his estimate of cost of production of sugarcane per maund in lands belonging to small cultivators was As. 4-5 during the season 1934-35. The conditions in the remaining districts of North Bihar are more or less similar to those prevailing in Chapra. While irrigation increases the yield, it is not essential for cultivation of cane in North Bihar. The estimate of the Special Officers, Cane-growers' societies is that the cost of production is not below 4 annas per maund which may be taken to be the average cost under present conditions. The cost is probably a little higher in the case of those big planters, who use hired labour for cultivating extensive areas. In South Bihar, where artificial irrigation is essential for keeping the cane plant alive till the monsoon sets in, the cost of production is higher and is probably not below 4 annas 6 pies per maund, though it probably varies from place to place according to the nature of the facilities for irrigation

available. Tenants in areas, irrigated by canals, are in a better position in this respect than those elsewhere in South Bihar. The cane-growers' societies were started only last year and no statistics of cost in previous years are available; but from oral enquiries, it appears, that there has been no substantial change in the cost of production except in the case of big planters employing hired labourers whose wages have somewhat been reduced as a result of the heavy fall in the price of agricultural produce after 1930.

The average yield per bigha comes to about 250 maunds in a year of normal rainfall. The sucrose content depends on the variety of cane. Accurate figures can be obtained from the Agricultural Department, but I understand that the average sucrose content is 8 to 9 per cent.

5. In the opinion of the Special Officers and the Deputy Registrar, the price should never be below 5 annas per maund. In connection with the determination of a fair price for sugarcane, the following points require consideration:—

(*a*) The cost of production.

(*b*) Sufficient margin for the payment of rent and incidental charges such as cartage, etc.

(*c*) Failure of crops due to natural calamities like droughts, floods insect-pests.

(*d*) The necessity for rotation in the case of sugarcane, which largely saps the fertility of the soil and which requires that the growers should compensate this loss of fertility by adding considerable amounts of manure.

(*e*) As the crop remains in the field for practically the whole year, quick outturn is not possible and the comparatively high cost of cultivation, taken with the absence of any surplus resources at the disposal of the small cultivator makes it necessary for him to take crop loans, at a high rate of interest, which has to be paid after the sale of cane.

(*f*) Uncertainty of sale of the whole quantity of cane produced under the present conditions.

In view of the above considerations, the average minimum fair price may be taken to be 5 annas a maund. In this connection, the effect of the fluctuations in the price of sugarcane as fixed by Government requires consideration. Usually the minimum price tends to be the maximum price available for the tenant and the price also falls as the crushing season progresses. A tenant left with his cane till late in the crushing season loses in the following seven ways:—

(*a*) If sugarcane is taken early in the season the tops and the green leaves separated at the time of striping provide valuable fodder for cattle and can also be sold as such. Very little fodder is available if the cane is harvested at a later season when most of the leaves have dried up.

(*b*) In several villages striping costs the grower nothing in the early season because there are always men with cattle, prepared to strip the cane without any "bani" provided they are allowed to take away the tops of cane and the green leaves to serve as fodder for their cattle. When the proportion of green leaves gets very low, late in March or April, the grower has to pay the cost of striping to labourers.

(*c*) For every variety of cane there is a certain period during which the maximum weight, after ripening, is maintained. This period does not usually extend to more than a month and it is clear that unless the cane can be sold during this period, there is an appreciable loss to the tenants in the form of dryage. After the middle of February, the loss in weight due to dryage is very rapid.

(*d*) As most of the agriculturists have very little surplus, a tenant who cannot sell his cane till a late stage of the crushing season, is obliged to borrow money from Mahajans at an exorbitant rate of interest, the loan being repaid from the money obtained from the sale of cane.

(*e*) If cane is removed from the field earlier, the tenant has a much longer period for preparing the field for the next crop in good time before the rain sets in whereas the tenant, whose cane remains standing till late in April or May, finds very little time for the necessary preliminary agricultural operation. Considerable difficulty is caused, specially in the case of a ratoon crop, the *khutis* of which require uprooting after the second year. There is also another aspect of the problem. Labourers can be had at a cheaper rate earlier in the season whereas the rates gradually rise towards the approach of the rainy season.

(*f*) Most of the tenants wait for the purchase of the whole of the standing crop by the mill. If a surplus is left after disposal early in the season the tenant gets sufficient time for arranging disposal by other means, *viz.*, crushing, whereas if he is landed with large quantities of surplus cane, not accepted by factories, towards the end of the season, he experiences great difficulties in arranging for crushing before the cane becomes too dry to be useful.

(*g*) The minimum price fixed by Government tends to be the maximum price available for tenants and usually the level of sugarcane price falls with the progress of the season so that a tenant who has to wait with his whole, or a substantial portion of his crop till a late stage of the season is paid less than one who gets his purzi earlier.

With a view to compensate the tenants against this loss and with a view to encourage the cultivation of late varieties, which are necessary for keeping the mills fully engaged towards the close of the crushing season, the desirability of fixing an irreducible basic minimum and of slowly increasing the price as the crushing season proceeds should be considered. The basic minimum price should not be less than 4 annas a maund at any time during the crushing season.

6. It has not been possible for me to get statistics showing the variations in sugarcane cultivation in the whole of the province but generally speaking sugarcane cultivation has steadily increased during the last 7 years consequent on the increase in the number of sugar factories, specially in areas from which the factories have been receiving their supply of cane. While variations in the rainfall have naturally had their effect on the yield of the areas under cane; the most potent factor has been the increased demand created by an increasing number of mills started mostly as a result of the encouragement given by the high degree of protection granted to Indian sugar. Prices for Gur and Jaggery have not materially affected the cultivation of cane in areas from which the mills have been taking their cane in as much as cultivators have been mainly depending on the sugar factories, for taking the whole of the cane. In fact, the cultivators in these areas have been gradually discarding the cane crushers—a number of which could be found in every village several years ago. The abnormal fall in the price of agricultural produce has also been instrumental in encouraging cane cultivation, which has been practically the only money crop in the field, crops like chillies tobacco having ceased to bring a profitable return as they used to do before. It is for this reason that even when the margin of profit in the case of cultivation of sugarcane has considerably gone down, tenants have taken to cultivation of sugarcane with the hope that the probable loss in the case of sugarcane cultivation would be less than that in the case of other crops. This extension of sugarcane cultivation has also been further facilitated by the ready marketability of the cane crop as compared to that of other crops.

Variations in the production of sugarcane have also been caused by the following peculiar conditions associated with the present sugar industry.—

(i) Owing to the rapid progress of the industry, specially in North Bihar as a result of the high protective duty, there have been at times half a dozen weighbridges, belonging to different concerns at a particular station. The propaganda done by various departments; by the factories and their purchasing agents has resulted in undue encouragement of the cultivation of more and more cane every year. At first, the increase in yield was readily consumed by the increasing number of factories but it is believed that the saturation point was reached about 2 or 3 years ago. The illiterate tenants are ignorant of market conditions and the requirements of various factories and have also no means of knowing the estimated production in the whole area. Finding their neighbours making good money out of what is practically the only good cash crop, they went on increasing their cane area every year. A seasonable rainfall last year also added to the yield. The total amount of sugarcane produced was far in excess of the requirements of the mills. The nature of the crisis was not fully realised, till, the crushing season had been in full swing and even though various steps in reducing prices to 3 annas and then to 2½ annas per maund and in inducing the factories to crush longer than usual, have been taken, a considerable quantity of cane has been left over.

(ii) According to the existing practice, *Sattas* or unilateral bonds executed by the tenants in favour of the mills, are taken by several mills from the tenants as soon as sowing takes place and on the strength of such bonds, sometimes tenants are advanced money by the mills, or by the purchasing agents, at a rate of interest which is generally very high. The peculiar thing about this bond is that while it purports to be a contract between the mill, or the purchasing agent, and the tenant, it provides for no legal obligation on the part of the mill to take the whole of the cane bonded. Apparently the whole idea is to encourage cultivation of sugarcane in excess of the requirements of the mills so that the mills can take what they require leaving the tenants to do what they can with the surplus cane, if any. In view of the fact that the mills are in a monopolistic position as regards the control of marketing and that the tenants are neither organised nor are they in a position to control their production, the whole system has tended to work in a manner to the detriment of the interests of the growers. It has also not been in the best interest of the mills either; for while they have been getting their gross requirements in weight they have not been getting the best varieties of cane at the proper season. For a year or two, following over-production in which excess of cane, grown by tenants, causes loss to them they grow less and less cane with the result that the prices rise and the buyers, on behalf of several factories again encourage them to grow more and more without any organisation to restrict production according to the estimated consumption. Year of over-production in various degrees have been followed by years of under-production to be again followed by years of over-production and thus the pendulum has been swinging from one side to the other often causing undue loss to the tenants and a good deal of waste of national resources.

7. Yes—particularly in North Bihar an over-production is likely to occur at periodical intervals under existing conditions.

Steps for controlling production of cane on the basis of the estimated requirements of mills from year to year are necessary. A

general propaganda for restricting the cultivation of sugarcane on the lines adopted by the Government of Bengal as regards jute is not likely to be useful inasmuch as such uncontrolled propaganda might lead to under-production causing serious embarrassment to the sugar mills. A half way measure, which is being partially followed by certain factories, would be to enter into forward contracts, with individual cane-growers before the planting season, for the supply of a specified amount of cane. Such an organisation, if undertaken by factories, would unduly increase their overhead charges and make it very difficult for them to sell sugar at competitive prices. During my recent tour in North Bihar, I discussed the rudiments of a scheme with Cane Superintendents of several sugar mills, the Special Officers, representatives of cane-growers' societies and non-officials, like directors of co-operative banks, interested in the movement. In the light of these discussions I have prepared a tentative scheme for controlling the production of sugarcane on the estimated requirements of the mill in each area through cane-growers' co-operative societies. The scheme provides for the following measures:—

(1) Detailed record of the area, plot by plot, of cane growing lands owned by each member of each cane-growers' society, or Union, with a view to ascertain the average maximum amount of cane which each society can supply in a year due consideration being paid to the necessity for a scientific system of rotation.

(2) Forward bilateral contracts with the mills, before the sowing season, for their requirements of improved varieties (early, medium and late ripening—selected by the mills after due consideration of the sucrose content) at different stages of the crushing season.

(3) Production of seeds of improved varieties.

(4) Planned distribution of seeds of the required varieties to the societies, through their marketing unions, according to the quota of the forward contract allotted to such unions or societies.

(5) Preparation of records, be actual measurement, of the area put under different varieties of cane, after the plants have come out, before the first forecast about the area under cane and the estimated yield is submitted.

(6) Marketing, under co-operative supervision, of the different varieties of cane, during the period for which each of such varieties retains its optimum conditions of weight and sugar content, according to a cane supply calender, for each society, prepared in advance, showing the quota of each member on specified dates.

(7) Accurate forecast of the surplus, if any, over the amount contracted for at the beginning of the crushing season and arrangements for its disposal in good time.

(8) Maintenance of crushing machines, boiling pans and a warehouse for storage by each society, or a group of societies, out of small contributions levied on sale by each member and commissions, or bonus earned from the mills by the societies as purchasing agents.

(9) Manufacture of *Gur*, S. B. Sugar, etc., of standard grades and their packing and storage in the co-operative warehouse, under expert supervision and hygienic conditions.

(10) Manufacture of toffees and other sweets from Gur under hygienic conditions—to be undertaken as a subsidiary cottage industry by the members in their spare time.

(11) Co-operative marketing of the Gur in warehouses through a central marketing agency keeping itself in touch with different markets for Gur and sanctioning the sale only when the best price has been obtained on the understanding that no unneces-

sary expenditure for transport from the warehouses should be incurred till the negotiations for sale, conducted by the marketing agency, are completed.

(12) Grant of small loans to members on the security of their share of the Gur in the warehouse pending sale of the Gur.

(13) Pooling of sale-proceeds with a view to distribute the incidence of loss arising out of fluctuations in the price of cane during different stages of the crushing season so that it may be easier to induce members to grow early and late varieties of cane which are at present unpopular for obvious reasons.

(14) Measures for improved methods of cultivation, use of manure, cattle welfare, village sanitation, water supply, etc., to be taken mainly out of the funds of the society.

It is proposed to try this tentative scheme, as an experimental measure, in areas where the sugar mills have agreed to fully co-operate with the department and to accept the whole of their cane supply, at certain purchasing stations, through co-operative societies. Certain details of the scheme are still being worked out but it is hoped that copies of the scheme will be ready by the time the Tariff Board visits Bihar for examination of witnesses.

For the success of the scheme, the full co-operation of the mill authorities is essential. A system of scientific planing would not only reduce, if not altogether eliminate, the undue hardship caused to poor growers in years of over-production like the present but would also help the mills in reducing their cost of production by making it unnecessary for them to maintain an expensive muffassal staff for cane supply, like Jamadars, Village Agents, Purchasing Agents, Peons, etc. The cost would also be reduced by an increase in the percentage of recovery consequent on the supply of improved varieties of cane, in their optimum condition for extraction. The saving and the increase in efficiency, effected under the scheme, should enable the mills to pay for co-operative cane at a higher rate and to pay substantial commission to the societies, working as purchasing agents, without reducing the margin of their profit.

11. (ii) For improvements effected, through cane-growers' co-operative societies—*vide* answer to question 16.

15. The main difficulties of cane-growers in the cultivation of cane may be summarised as follows:—

(i) Owing to undue fragmentation of holdings and the necessity for stopping cane cultivation in the same plot after two years, production in small plots scattered at different places in the village tends to be uneconomic and makes intensive cultivation difficult.

(ii) Owing to his ignorance he does not follow any scientific system of rotation with the result that the fertility of the soil is unduly depleted. He is not in a position to use chemical manures, the only manure available in the village being cow dung—a good deal of which is burnt as fuel. While it may be regarded to be deplorable that the only available form of manure in the village should be burnt, it has to be remembered that alternative forms of fuel in sufficient quantities at a cheap rate are not available in most of the villages in Bihar. The importance of making use of compost heaps has not yet been realised by the ordinary villagers.

(iii) Owing to poverty and the uncertainty of the return dependent on fluctuating prices of sugarcane, he is seldom in a position to buy or properly maintain bullocks and agricultural implements of the proper type with the result that the preparation of the field is not adequately done.

(iv) Owing to his ignorance and the absence of adequate facilities for the supply of seeds of improved varieties of cane, he continues sowing such seeds as he can get hold of from his own lands or from the nearest neighbour regardless of the competitive prices it may fetch in the hands of mill-owners who seldom make any serious attempt to supply him with seeds of early, medium or late maturing varieties according to their requirements.

(v) In North Bihar there is practically no system of irrigation vogue, even though it is estimated that irrigation produce a larger yield. In this respect the growers of North Bihar should emulate the examples of the hard work, that is done by cane-growers of South Bihar, in the way of irrigating their fields in the intense heat of the summer.

The main difficulties in connection with the delivery of cane to the mill gate are as follows:—

(i) Except in the case of a few well-managed factories in the districts of Darbhanga, Purnea and Muzafferpur, the majority of the factories have no system of cane supply. They purchase either direct from the growers or through purchasing agents from different stations, the result is that the cultivators are quite in the dark about the exact number of cane carts required at the weighbridges on particular dates. The ignorant cultivator can hardly be blamed if he rushes with the process of harvesting in his anxiety to dispose of his cane as early as possible and sometimes owing to the lack of control over supply, there is undue congestion at the weighbridges for days together and carters have to wait for 2 to 3 days. Some of them after selling their cane on the "Kutha system" at a nominal price—as in some places in the districts of Saran and Champaran.

(ii) Inspite of the vigilance of Sugarcane Inspector short weighment is still going on to a certain extent. The main difficulty of the cane-growers lies in the disposal and sale of the cane. This difficulty is intensified by the fact that cane has to be disposed of within a limited period—usually extending over a month from the date of its ripening and that it is a perishable commodity at the mercy of the licensed agents for obtaining purjis. There is nothing in the Sugarcane Act, or in the rules framed thereunder, which restricts the power of withholding a purji from any particular cane-grower even though he may have bonded his cane. This being so, corruption is bound to creep in the system under which the distribution of purjis is being done at present.

(iii) Undue detention and congestion at the weighbridges are sometimes caused owing to there being no arrangements for shifts for the work of the weighment clerk. At several places, he goes for his food at 12 A.M. and does not return till 2 or 3 P.M. after his midday rest.

(iv) Another difficulty also arises from the inadequate supply of railway wagons as set forth in my reply to question No. 22.

16. Before the organisation of cane-growers' societies was taken up last year out of funds provided by the Government of India, there was no special agency for helping cane-growers in the disposal of their cane. Those growers, who were members of ordinary co-operative societies, received such help in the form of loans for purchasing cattle, seeds, etc., as the central co-operative banks deemed fit to grant. All the help that they received from the ordinary credit societies was for production of cane and there was no agency to assist them in marketing the produce.

In 1936, two Special Officers with a limited staff of organisers and supervisors were sanctioned for organising cane-growers societies—the scheme being financed by the grant placed by the Government of India at the disposal of the Local Government. I enclose a statement showing the number of cane-growers co-operative societies at work in 1936-37. It will be seen that there were 104 societies with 2,053 members in the districts of North Bihar while there were 14 societies, with 118 members, in only one district, namely Patna, in South Bihar. 118 societies with a total membership of 2,171 supplied 767,204 maunds of cane, valued at about Rs. 2 lakhs, during the present crushing season. Great difficulties were experienced by the Special Officers in persuading the mills to extend their co-operation—as in several quarters considerable opposition and hostility had to be met and a number of mills flatly refused to have anything to do with such societies. It is, however, gratifying that the Special Officers were able to get so many societies organised in such a short time. They have been recognised as purchasing agents—either directly or through co-operative unions and generally speaking they have been able to secure small commissions as purchasing agents, for the work done, in addition to the price paid to the members for their cane. As a result of the successful work of the few societies organised during the year, a welcome change in the attitude of some of the mills is perceptible and during my recent tour in North Bihar, I was glad to find a better realisation of the benefits which an organisation of cane-growers' societies on co-operative lines would confer upon the industry. It is expected that about 20 lakhs of maunds of cane will be marketed through the co-operative societies in the coming season. As a result of the success of the few co-operative societies in being able to sell their cane before the close of the crushing season in a year of over-production a large number of applications are being filed before the Special Officers and the Registrar for organising new societies throughout North Bihar. The present policy has been to organise societies only in areas where the mill authorities are sympathetic and are willing to undertake to purchase cane from co-operative societies. A considerable increase in the number of societies in areas where the necessary co-operation from the mills is forthcoming is possible but progress in this respect has been greatly handicapped owing to funds not being available for an increase in staff. In the district of Purnea, for example owing to the personal interest taken by the Collector, the authorities of the Semapur Factory have agreed to take the whole of their cane through co-operative societies if they could be organised. Apart from the absence of adequate trained staff to enable the department to take up organisation of such large areas, it has also been considered advisable to fully consolidate the position of the existing societies before taking up organisation of new societies on a large scale. Until additional staff are available, it is proposed to restrict organisation of cane-growers' societies the compact blocks in selected areas up to the limit of the supervising capacity of the available staff and to obtain, as far as possible, the whole contract for supply at particular stations from the mills.

Apart from the assistance in the marketing of cane, the Department have been encouraging improved methods of cultivation by encouraging the societies to purchase improved implements with which demonstrations have been arranged by Kamdars deputed by the Agricultural Department. The growers are also being trained to appreciate the utility of manure pits and compost heaps—a large number of which have been prepared in the villages with cane-growers' societies.

Rural re-construction in the form of provision for better water supply, bore hole latrines, widening of village roads, night schools for adults, etc., is also being encouraged. For the complete success of this scheme, it is necessary that all the mills should recognise the co-operative societies as agents for supply and in areas where, in the opinion of Government, the societies have been so organised as to be able to meet the entire supply of cane of the mills, no private purchasing agents should ordinarily be licensed.

Statement showing the number of Cane-growers' Co-operative Societies at work in 1936-37.

District.	No. of Societies.	No. of members.	Quantity of cane supplied in Maunds.
North Bihar.			
Darbhanga . . .	16	464	172,391
North Monghyr . .	10	213	94,735
North Bhagalpur . .	7	159	63,282
Muzafferpur (Sitamarhi Sub-Division)* . .	7	131	91,939
Muzafferpur† . . .	20	332	141,444
Champaran . . .	9	136	...
Saran	35	618	182,530
Total .	104	2,053	746,321
South Bihar.			
Patna	14	118	20,883
Total	14	118	20,883
Grand Total .	118	2,171	767,204

17. The answer of the first part is in affirmative. The minimum price until March, 1937, as laid down in Government Notification No. 2119-D., dated the 11th November, 1935, was determined by the highest quotations of 12 different factories but after March, 1937, this minimum price as laid down in Notification No. 516-D., dated the 27th March, 1937, is being determined by the average price of sugar obtainable during the fortnight previous to the fortnight immediately preceding, while the price fixed by the Government is only the minimum and there is nothing to prevent a mill from paying the grower a little more, the fact remains that for all practical purposes the minimum price has become the maximum price for the cane-growers even though the original intention was that the cane-growers should ordinarily get a little more than the minimum and never less. It may be argued that the principle on which the price of sugarcane is fixed is open to criticism on general economic principles. Ordinarily the price of raw materials should determine the price of the finished products and not *vice versâ*. Just as a factory cannot afford to purchase cane except at a price ensuring a reasonable return to the shareholders and the managing agents the growers cannot in all fairness be subjected to an ever changing minimum price which unfortunately tends to get lower and lower as the crushing season proceeds without due attention being paid to their cost of production and a reasonable margin of profit. As the minimum cost of production appears to be about 4 annas per maund undue hardship must be caused if growers have to sell it at a lower price. In a rational system of production there should be a full examination of the cost of production of cane, the extent of reasonable margin of profit which should be left to the growers the cost of production of sugar, reasonable return on the capital sunk and after due consideration of all these factors, the price of sugar should be fixed. The remedy of the mill-owners does not lie so much in the con-

* Incharge of S. O., Samastipur.

† Incharge of S. O., Chapra.

tinuous lowering of the price of sugarcane as in controlling the price of sugar itself. As far as the cane-growers are concerned there should be an irreducible minimum price of cane which should be not allowed to go below 4 annas. In any case the fixation of price of sugarcane, on which lives of so many thousands of poor agriculturists depend, should not be based on the price of sugar which must be fluctuating under the present condition allowing production of uncontrolled quantities of sugar of unrecognised grades. The solution of the difficulty lies in controlling the price of sugar by controlled production on the basis of estimated consumption, in standardising the product and in prohibiting the manufacture and sale of sugar below the standard grades. The present condition, which allows sugar of unduly inferior quality to flood the market, has tended to make the demand for the best grades unduly elastic and to tend to undue fluctuations in the prices of sugar. There are several factories, without properly trained and properly paid staff or up to date machines, producing sugar of inferior quality and giving rise to a situation under which up to date mills, with proper staff, are finding it difficult to sell the good grade of sugar that they produce. Under the present circumstances it is not possible for the grower to secure a steady and reasonable price for sugarcane from year to year.

18. In areas, where, as in parts of the Darbhanga district, mills have entered into boundary agreements, growers do not get the benefit of competitive prices. In other areas, in a year of under-production, competition between factories may enable the grower to get a little more than the minimum price fixed by Government but the consequent loss due to over-production stimulated by such competition appears to have been heavier than the gain. In a season of over-production, like the present, there could be no competition among the mills. Some of which were in a position to use surreptitious methods for evading the provisions of law. Growers have been reported to have parted with their standing crops, without weighment, for nominal sums.

19. It is certainly desirable to encourage cultivation of superior, early and late varieties of cane, but a system of bonus payment is not likely to succeed in areas with no agency for supplying the seeds of such varieties on reasonable terms for securing their disposal while the optimum conditions, after ripening, are maintained. Bonus payment may, with the best advantage, be introduced in areas where cane-growers' co-operative societies are working according to the scheme set forth in reply to question No. 7. It may also be tried in areas where the sugar mills possess nurseries for growing improved varieties and have reliable mofassil staff to secure proper distribution of seeds and harvesting at the right time. In other areas, which are still unorganised such a system, if introduced, is likely to create complications adversely affecting the growers. Such growers have learnt by experience that the safest course for them is to grow the mild season variety.

20. 6 pies per maund per mile within a radius of 4 miles.
3 pies per maund per mile for distances over 4 miles.
The minimum hire for a cart for the day is rupee one.

21. About 50 per cent. of the cane-growers employ their own carts for transporting their cane. The average cost of hiring has been given in reply to question No. 20.

22. Figures showing the proportion of cane carried by rail, tramway and by road throughout the Province could not be obtained within the short time allowed. Except in the case of the sugar mills at Ryaen and Lohat in the district of Darbhanga, tramway facilities are not available. About 50 per cent. of the cane for the mills is carried by railway but bullock carts are generally used for carrying cane to the loading stations from places within a distance ranging up to 20 miles.

Generally speaking, there are no adequate feeder roads for taking the cane from the fields to the main roads leading to the weighbridges. Fortunately for the cane-growers, cane is harvested mostly during a period

when owing to the harvesting of the paddy, a substantial area of the fields is clear of other crops and temporary tracks for bullock carts can easily be made by cutting portions of the ridges between the fields. As most of the District Boards are not in a position to maintain their existing communications, they have not been able to do anything towards the development of feeder roads. It is, however, believed that some improvement in this direction is being effected by district officers with the rural reconstruction grants placed at their disposal but the amount available is utterly inadequate for any substantial improvement. No provision has also been made under the rural reconstruction scheme for the maintenance of such roads as may be financed by this grant.

There has been no expansion of tramway facilities and in view of the heavy cost involved—and the uncertain condition of the sugar industry no tangible expansion is expected in the near future.

The facilities for transport by the Bengal and North-Western Railway are reported to be inadequate for the following reasons:—

(1) The railway lines pass through a limited area of North Bihar.

(2) The speed of the train is unduly slow so that there is a good deal of loss from dryage and deterioration and it is not possible to transport cane in good condition from beyond a limited distance.

(3) The Bengal and North-Western Railway are often unable to supply the requisite number of wagons specially covered wagons—on dates as required by the mills, purchasing agents or co-operative societies. In view of the fact that about 50 per cent. of the cane for the mills is transported by rail, it is obvious that no rational system of supply can work unless the railway authorities fully co-operate with the millowners by way of supplying, in time, the number of wagons of specified types required. The Special Officer, Cane-growers' Societies, Chapra, reports that he experienced considerable difficulties in getting the requisite number of wagons for the societies' cane and even when the matter was reported to higher railway authorities, no adequate solution of the difficulty was forthcoming. It is clear that as it is not open to cane-growers' societies to take recourse to other methods for securing the necessary number of wagons, prompt steps should be taken to ensure that the railway do possess, and stock at suitable centres, a sufficient number of wagons and that requisitions for supply are duly respected. With a view to secure proper regulation of transport and to enable the railway to make adequate arrangements in time, they should before the crushing season starts, call upon every mill to submit a schedule showing the number of wagons required at different stations on different dates throughout the crushing season. Serious notice should be taken of failure on the part of the railway to comply with the indent and provisions should be made for payment of compensation to the mills and the growers in case of loss due to such failure.

25. There are no co-operative sugar factories in Bihar.

31. (i) The development of the sugar industry in North Bihar has reached a stage, when a system of zoning has become necessary, but zoning without co-operative organisation of growers and the fixation of an irreducible minimum price for sugarcane on the lines set forth in my reply to question No. 5, would be to the detriment of the interests of the cane-growers inasmuch as they will be placed entirely at the mercy of a particular mill. At present, there are certain sugar mills in North Bihar, particularly in the district of Darbhanga, where they have a system of zoning based on private boundary agreements. It is clear that in such cases unless there is something to ensure that the price paid by the mills would leave a sufficient margin of profit to the grower, he is likely to lose the benefit of competitive prices.

(ii) The fixation of a quota for sugar manufacture by factories is necessary.

(iii) The measures, proposed in (ii), require that new factories and the extension of existing factories should be licensed. A scheme of zoning coupled with co-operative organisation of growers and fixation of a quota of standard grade or grades, of sugar for each factory, satisfying the minimum specifications required for production of the permissible grade or grades, may be set forth as follows:—

A survey of the cane growing lands in North Bihar up to the limits of the areas from which cane is being taken at present by the different sugar mills should be undertaken and an estimate of the average maximum yield in a year of normal rainfall should be made. The maximum consuming capacity of each mill during the crushing season should then be estimated and on the basis of this estimate, the minimum area of cane growing lands required for the purpose should be calculated. Adequate allowance for rotation, loss caused by natural calamities like, floods, etc., decrease in production due to the loss of human power, cattle power and credit in individual cases, should be made and a liberal estimate of the area of cane growing lands for each factory should be framed. An area, as compact as possible, round each factory should then be demarcated so that the estimated quantity of cane could be safely supplied from such an area. This should form what may be called the economic zone for the factory and unless there is a deficit of cane within this area, purchase of cane from outside area by the mill should be forbidden. It should be made clear, by general propaganda, to the growers beyond the economic zone that cane produced by them is not ordinarily to be taken by the factory. On the estimated demand for sugar, the total quantity of sugar to be produced in a particular area should be determined and a quota of production of a particular grade, or a few specified grades, should be allotted to each sugar mill after due consideration of its consuming capacity and nature of machineries, etc. On the basis of this quota, the quantity of sugarcane of different varieties during different stages of the crushing season will be estimated. The production of the requisite quantities of different variety of cane and their marketing will be controlled through co-operative societies in a manner set forth in my reply to question No. 7. It may be urged that for the success of any scheme of control, standardisation of sugar is essential. If this system of control is accepted, it is clear that the establishment of new factories and the extension of existing ones must be controlled by a system of licensing. After the standard grades have been fixed, those of the existing factories, which do not possess machineries or staff competent to produce the recognised grades of sugar, should close down. The licensing of new factories and extension of old factories should also be based on the same considerations and ordinarily it is undesirable to encourage the increase of sugar mills, when the existing mills cannot be fully engaged during the crushing season at a reasonable profit.

47. Ordinarily the burden of taxation of a commodity is shifted mainly to the consumers, inasmuch as the price of raw materials is not ordinarily affected by taxation, within certain limits, of the manufactured products. In view of the circumstances under which the price of sugarcane is determined by the price of sugar and the manner in which the prices of the best grades of sugar are kept low owing to various kinds of inferior sugar flooding the market, the additional duty has, to a large extent, adversely affected the cane-growers. It has also affected the manufacturers so much so that many badly managed sugar mills, with inadequate financial resources, will probably be soon closing down. The general impression is that the dealer and the consumer have not been affected to any appreciable extent.

48. The protective duties have led to a rapid development of the sugar industry in India and has practically eliminated imported sugar from the market. While it may be said that with the removal of the protective duty imported sugar may now be available at a price much lower than the prevailing price in India, past experience shows that in the absence of a flourishing indigenous sugar industry, manufacturers of foreign sugar would

be in a monopolistic position and would be able to gradually raise the price to the detriment of the ultimate interest of the consumers. With proper organised control of the production of sugarcane and sugar—an indigenous sugar industry should flourish without undue indirect taxation of the consumers.

50. Statistics of acreage and production of cane are usually based on surmises of village Chowkidars and are not reliable. Statistics of prices of sugar and gur collected from recognised markets, are fairly accurate.

51. I would make the following general suggestions:—

(1) Zoning based on co-operative organisation of growers appears to be the only solution.

(2) Sufficient staff for the necessary survey of cane growing lands and for working out the scheme, for the organisation of cane-growers' societies and for the necessary training of the Panches of such societies for a time should be made available at an early date. Where, in the opinion of Government, co-operative organisation has developed sufficiently and is able to take up the whole supply of cane within the economic zone for a particular mill—no private purchasing agent should ordinarily be licensed. Side by side with the development of co-operative organisations of growers, there should be a co-operative federation of mill-owners for advising Government on the following points:—

(i) Specifications of the standard grades of sugar.

(ii) Total quantity of sugar of different standard grades to be produced in a particular year.

(iii) Quota for each sugar mill.

(iv) The desirability of allowing the establishment of any new sugar mill in any particular area or the extension of an existing mill.

The mill-owners and the growers should realise that it is to their common interest to co-operate with one another, in securing the success of the scheme. With proper working of these organisations, the fluctuations in the price of sugar would be reduced to the very minimum and would secure stabilisation in the price of sugarcane and of the industry in general.

The cane-growers have been watching, with a growing sense of discontent, that while for several years after the protective tariff came into force, the sugar mills continued to make unduly large profits, the growers seldom got more than As. 5 per maund on an average for their sugarcane, which did not leave them much margin for profit. They also feel that, in years when due to over-production or other causes, they suffered undue loss—the sugar mills seldom came forward to help by way of sharing the loss so caused even though they were partly responsible for encouraging such periodical over-production. The suffering caused by the abuses under the present system of supply has been all the more intensified by the steadily increasing burden of rural indebtedness and the general fall in the price of agricultural produce. A growing consciousness of their helplessness arising out of their unorganised condition and of the advantages, real and imaginary, to be gained by a mass movement for safeguarding their position, is clearly perceptible throughout the Province, particularly in North Bihar. In the interest of both the growers and the mill-owners, it is highly desirable that the accumulating feelings of discontent should be able to find constitutional expression through co-operative organisations of the growers, that due consideration should be shown to such legitimate grievances as may be proved to exist and that with a view to eliminate the abuses prevalent under the Jamidari system of cane supply, such co-operative organisations should be recognised by the mills as agencies through which the growers may supply their sugarcane to the mills. A rational system of control of production of sugarcane and sugar, benefiting both the growers and the millers, can only be successfully worked, if there is sympathetic understanding and co-operation between the representatives of the growers and the millers. If prompt

steps to promote the healthy growth, under responsible supervision, of cane-growers' organisations and to discourage the short sighted policy, pursued by some of the mills, of refusing to encourage, or to recognise such organisation, are not taken, the growers, in their despair, may be driven into the hands of undesirable associations with far-reaching serious consequences.

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(2) *Letter dated the 3rd February, 1936, from the Government of Bihar, Education and Development Department, to the Director of Industries, Bihar and Orissa.*

Subject:—SCHEME FOR THE WORKING OF THE SUGARCANE ACT, 1934, AND THE RULES MADE THEREUNDER IN BIHAR.

In continuation of Mr. Gokhale's letter No. 2547-D., dated the 31st December, 1934, I am directed to convey the sanction of the Government of Bihar and Orissa (Ministry of Education) to the scheme set forth in the enclosed memorandum for the working for the Sugarcane Act, 1934, and the rules framed thereunder in North Bihar and in the Patna Division, and to the creation of three temporary posts of sugarcane inspectors in addition to the five temporary posts of sugarcane inspectors already sanctioned in the letter cited above, for a period of seven months from the 1st November, 1935, and in subsequent years subject to the conditions laid down in the same letter with regard to recruitment, pay, special pay and travelling allowance. One of these three additional inspectors should be employed in the controlled area of the Patna Division and of the remaining two, one in Saran and the other in Champaran, making the total number of inspectors two in each of these two controlled areas against one employed during the last crushing season.

2. The headquarters of the sugarcane inspector in charge of the controlled area of the Patna Division will be at Arrah and the District Magistrate of Shahabad shall be the controlling officer for the purposes of travelling allowance of this sugarcane inspector. The District Magistrates of Saran and Champaran shall be the controlling officers for the same purpose in respect of the additional inspectors of these districts.

3. Sanction is also accorded to the appointment of a clerk and a peon on a temporary basis on a pay of Rs. 30 and Rs. 10 respectively, for each of the three inspectors whose posts are now sanctioned. The total estimated expenditure of (Rs. 31,521+Rs. 12,040)=Rs. 43,561 for 1935-36 and Rs. 31,521+Rs. 20,320 or Rs. 51,841 for 1936-37 and subsequent years including contingent expenditure on other items connected with the working of the Sugarcane Act, 1934, as shown in statements A and B annexed, is also sanctioned.

4. The three inspectors are hereby authorised under Supplementary Rule 20 of the Bihar and Orissa Account Code to draw their contingent and establishment bills

5. The cost will be debitable to the head "35.—Industries—Expenditure in connection with the Sugarcane Act, 1934" in the budget estimates for the year 1935-36.

6. The scheme is being financed by a grant from the Government of India out of the sugar excise duty. The accounting procedure in respect of this grant and the expenditure therefrom will be as indicated below:—

The grant received from the Government of India will be taken to a separate deposit head, *e.g.*, "Deposit account of grant from the Sugar Excise Duty"; the expenditure by the Local Government from this grant should appear in the service head "35.—Industries", as stated in paragraph 5 the amount spent during the year will be credited under the head

"XXV.—Industries" by transfer from the deposit account. The unspent balance of the grant, if any, in the deposit account which should be kept in the form of Appendix F to the Civil Budget Estimates for 1935-36 will be carried forward to be utilized in subsequent years.

7. For the purpose of exhibiting the transactions noted in paragraph 6 above in the provincial civil budget estimates, estimates should be framed for the scheme under the following three kinds of heads:—(i) Deposit head, (ii) Service head and (iii) Deposit account in the form of Appendix F to the Civil Budget Estimates for 1935-36. You are made the estimating and controlling officer in respect of these estimates and the necessary estimates may be furnished by you on the dates prescribed in the Budget Manual to the Accountant General, Bihar and Orissa, Finance Department of Government, and to the Education and Development Department. The Government of India have sanctioned the scheme and a grant equal to the amount of estimated expenditure for 1935-36 as mentioned in paragraph 3 above.

ANNEXURE X.

Memorandum explaining the scheme for the working of the Sugarcane Act, 1934, and the Rules framed thereunder in Bihar and Orissa.

The sugar factories of the province are concentrated chiefly in North Bihar comprising the whole of the Tirhut Division and North Bhagalpur and North Monghyr and the Purnea district of the Bhagalpur Division. The industry has now extended to South Bihar and in the Patna Division five big factories were already in operation last year and a sixth factory is under construction.

2. In the year 1934-35 the Sugarcane Act was applied only to North Bihar which was divided into five circles for the purposes of the administration of the Act. Each of these circles was declared to be a controlled area in accordance with the provision of sub-section (1) of section 3 of the Sugarcane Act and for each controlled area there was an Inspector and a local advisory committee consisting of representatives of growers and factories and of other persons, not being growers or persons interested in factories with the District Magistrate of the area as its chairman. Two central advisory committees were also established at the divisional headquarters of Tirhut and Bhagalpur with the Divisional Commissioner as the chairman. These advisory committees have been given definite powers under the Sugarcane Rules framed by the Local Government in exercise of the powers conferred on them by section 7 of the Sugarcane Act, 1934.

3. During the last crushing season five sugarcane inspectors were employed for five months and 22 days and the advisory committees also functioned for the same period. The total cost incurred (both recurring and non-recurring) amounted to Rs. 15,635 as detailed in enclosed Statement A. The estimated cost of employing these five sugarcane inspectors in North Bihar with the advisory committees for the full crushing season of seven months in 1935-36 amounts to Rs. 31,521 as shown in the statement mentioned above. The staff of inspectors employed last year in North Bihar was, however, inadequate for effective supervision and control. It is also proposed during the next crushing season to extend the operation of the sugarcane Act and the Rules to South Bihar. An additional staff of three sugarcane inspectors (with the necessary ministerial and menial staff) will, therefore, be required. The total estimated cost (recurring and non-recurring) of this additional staff and an advisory committee for South Bihar comes to Rs. 20,320, details of which are given in Statement B annexed. The total cost in 1935-36 will thus be Rs. 31,521+Rs. 2040 or Rs. 43,561 and Rs. 31,521+Rs. 20,320 or Rs. 51,841 in 1936-37 and subsequent years.

STATEMENT A.—*Details of estimates of expenditure incurred during the year 1934-35.*

"35.—INDUSTRIES—PROVISION FOR THE WORKING OF THE SUGARCANE ACT, 1934."

	Rs.	Rs.
1. *Pay of officers—voted—*		
One Deputy Collector at Rs. 500 from 1st December, 1934, to 28th February, 1935	1,500	
One Deputy Collector from 1st December, 1934, to 28th February, 1935, at Rs. 450 per month	1,350	
One Deputy Collector from 1st December, 1934, to 28th February, 1935, at Rs. 400 per month	1,200	
One Deputy Collector from 7th November, 1934, to 19th December, 1934, at Rs. 300 per month and from 20th December, 1934, to 28th February, 1935, at Rs. 350 per month	1,260	
One Sub-Deputy Collector from 1st December, 1934, to 28th February, 1935, at Rs. 250 per month	750	
	6,060	
		6,060
Special pay—		
One Deputy Collector from 10th December, 1934, to 28th February, 1935, at Rs. 100 per month	271	
One Deputy Collector from 10th December 1934, to 28th February, 1935, at Rs. 90 per month	244	
One Deputy Collector from 10th December, 1934, to 28th February, 1935, at Rs. 80 per month	217	
One Deputy Collector from 10th December, 1934, to 19th December, 1934, at Rs. 60 and from 20th December, 1934, to 28th February, 1935, at Rs. 70 per month	187	
One Sub-Deputy Collector from 10th December 1934, to 28th February, 1935, at Rs. 50 per month	136	
	1,055	
		1,055
Total	...	7,115
Less percentage cut	...	355
Total	...	6,760
2. *Pay of establishment—*		
Five clerks at Rs. 30 each from 10th December, 1934, to 28th February 1935	406-7	
Five peons at Rs. 10 each from 10th December, 1934, to 28th February, 1935	135-8	
	541-15	
	or	542

	Rs.	Rs.
3. *Travelling allowances*—		
(A) Travelling allowance for 5 inspectors at Rs. 175 per month for 3 months	2,450	
(B) Travelling allowance for inspectors' staff at Rs. 15 per month for 3 months	203	
For transfer travelling allowance	500	
	3,153	3,153
Travelling allowance for 10 non-official members of the Tirhut Central Advisory Committee and 6 non-official members of the Bhagalpur Central Advisory Committee at Rs. 30 per head per meeting for two meetings	960	
Travelling allowance for 6 non-official members of each of the 4 local Advisory Committee in the Tirhut Division at Rs. 10 per head per meeting for 3 meetings	720	
Travelling allowance for 12 non-official members of the local Advisory Committee in Purnea, North Bhagalpur and North Monghyr, at Rs. 10 per head per meeting for 3 meetings	360	
Travelling allowance for non-official members for attending Sugar Conference held at Patna . .	900	
	6,093	6,093
4. *Contingencies—Non-contract*—		
Miscellaneous contingencies for 5 inspectors at Rs. 20 per month for 3 months	300	
For 2 Central Advisory Committees and 7 local Advisory Committees at Rs. 10 per month for 3 months	270	
	570	570
Periodicals and Journals	...	120
Equipment—		
Portable Typewriters—5 at Rs. 200 each . . .	1,000	
Chairs, tables, etc., for 5 inspectors at Rs. 50 each .	250	
Three sets of standard weights for each of the 5 inspectors	300	
	1,550	1,550
Total .	...	2,240
GRAND TOTAL—Provision for the working of the Sugarcane Act, 1934	...	15,635

NOTE.—Items of expenditure marked (A) and (B) under "Travelling allowance" show actuals for three months only as the inspectors were on training and did not tour during the entire period.

Details of estimates of expenditure during the year 1935-36.

"35.—INDUSTRIES—PROVISION FOR THE WORKING OF THE SUGARCANE ACT, 1934."

	Rs.	Rs.
1. (I) *Pay of officers—voted—*		
One Deputy Collector from 1st March, 1935, to 1st May, 1935, at Rs. 500 per month and from 2nd May, 1935, to 31st May, 1935, and again from November, 1935, to February, 1936, at Rs. 550 per month	3,748-6	
One Deputy Collector from 1st March, 1935, to 31st May, 1935, and from November to 27th December, 1935, at Rs. 450 per month and again from 28th December, 1935, to 28th February, 1936, at Rs. 500 per month	3,256-7	
One Deputy Collector from 1st March, 1935, to 31st May, 1935, and from 1st November, 1935, to 20th January, 1936, at Rs 400 per month and again from 21st January, 1936, to 28th February, 1936, at Rs. 450 per month	2,867-12	
One Deputy Collector from 1st March, 1935, to 31st May, 1935, and from 1st November, 1935, to 28th February, 1936, at Rs. 350 per month . . .	2,450	
One Sub-Deputy Collector from 1st March, 1935, to 31st May, 1935, and from 1st November, 1935, to 28th February, 1936, at Rs. 250 per month . .	1,750	
Total .	14,072-9	
	or	14,073
(II) *Special pay—*		
One Deputy Collector from 1st March, 1935, to 31st May, 1935, and again from 1st November, 1935, to 28th February, 1936, at Rs. 100 per month . .	700	
One Deputy Collector from 1st March, 1935, to 31st May, 1935, and 1st November, 1935, to 27th December, 1935, at Rs. 90 per month and again from 28th December, 1935, to 28th February, 1936, at Rs. 100 per month	651-5	
One Deputy Collector from 1st March, 1935, to 31st May, 1935, and 1st November, 1935, to 20th January, 1936, at Rs. 80 per month and again from 21st January, 1936, to 28th February, 1936, at Rs. 90 per month	573-9	
One Deputy Collector from 1st March, 1935, to 31st May, 1935, and from 1st November, 1935, to 28th February, 1936, at Rs 70 per month . . .	490	
One Sub-Deputy Collector from 1st March, 1935, to 31st May, 1935, and from 1st November, 1935, to 28th February, 1936, at Rs. 50 per month . .	350	
Total .	2,764-14	
	or	2,765
Totals I & II .	...	16,838
Less percentage cut (for 1 month)	...	117
(Percentage cut for the remaining period will be Rs. 725.)		16,721

	Rs.	Rs.
2. *Pay of establishment*—		
Five clerks at Rs. 30 each for 7 months . . .	1,050	
Five peons at Rs. 10 each for 7 months . . .	350	
Total .	1,400	
		1,400
3. *Travelling allowances*—		
Travelling allowance for 5 inspectors at Rs. 175 per month for 7 months	6,125	
Travelling allowance for staff at Rs. 15 per inspector	525	
Travelling allowance on transfer	500	
Travelling allowance for 10 non-official members of the Tirhut Central Advisory Committee and 6 non-official members of the Bhagalpur Central Advisory Committee at Rs. 30 per head per meeting for 4 meetings	1,920	
Travelling allowance for 6 non-official members of each of the 4 local Advisory Committees in the Tirhut Division at Rs. 10 per head per meeting for 8 meetings	1,920	
Travelling allowance for 12 non-official members of the local Advisory Committee in Purnea, North Bhagalpur and North Monghyr at Rs. 10 per head per meeting for 8 meetings	960	
Total .	11,950	
		11,950
4. *Contingencies—Non-contract*—		
Miscellaneous contingencies—		
For 5 inspectors at Rs. 20 per month for 7 months	700	
For 2 Central Advisory Committees and 7 local Advisory Committees at Rs. 10 per month for 7 months	630	
	1,330	
Periodicals and Journals	120	
Total .	1,450	
		1,450
GRAND TOTAL—Provision for the working of the Sugarcane Act, 1934	...	31,521

STATEMENT B.—*An estimate of cost for three additional sugarcane inspectors for the working of the Bihar and Orissa Sugarcane Rules, 1934, to be employed partly in North Bihar and partly in South Bihar with a Divisional Advisory Committee for the crushing season of 1935-36.*

	1935-36 (For 4 months from November, 1935 to February, 1936).	1936-37 (For 3 months from March to May, 1936).	Total for the crushing season of 1935-36.
	Rs.	Rs.	Rs.
Pay of officers—			
1. Pay of 3 inspectors at Rs. 500 each a month for 7 months .	6,000	4,500	10,500
2. Special pay for the 3 officers at Rs. 100 each a month for 7 months	1,200	900	2,100
Total .	7,200	5,400	12,600
Pay of establishment—			
1. Pay of 3 clerks at the rate of Rs. 30 each a month for 7 months	360	270	630
2. Pay of 3 peons at the rate of Rs. 10 each a month for 7 months	120	90	210
Total .	480	360	840
Travelling allowances—			
1. For 3 inspectors at the rate of Rs. 175 each a month for 7 months	2,100	1,575	3,675
2. For the staff of 3 inspectors at the rate of Rs. 15 each a month for 7 months . .	180	135	315
3. For 10 non-official members of a Central Advisory Committee at Rs. 30 per head per meeting for 4 meetings . . .	600	600	1,200
4. Travelling allowance for 3 officers on transfer	300	...	300
Total .	3,180	2,310	5,490

	1935-36 (For 4 months from November, 1935 to February, 1936).	1936-37 (For 3 months from March to May, 1935).	Total for the crushing season of 1935-36.
	Rs.	Rs.	Rs.
Contingencies (non-contract)—			
1. For 3 inspectors at Rs. 20 each a month for 7 months . .	240	180	420
2. For 1 Advisory Committee at Rs. 10 a month for 7 months .	40	30	70
Total .	280	210	490
Equipment—			
1. Furniture (chairs, tables, etc.) for 3 inspectors at the rate of Rs. 50 per inspector . .	150	...	150
2. Three sets of weights for each of the 3 inspectors . . .	150	...	150
3. Three portable typewriters at Rs. 200 each . . .	600	...	600
Total .	900	...	900
Grand Total .	12,040	8,280	20,320

(3) *Letter dated the 3rd February, 1936, from the Government of Bihar, Education and Development Department, to the Director of Agriculture, Bihar and Orissa.*

Subject:—SCHEME FOR THE IMPROVEMENT OF SUGARCANE CULTIVATION IN BIHAR.

With reference to the correspondence resting with Mr. MacLean's letter No. 9483, dated the 29th July, 1935, and in continuation of my letter No. 2339-D., dated the 27th November, 1935, I am directed to convey the sanction of the Government of Bihar and Orissa (Ministry of Education) to the scheme set forth in the enclosed memorandum for the improvement of sugarcane cultivation in Bihar on a temporary basis, and to the creation of temporary posts of 3 Assistant Directors of Agriculture, 33 Overseers, 99 Kamdars, 6 Mistries, 3 Clerks and 3 Peons mentioned in paragraph 2 of the memorandum on the rates of pay shown in schedule No. I annexed thereto, till the end of the year 1938-39, with effect from the 1st September, 1935.

2. One of the 3 temporary Assistant Directors with the necessary non-gazetted staff as explained in the enclosed memorandum will be employed in each of the three Ranges, *viz.*, North Bihar Range, South Bihar Range and South-East Bihar Range, and the Deputy Director of each Range shall be the controlling officer for the purposes of travelling allowance of the temporary Assistant Director working in his Range.

3. Sanction is also accorded to the appointment of four extra temporary clerks for Range offices on the scales of pay mentioned in column 6 of

schedule No. I attached to the memorandum. The total expenditure of Rs. 80,000 for 1935-36 inclusive of a non-recurring expenditure of Rs. 20,850 as detailed in schedule No. II and of Rs. 1,00,004 for subsequent years including contingent expenditure on other items connected with the scheme, is also sanctioned.

4. The three temporary Assistant Directors of Agriculture are hereby authorized under Supplementary Rule 20 of the Bihar and Orissa Account Code to draw their contingent and establishment bills.

5. The cost is debitable to the head "54.—Agriculture—Agriculture—Improvement of sugarcane cultivation" in the budget estimates for the year 1935-36.

6. The scheme is being financed by a grant from the Government of India out of the sugar excise duty. The accounting procedure in respect of this grant and the expenditure therefrom will be as indicated below:—

The grant received from the Government of India should be taken to a separate deposit head, *e.g.*, "Deposit account of grant from the sugar excise duty"; the expenditure by the Local Government from this grant will appear in the service head "34.—Agriculture—Agriculture" as stated in paragraph 5 the amount spent during the year will be credited under the head "XXIV.—Agriculture" by transfer from the deposit account. The unspent balance of the grant, if any, in the deposit account which should be kept in the Form of Appendix F to the Civil Budget Estimates for 1935-36 should be carried forward to be utilized in subsequent years.

7. For the purpose of exhibiting the transactions noted in paragraph 6 above in the civil budget estimates, estimates should be framed for the scheme under the following three kinds of heads:—(i) Deposit head, (ii) Service head and (iii) Deposit account in the form of Appendix F to the Civil Budget Estimates for 1935-36. You are made the estimating and controlling officer in respect of these estimates and the necessary estimates may be furnished by you on the dates prescribed in the Budget Manual to the Accountant-General, Bihar and Orissa, Finance Department of Government and to the Education and Development Department.

The Government of India have sanctioned the scheme and also a grant equal to the amount of estimated expenditure for the year 1935-36 as mentioned in paragraph 3 above.

8. This being a new scheme it is necessary to obtain the approval of the Legislative Council by means of a token or supplementary demand under Rule 72 of the Bihar and Orissa Budget Manual. I am to request that you will be so good as to submit to Government at an early date a draft schedule of a token or supplementary demand in order to enable them to take the necessary approval of the Council in March next. You are, however, authorized to proceed with the scheme in anticipation of such approval.

9. Government consider that it is of utmost importance to ensure co-ordination between this scheme and the scheme for the organization and operation of cane-growers' co-operative societies in order that the best results may be achieved under both the schemes. You should therefore try to secure the necessary co-ordination in consultation with the Registrar of Co-operative Societies.

ANNEXURE Y.

Memorandum explaining the scheme for the improvement of sugarcane cultivation in Bihar and Orissa.

This scheme deals with the purely agricultural aspects of the problem of the sugar industry and covers all areas from which cane is supplied to a large sugar factories. The object of the scheme is to secure an improvement in quality and yield of sugarcane which will help the cultivator to secure a better return for his labour and investment.

2. The scheme, which will be under the general supervision and control of the Director of Agriculture, provides for the appointment of 3 additional Assistant Directors of Agriculture, 33 overseers, 99 Kamdars, 6 mistries, 7 clerks and 3 peons. 2 Assistant Directors with 1 clerk and a peon for each 20 overseers, 60 Kamdars and 4 mistries are intended for the North Bihar Range, 1 Assistant Director with 1 clerk and 1 peon, 10 overseers, 30 Kamdars and 2 mistries for the South Bihar Range, and 3 overseers and 9 kamdars for the South-east Bihar Range. Normally 1 experienced overseer can supervise the work of 5 kamdars who have proved their worth, but as the scheme will result in a sudden expansion of staff, it is not considered desirable at the outset to have more than 3 kamdars under an overseer. The ratio of kamdars to overseers can be increased gradually, but for the present it is necessary to keep it low so that slipshod work may be avoided. The kamdars are the back-bone of the scheme and they must be kept up to a high standard of efficiency. Their work, therefore, requires constant and careful supervision by the overseers as well as by the additional Assistant Directors to be appointed under the scheme. In spite of the appointment of 3 additional Assistant Directors the scheme will throw much extra work on the officers in charge of the three Ranges. For this reason provision has been made in the scheme for extra clerical assistance and extra travelling allowance for the three Range officers. No extra Assistant Director of Agriculture is proposed for the South-East Bihar Range, and the additional work on account of the scheme will be managed by the existing gazetted staff at present employed in the Range. The staff engaged for this scheme will be on a temporary basis.

3. Schedule I to this memorandum explains in detail the recurring cost which the scheme involves, while Schedule II shows the non-recurring expenditure. The rates of pay and travelling allowance proposed for the staff, and the amount of contingencies and other charges are in accordance with the prevailing rates given to officers of a similar status employed by the local Government in the province.

4. The work which the staff to be employed under the scheme will be required to do is:—

(a) *Propaganda.*—Intensive propaganda will have to be carried on in the villages and at *melas*, fairs and exhibitions. The staff will explain the supreme importance of good preliminary cultivation and will bring home to the cane-growers the necessity of selecting only the healthiest clumps for seed, the proper after-care of the field once the crop germinates, the correct methods of cutting the crop, the necessity of a sound field hygiene (*e.g.*, the early removal of all dead cane and stubble which might be harbouring disease germs and caterpillars of various moth borers) and the dangers of even limited ratooning and so on. The staff provided in the scheme is the minimum necessary for both extensive and intensive propaganda work.

(b) *Demonstration.*—Improved varieties which give a higher yield than ordinary varieties deplete the natural soil fertility quickly with the result that the yield begins to fall rapidly after the first few years and in some cases serious injury is done to the soil. The staff will demonstrate the importance of the cultural and manurial operations that should be adopted in order to enable the cane-growers to derive full benefit from these improved varieties. Practical demonstrations will be carried on in the growers' own fields on the best methods of planting, subsequent cultivation of cane and proper and adequate manuring. For this purpose provision has been made in the scheme for 33 peripatetic demonstration parties. Each party will be provided with a pair of bullocks, a cart and a set of improved labour saving implements as shown in Schedule II.

(c) *Distribution of disease-free cane-seeds and fertilisers.*—For successful practical demonstrations it is necessary that disease-free and clean seed and manures should be given to the cultivators who agree to carry out demonstrations with the help of kamdars strictly in accordance with the instructions of the Range Officers. For this purpose a sum of Rs. 16,300 has been pro-

vided in the estimate for the first year and Rs. 14,300 for the second and subsequent years. In the second and subsequent years it is anticipated that local supplies will develop and there will be less expenditure on the transport of seed.

(d) *Irrigation.*—Adequate irrigation of cane during the early stages of its growth is a deciding factor in the ultimate yield. The necessity for irrigating the cane crop before monsoon breaks has been felt in many areas. It is, therefore, essential that the value and importance of light, cheap and efficient portable irrigation sets, now on the market, should be demonstrated over as wide an area as possible. Provision has accordingly been made in the scheme for six sets for pumping water for irrigation. The mistries for whom provision has been included in the scheme are required to look after these pumping outfits.

SCHEDULE No. I.—*Details of Recurring Expenditure.*

1	Proposed for. North Bihar. 2	South Bihar. 3	South-East Bihar. 4	Total. 5	Scales and Rates. 6	Total recurring expenditure for Six months in 1935-36. 7	For one full year. 8	Remarks.
					Rs.	Rs.	Rs.	
Assistant Directors .	2	1	..	3	200—40/2—560—40/3—640.	3,600	7,200	The scheme involves an increase of recurring expenditure amounting to Rs. 824 in 1936-37, Rs. 3,780 in 1937-38, Rs. 5,424 in 1938-39 and Rs. 9,696 in 1939-40 on account of increments which the staff will earn in the progressive scales of pay proposed.
Overseers . . .	20	10	3	33	(40—3—55—3—85)×22 52—4—124×11	5,280 3,432	10,560 6,864	
Kamdars . . .	60	30	9	99	15—½—20 *plus* travelling allowance at Rs. 6 per month.	12,474	24,948	
Clerks for Assistant Director of Agriculture.	2	1	..	3	40—3—52	720	1,440	
Extra clerks for Range officers.	3	1	..	4	40—3—52	960	1,920	
Mistries . . .	4	2	..	6	40—1—50	1,440	2,880	
Peons for Assistant Director of Agriculture.	2	1	..	3	10 Per month.	180	360	

Travelling allowance for Range officers.	Rs. 60	Rs. 40	Rs. 20	..	120 ,,	720	1,440
Travelling allowance for Assistant Directors of Agriculture.	..	..	..	..	120 ,,	2,160	4,320
Travelling allowance for Overseers.	..	..	..	..	30 ,,	5,940	11,880
Travelling allowance for Mistries.	..	..	..	..	20 ,,	720	1,440
Travelling allowance for Peons.	..	..	..	..	6 ,,	108	216
Food for bullocks . pairs	20	10	3	33	10 ,,	1,980	3,960
Contingencies. . .	Rs. 4,000	Rs. 2,000	Rs. 500	..	Per annum.	3,125	6,250
Purchase of seed cane fertilisers.	..	..	..	..	..	10,500	12,250
Freight on seed cane .	..	..	..	..	..	5,811	2,076
Total .	..	..	..	..	..	59,150	1,00,004
Non-Recurring expenditure as detailed in Schedule No. II.	..	..	..	..	..	20,850	..
Grand Total .	..	..	..	..	..	80,000	1,00,004

SCHEDULE No. II.—*Details of non-recurring expenditure in 1935-36.*

	Rs.
Bullocks—33 pairs at Rs. 150 per pair . . .	4,950
Carts—33 with Dunlop tyres at Rs. 250 each . .	8,250
Implements—33 sets at Rs. 50 per set . . .	1,650
Irrigation sets—6 at Rs. 1,000 each	6,000
Total .	20,850

(4) *Letter dated the 3rd February, 1936, from the Government of Bihar, Education and Development Department, to the Registrar of Co-operative Societies, Bihar and Orissa.*

Subject:—SCHEME FOR THE ORGANISATION AND OPERATION OF CANE-GROWER'S CO-OPERATIVE SOCIETIES.

With reference to your letter No. 11713-C. S., dated the 18th July, 1935, I am directed to convey the sanction of the Government of Bihar and Orissa (Ministry of Education) to the scheme outlined in the enclosed memorandum for the organization and operation of cane'growers' co-operative societies in Bihar on an experimental basis, and to the creation of temporary posts of 2 special officers, 10 organisers, 2 clerks and 14 peons on the rates of pay and special pay mentioned in Statement C appended to the memorandum, from the 1st September, 1935, till the end of the year 1936-37.

2. Of the 2 special officers 1 should be recruited from among the members of the Bihar and Orissa Civil Service on the revised scales of pay fixed for that service. If the officer recruited is not a new entrant to the Bihar and Orissa Civil Service, his pay should be protected by the grant of personal pay equal to the difference between his existing pay in the old scale, including the increments which he would have ordinarily earned, and the corresponding stage in the revised scale. In addition, he should draw special pay at the rate of 20 per cent. of his substantive pay subject to a minimum of Rs. 50 and a maximum of Rs. 100 a month.

Government agree with you that a Federation employee or any other person who is not a Government servant but who has adequate experience of organizing co-operative societies and has made a special study of the sugar industry, should be appointed as the second special officer under the scheme. His pay should not exceed Rs. 230 a month and he should not be given any special pay.

3. The special officers should be vested with the powers of an Assistant Registrar of Co-operative Societies under the Bihar and Orissa Co-operative Societies Act, 1935. They should therefore draw travelling allowance at the rates prescribed in letter No. 456-D. R., dated the 26th August, 1932, for Assistant Registrars. You will be the controlling officer for the purposes of travelling allowance of the special officers, who are hereby authorised under Supplementary Rule 20 of the Bihar and Orissa Account Code to draw their contingent and establishment bills.

4. Sanction is also accorded to the total expenditure of Rs. 80,062 for 1935-36 including contingent expenditure on other items connected with the scheme and to the total estimated expenditure of Rs. 51,304 for 1936-37, as detailed in Statements C and D annexed to the memorandum. Out of a total estimated expenditure of Rs. 80,062 a sum of Rs. 60,000 represents provision to be utilized as working capital for financing the cane-growers' co-operative societies on terms and conditions specified in paragraph 5 of the enclosed memorandum. You will be responsible for making advances out of this amount to these societies and for seeing to the proper recovery of these advances. I am, however, to request that before any sums are advanced the detailed rules framed by you for the advance of the money

should be forwarded for the approval of Government. These rules should provide *inter alia* for such matters as—

(i) the security to be accepted, and

(ii) the action to be taken on default of an instalment.

It is also presumed that bye-laws will be framed for the management of these societies. If so, draft bye-laws may also be forwarded for the approval of Government.

5. I am to request that you will be so good as to submit to Government by the middle of June, 1936, a report on the working of the scheme, on receipt of which Government will consider the desirability of taking necessary steps to sanction the additional staff mentioned in Statement D attached to the memorandum.

6. The cost will be debitable to the head "34.—Agriculture—Co-operative Credit—Organisation and operation of cane-growers' co-operative societies" in the budget estimates for 1935-36.

7. The scheme is being financed by a grant from the Government of India out of the Sugar Excise Duty. The accounting procedure in respect of this grant and the expenditure therefrom will be as indicated below:—

The grant received from the Government of India will be taken to a separate deposit head, *e.g.*, "Deposit account of grant from the Sugar Excise Duty"; the expenditure by the local Government should appear in the service head "34.—Agriculture—Co-operative Credit" as stated in paragraph 6 above. The amount spent during the year will be credited under the head "XXIV.—Agriculture" by transfer from the deposit account. The unspent balance of the grant, if any, in the deposit account which should be kept in the form of Appendix F to the Civil Budget Estimates for 1935-36 will be carried forward to be utilised in subsequent years.

8. For the purpose of exhibiting the transactions noted in paragraph 7 above in the Civil Budget Estimates, estimates should be framed for the scheme under the following three kinds of heads:—

(i) Deposit head, (ii) Service head and (iii) Deposit account in the form of Appendix F to the Civil Budget Estimates for 1935-36. You are made the estimating and controlling officer in respect of these estimates and the necessary estimates may be furnished by you on the dates prescribed in the Budget Manual to the Accountant General, Bihar and Orissa, Finance Department of Government and to the Education and Development Department.

The Government of India have sanctioned the scheme with a grant equal to the amount of estimated expenditure for the year 1935-36 as mentioned in paragraph 4 above.

9. This being a new scheme it is necessary to obtain the approval of the Legislative Council by means of a token or supplementary demand under Rule 72 of the Bihar and Orissa Budget Manual. I am to request that you will be so good as to submit to Government at an early date a draft schedule of a token or supplementary demand in order to enable them to take the necessary approval of the Council in March next. You are, however, authorised to proceed with the scheme in anticipation of such approval.

10. Government consider that it is of utmost importance to ensure co-ordination between this scheme and the scheme for the improvement of sugarcane cultivation in order that the best results may be achieved under both the schemes. You should therefore try to secure the necessary co-ordination in consultation with the Director of Agriculture.

ANNEXURE Z.

Memorandum explaining the scheme for the organisation and operation of cane-growers' co-operative societies in Bihar and Orissa.

One of the main objects of the Government of India grant out of the sugar excise to different provinces is to assist the organisation and operation of

co-operative societies among the cane-growers so as to help them to secure a fair price for their sugarcane. The scheme outlined below deals with proposals for the organisation of such societies and for their efficient administration.

2. The scheme provides for the appointment of two special officers, who will be vested with the power of an Assistant Registrar of Co-operative Societies, with the necessary ministerial and menial staff. Under these two special officers there will be ten organisers to be recruited from among selected men of the rank of bank managers or supervisors with experience of the organization of co-operative societies. The pay, special pay, travelling allowance and contingencies for which provision has been made in the scheme for the proposed staff are in accordance with the approved rates allowed to officers of similar status employed by the local Government in the province. The entire staff will be on a temporary basis. Details of the recurring and non-recurring expenditure involved are shown in the enclosed statement. The total cost for six months during the year 1935-36 including the initial non-recurring expenditure comes to Rs. 20,062. The total recurring cost of this staff in a full year will be Rs. 38,000.

3. During the year 1935-36 cane-growers' co-operative societies will be organised in North and South Bihar. The ten organisers will have their headquarters as shown below:—

(*a*) In North Bihar—

(1) Siwan, (2) Gopalganj, (3) Bettiah, (4) and (5) Two centres at Madhubani, (6) Rosera, (7) Purnea and (8) Supaul;

and (*b*) in South Bihar—

(9) Patna and (10) Arrah.

If the experiment proves successful, it is proposed to extend the scheme in 1936-37 to other centres, which will necessitate the employment of an additional special officer and five more organisers with the necessary ministerial and menial staff. The recurring cost of this additional staff is Rs. 12,714 recurring and Rs. 590 non-recurring as shown in Statement D. The total ultimate cost of the whole scheme will thus come to about Rs. 51,304.

4. Eight out of the ten organisers will be posted to North Bihar and only two to South Bihar. To supervise the work of the eight organisers in North Bihar there will be two special officers. The cane areas are extensive but work will be concentrated in selected areas. Constant supervision and guidance will be necessary. Special care will also be necessary to organise supplies to sugar factories in a systematic manner. Two special officers are, therefore, necessary in North Bihar. One of these officers will have his headquarters at Chapra and control the organisers at Siwan, Gopalganj and Bettiah, while the other special officer will control the organisers at Madhubani, Rosera, Supaul and Purnea. The two organisers in South Bihar will work under the supervision and guidance of the Assistant Registrar of Co-operative Societies at Patna and the Additional Assistant Registrar at Arrah. The Registrar of Co-operative Societies, Bihar and Orissa, will be in general control of the working of this scheme.

5. The cane-growers' societies will be co-operative societies on a limited liability basis. In view of the present difficulties of the co-operative movement in the province neither the central banks nor the Bihar and Orissa Provincial Co-operative Bank are in a position to finance these new societies in the early stages of their organisation. It is, therefore, proposed that in addition to Rs. 20,062 for the scheme in 1935-36, a sum of Rs. 60,000 should be provided in the first year to be utilised as working capital for financing these societies. From this amount short-term loans bearing 6¼ per cent. interest will be advanced to the new societies. The maximum rate of interest which these societies can charge their members will be fixed at 9⅜ per cent. The entire amount will be repaid to Government by instalments in five years. The amount recovered each year will be reported to the Government of India and will be available for expenditure on the scheme in the following year in addition to the grant from the Government of India for that year.

STATEMENT C.—*An estimate of cost of the scheme for the organisation and operation of cane-growers' co-operative societies for six months in 1935-36.*

	Rs.
1. *Pay of special officers—*	
One at Rs. 450 per month, the other at Rs. 250 per month for 6 months (700×6)	4,200
Special pay Rs. 90+50 (140×6)	840
Total	5,040
2. *Pay of 10 organisers—*	
Selection will be made from amongst these who have experience of co-operative organisation and knowledge of conditions in cane-growing areas. They will be paid between Rs. 100 and Rs. 125 according to qualifications (10×112½×6)	6,750
3. *Pay of establishment—*	
Clerks—	
Two clerks for each special officer at Rs. 30 each (2×2×30×6)	720
Servants—	
Two orderly peons—1 for each special officer on Rs. 8 (2×8×6)	96
Two orderly peons—1 for each organiser on Rs. 8 (10×8×6)	480
Two office peons for special officers at Rs. 8 each (2×8×6)	96
Total	1,392
4. *Travelling allowance—*	
Two special officers at Rs. 100 each (2×100×6)	1,200
Two orderly peons of special officers at Rs. 8 each (2×8×6)	96
Ten organisers at Rs. 40 each (10×40×6)	2,400
Ten orderly peons of organisers at Rs. 8 each (10×8×6)	480
Total	4,176
5. *Contingencies including stationery—*	
Two special officers at Rs. 120 each (2×120×6)	240
Ten organisers at Rs. 36 each (10×36×6)	360
Office rent for 2 special officers at Rs. 30 each (2×30×6)	360
Livery for 2 orderly peons of special officers at Rs. 12 each (2×12)	24
6. (1) One accountant for the Registrar's office on Rs. 55 (55×6)	330
(2) One typist for the Registrar's office on Rs. 35 (35×6)	210
Total	1,524
Total recurring	18,882

	Rs.
7. *Non-recurring for 1935-36—*	
Furniture—	
Two special officers with staff (2 × 275)	550
Ten organisers (10 × 60)	600
Ten brass badges for organisers' peons at Rs. 3 each (3 × 10)	30
Total non-recurring .	1,180
Grand total .	20,062

In addition Rs. 60,000 would be provided for financing the societies.

STATEMENT D.—*An estimate of cost of one additional special officer with five organisers and the necessary ministerial and menial staff (Co-operative Department) for the year 1936-37.*

	Rs.
1. *Pay of officers—*	
One special officer (Sub-Deputy Collector) on a pay of Rs. 250 and special pay at Rs. 50 a month (300 × 12) . . .	3,600
2. *Pay of organisers—*	
Five organisers on a pay between Rs. 100 and Rs. 125 each a month (5 × 112½ × 12)	6,750
3. *Pay of establishment—*	
Two clerks for the special officer at Rs. 30 a month (2 × 30 × 12)	720
One orderly peon for the special officer at Rs. 8 a month (8 × 12)	96
Five orderly peon—1 for each organiser at Rs. 8 a month (5 × 8 × 12)	480
One office peon for the special officer at Rs. 8 a month (8 × 12)	96
Total .	1,392
4. *Contingencies including stationery—*	
One special officer at Rs. 240	240
Five organisers at Rs. 72 each (5 × 72)	360
Office rent for the office of the special officer at Rs. 30 a month (30 × 12)	360
Livery for the orderly peon of the special officer . . .	12
Total .	972
Total recurring .	12,714
5. *Non-recurring—*	
One special officer and 2 clerks	275
Five organisers (5 × 60)	300
Total non-recurring .	590
Five brass badges for organisers' peons at Rs. 3 each (3 × 5) .	15
Grand Total .	13,304

(5) *Letter dated the 28th June, 1937, from the Government of Bihar, Revenue Department, Ranchi.*

With reference to your letter No. 181, dated the 15th May, 1937, I am directed to forward a statement showing the prevailing rates of interest at which cultivators can borrow money from Mahajans and Co-operative Societies in different parts of the Province of Bihar.

2. I am to add that the Provincial Government charge interest at the rate 6¼ per cent. per annum on the *Takavi* loans advanced by them.

Statement showing the prevailing rates of interest at which cultivators can borrow money from the village Mahajans and Co-operative Societies.

Area.	Rate of interest charged by Mahajans.	Rate of interest charged by Co-operative Societies.
Hazaribagh and Santhal Parganas.	37 per cent. per annum for loans below Rs. 50 and 24 per cent. per annum for bigger loans. (The Mahajans compound the interest with the principal every year).	Between Rs. 14-1-0 to 18-12-0 per cent. per annum.
Darbhanga District . .	12 to 24 per cent. compound interest.	12½ per cent.
Chapra and Champaran districts and Hajipur subdivision of the district Muzaffarpur.	12 to 24 per cent. (on petty sums the village mahajans charge interest from 24 to 36 per cent.)	12½ per cent. to 15½ per cent.
Purnea and North Bhagalpur district.	6 per cent. to 25 per cent.	12½ per cent. to 15½ per cent.
South Bhagalpur district .	12½ per cent. to 50 per cent.	9 per cent. to 15 per cent.
Gaya district . . .	18¾ per cent. to 37½ per cent.	12½ per cent. to 15½ per cent.
Ranchi	25 per cent. to 37½ per cent.	9¾ per cent. to 18¾ per cent.

(6) *Letter dated the 5th July, 1937, from the Government of Bihar, Revenue Department, Ranchi.*

In continuation of my letter dated the 28th June, 1937, I am directed to forward a supplementary statement showing the prevailing rates of interest at which cultivators can borrow money from Mahajans and Co-operative Societies in certain other districts of the Province of Bihar.

Supplementary Statement showing the prevailing rates of interest at which cultivators in the areas under the circles of different Assistant Registrars of Co-operative Societies, can borrow money from the village Mahajans and Co-operative Societies.

Area.	Rate of interest charged by mahajans.	Rate of interest charged by Co-operative Societies.
	Per cent.	Per cent.
1. Patna District . . .	12 to 18	12½ to 15·⅝
2. Shahabad District . .	6 to 24	12½ to 15·⅝
3. Muzaffarpur District .	9 to 24	12½
4. Palamau District . .	24 to 75	15·⅝
5. Gaya District . . .	18¾ to 75	9⅜ to 15·⅝

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(7) *Letter dated the 8th September, 1937, from the Government of Bihar, Local Self-Government Department.*

With reference to your letter No. 303, dated the 18th June, 1937, addressed to the Revenue Department of Government, I am directed to forward a statement containing the necessary information required by the Tariff Board.

STATEMENT A.

Name of Distilleries.	1934-35.			1935-36.			1936-37.			Remarks.
	Total quantity of molasses supplied.	Sources of supply.	Price paid for molasses per md.	Total quantity of molasses supplied.	Sources of supply.	Price paid for molasses per md.	Total quantity of molasses supplied.	Sources of supply.	Price paid for molasses per md.	
	Mds.		As. p.	Mds.		As. p.	Mds.		As. p.	
1. Manpur .	17,472	Lohat and Delhi Sugar Mills.	12 9	22,650	Lohat and Delhi Sugar Mills.	9 4	17,650	Lohat and Delhi Sugar Mills.	12 3	The Sugar factory is owned by the distilleries themselves.
2. Marhaurah	74,117	Marhaura Sugar factory.	2 0	80,790	Marhaura Sugar factory.	4 6	1,11,213	Marhaura Sugar factory.	3 0	
3. Monghyr .	7,994	Lohat Gauripur, Hasanpur and Gararu Sugar factories.	12 0	13,961	Lohat, Gouripur, Hasanpur Garaur Sugar factories.	12 0	12,239	Lohat, Gouripur, Hasanpur and Gararu Sugar factories.	12 0	
4. Sultanganj	244	Bihta Sugar Mill.	6 6	8,443	Gouribazar, Motihari and Lohat Mills.	5 6	32,929	Harinagar, Gouribazar, Bihta and Dhampur (Cawnpur.)	4 6	
5. Ranchi .	..	..	..	..	..	..	1,650 (molasses)			
							1,950 (gur)	Molasses from Gararu Sugar Mill.	14 3 (Molasses.)	
								Gur locally purchased.	2 13 0 (Gur.	

(8) *Letter dated the 18th September, 1937, from the Government of Bihar, Development Department, Patna.*

I am directed by the Governor of Bihar to forward a Supplementary Note for the consideration of the Sugar Tariff Board explaining the points urged on behalf of the Provincial Government by their representatives who were examined by the Board on the 11th September, 1937.

Supplementary Note for the Sugar Tariff Board.

1. *Fair price of Sugarcane.*—According to the calculations of the Agriculture Department the cost of sugarcane cultivation in North Bihar, which is the most important area in this province, is approximately Rs. 55 an acre, while the average outturn per acre is approximately 250 maunds. On this basis the cost of cultivation works out at 3 annas 6 pies a maund. To this should be added a minimum profit of 1 anna a maund to the grower who is prevented from utilizing his land for the cultivation of any other crop for a period of 12 to 14 months. The minimum selling price of cane on the growers field should, therefore, be 4 annas 6 pies a maund. The average cost of transport of cane is 1½ annas per maund per mile, while the average lead from the field to the factory weighbridge is 8 miles. The average cost of transport may, therefore, be taken at 1 anna per maund. The minimum selling price of sugarcane at the weighbridge thus comes to 5 annas 6 pies. Allowing for transport charges from the weighbridge the total cost of cane comes to 6 annas a maund to the factory.

2. *Level of protective tariff.*—The cost of manufacture of one maund of sugar by an efficient factory maintaining a properly paid staff and paying a fair price for cane is indicated below:—

	Rs.	A.	P.
Price of 11 maunds of cane at 6 annas a maund .	4	2	6
Cost of manufacture (allowing fair wages for labour and including miscellaneous expenditure)	2	4	0
Profit at 10 per cent. of above	0	10	0
Duty	1	7	6
Total .	8	8	0

Thus, the price of sugar f.o.r. factory comes to Rs. 8-8. Adding an average railway freight of 12 annas the cost of sugar landed in Calcutta comes to Rs. 9-4 a maund against the price of Rs. 9-9 for Java sugar in the Calcutta market with the present protective tariff. The margin is in sufficient to keep out Java sugar which is of superior quality.

The cost of manufacture of a maund of sugar by an efficient factory paying fair wages for labour has been worked out as below:—

	Rs.	A.	P.	
Average collection charges of cane at 6 pies per maund . . .	0	5	6	
Actual manufacturing cost . .	1	4	0	
Depreciation and interest . .	0	7	2	(Allows for depreciation of plant at 5 per cent. and building at 2½ per cent. and interest on working capital at 5 per cent.)
Brokerage, commission and marketing, insurance, income-tax, rent and cess, provident fund, medical, etc. . . .	0	3	6	
Total .	2	4	2	or 2 4 0

The abnormally low price of sugar has made it impossible even for an efficient factory to pay the grower adequately for his cane. The staff of chemists, technologists, etc., are being paid a very low wage and as they are engaged only for the season they have to suffer considerable hardship. The housing conditions of labour also need improvement. The provincial Government consider that pressure must be brought to bear on factories to give the grower a fair price for his cane and to improve the conditions of employment of factory employees. These cannot however, be done until there is a margin of at least 8 annas between the price of Java sugar the fair selling price of Bihar Sugar landed in Calcutta.

3. *Removal of additional excise duty on sugar.*—The additional excise duty brought no corresponding increase in the price of sugar, the slight increase at the time of imposition being only temporary. The burden of the additional duty has fallen entirely on the industry and more particularly on the grower. Owing to the low price of sugar and the high excise duty the factories have paid an uneconomic price to the grower for his cane and have reduced the wages of their technical staff. With sugar selling at Rs. 6-5 a maund the factory can not pay more than about 3 annas 6 pies for cane. To ensure a fair return to the grower and fair wages of labour employed by factories it is necessary that the price of sugar should be raised by Rs. 2 a maund. Improved marketing arrangements will not achieve this result and it is necessary therefore, that the additional excise duty should be removed.

4. *Utilization of molasses.*—The problem of the utilization of molasses is urgent and important. At present roughly 300,000 tons of molasses is going to waste and it is estimated that this quantity is capable of producing about 18 million gallons of power alcohol. The industry can not be efficient if it is unable to make economic use of its most important bye-product. Other known uses of molasses appear to be uneconomical at present. As regards the utilization of molasses as manure, the experiments in North Bihar show that the molasses from sulphitation factories are beneficial, but molasses from carbonitation factories are definitely harmful. In any case, on account of the cost and difficulties of transport, the use of molasses as manure at this stage is uneconomic. In the circumstances, the Government of Bihar consider that experiments should be permitted in the manufacture of power alcohol from molasses and that licences for this purpose should be granted.

5. *Research work on sugarcane.*—Research work on sugarcane is of fundamental importance and unless this work is done on a more intensive scale, it will be difficult to reduce the cost of cultivation. The present grant from the sugar excise fund is inadequate and should be increased. Provincial Government have to carry out intensive demonstration and propaganda for which money cannot be provided from provincial revenues. Unless the grant from sugar excise fund is increased the improvement in cane cultivation will be slow and there is little hope of the sugar industry being able to face foreign competition.

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(9) *Memorandum circulated by Bihar Government Explaining Proposals for Legislation to Regulate the Supply of Cane to Sugar Factories.*

Defects of existing system.—The tariff protection given to the sugar industry since 1932 has led to its rapid expansion, but there are unsatisfactory features in its development which are indicated briefly below:—

(*a*) the cane-grower receives little encouragement from the factory to adopt more efficient methods of cultivation.

(*b*) the supply of cane is made mainly through middle-men a practice which has given rise to many abuses resulting in the exploitation of the grower;

(*c*) there has been over-production of cane resulting in the lowering of cane prices below the economic level as experienced during the last season;

(*d*) the grower is left in uncertainty as to the cane requirements of factories. Except in rare cases there are no binding agreements for the purchase of cane. The grower, is, therefore, not in a position to know at the time of planting how much cane he should grow for supply to factories;

(*e*) the grower is often harassed by having to pay illegal gratification to the cane staff or the purchasing agents before he can obtain "purjis" for the supply of cane.

These defects cannot be dealt with adequately under the existing Act (XV of 1934) and fresh legislation is, therefore considered necessary.

2. *Zoning.*—The first proposal considered necessary is the introduction of a system of zoning wherever this is found to be practicable. This is not a new idea. It was considered by the Tariff Board in 1931, but was not looked upon with favour. It was thought that competition between factories was the only definite safeguard which the cultivator possessed for the maintenance of cane rates and it would be inequitable to deprive him by statute of this guarantee unless effective statutory provision could be made for the rates which should be paid for cane. Conditions, however, have changed since the Tariff Board's report. Sugarcane being almost the only cash crop in the United Provinces and Bihar, there has been a rapid extension of cane cultivation which last year resulted in a heavy surplus of sugarcane. If this surplus continues, there will be no competition amongst factories to raise cane rates. As a matter of fact, as a result of better organization among the factories zoning has already come into being by private agreement and the unorganized grower is beginning to find himself left with little option as to the factory to which he can sell his cane.

3. *Safeguards for Growers.*—If zoning is to be introduced by legislation, two safeguards are necessary for the grower, namely:—

(*a*) exclusion from the zone of all middle-men, and

(*b*) a definite assurance that in the zone the cane of each grower or cane-growers' co-operative society up to a prescribed limit to be determined by the cultivable area will be taken by the factory and that any surplus cane in the zone will get a preference over cane grown in a free area if the factory requires an additional supply.

If these safeguards are provided and with the minimum price fixed by Government, the objections to zoning to a large extent disappear and a general improvement in cane cultivation with increased efficiency in cane supply becomes possible. In any case, zoning with legislative safeguards is better for the grower than zoning by boundary agreements between factories, which is now the prevailing tendency.

4. *Proposals for zoning.*—If an obligation is to be imposed on a factory to purchase all the cane that has been grown for supply to the factory, it would clearly be necessary to limit the size of the zone so that the available cane may not exceed the factory's actual requirement. The first step, therefore, is the preparation, sufficiently in advance of the planting season, of an estimate of the cane requirement of the factory during the following season. Such an estimate may be based on the crushing capacity of the factory and the normal crushing period. It is essential, however, that this estimate of the cane requirement of the factory, after proper check by the provincial Government, should be duly notified for general information. The next step is the allotment of a zone to the factory. The provincial Government should have the power to declare by notification that any area in the vicinity of a factory shall be a reserved area for the purposes of that factory. Such a notification will be made after previous publication and

after considering any objections that may be raised. The next point for consideration is the size of the zone. It would not be feasible to fix a zone which would supply the total estimated cane requirement of a factory because on account of climatic conditions or unexpected break-downs of machinery the factory may not be in a position to crush the full estimated amount. Also in a year of bumper crop, the zone will produce more cane than the factory can consume, and the surplus cane will have no other market. It is necessary, therefore, to provide for an adequate margin. In Bihar it is considered that the zone should be fixed so as to provide approximately 50 per cent. of the factory's estimated requirement of cane. A higher percentage is not considered desirable because, on account of the absence of any survey of cane areas, it is possible that the zone may supply more cane than is anticipated. In the United Provinces, however, where there is an up-to-date survey, the percentage may be raised to 65 or possibly even to 75 as recommended by the Sugar Committee of the Imperial Council of Agricultural Research. A provision should, however, be made enabling the Provincial Government at any time to alter the boundaries of a zone after hearing any objections that may be made by the factory or any cane-grower or cane-growers' co-operative society. In Bihar it may be necessary to undertake a survey of the zone in order to determine the cane areas. The cost of such survey should be recovered from the factory at a prescribed rate per acre.

5. *Rights of growers within the zone.*—As soon as a zone is allotted, the factory will be required to maintain a register of all Individual cane-growers who are not members of co-operative societies and of all cane-growers' co-operative societies within the zone. This register will contain such particulars as may be prescribed including the area of lands suitable for growing sugarcane in the occupation of each cane-grower or of the members of each cane-growers' co-operative society and the area on which cane is actually grown for supply to the factory. The grower or the cane-growers' co-operative society shall be entitled to a certified copy of the entries in the register relating to him or it. If the factory refuses to register a cane-grower or a cane-growers' co-operative society, the latter may make an application to the Collector and the Collector may, after making such enquiries as he thinks fit and hearing the parties, order the factory to register the name of the cane-grower or cane-growers' co-operative society or correct any incorrect entry in the register. The cost of any proceedings will be recoverable from the party against whom the order is passed in accordance with such rates as may be prescribed.

6. *Bilateral agreements between the factory and the grower.*—After the preparation of the register as detailed in the preceding paragraph, a registered grower or cane-growers' co-operative society can require the factory to enter into bilateral agreements for the purchase and supply of cane. The amount of cane which the factory will undertake to purchase will be determined by the average outturn and the area under cultivation, provided that such area shall not exceed one-third of the total land suitable for sugarcane cultivation so as to allow for proper rotation. Thus a cane-grower or a cane-growers' co-operative society in the zone will be given a statutory right in regard to the disposal of his or its cane to the factory. It should however, be clearly understood that there will be no obligation on the part of the cane-grower or the cane-growers' co-operative society to enter into an agreement for the supply of cane, but as no other factory or licensed purchasing agent will be allowed to purchase cane from the zone the refusal of the cane-grower or the cane-growers' Co-operative Society to enter into an agreement with the factory will mean that he or it may only grow cane for the manufacture of Gur or Khandsari sugar. In view of the low price of Gur and Khandsari sugar, it is not expected that there will be any refusal on the part of the cane-grower or the cane-growers' Co-operative Society to enter into agreement for the supply of cane to the factory. In any case, the factory can, if necessary, apply for an enlargement of its zone

and, in the event of failure of cane supply from the zone, it may purchase a larger proportion of its cane from a free area which is not declared to be the zone of another factory. It is also proposed to provide that, at any particular time, the cane purchases of a factory outside its zone shall not exceed 50 per cent. of its total cane purchases until all the available cane within the zone has been purchased. The object of this provision is to ensure that any surplus cane available within the zone will be taken by the factory in preference to outside cane.

7. *Advantages of zoning.*—The advantages of a system of zoning as contemplated in this note are obvious. It ensures a regular supply of gate cane to the factory, whilst the growers within the zone are given definite rights. As soon as these rights are realised, the necessity for the payment of illegal gratification will disappear. In the beginning, the maintenance of registers may impose a heavy task on factories, but this should be amply compensated by the saving on middle-men's commission. In view of the fact that gate cane is more profitable to the factory than rail cane it is to its interest to develop cane cultivation within the zone. At present even the more efficient factories are curtailing their advances to growers because of the uncertainty of supply. With zoning it would be to the interest of the factories to make advances to the growers within the zone to enable them to adopt proper manuring and to purchase seeds of good varieties.

8. *Compulsory bonding.*—In some areas where there is a congestion of sugar factories it may not be possible to provide exclusive zones for all factories. Where no zone is allotted to a factory, it is proposed to provide that the factory shall bond at least 70 per cent. of its estimated cane requirement either with growers or cane-growers' co-operative societies or with licensed purchasing agents. This, it is hoped, will remove some of the defects of the present system which leaves growers in uncertainty regarding the disposal of their cane. It will also indirectly encourage zoning, as the factories will no doubt endeavour to bond with growers in their vicinity in order to save the cost of transport. In Bihar where, for reasons already stated, it is not considered practicable to allot a zone for more than 50 per cent. of the estimated requirement of a factory, it is proposed that, in addition to the zone, the factory shall be required to bond at least 15 per cent. of its estimated requirement in a free area outside its zone either direct with growers or cane-growers' co-operative societies or with licensed purchasing agents. This will give a regulated supply of 65 per cent. of the estimated requirement of the factory. Where compulsory bonding is required in a free area, *i.e.*, an area which is not reserved for any particular factory, middlemen will be allowed to operate, but only under a licence. A licensed purchasing agent who has entered into an agreement to supply a specified quantity of sugarcane to a factory will be required to enter into agreements with cane-growers or cane-growers' co-operative societies for the purchase of such quantity and shall not supply any such sugarcane to the factory unless he has purchased it direct from a grower or a cane-growers' co-operative society. In this way, the benefit of compulsory bonding between the factory and the licensed purchasing agent will be passed on to the grower. The agreements shall in all cases be bilateral and in a form to be prescribed by the Provincial Government. Compulsory bonding will give the growers some assurance regarding the purchase of their cane by factories, but as compared with zoning it has one serious disadvantage. The factory is not bound to enter into an agreement with any particular grower and this leaves a loophole to the cane staff for demanding illegal gratification before any agreement is executed on behalf of the factory.

9. *Licensing of purchasing agents, etc.*—The existing Act provides for licensing only of purchasing agents, but this is not considered adequate. Weighment clerks and the cane staff of factories or purchasing agents play an important part in the system of cane supply to sugar factories and it is considered desirable that they should be licensed. In the case of purchasing agents and weighment clerks provision should be made for furnishing security

which may be held until six months after the termination of the period of the licence or until six months after the close of the crushing season in respect of which the license is granted, whichever period is shorter. The Collector will be empowered to cancel a licence if a purchasing agent or weighment clerk or regular employee responsible for cane purchase has been convicted of any offence and his decision in the matter shall be final. If the license is cancelled, the Collector will be further empowered to forfeit to the Crown the whole or any portion of the security money. Under the existing Act a difficulty has been experienced in excluding undesirable middle-men who do not actually purchase cane on behalf of the factory, but who carry on preliminary negotiations with the grower on its behalf. It is proposed to make a provision in the new Act to the effect that no person shall enter into any negotiation on behalf of a factory or a licensed purchasing agent or carry out any transaction connected with the supply of sugarcane to a factory unless he is licensed employee of the factory or of the licensed purchasing agent, as the case may be.

The existing Act requires that cane shall be purchased direct from the grower or through a carter or a co-villager. This practice should be recognised. It is further proposed to permit the grower to appoint a licensed agent, who will see that the cane is properly weighed and that full payment is received or due credit is given to the grower. The grower's licensed agent may charge a commission at a rate not exceeding that prescribed by Government. As the employment of such agents may give rise to abuses, it is proposed that a license will only be given when the collector is satisfied regarding the agent's honesty and his license may also be cancelled at any moment at the discretion of the Collector.

10. *Minimum price.*—It is proposed to provide for a minimum price for sugarcane intended for use in a sugar factory which will be fixed by the Provincial Government in accordance with rules framed under the Act. Before these rules are adopted they will be draft published and objections duly considered. Every agreement for the supply of cane to a factory shall provide for the payment to the seller of a price not less than the minimum price. The provisions regarding the minimum price must be elastic, but the intention is that the Provincial Government will prescribe an absolute minimum and a progressive scale which will secure an increase in the minimum price corresponding to the increase in the price of sugar. Deductions will not be permitted, but if in any area the crop or any part of it is damaged by frost, flood or other natural calamity or by any disease or pest, the factory may be permitted to purchase such cane at such price lower than the minimum price as may be determined by a competent authority. A provision is also required to give the Provincial Government, in case of emergency, the power to reduce the minimum price in any area where this is considered necessary. On the other hand, the Provincial Government should also be given the power to direct that in addition to the minimum price a premium shall be paid for special varieties of cane required by the factory. The object of this provision is to secure adequate remuneration to the grower for early and late varieties which involve greater expense.

11. *Inspection.*—The Provincial Government will be authorised to appoint any person to be an Inspector for the proper enforcement of the provisions of the Act and the rules framed thereunder. The Commissioner, Collector, Sub-Divisional Officer, Director of Agriculture, Director of Industries and the Deputy Director of Agriculture will also be given the powers of an Inspector. At the end of the crushing season the factory will be required to submit returns in the prescribed form containing the prescribed particulars, *e.g.*, total quantity of cane crushed during the season, the quantity of cane purchased from the zone and the quantity of cane purchased from a free area. For the enforcement of the Act certain registers will also have to be prescribed which shall be open for inspection to an Inspector and to officers who are given the powers of an inspection. It is for consideration whether any other person can suitably be appointed as an Inspector, *e.g.*,

the secretary or member of a local sugarcane committee or any other non-official.

12. *Local committees and Provincial Sugarcane Board.*—In the sugar industry the interest of growers and manufacturers are so closely interwoven that it is desirable to provide machinery for the national adjustment of the claims of both parties. It is proposed to appoint local committees and a Provincial Sugarcane Board. The former will function in each district or group of districts while the latter will co-ordinate the work of the local committees and consider the major problems of the industry. The local committees may be asked to advise on the zone areas for factories, the licensing of purchasing agents, weighment clerks, etc., the estimated cane requirements of factories within their jurisdiction, the cancellation of licences, etc. The Provincial Sugarcane Board will advise on the rules to be drafted by the Provincial Government and in particular the minimum price to be fixed for sugarcane. In the case of both the local committees and the Provincial Sugarcane Board it is proposed to have an equal representation of growers and sugar factories in addition to the official representatives to be nominated by the Provincial Government. The conference may wish to consider in greater detail the constitution, duties and functions of the local committees and the Provincial Sugarcane Board.

13. *Penalties.*—Penalties will have to be provided for offences under the Act and the rules, *e.g.*:—

(*a*) payment of less than the minimum price,

(*b*) use of false weights and scales,

(*c*) failures to submit estimates and returns,

(*d*) unauthorised purchase or sale of sugarcane, etc.

In order, however, to minimise, as far as practicable, the possibility of vexatious prosecutions for petty offences it will be provided that no court shall take cognizance of any offence punishable under the Act or the rules except upon complaint made by order of, or under authority from, the Collector.

14. To sum up, the points which will require the consideration of the Conference are indicated briefly below:—

ZONING.

(1) Should a system of zoning be introduced?

(2) If so, what are the safeguards which are essential for the grower?

(3) What should be the size of the zone?

(4) How can the estimated cane requirement of a factory be determined?

(5) Should the maintenance of a register of growers and cane-growers' co-operative societies be insisted upon and, if so, what particulars should the register contain and what are the steps that are necessary to ensure the proper and accurate maintenance of this register? Should factories be allowed to deal individually with a cane-grower who is a member of a cane-growers' co-operative society registered under the Co-operative Societies Act?

(6) Should factories be required to deal direct with growers and cane-growers' Co-operative Societies in the matter of purchase and supply of sugarcane?

(7) Should the factory be compelled to bond a specified quantity of its cane requirement outside its zone? If so, to what extent?

(8) If a zone cannot be allotted to a factory, should it be compelled to bond a percentage of its estimated cane requirement in the free area in its neighbourhood, *i.e.*, an area not reserved as a zone for another factory. If so, what should be the percentage of bonded cane?

(9) If a factory enters into an agreement with a licensed purchasing agent for the supply of a specified quantity of cane should the licensed purchasing agent also be compelled to enter into agreements with growers for the full amount of cane which the factory has agreed to purchase from him?

(10) What would be the form of the bilateral agreements between factory and growers (including cane-growers' Co-operative Societies), factories and licensed purchasing agents, and licensed purchasing agents and growers (including cane-growers' Co-operative Societies)? In particular, what relief, if any, should be provided, if, through causes beyond its control, e.g., complete breakdown of machinery, a factory is unable to consume the entire amount of bonded cane in the zone or outside?

LICENSING OF PURCHASING AGENTS, ETC.

(11) Should provision be made for the licensing of purchasing agents, weighment clerks and cane staff of factories and of purchasing agents?

(12) Should the practice of delivering cane through a carter or co-villagers be recognised?

(13) Should growers be allowed to appoint licensed agents to supervise weighment of and payment for cane on their behalf and generally to look after their interests in their dealings with the factory or purchasing agent? If so, what should be the maximum rate of commission to be allowed to such agents?

MINIMUM PRICE.

(14) Should any definite principles be laid down for the determination of the minimum price of sugarcane?

(15) Is it desirable to fix an absolute minimum which will be notified before the commencement of the planting season?

(16) Should deductions be allowed from the minimum price on account of damage caused by frost, flood, etc., and, if so, in what manner?

(17) Should the Provincial Government be empowered in cases of emergency to reduce the minimum price in any area where this is considered necessary?

(18) Should the Provincial Government be empowered to insist on the payment of a premium in addition to the minimum price for special varieties of cane?

INSPECTION.

(19) Who are the persons considered suitable for appointment as inspectors?

LOCAL COMMITTEES AND PROVINCIAL SUGARCANE BOARD.

(20) What should be the constitution, powers, duties and functions of local committees and the Provincial Sugarcane Board?

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(10) *Letter dated the 22nd September, 1937, from the Tariff Board, to the Government of Bihar, Revenue Department, Patna.*

I am directed to request you to kindly let me know the approximate number of large planters in Bihar who grow cane on their plantations and the approximate total acreage in the plantations.

(11) *Letter dated the 28th January, 1938, from Revenue Department, Bihar, Patna.*

Subject:—NUMBER OF LARGE PLANTERS IN BIHAR WHO GROW CANE ON THEIR PLANTATIONS AND THE APPRIXIMATE TOTAL ACREAGE IN THE PLANTATION.

With reference to you letter dated the 22nd September, 1937, I am directed to say that the approximate number of large planters in Bihar who grow cane on their plantation is 62 and the approximate total acreage in the plantations is 23, 146.

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(12) *Letter dated the 23rd October, 1937, from the Tariff Board to the Government of Bihar, Revenue Department, Patna.*

I am directed to enquire the basis on which the Government of Bihar fixed recently the minimum price for cane for the next season at 5 annas 3 pies. The Board would be grateful to have as detailed information as possible. I am further to request that a note on any other proposals connected with the Sugar industry, *e.g.*, the Sugar Selling Syndicate which may be under the consideration of the Government also be furnished at an early date.

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(13) *Letter dated the 28th October, 1937, from the Government of Bihar, Development Department, Patna.*

With reference to your Express letter dated the 23rd October, 1937, I am directed to forward a copy of Notification No. 1683-D, dated the 11th October, 1937, and to say that the intention to fix the minimum price at 5 annas 3 pies for gate cane and 5 annas for rail-cane was notified in consultation with the United Provinces Government and after discussion at a joint conference which was attended by the representatives of growers and millers from both provinces. As regards the Sugar Selling Syndicate I am to enclose a copy of the Press Note which was issued by the Government and to say that proposals for legislation are still under consideration.

GOVERNMENT OF BIHAR.

DEVELOPMENT DEPARTMENT.

NOTIFICATION.

The 11th October, 1937.

No. 1683-D.—The followng draft notification which the Government of Bihar propose to issue in exercise of the powers conferred by sub-section (2) of section 3 of the Sugarcane Act, 1934 (XV of 1934), is hereby published as required by section 4 of the said Act for the information of persons likely to be affected thereby, and notice is hereby given that the said draft will be taken into consideration on or after the 10th November, 1937.

Any objection or suggestion which may be received from any person with regard to the draft before the date specified above will be duly considered by the Government of Bihar.

Draft notification.

The Government of Bihar are pleased to fix in all controlled areas from the beginning of the next crushing season till the 15th December, 1937, or

until further notification, the minimum prices shown below for the purchase of sugarcane intended for use in any factory:—

(i) For sugarcane intended for use in a factory which is worked by the vacuum pan process the minimum price shall be five annas and three pies per standard maund of 82⅔ lbs. avoirdupois, except in respect of purchases made at a railway station for transport by rail to factories situated at a distance of not less than five miles from such railway station in which case the minimum price shall be five annas per standard maund of 82⅔ lbs. avoirdupois.

(ii) For sugarcane intended for use in a factory which is worked by the open pan process the minimum price shall be ¾ of the minimum price mentioned in (i) above.

By order of the Governor of Bihar,
(Sd.) L. LALL,
Secretary to Government.

Press note.

(From the Information Officer, Government of Bihar).

The problems of the sugar industry have been engaging the consideration of the Government of the United Provinces and Bihar. The Joint Sugar Conference consisting of representatives of both provinces which met at Lucknow on the 29th and 30th September, 1937, decided to appoint Sub-committees to consider questions relating to marketing and zoning which, for want of time, could not be dealt with in details by the main conference. The Sub-committees met at Patna on the 19th and 20th October, 1937, under the chairmanship of the Hon'ble Pandit Govind Ballabh Pant, the Premier of the United Provinces. The Hon'ble Dr. Katju, the Development Minister of the United Provinces, the Hon'ble Dr. Mahmud, the Education and Development Minister of Bihar, the Hon'ble Mr. Anugrah Narayan Sinha, Finance Minister of Bihar, the Hon'ble Mr. Jaglal Chaudhuri, Excise Minister of Bihar. Babu Rajendra Prasad and representatives of cane-growers, sugar factories and sugar merchants attended these meetings. The Hon'ble Mr. Sri Krishna Sinha, the Prime Minister of Bihar, who was away at Mussorie, returned on the 19th evening and attended the meeting on the 20th.

2. The question of the marketing of sugar was first taken up. It was felt at the Lucknow Conference that if the industry was to be placed on a sound footing, steps must be taken to stabilise the price of sugar and to eliminate cut-throat competition. The price of sugarcane had been linked with the price of sugar. Owing to lack of finance and godown arrangements for storing sugar, the weaker factories were compelled to throw their sugar on the market as soon as it was manufactured. This was responsible for the sharp decline in the price of sugar with the consequent lowering of the minimum price for sugarcane which proved to be quite unremunerative to the grower. If sugar prices could not be stabilised the grower could not be assured a fair price for his cane. The sugar factories had formed a syndicate as a central marketing organization, but in order to be successful, it was necessary that all factories should join the organisation. As some had not yet done so in spite of persuation, the Syndicate desired that the Government of the two provinces mainly concerned should introduce legislation which would make it compulsory for all factories to become members. In

discussion it was agreed that if any such organisation was to be set up with Government assistance, Government should retain effective control to safeguard the interests of the consumers as well as of the growers. The latter were concerned as limitation of the production of sugar would affect the production and cultivation of sugarcane.

The Sub-committee after discussion agreed to the following:—

(*a*) that the establishment of a syndicate as the central marketing organization of the industry was desirable;

(*b*) that the Board of Directors should consist of 25 members, of which six will be nominated by the Governments of the United Provinces and Bihar, and the rest appointed by the industry by election and cooption;

(*c*) the Governments of the United Provinces and Bihar should provide for the licensing of sugar factories, including establishment of new factories and extensions of existing ones;

(*d*) one of the conditions of the license would be that factories must become members of the Syndicate;

(*e*) other conditions may be imposed by Government and the sugar prices should have the approval of Government, which may fix the range of prices from time to time.

3. Owing to the necessity for joint consultation and joint action by the Governments of the United Provinces and Bihar it was considered desirable to set up a joint organisation consisting of representatives of all interests in both provinces. It was decided to set up an Inter-provincial Sugar Board for these two provinces consisting of 15 members including the Minister in charge of Industries in the United Provinces and Bihar, the Secretaries of the Development Departments in both provinces, four representatives of sugar factories to be nominated by the Indian Sugar Mills Association having due regard to all areas ond the smaller factories, one representative of the sugar merchants and 6 persons to be nominated by the Governments of the two provinces to represent growers and other interests. The Inter-provincial Sugar Board will be set up as soon as possible to deal with all problems of the sugar industry that are common to both provinces.

4. The Sub-committees agreed generally with the principle of zoning with safeguards to protect the grower. The details of the scheme prepared by the Government of Bihar were examined. The exclusion of middlemen from the zone was accepted and also the principle that some definite assurance must be given to the grower within the zone that his cane would be purchased by the factory. There should be an absolute minimum price for sugarcane and a scale providing for an increase with a rise in the price of sugar. It was felt that zoning could not be applied universally and should first be tried experimentally in special areas. It was not possible to bring it into force in 1937-38, but it was considered that a beginning should be made during the 1938-39 season and necessary legislation for this purpose should be undertaken. Other details of the scheme will now be worked out in the Secretariat of the two provinces in the light of the discussion.

5. Finally, the Sub-committees considered that the future of the industry depended on its efficiency and so long as the problem of the utilization of molasses was left unsolved the industry could not be expected to reach the desired level of efficiency which alone would enable it to make fair payment to the growers. It was decided to set up a committee consisting of eminent chemists and experts to devise ways and means of starting the manufacture of power alcohol out of mollases and to explore all possible uses for molasses. This committee will start functioning as soon as possible and necessary action will be taken by both Governments when its report is received.

Replies from the Government of the United Provinces.

(1) *Letter dated the 30th June, 1937, from the Government, United Provinces, Industries Department, Lucknow.*

I am directed to enclose seven copies each of the replies of the Director of Industries, Director of Agriculture, and Registrar, Co-operative Societies, United Provinces, to such of the questions included in the "Questionnaire for Local Governments" as concern them either directly or indirectly. These replies embody the personal views of the officers concerned and should not be regarded as an expression of the Local Government's views. There is no objection to these three officers being examined by the Board orally.

REPLIES TO TARIFF BOARD'S QUESTIONNAIRE BY THE DIRECTOR OF INDUSTRIES, UNITED PROVINCES.

4. The sucrose content varies from 10 to 12 per cent.

12. The Imperial Council of Agricultural Research gave a contribution of Rs. 1,25,000 for equipping the Factory attached to the Sugar Section of the H. B. Technological Institute and a contribution for 5 years of Rs. 20,000 per year for running it. The Sugar Technologist was allowed to be the Honorary Head of the Sugar Section of the H. B. Technological Institute. In that capacity he gave all the technical help to the Sugar Section and also helped the industry by attending to technical enquiries. The Sugar Section has now been entirely taken over by the Imperial Council of Agricultural Research and developed into the Imperial Institute of Sugar Technology. The Industries Department now carries on no sugar technological research.

14. My estimates for the consumption of cane-grown in these provinces are:—

	Per cent.
(*a*) Crushed in sugar factories	18
(*b*) Utilised by open pan factories and khandsaris .	7
(*c*) Turned into gur	65
(*d*) Used for chewing purposes and for seed . .	10

23. The Sugar Section of the H. B. Technological Institute was assisting the industry in various ways, *e.g.*:—

(i) training skilled labour,

(ii) giving expert advice in regard to selection of sites, purchase of machinery, technical manufacturing problems, etc.,

(iii) drawing up schemes and specifications for factories,

(iv) preparing layout plans for factories and checking those supplied by sugar engineering firms,

(v) designing and testing small cane mills and testing machinery made by private engineering firms.

(vi) collecting and disseminating commercial and other information relating to sugar, and

(vii) carrying on research in connection with the various problems of the industry.

A general idea of the amount of work done in regard to the above items year after year may be gauged from the work of a representative year. This class of work in the year ending March, 1935, is summarised below:—

"About 25 vacuum-pan sugar factories in the United Provinces were advised by the Sugar Technologist while technical assistance was given to about two dozen parties regarding site, erection,

starting of factories and extension to existing plants. Over and above these, a considerable amount of statistical and general technical information was supplied to various parties. Various factories were helped for selecting technical staff from outside as well as from those enlisted in the office of the Sugar Technologist and the Sugar Section of the H. B. Technological Institute, Cawnpore."

2. A number of technical scholarships have been given by the Department for the benefit of this industry. The scholarships granted up to date are enumerated below:—

1911—Sugar manufacture—Mr. R. C. Srivastava.
1912—Sugar industries—Mr. Krishna Lal.
1913—Sugar industries—Mr. A. R. Khan.
1917—Sugar engineering—Mr. P. D. Kapur.
1926-27—Sugar industry—Mr. Raza Husain Khan.
1927-28—Sugar industry—Mr. K. K. Bhargava.
1933-34—Utilization of molasses—Mr. H. K. P. Varma.
1934-35—Sugar engineering—Mr. J. P. Mathur.
1936-37—Sugar engineering—Mr. A. Sanghi.
1926-37—Sugar engineering—Mr. G. R. Athawale.

Besides these, a few short-term scholarships for about six months' training abroad in this industry have been awarded. Study leave was granted to Assistant Chemists of H. B. Technological Institute.

24. The Department sanctioned a loan of Rs. 6 lakhs in 1922 to the Karundia Industrial Development Co., Ltd., Lucknow, for completing and working the Lucknow Sugar Mills and another of Rs. 1,20,000 to the Shri Mahalakshmi Sugar Corporation, Ltd., Lucknow, in 1924 for the purchase of sugar machinery. Acquisition of land for the disposal of sullage of the Modi Sugar Mills, Begamabad, District Meerut, has been recommended to Government.

26. Generally speaking conditions of labour are satisfactory. In the case of technical staff, the general complaint is that they have no stability of tenure.

27. Wholesale and retail prices of sugar in Cawnpore have been supplied with un-official No. 412/II-73, dated June 12, 1937.

28. The variation has not been considerable.

29. It is not possible to give any satisfactory estimate of the normal consumption of sugar in the province, but there is a possibility of increasing it appreciably.

30. Confectionery manufacture, as they exist in Western countries, are none in these provinces. Most of the manufacturers here are sweetmeat makers. The material used by them is sugar.

31. I think that the time has arrived when remedies Nos. (i) and (iii) should be applied at once. No. (ii) will be a rather stiff restriction on the factories and should wait until an experience has been gained of the working of (i) and (iii).

32. There are no great possibilities in the directions suggested.

35. Please refer to my un-official No. 412/II-73, dated June 12, 1937.

36. No information is available in this office.

37-38. Please see Statement IV attached to my un-official No. 412/II-73, dated June 12, 1937.

39. There is no relation between the prices of gur and sugar.

40. It is difficult to say exactly to what extent the factory sugar is replacing gur/jaggery but the general belief is that more sugar is being used even by villagers who formerly used gur.

42. A list of open pan factories and Khandsars in the United Provinces is enclosed. The estimate of their outturn of sugar and molasses during the last three years is given below:—

Year.	Production of sugar in tons.
1934-35	150,000
1935-36	125,000
1936-37	125,000

In open pan factories the quantity of molasses produced is nearly as much as the sugar manufactured. The figures given above are mere estimates as it has not been possible to collect figures of actual quantities.

43. The cost of manufacture in an open pan sugar factory or khandsar may be taken at As. 1-6 to As. 2 per maund of cane crushed. The variation depends on the situation and size of the factory as well as on the influence which the proprietor has on cane-growers, labour and the market.

44. Open pan factories and khandsars have closed down their concerns to a large extent on account of the availability of cheap factory sugar.

45. Open pan sugar and khandsar sugar have even now some markets, such as, Marwar, Rajputana, etc., where it is believed that sugar of a particular colour and flavour is the only pure swadeshi product. This belief is not likely to last long. Propaganda for popularising factory made sugar will eventually replace the inpure khandsar sugar. Open pan manufacture is definitely un-economical and the industry has a very gloomy future.

46. The following experiments were undertaken at the H. B. Technological Institute during 1932-33 in connection with open pan system of sugar manufacture (by Dr. H. D. Sen and Mr. R. C. Srivastava):—

(i) Study of sugar losses in open pan boiling.

(ii) Use of sucrate re-agent for the manufacture of better quality rab by open pan boiling.

(iii) Experiments on the use of various chars for the refining of brown sugar obtained by open pan process.

In the year 1929, a sum of Rs. 2,000 was given by the Board of Industries, United Provinces, for a portable sugarcane crusher.

47. The Sugar Excise Duty of 1934 and the additional duty of 1937 have not affected the consumer or the dealer. The manufacturer has been affected as the margin of profit has been reduced while the cane-grower has been affected because he gets a lesser price for his cane. The latter has been affected more by over production than the levy of the additional duty.

48. I do not think that protective duties have adversely affected the consumer. The sugar is decidedly cheaper these days than what it was at the time of imposing protective duties.

49. I am not aware of any industry in these provinces dependant on the supply of sugar products or molasses which has been affected by the protective duties.

50. The area under sugarcane in the United Provinces is based on the revenue statements prepared by the Patwaris and Qanungoes according to the instructions contained in the Land Records Manual, Sections 147 to 152, and may be taken as correct.

As regards figures of outturn of gur, these are based on the *annawari* reports received from District Officers as to the condition of the crop in their respective areas. These reports show the estimated percentage yield of the crop in the current year as compared to the normal, the normal being the standard outturn that may be expected in a year of average character according to the experience of crop cutting experiments carried

out in each quinquenium. There is some controversy as to the accuracy of the figures of outturn not based on the above data. The crop cutting experiments are not only insufficient in number but are not based on random sampling, so that the error of the results cannot be computed. The representative character of the samples selected for crop cutting experiments is also doubtful.

The wholesale and retail prices of sugar and gur are taken from the records maintained by the Director, Imperial Institute of Sugar Technology and wholesale and retail merchants.

51. None.

List of Sugar Factories other than Central Sugar Factories and Central Refineries in the United Provinces.

Serial No.	Name of Factories.
1.	S. M. Sugar Factory, Harduaganj (Aligarh).
2.	Shri Shankar Oil and Sugar Mills, Indara (Azamgarh).
3.	Ganesh Sugar Factory, Indara (Azamgarh).
4.	Phephna Sugar Factory, Village and P. O. Phephna, District Ballia.
5.	Ram Sarup Ram Bharosey Sugar Factory, Nai Basti, Bareilly.
6.	Saddiq Ahmad Khan, Tufail Ahmad Khan Sugar Factory, Alamgiriganj, Bareilly.
7.	Raghunandan Prasad Zamindar Sugar Factory, Alamgiriganj, Bareilly.
8.	Ahmad Ali Khan Sugar Factory, Jatapura, Bareilly.
9.	Shanti Prasad Misra Sugar Factory, Alamgiriganj, Bareilly.
10.	Ghasi Ram Sugar Factory, Chamar Tola, Bareilly.
11.	Bhagwan Das Lachmi Narain Sugar Factory, Charahi Nim, Bareilly.
12.	Bankey Lal Sugar Factory, Alamgiriganj, Bareilly.
13.	Maqtada Ali Khan Sugar Factory, Gher Jafar Khan, Bareilly.
14.	Gullimal Chunnilal Sugar Factory, Shahamatganj, Bareilly.
15.	Raman Lal Kailash Nath Sugar Factory, Bansmandi, Bareilly.
16.	Mohd. Kamil Sugar Factory, Phoota Darwaza, Bareilly.
17.	Doolha Sugar Factory, P. O. Birdpur (Basti).
18.	Karanpur Sugar Works, P. O. Anupshahr (Bulandshahr).
19.	Herbertpur Sugar Factory and Rice Works, P. O. Herbertpur (Dehra Dun).
20.	Zammurradganj Co-operative Sugar Factory, Zammurradganj, P. O. Joti Sadan (Fyzabad).
21.	The Bajrang Sugar & Oil Mills, Mani Parbat Road, Ajodhia (Fyzabad).
22.	Mohd. Ashraf Sugar Factory, Village Asapur, P. O. Sarshannagar (Fyzabad).
23.	Hallows Sugar Factory, Itairampur (Gonda).
24.	Burn Sugar Factory, Itairampur (Gonda).
25.	Kumar Sugar Mills, Village Bughra, P. O. Utrolla, District Gonda.
26.	Lakhpat Lala Dhanpatlal Sugar Factory, Siswa Bazar (Gorakhpur).
27.	The Saraswati Sugar Mill, Ltd., Ghugli (Gorakhpur).
28.	Clarke Central Sugar Factory, Hardoi.
29.	Clerke Agricultural Farm and Sugar Factory, Village Gokun, P. O. Mohammdi, District Kheri.
30.	Misra Sugar Factory, Kajar Keri, P. O. Sikandrabad (Kheri).

31. Harish Chandra Sugar Factory, Sarwa, District Kheri.
32. Shatrunjya Sugar Factory, Patersia, District Kheri.
33. Sardar Sugar Factory, Sarwa, District Kheri.
34. The Central Co-operative Sugar Factory, Village and P. O. Mohanlalganj, District Lucknow.
35. Jilani Brothers Sugar Factory, Lahoreganj, P. O. Ameria, District Pilibhit.
36. Krishna Sugar Factory, Raisi, P. O. Lhaksar, District Saharanpur.
37. Shri Mahadeo Sugar & Flour Mills, Village Newadia Lachhan, P. O. Jugrajpur-Kheri, District Saharanpur.
38. The Shanti Sugar Factory, Ltd., Jashanpur, P. O. Kant, District Shahjahanpur.
39. Dwarka Sugar and Flour Mills, Maholi, District Sitapur.
40. The Martand Sugar Works, Village Kusepa, P. O. Laharpur, District Sitapur.
41. Bhadphar Sugar Mills, Village Bhadphar, P. O. Laharpur, District Sitapur.
42. L. Har Sahai Gupta's Factory, Bilari, District Moradabad.
43. Sahu Ram Rattan Jain's Factory, Bilari, District Moradabad.
44. Pheona Sugar Works, Pheona, District Bijnor.

REPLIES TO TARIFF BOARD, QUESTIONNAIRE BY THE DIRECTOR OF AGRICULTURE, UNITED PROVINCES.

1. (*a*) Table showing the area under sugarcane in the United Provinces:—

Year.	Total area under sugar cane.	Area under improved varieties.
	acres.	acres.
1930-31	1,488,419	527,237
1931-32	1,576,280	678,774
1932-33	1,773,211	989,920
1933-34	1,713,183	1,289,337
1934-35	1,813,230	1,445,478
1935-36	2,211,932	1,670,971
1936-37	2,469,210	*2,166,553

(*b*) The following are the improved varieties generally grown by the cultivators. The exact area under each variety is not known but an approximate percentage of the total improved area under each variety is as follows:—

Approximate.	Percentage of the area under improved varieties.	
Co. 213	70	Is the most popular variety all over the province.
Co. 244	10	Is confined to the Western parts of the province.
Co. 290	10	
Co. 312	10	
Co. 313	10	
Co. 331	10	

* Final forecast, dated January 31, 1937 (Land Records Department).

2. Sugarcane area in the United Provinces can be divided as follows (only those districts with 3,000 acres or more under cane have been taken into consideration):—

(i) In respect of difference in climatic conditions into five moderately well defined tracts—

Tract.	District.	Climatic conditions.	Area under sugarcane in 1935-36		
			Irrigated.	Unirrigated.	Total.
1. Mid-Western (Major portion popularly known as upper doab districts of Meerut division. It is a typical sugarcane area irrigated by canal and tube-wells).	1. Muzaffarnagar. 2. Meerut . 3. Bulandshahr.	Average annual rainfall 27·93″. Extremely hot and dry in summer and intense cold in winter.	3,21,731	19,768	341,499
2. North-Western (Major portion popularly known as Rohilkhand Division. It has one of the oldest sugarcane growing tracts in India. The climate, rainfall and soil of the tract are suited for sugarcane growth and it has been the home of Khandsaris from time immemorial.	1. Saharanpur 2. Bareilly . 3. Bijnor . 4. Moradabad 5. Pilibhit . 6. Budaun .	Average annual rainfall 40·89″. Fairly hot and dry in summer fairly cold in winter.	246,651	275,569	522,220
3. North Central .	1. Shahjahanpur. 2. Hardoi . 3. Barabanki 4. Sitapur . 5. Kheri .	Average annual rainfall 31·08″. Fairly hot and dry in summer and cold in winter.	230,516	179,538	410,054
4. North Eastern .	1. Gonda . 2. Gorakhpur 3. Basti . 4. Azamgarh.	Average annual rainfall 45·19″. Hot in summer but mild in winter.	264,549	166,484	431,033
5. Mid Eastern .	1. Fyzabad . 2. Jauppur . 3. Ghazipur 4. Ballia .	Average annual rainfall 40·27″. Hot in summer and mild in winter.	163,602	9,093	172,695
		Total .	1,227,049	650,452	18,77,501
Total area under cane during 1935-36 .			..	..	2,211,932

NOTE.—Date from Season and Crop Report for the year 1935-36.

(ii) Classification according to methods of cultivation is not practicable Standards and methods vary from place to place with the economic condition and the agricultural ability of the cultivators; and with the meeting of the water requirements of the crop by rainfall and shallow subsoil water level or by irrigation from gravity canals, tube-wells, and bullock or human power lift. In general the standard of cultivation is higher in ratio with the cost or labour entailed in water provision.

Of the total estimated acreage of 2,211,932 in 1935-36, the area recorded as irrigated and unirrigated were 1,511,634 and 700,298 acres respectively. The records do not specify the source of irrigation.

4. The validity of estimates of costs of production depends upon the acceptance of a common standard of charges against the crops. The Board will doubtless have before it the costs of production of cane in selected villages throughout India as prepared by the cost of cultivation enquiry upon sugarcane and cotton. The extent to which the cultivator makes an estimated profit or loss upon his crops individually or in rotation depends very largely upon the rate at which the labour of himself and his family is calculated. In the appended table are given estimates of cost of cultivation, average yield per acre and average sucrose in juice, made by the Deputy Directors of Agriculture responsible for the areas concerned:—

Tract.	Cost of cultivation per acre.		Average yield per acre.		Average sucrose in juice.
	Irrigated.	Unirrigated.	Irrigated.	Unirrigated.	
	Rs.	Rs.	Mds.	Mds.	
Mid-Western . .	60—80	50—60	500	300	14—15
North-Western .	70	60	400	300	14—17
North-Central .	100	80	500	350	12—13
North-Eastern .	60	50	400	300	13—16
Mid-Eastern . .	65	44	350	350	15—16

Cost of cultivation.—The details of the round estimates will be made available to the Board separately if desired.

There has been no material variation in cost of cultivation of plant cane during the last seven years. The increase in ratooning has tended to reduce the average cost per acre materially, but as in general the ratoon cane is neither manured nor adequately cultivated and thus shows progressive decrease in yield, reduction in cost per maund has probably not been very considerable.

Average yield per acre.—The circle officers' estimates of 350-500 maunds per acre for irrigated cane and 300 to 350 for unirrigated cane has reference to plant cane only. Even so, under present conditions I suspect these figures to be on the high side, especially for unirrigated plant cane. As, however, ratooning has markedly increased and probably now represents at least 50 per cent. of the total cane area, it is likely that the average yields are considerably below the figures in the table. Question No. 50 also refers.

Rate of interest at which cultivators can borrow.—The rate of interest at which cultivators can borrow to finance their cane crop varies with the locality, the source of borrowing, and the standing of the borrower. Thus the present rate of interest on taqavi loans is 5½ per cent. The application of these to cane crop is very limited. Some factories make advances to their cultivators against bonded cane at rates which may be assumed to be reasonable but are not available. The average grower pays from

a minimum of 10-12 per cent. in the case of big farmers to as much as 40 per cent. for the smaller cultivator. The rates reported for different circles by the Deputy Directors of Agriculture are as follows:—

Sarda.—12½ to 37½ per cent.

Western.—18 to 24 per cent. generally, though many money-lenders issue loans repayable in monthly instalments at Re. 1 per mensem for 12 months for each Rs. 10 advances, being 40 per cent. per annum or Rs. 3-5-8 per cent. per mensem.

North-Eastern.—10 to 24 per cent. according to standard of borrower.

Eastern.—12 to 25 per cent.

Cane Development, Western range.—For private loans 18 to 25 per cent., Co-operative Societies 9 per cent.

Cane Development, Eastern range.—Through Co-operative Societies 6 per cent.

5. Speaking generally I consider 4 annas per maund, or half the value of the sugar produced per maund whichever is greater, would be a fair price; while 3½ annas at present standards of cultivation appears to represent the minimum at which the crop can be expected to compete against other food and cash crops. This should be the net price to the grower in the village and should not include the cost of cartage from the village to the factory.

It is not practicable under present trade organisation to determine the sugar recovery value in the current season. The seasonal effect upon sucrose content, and particularly the effect of adverse weather conditions and variable incidence of pest attack, appears to be considerable judging from the difference in factory recovery in 1935-36 and 1936-37. If the minimum price is to be determined on sugar value the average recovery of the previous season could be taken as the basis. There should however be provision for a graded scale of minimum prices for standard varieties of canes according to their known sucrose content and factory extraction value.

6. The following table is illustrative of the manner in which the sugarcane area has extended in districts where factory demand or improved irrigation facilities have resulted in increase during the past seven years, whereas in the absence of better irrigation or increased factory demand the acreage has remained steady:—

Year.	Muradabad Typical tubewell area.	Gorakhpur Typical factory area.	Hardoi Typical Sarda canal area.	Benares (No change due to absence of facilities of water or factories).
	Acres.	Acres.	Acres.	Acres.
1929-30 . .	48,856	120,728	25,713	25,108
1930-31 . .	55,420	138,649	29,346	24,111
1931-32 . .	58,582	172,459	27,844	29,693
1932-33 . .	63,698	172,237	44,005	28,608
1933-34 . .	60,102	197,887	29,082	25,877
1934-35 . .	78,486	193,986	31,614	22,923
1935-36 . .	104,329	213,452	59,864	27,170

Figures have been taken from Season and Crop reports.

(i) Climatic conditions are not held to have produced any major effect. The temporary decrease in 1933-34 shown in Hardoi district and in the total area (see Answer No. 1) is ascribed to deficiency in rainfall.

(ii) The main factor in the original increase in area under sugarcane in the United Provinces was undoubtedly the higher yields obtainable with Coimbatore canes and encouragement of the growing of these through departmental propaganda. The provision of irrigation facilities by the Sarda Canal, and the development of State tube-wells in the Western and Rohilkhand circles have stimulated the considerable increase in cane cultivation. This increase has, however, become more rapid and marked throughout the province since 1933, which is without doubt due to the increased demand for cane for crushing, following upon the construction of a number of factories to take advantage of the protection afforded to the Indian Sugar Industry. As the erection of these factories and the consequent demand for cane for crushing was based upon the expected high price of sugar, the fifty per cent. increase in area in the last five years may be regarded as due to the price obtainable for sugar on the establishment of protection. It may thus be expected that the enthusiasm for planting of further extensive areas will wane as the price of sugar falls.

(iii) Except perhaps in the Meerut area which has a high reputation for gur, and can consequently command a satisfactorily high price, there is no available evidence that the price of gur has been to any extent responsible for variations in sugarcane area. Gur prices are discussed under Question No. 35.

(iv) Prices of other cash crops have considerably fallen since 1930 making them less profitable to grow. The cultivator has thus naturally been tempted to increase his area under cane in general.

Table showing prices per maund of different commodities at harvest time at Shahjahanpur.

Year.	Wheat.	Gram.	Rice (common).
	Rs. A.	Rs. A.	Rs. A.
1929	4 12	5 8	6 15
1930	3 6	3 10	5 15
1931	1 13	1 13	4 7
1932	2 6	2 1	3 13
1933	2 11	2 6	4 7
1934	2 12	2 6	4 7
1935	2 11	2 2	3 10
1936	2 10	1 14	4 7

(Figures taken from Season and Crop report.)

7. More cane was produced in anticipation of sale to factories in 1936 than the factories were prepared to crush. This was particularly the case in Meerut and Gorakhpur districts and in the central Sarda canal region.

There is no effective administrative machinery for the restriction of area under any crop. I do not consider that such action would be necessary or desirable in the case of plant cane. The cane crop has extended naturally owing to its cash returns giving promise of being higher than from other crops which could be grown on the same area. The cultivator will naturally contract his sowings when the margin of increased profit disappears. As with other cash crops, the area may be expected to accommodate itself according to economic values or the cultivators' expectation of these. Moreover the factory requirements in the United Provinces are for approximately only ¼th of the present cane area. The enforcement of a quota against all cane sowings would operate harshly against gur making areas over the production areas for factory cane. All that appears feasible in seasons when excess production is anticipated is to avoid encouraging the planting of cane by withdrawing subsidies for seed supply or taqavi advances for seed cane. The best method for ensuring against over-production of sugarcane appears to be to encourage the concentration of cane-growing

in those areas in which the cost of production per unit weight is lowest; whether by intensive cultivation and manuring in the most suitable tracts, or within the neighbourhood of factories; or in unirrigated areas in which the cost of cultivation is very low. This should be combined with the introduction of alternative cash crops which throughout the course of rotation yield approximately the same cash return as if sugarcane were grown.

While quick response to low cane prices by way of a reduction in plant cane area may be anticipated, the likelihood appears to be that the practice of ratooning will be increased. The economic aspects of ratooning have not been sufficiently fully examined for expression of opinion upon the soundness or otherwise of the practice, always provided that adequate manuring and cultivation is given to the ratoon crop. The first ratoon, even without such care, is often a more profitable crop than plant cane; although the profit may prove to be obtained at the expense of subsequent fertility. Ratoons beyond the first year are generally neglected, and as such are undoubtedly uneconomical in the long run. It may, therefore, be justifiable to deter the practice of maintaining the cane stand beyond two seasons, by withholding any remission of revenue in cases of calamity.

8. If by cash crops is intended to mean crops which the cultivator disposes of by sale of his surplus, these include all the crops of the province except millets and guar in the kharif grown for fodder purposes, the rabi fodders, mehti, berseem, etc., and such perennial fodders as Napier grass and lucerne. The main crops of the Province other than cane are classified below under three heads:—(1) for consumption and sale; (2) for consumption sale and soil maintenance; and (3) mainly for sale.

(1) *Crops for consumption and sale.*—Wheat, rice, barley, juar and other cereals, arhar, rapeseed, til, sunnhemp.

(2) *Crops for consumption, sale and soil maintenance.*—Gram, pea and other rabi pulses, mung and urd.

(3) *Crops mainly for sale.*—Groundnut, linseed, potato and tobacco.

The cost of cultivation and return per acre of these cash crops varies in different parts of the province, depending on local conditions, but average returns are shown as follows:—

Estimated average net income from crops other than sugarcane.

	Crop.	Western Circle. Net income per acre.	Sarda Circle. Net income per acre.	North-Eastern Circle. Net income per acre.
		Rs.	Rs.	Rs.
1.	Wheat	...	60	15
	Rice	...	45	...
	Barley	...	45	...
	Maize (green cobs) .	15	...	...
	Cotton	10	...	...
2.	Gram	...	40	...
3.	Groundnut . . .	15	40	10
	Linseed . . .	...	50	10
	Potato	50	100	100
	Tobacco	25	60	...
	Turmeric . . .	50	...	...
	Colocasia . . .	...	60	...

The estimated cost of cultivation, outturn and financial results will be submitted in detail in a later communication.

9. The figures are being collected so far as possible and will be submitted in a later communication.

11. Research for the improvement of sugarcane has been conducted for more than twenty years, mainly at the Shahjahanpur farm. This at first consisted in the trial of exotic canes and of hybrid canes raised at Coimbatore, and supplied as setts. It also included the agronomics of the improved crop, and the establishment of the value of green-manuring with sunn-hemp in irrigated areas in the monsoon previous to sowing. The work was conducted by the Agricultural Chemist—subsequently Director of Agriculture—with the assistance of an Assistant Chemist and field staff, until 1931 when an Economic Botanist was put in charge. Since then the trials and researches have been greatly intensified. Funds for mass trials of canes bred at Coimbatore to suit the United Provinces conditions; and for agronomic, physiological, and entomological research, have been provided by the Imperial Council of Agricultural Research. A new research station was created by the utilisation of the Muzaffarnagar farm from 1933. The work undertaken under Imperial Council of Agricultural Research schemes will be available to the Tariff Board in the progress reports printed by the Imperial Council of Agricultural Research; while the results of the work of the five years to 1936 is in the press in the form of a departmental bulletin which is expected shortly to be available, and copies of which will be submitted to the Board on issue.

Brief summary of the major investigations.

(A) VARIETAL.—This is now confined to Coimbatore material setts, seedlings, and seeds.

Setts are supplied after preliminary trials at Coimbatore. These are tested for three years and suitable types released for multiplication and issue after further trial on departmental farms for local performance. All the present standard canes have thus been obtained.

Seedlings.—With the accumulated knowledge of local performance, it has become possible to indicate varieties as suitable to be employed as parents in further crossings which are made at Coimbatore. The progeny has been sent to Shahjahanpur as seedlings for direct trial and selection. During the past five years about 5,000 seedlings annually have been under study. A number of highly promising types have thus been obtained which are in different stages of trial.

Seeds.—Further to facilitate the work, and to avoid mortality during the long rail transit of young seedlings, the progeny of crosses is now being received as seed for germination on the research station.

(B) AGRONOMIC.—Every aspect of the requirements of the crop are under study; preparation of land and method of planting; time of planting; difference in seed value of bottom, middle and top of cane; interculture; irrigation; rotations; manuring as to quality, quantity, combination, and time of application, including the use of factory molasses alone and in combination, and green manuring at different stages of growth and with different portions of the sanai plant. The optimum water requirements are being investigated by field trials of quantity and frequency of irrigation, and by pot culture.

(C) PHYSIOLOGICAL.—In addition to a detailed pot culture examination of water requirements, the physiological studies include inter-relation of nitrogenous manuring and water duty; development in different soils with particular reference to root growth; and the effect of climate on growth.

(D) CHEMICAL.—Frequent determinations of juice, sucrose, and purity are made on all canes under experiment; while manurial experiments are followed up by soil analysis. Specific investigations are in progress upon the effect of organic and inorganic manures on maturity and sucrose content;

and upon the relative absorption through the roots at different periods in the life of sugarcane.

(E) DISEASES.—The major diseases of cane in the United Provinces have been mosaic, red-rot, stinking rot, and smut. These have been investigated by the Plant Pathologist to Government, working at Cawnpore, who has collaborated with the Imperial Mycologist in studying the effect of mosaic upon sugarcane.

Rogueing and seed cane selection have been found to reduce mosaic infection to 0·1 per cent. in three years. Red-rot which occasionally developes into a serious outbreak, and stinking rot which occurs only during the rains, are also controlled by rigid rogueing, sufficiently to check spread. Smut seldom appears in epidemic form.

(F) PESTS.—A Research Assistant Entomologist specialises in the study of insect pests, and of the susceptibility of canes under trial to pest attack on the Muzaffarnagar station. His investigations include studies of the life histories of the pests with a view to direct control; their incidence upon standard and trial canes to discover any resistance factors inherent in the varieties, as well as to determine their suitability for issue, and their parasites and other natural enemies, for the possibility of biological control.

(ii) The measures adopted for the introduction of improved varieties of cane, etc., have been:—

(i) Propaganda and setting up of demonstration plots in villages.
(ii) Free supply of new varieties for demonstration and multiplication for seed cane in the following year.
(iii) Grant of subsidies to the growers as premium on the price of seed cane and cost of transport.
(iv) Seed cane advances to cultivators on takavi.
(v) Supply of fertilizers on takavi advances to cultivators in irrigated areas.
(vi) Distribution of leaflets and other literature.

The following table shows seed and manure in maunds distributed by the Department:—

	1933-34.	1934-35.	1935-36.
Seed cane . .	4,389,231	2,256,374	3,948,007
Departmental fertilizer mixture .	...	12,600	63,025
Ammonium Sulphate . .	14,911	16,213	51,227
Castor cake .	22,434	23,799	15,774

Over and above the general propaganda and departmental demonstrations of better varieties, cultivation, manuring, and irrigation, intensive development has been organised on the Sarda canal system and the State tube-well areas, including up-to-date cultivation and the consolidation of cropping. Intensive development in factory areas is referred to under Question No. 13.

12. (i) The Imperial Council of Agricultural Research has sanctioned the following grants for research on sugarcane in the United Provinces:—

(*a*) Rs. 6,000 in 1930 for importation of cane seedlings and their study at Shahjahanpur. This expired in 1936 and a fresh grant of Rs. 5,230 has been given for the same purpose.

(*b*) Rs. 1,11,880 for five years for physiological studies at Shahjahanpur and agronomic and entomological work at Muzaffarnagar. The scheme has already run for three years.

(ii) *Coimbatore breeding station.*—All the varieties tested at Shahjahanpur are produced at Coimbatore. The material is received in the form of sets, seedlings and seeds. Seeds are now germinated at Shahjahanpur and this has effected a great saving.

(iii) The Imperial Institute of Sugar Technology is concerned mainly with the manufacturing side and is not in a position to assist to any appreciable extent in the agricultural research conducted at distant stations.

Funds for agricultural research are not adequate. Among important lines of work for which it has not yet been possible to make provision either provincially, or through the Imperial Council of Agricultural Research, are the establishment of a research station for the Eastern cane areas; critical examination of the effects of ratooning; detailed mycological investigations; correlation of growth with soil and climate in different areas; extension of physiological investigations to the Rohilkhand and Eastern tracts.

13. Factories have not contributed directly to the improvement of methods of cultivation; and to a limited extent only to the introduction of better varieties of cane. Prior to the inception in 1935 of the Cane Development scheme in factory areas, the relation of the department to factories was of an advisory nature only. A few go-ahead factories obtained good seed cane for multiplication on factory farms or by their growers. Such factories continue to develop the cultivators' cane in their vicinity by seed-cane supply.

A marked improvement is taking place under the cane development scheme financed from Sugar Excise funds. Under this an area of about 2,500 acres of cane is proposed to be developed in each of 22 factory zones within a five year period; to grow the most suitable canes for the locality, under the best conditions of cultivation. This area will be a seed cane supply and a demonstration of better production to the rest of the locality as well as catering for part of the crushing cane to the factory. It is organised by a staff of agricultural assistants, fieldmen and kamdars under the direction of two Class I officers and two Divisional Superintendents of Agriculture. The annual cost per factory zone is about Rs. 9,000, which is met from a contribution of Rs. 3,000 or Rs. 6,000 from the factory; the balance being a subsidy from the Local Government out of Sugar Excise funds. Factories which contribute the lesser sum also contract to pay a commission to the growers organised into a supply association. The effectiveness of this scheme under the present depression in sugar prices has yet to prove itself.

Some factories are assisting or are prepared to do so, in the testing of suitability of cane varieties in their areas, both by conducting field trials in parallel with the final yield trials on research stations, and by factory tests of sugar recovery from such varieties. It is hoped to make increasing use of such facilities.

21. Mostly the growers employ their own carts for taking cane to the factories, but they do hire the carts sometimes and when they do so they pay the usual rates as given in answer to Question No. 20.

20. Cost of transport of cane by carts per maund per mile in different areas of the province is reported to be as follows:—

	On pacca road.	On kacha road.
Western Circle	1½ pies.	3 pies.
Sarda Circle	3 pies.	
North-Eastern Circle	Varies from 2 pies to As. 2 within a range of 10 miles. A fair average is 2 pies.	
Eastern Circle	1 pie.	2 pies.
Rohilkhand and Kumaon Circle	1½ pies. Average cost of hiring carts in the villages is Rs. 1-8 per day per cart.	2½ pies.
Bundelkhand Circle	2 pies.	
Cane Development (Eastern range)	Between 1 anna to As. 1-6 for a distance between 1 to 6 miles.	

These costs are although heavy but are not paid by the cultivator as he usually employs his own carts.

15. 1. CULTIVATION: (A) *Lack of capital* and general indebtedness prevent the use of the best seed cane, or of concentrated fertilisers unless these can be obtained from takavi or mill advances; and the purchase of improved implements for preparation and interculture.

(B) *Shortage of organic manure.*—The doubling of the cane area in the ten years, with, if any thing a decrease in the amount of farm yard manure is largely responsible for decrease in tonnage. The effect is likely to be cumulative as the fields again come under cane. Nothing will alter the practice of using cattle dung for fuel. The shortage must be made good by widespread demonstration of composting cane waste and weeds.

(C) *Smallness of holdings and scattered cultivation.*—In the irrigated areas the disadvantages including delay in irrigation and waste of water attendant upon scattered cultivation are being remedied by demonstration of block cropping, with such realignment of channels and straightening of field boundaries as may be practicable. Consolidation of cropping reduces watching costs, stimulates co-operation in cultivation, and facilities harvesting. It is, therefore, applicable also to unirrigated areas, but not to areas irrigated from small open wells.

(D) *Irrigation supply.*—The investigations of the research stations show that best results are obtained from light but frequent watering; three pre-monsoon and one or two post-monsoon. Generally the cultivator who has to lift water, or pay for lift, can not afford the labour or cost of optimum irrigation; while there is frequent complaint that in gravity flow areas the need is insufficient during the dry months to give an effective discharge through the Colabas.

2. DELIVERY: (A) Failure of the factory to organise supply of cane, resulting in disproportionate and often excess supply; overcrowding of packing space; and delay in weighment.

(B) Defective roads, which get cart into dust heaps or quagmires by antiquated vehicles.

(C) Factory and purchasing station delays and malpractices.

16. The Co-operative Department has organized registered Central Cane Development and Sale Organisation round about participating factories in different districts. There are 54 primary societies which have been registered in addition to a very large number of primaries which are in the course of registration in the Gorakhpur division. Similar societies are springing up in the Western division. The ideal kept in view is a registered primary society per village. It is through these primaries and the Central Development Organisation that the Co-operative Department renders assistance to the cane-growers. The members are given advice on cultivation of sugarcane; they get seed and manure on advance to be repayable after realising the price of their produce in the supply season. New varieties and proper quota of earlies and lates are given out to them. The improvement of rotation crops are also kept in view. After the two major means of development, namely, improved seed and approved fertilizer come proper irrigation and suitable cultivation operations. The Cane Development staff survey the zones carefully and wherever possible give out loans on easy terms to the members for irrigation improvements. Rubber-tyred carts are also on trial with a view to improving transport. Demonstrations of the proper cultivation of cane have been given on the fields of each member in the sowing seasons 1936 and 1937. The central institutions include representatives of the factories and the cane-growers with a local Revenue Official as Chairman. These central organisations are connected with Co-operative Banks, and organize seed and manure advances for their members. They also organise the supply of cane from the growers to the factories. By negotiation with the Mills provision is made for a separate line for the society's carts and the weighing of the carts at fixed hours under the

inspection of a society's representative. The commission earned from this organised supply will be used for the benefit of the cane-growers. In the Western districts during the last three years the members of the societies in the Dehra Dun District have been obtaining one anna to one anna six pies per maund over the minimum Government price. In the Meerut District Co-operative Sugarcane Supply Societies have been dealing with 5 to 15 lakh maunds of cane per year for the last three years. In Moradabad and Bijnor districts the cane supply societies have supplied over 45 lakh maunds of cane to various factories and have afforded the usual facilities to the cultivators. Similar cane supply societies rendered useful service in Tarai and Bhabar areas and Districts of Hardoi, Sitapur and Lakshimpur.

22. *Rail facilities* are in general fairly adequate for estimated future needs. There has been much complaint in the past of shortage of wagons, high unauthorised charges, and delay in transit. The increasing tendency to draw supply of cane from nearly areas is expected to do away with the difficulty of wagon shortage on most lines. Delay in transit should be overcome by better organisation within and between the railway companies. Normal freights on cane are also too high for raw material ten times the weight of the finished article.

Road facilities are very inadequate. Even the main roads within the supply area get badly cut up, while the katcha roads over which most of the cane has to be brought a greater part of the distance quickly become appalingly bad, making haulage very difficult.

Tramways exist only in very few places, notably at Meerut to the Daurala factory, and at Dhampore in Bijnor. With the proposed delimitation of extensive factory zones from which the bulk of supplies are to be drawn, further tramway construction will be desirable; especially for such factories as may have to be accommodated with zones extending to some distance.

34. Gur or jaggery is not manufactured in appreciable quantity from any other material than cane in these provinces. In a few district in the Eastern and North-Eastern parts of the province, however, people sometimes manufacture a crude type of jaggery from palm juice.

19. The minimum price is calculated against the recovery of sugar in an average factory from cane of good average quality. Speaking generally this is the kind of cane which pays the cultivator best to grow. He desires a cane which is harvested between his rabi sowings and harvest, and which can be cut at the time of maximum tonnage. The factories, however, desire both early and late stands of cane giving a profitable recovery at the two ends of the season, and the highest obtainable sucrose content from their mid-season purchases. The department aims to produce such canes, and to develop their growth in proportions which will ensure continuous supply of cane from a range of varieties, each coming to harvest at or near the peak of its sucrose content curve. High sucrose is generally associated with low tonnage. This is especially the case with early canes; while with canes standing into the hot weather, tonnage decreases with ripening. There is thus justification for bonus payments—

(*a*) for all canes markedly superior in extraction over the average mid-season cane,

(*b*) for early cane markedly better than the standard Co. 213, October-December,

(*c*) for late cane of satisfactory performance, April onwards.

It is also definitely in the interest of the factory to pay such bonus to encourage the growers to plant the required areas of the approved canes. I, therefore, consider the introduction of agreed bonuses to be not only feasible, but necessary in the common interest of factory and grower. The rate should be based on known extraction performance, and should be applicable for fixed periods of the year for each approved variety. Tonnage, sucrose and purity data, and factory performance require to be taken

into consideration in determining the varieties and the proportions to be grown in the different tracts of the province. Tentative proposals have been made for small advisory committee to advise upon local quotas and bonus; and all canes under issue or trial are being examined at frequent intervals to afford the data upon which such advisory committee can make recommendations. The full co-operation of factories is visualised, and is indeed essential to successful operation.

33. I am unable to give any useful estimate. Calculated production will doubtless have been provided by the Director of the Institute of Sugar Technology, based upon the best figures available. As, however, these must derive from crop estimates, the reliability of which within 12½ per cent. or more either way is open to grave doubt owing to the inadequacy of actual crop determinations; and as further the average gur cane ratio for the cases now generally grown has also not been sufficiently determined, any such calculations may be very wide of the mark.

31. (i) Yes. The areas need not be contiguous to the factory or of any specified shape. They should provide adequate cane-growing possibilities to supply at least 75 per cent. of the annual crushing requirements of the factory. Other things being equal the "zone" should be so located as to make haulage to the factory cheap and easy, but due consideration should be given to efficiency in organising intensive production; and to the possibilities of cheap production of high quality cane. Within the zone the factory should be responsible for the organisation of cane production and of supply to the factory. It should further be incumbent upon the factory to encourage the cultivators to employ a suitable rotation for the area, approved by the Agriculture Department. The aim should be to raise the required cane for any year from the smallest possible area under the crop, compatible with good cultivation and a sound rotation. Not more than ten per cent. of the cultivated area should be under cane at any time and an interval of at least three years should elapse between successive cane crops in all parts of the United Provinces. The recent recommendations of the Sugar Committee of the Imperial Council of Agricultural Research should be applied as amplified above.

(ii) Yes. There is an estimated surplus of 150,000 tons of white sugar expected to be carried over to 1937-38. The effect of this has been to alarm dealers, depress the market, and encourage hurried liquidation of stocks at cut prices. It may be held by many that the panic is unfounded, and is due to absence of information upon the absorbtive power of the market at a figure remunerative both to miller and grower. Be that as it may, until the information is available it appears wise in the interest of all parties to keep the supply within the known capacity of the market, admitting an annual increase for internal consumption of not more than say, 6¼ per cent. over the average off-take of the previous three years.

(iii) Yes, both for new factories and for extensions. This is necessary now to safeguard the industry against the effects of over-production; and will be necessary, if and when the construction of further factories is justified, to ensure the most effective location of such factories and their zones.

32. The market for sweets, syrups, fruit preservation and canning has not yet been thoroughly surveyed by the marketing staff, but consumption of these commodities in most strata of society indicates that there is extensive scope for their manufacture. Fruit preservation and the canning industry, also offer scope for development.

35. There being no fixed standards for gur, the records of prices available as published in the Gazette are of very uncertain value for comparison. Gur from the United Provinces may be roughly classified as (*a*) eating gur, superior quality—as prepared in and around Meerut; (*b*) eating gur, ordinary quality; refining gur. The last is not suitable for consumption, and its price depends entirely upon its value in sugar refining.

The prices of eating gur depend upon many factors, as the source, colour, size of contained crystals. This may account for the discrepancies in the figures in the following tables of which the first purports to show the average rates for gur from 1932-36 in six important markets of the United Provinces; and the second the prices of gur and factory sugar in four markets in May, 1933-37.

Average rate of wholesale price of sugar (raw) from the years 1932-36.

Year.	Cawnpore.	Muzaffar-nagar.	Shahjahan-pur.	Fyzabad.	Benares.	Gorakhpur.
	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.
1932	3 2 8	3 1 8	2 15 11	2 10 9	3 6 6	3 5 9
1933	2 15 2	2 12 4	2 15 9	2 10 6	3 10 0	4 4 2
1934	4 0 0	4 2 0	3 14 0	3 7 0	4 5 0	3 13 4
1935	4 15 7	4 15 6	4 8 6	4 5 6	4 15 4	4 8 3
1936	3 7 4	3 8 8	3 6 3	2 13 8	3 7 1	4 12 0

Prices of gur and factory sugar—May, 1933, to May, 1937.

Year and Commodity.	Cawnpore.	Meerut.	Shahjahan-pur.	Gorakhpur.
	Rs. A. P.	Rs. A.	Rs. A. P.	Rs. A.
1933—Gur	2 3 0	2 8	3 1 3	3 12
Sugar	9 0 0	8 8	8 0 0	12 4
1934—Gur	4 8 3	5 0	4 1 6	3 14
Sugar	10 0 0	10 0	9 8 0	10 10
1935—Gur	5 4 0	4 8	4 6 0	4 10
Sugar	9 4 0	9 8	8 8 0	10 13
1936—Gur	3 1 0	3 8	2 6 0	4 12
Sugar	8 8 0	8 0	9 0 0	9 0
1937—Gur	4 0 0	...	2 12 0	...
Sugar	Rs. 6 to 7	...	Rs. 6 to 7	...

N.B.—The prices are for the month of May and derived from the Government *Gazettes*.

(i) Factory consumption appears to have absorbed most of the extra production of cane in the United Provinces up to 1935. Changes in area do not thus appear likely to have had much effect upon gur prices before 1936.

(ii) In the absence of extensive and accurate yield data for every year, it is not possible to assess the effect of climatic conditions upon either yield of cane or sucrose. These factors obviously determine outturn in gur, and quality. In addition to the direct effect of climatic conditions on cane growth, climate is a main determining factor in pest and disease attack. No valid conclusions upon climatic effects can be drawn in the absence of such essential data.

(iii) So far the effect of competition from factory sugar can not have been very significant as the total of local and imported sugars have remained until 1936 at a fairly constant figure.

It is generally held that the production of factory sugar has greatly reduced the manufacture of sugar in open pans. If this be so, the surplus cane thus released for preparation of gur may have caused a depression in gur prices.

39. There appears to be no constant relation in price between sugar and eating gur. In some years the price movements have been in apparent

sympathy, while in others they have been in opposite directions. The two products are not interchangeable at present. They may meet common needs to a considerable and increasing extent, but each has specific demands or limitations which affect market prices according to the availability of stocks. Thus sugar is in demand among the well to do throughout the year, while gur is not. The keeping quality of gur is limited, and affected by seasonal changes. This is reflected in limitation of bazaar stocks and consequent periodic scarcity. The table below displays the comparative prices of sugar and gur in the Meerut market at the end of the old and commencement of the new seasons of 1933-34-35. It will be seen that although in November and December there was an apparent relation in prices, such was not the case during the monsoon months.

Year and Commodity.	End of the old season.			Beginning of the new season.	
	August.	September.	October.	November.	December.
	Rs. A.	Rs. A.	Rs. A.	Rs. A.	Rs. A.
1933—Sugar	8 8	9 0	9 0	9 0	9 0
Gur	2 14	3 4	5 12	4 0	3 4
1934—Sugar	10 8	10 0	10 0	10 0	10 0
Gur	6 8	6 0	5 12	4 12	3 12
1935—Sugar	10 8	10 8	10 8	9 8	10 0
Gur	5 0	5 0	5 0	3 12	3 10

40. No precise data are available. It is reported by members of my staff that there is a tendency to use low grade sugar in place of gur in villages which sell their cane to factories; particularly in areas which made eating gur in the past for local consumption.

41. No research on gur preparation has been undertaken by the United Provinces Agricultural Department. It has co-operated with Khan Bahadur Syed Mohd. Hadi in improvement on open pan sugar manufacture. Three sizes of improved bels have been evolved, of 13, 4 and 3 pans, respectively. While designed primarily for rab, the miniature bels are excellent for gur preparation also.

The Hadi 13 pan bel was tested at Belari by the Sugar Technologist of the Imperial Council of Agricultural Research and subsequently demonstrated extensively at the Shahjahanpur Research Farm. This bel effects quicker boiling with economy of fuel, less inversion and a higher sugar recovery than the Rohilkhand bel. It is suited to khandsari sugar manufacture. As this industry has declined, and large bels are not in demand, Mr. Hadi has adapted his design to "miniature" bels. These bels are fired with local fuel as bagasse and cane trash, cotton and arhar sticks, leaves and the like, and are thus economical to run. They have the great advantage over the local bel of being continuous in operation; and can be used for gur or rab at will. Miniature bel No. 1 with three pans costs about Rs. 35, and boils about two maunds of juice per hour; while No. 2, with four pans, costs approximately Rs. 50 and boils three and one-third maunds juice per hour.

Details have been published in Departmental leaflet No. 43, copies of which will be supplied.

46. Please refer to Question No. 41 in which this has been considered along with gur improvement.

47. On a market capable of contraction of supplies to force consumers to buy at an enhanced price, the imposition of duties may be passed on to the consumer; otherwise it is borne mainly by the producer of the raw material.

So long as Indian production was not sufficient as in 1934 and 1935, to meet internal requirements, and a considerable balance had to be met by importation, the excise duty appears to have been mainly, if not solely, paid by the

consumer. The stabilising factor of import price disappeared as soon as Indian factory supply appeared to have overtaken the normal demands, towards the end of the 1935-36 season. There has since been a progressive decline in prices, approximating to a panic, which was stimulated by the additional duty in 1937. Factories threatened early closure; cultivators who grew cane in anticipation of increased factory demand were alarmed, and anxious to dispose of their crop at any price; particularly as the crushing season commended late and this, along with the increased area of two lakhs acres, had resulted in surplus cane. To meet the crisis, the minimum price of cane was reduced to what was in effect a salvage rate which the cultivator was eager to accept rather than lose the whole value. Much, if not all, of the enhanced duty was thus, in my opinion, passed on to the grower.

It is of course not possible to determine how far the slump was aggravated by excise duties, and whether it would not equally have taken place with the removal of the stabilising factor of import prices under protection. By failure to restrict or control supplies within known requirements, the manufacturers of sugar have in effect deprived themselves of much of the advantage of protection, to their own considerable loss, and to the very grave loss of the growers; which in this province alone must have been at leave eighty lakhs on cane sold to factories alone. To this must be added whatever sympathetic fall has followed in gur prices. The consumer is the only beneficiary; but it may be doubted whether he will benefit ultimately, as agricultural distress is reflected in general trade depression.

To recover stability and prosperity with cane not below 4½ annas at factory, a new stabilising factor must be introduced. This would be effected by Governments in India agreeing to a minimum cane price not below the approved figure, as a last resort. As, however, the off-take of cane would be dependent upon the factories, it would still be incumbent upon them to restrict production to a level which ensured an economic price for sugar; otherwise they would periodically be faced with unprofitable production, and be forced to periodical closure, leaving the cane to waste. Restriction of cane area would not serve the purpose, even if it were possible, as factory demands are a small proportion of the total cane produced.

It should thus be the recognised duty of factories—which have made, and still may make large profits out of the industry—to restrict their output within the calculated limits of demand. This is a duty which they should accept in their own interests, and in those of the growers and the general prosperity of the community.

50. *The statistics of acreage* are based on figures collected by the Department of Land Records and published from time to time in the Season and Crop reports. They derive from patwaris reports and are very accurate. They do not, however, distinguish between cane varieties, or plant and ratoon cane. Where such figures are given they are departmental estimates.

Production figures per acre are similarly derived from condition factor reports in terms of anna valuation against a normal crop. The "normal" crop yield is based on crop cutting experiments. These have in the past been faulty in design and insufficient in number. The normal crop figure is therefore open to grave suspicion of error.

The anna value figure which is the average of a large number of individual judgments, may be approximately correct in terms of cane. As, however, the cane-sucrose and cane-gur ratios vary greatly between varieties, areas, and cultivation practice; and still more widely between seasons, it is not a reliable index of outturn in terms of sugar or gur.

Experiments are in progress which aim to provide a technique less open to criticism.

The Agricultural Department is not responsible for statistics of prices.

Replies by the Registrar of Co-operative Societies.

7. Over-production has not been defined. Perhaps what is meant is: whether so much cane was produced that some of it remained undisposed of or was disposed of at an unremunerative price or (as in the case of gur) it was converted into a commodity which on account of increased output fetched an inadequate return.

The area under sugarcane increased almost everywhere.

I take different parts of the Province in detail.

West of the Province.—There was a bumper crop in the Meerut division and the Bijnor and Moradabad districts. The Meerut cultivator dislikes keeping his cane till April and in previous years the position was that the Meerut and Bijnor factories did not have a sufficient supply of cane near their gate towards the end of the season. At that period supplies were obtained from the Moradabad district and from areas outside the home zone, which were not tapped earlier in the season. Till last year there had been no question of over-production in any sense of the term and even this year the change in the position on account of increase in the area under sugarcane, and an unusually good crop was not realised at the beginning of the season. In December several factories in Meerut were offering prices above the Government minimum and there were two strikes of growers in order to extract certain facilities and higher prices from factories. The grower realised his weak position sometime in February and in March there was a panic with the result that notwithstanding the desire of the grower to dispose of his cane before March, Government had to reduce the minimum price to induce factories to continue crushing into April so that the surplus cane might be disposed of. A contributory cause of the glut in this area was the reduction in the manufacture of gur owing to the unfavourable price of gur as compared with cane prices.

The net position in this area was that only small quantities of the cane grown remained undisposed of but there was over-production in the sense that the prices obtainable at the end of the season were unremunerative. This was particularly the case in Moradabad where the demand is not merely irregular and uncertain but is mainly concentrated to the end of the season. The bulk of the cane in this district was sold only at the end of the season when prices were low and there had been reduction in weight owing to the heat.

Next year the position will have improved. There will be a reduction in area and more gur will be made. Also, it is unlikely that a crop as good as this year's will be repeated.

In the peculiar case of Dehra Dun where the only factory in the district, *viz.*, Doiwala, has a natural zone, there was a small surplus. The position is bound to be adjusted next year by a reduction in area.

Bareilly, Shahjahanpur, Sitapur and Kheri Districts.—The position here was very different from that in the Meerut division. The Baheri factory in Bareilly district ceased to get its full requirements after the 15th of March and closed down about the middle of April. The Maholi and Rosa factories in Sitapur and Shahjahanpur closed down before the end of March and the Kargoon and Hardoi factories stopped crushing about the middle of April. This was largely due to the fact that the crop had been damaged by excessive rain. There was, however, surplus cane round about Biswan in Sitapur district and the factory continued crushing till the end of May to enable this cane to be disposed of. One may hold that there was over-production round about Biswan. No cane, however, remained undisposed of.

East of the Province.—There was more cane this season than the factories required in the Gorakhpur and Basti districts. The cause was the increase in area under cane. In Gorakhpur district the area under cane in 1936-37 was 277,000 acres compared with 213,000 acres in 1935-36. Reduction in price at the end of the season and the consequent prolongation of the season, however, enabled most of the cane to be disposed of

and only a few thousand acres remained unsold at the end of the crushing season. Statistics are not yet available but local enquiries show that the area is already being reduced for the next season.

I have no information regarding Balrampur, Kheri and other parts of the Province. The above information merely relates to cane grown for factory consumption. I have no information regarding cane utilised as gur. Our prices were generally low and it is doubtful whether they were sufficient for the out-lay involved in the production of cane.

The next question is whether any scheme for restricting is necessary or is feasible. I have already stated above that reductions in area are being voluntarily made by the cultivators and I question whether it is even necessary to adopt any further measures for restriction. In any case I do not think that any scheme of restriction is feasible. Cane differs from other crops like wheat in so much as it cannot keep. If the area is restricted and the crop is poor on account of disease or poor rainfall, there will be shortage. If, on the other hand, there is a bumper crop there will be surpluses which cannot be readily diverted to gur. Under the existing arrangements kolhoos cannot be put down at a moment's notice and when it is realised towards the end of the season that there is going to be a surplus it is usually impossible to make arrangements for kolhoos. A glut will then be inevitable. In these circumstances no scheme of restriction can be feasible.

There is also another consideration. Agriculture in this province is different from agriculture in western countries where schemes of restriction have been tried. Where it is all small-scale agriculture and any scheme for restriction will involve a horde of small officials which will be not only very expensive but also very oppressive. The position should be left to adjust itself.

9. I am not in a position to answer this. This department has been concerned only with one scheme—the cane development and marketing scheme financed by the Government of India grant described below. So far Rs. 37,905 have been spent through this department; the bulk of the expenditure has been through the department of Agriculture.

11. (i) I repeat a report by Mr. S. C. Roy, Cane Development Office: Eastern Range:—

In the United Provinces the area under improved varieties of sugarcane was eighty six per cent. of the total area under cane during 1934-35, compared with eighty-one per cent. during the preceding year. In varietal trials, Co. 313 was the best yielder, closely followed by new selections Co. 341 and Co. 350. The latter is, however, susceptible to mosaic. In terms of sugar, Co. 313 maintained its position followed by Co. 350 but Co. 347 and Co. 349 are reported to be better than Co. 341. Cos. 231, 244 and 299 held the field in many areas, though Co. 300 and Co. 312 are reported to be gaining ground in the eastern Rohilkhand and Western circles.

Shahjahanpur has for many years been the central station for sugarcane research. With the aid of a grant from the Imperial Council of Agricultural Research, a new sub-station was added at the Muzaffarnagar farm, for research on cane agronomy and cane entomology to meet the particular needs of the western districts. The research undertaken at the above stations included the testing of new types, raising of cane seedlings, carrying out chemical, physiological and manurial tests on cane. Seedlings raised at Shahjahanpur from seed at Coimbatore are given the designation of Co. S. The hybris of Cos. 5 and Cos. 19 obtained by crossing Cos. 210 and Co. 244 are already being used in field trials. They are found to be hardy, late ripening canes and are likely to replace Co. 212 which has deteriorated, largely due to bad farming practice, in certain areas. Of the new arrivals, C.O.K. 1, Co. 386, Co. 421 and Co. 428 are among the most promising. Co. 285 has been found to be very suitable for dry regions. Under chemical research, investigations have been in progress on the effect of (1) organic and inorganic manures on the maturity of cane and sucrose contents, (2)

selective absorption of different materials at the different periods for life of cane. The physiological researches included investigation on (1) studies on interrelation of nitrogen manuring and water duty on the growth of the plants, (2) effect of climatic conditions on the growth of cane plants, (3) studies in the development of sugarcane in relation to various soils with particular reference to root growth. Agronomical trials consisting of manurial, cultural and irrigational were also under progress. In the application of molasses the best result was shown by addition of 270 maunds molasses per acre two months before planting. In cultural trials trenches at a distance of four feet and in flat sowing lines three feet apart followed by earthing indicated best results. Experiment on the irrigation of sugarcane showed, as in previous years, that the influence of this factor on yield was more closely allied to the frequency with which irrigation was given rather than to the quantity of water given at each irrigation. At Muzaffarnagar sub-station, the incidence of various sugarcane pests such as borers, pyrilla, and white fly were studied. The effect of frost on cane was also under examination so as to secure a rough and ready method of assessing frost susceptibility. There appears to be some correlation between the heaviness of transpiration and frost susceptibility. The leaves of cane which are less susceptible to frost were found to yield less water, when cut and stored before sunrise. Co. 312 and Co. 247 and Co. 350 showed less water loss and were less susceptible.

As regards manurial trials it is reported that green manure with sann increased the yield by over forty per cent., and could be profitably augmented by cow-dung or amonium sulphate, but not by castor-cake. Castor-cake alone at 120 lbs. nitrogen to the acre, gave better results than equivalent mixtures of castor-cake and amonium sulphate, or farmyard manure and amonium sulphate, all being better than farmyard manure alone. Where green manuring cannot be done, castor-cake alone is indicated if cheap and readily available or alternatively cow-dung supplemented by a latter dose of amonium sulphate.

(ii) Co-operative Societies generally carried on propaganda for the introduction of improved varieties with the result that nearly all the members' cane is under the latter. Propaganda has also been carried on for improved methods of cultivation and manure. Statistics cannot, however, be quoted at such short notice.

A special scheme for intensive improvement in the cultivation of sugarcane has been operating in the Province since November, 1935. A "Zone" of about 2,000 acres under sugarcane is taken up near a factory and arrangements are made for the supply of approved seed and manure for every grower in this area. The growers are organised into Co-operative Societies. Intensive instruction and demonstration in correct agricultural practice is given through a staff of 9 Kamdars, 3 fieldmen and one agricultural graduate as Inspector in charge of the Society. Part of the cost of the scheme is paid by the factory, benefitted by it. There are 23 such Societies in the Province, 10 of which in the East of Province are under my departmental control, the rest being under the Director of Agriculture. In my range, 93,104 and 145,622 maunds of improved seed were distributed in 1935-36 and 1936-37 respectively. Attempt has been made to furnish the factories with early, late and medium canes with a view to prolonging the factory season. Improved cultivational methods, *viz.*, line sowing with proper spacing and inter-cultivation with proper appliances were demonstrated in all these societies. The practice of additional manuring with which the success of the Coimbatore varieties is so intimately connected has been built up and the quantities of mixed manure (ammonia and castor cake) distributed in 1935-36 and 1936-37 were 18,000 and 24,000 maunds respectively.

13. The scheme described in answer to question No. 11 may be referred to. There are twenty-two factories in the scheme. The cost of the scheme per zone is about Rs. 9,500 and 20 factories contribute Rs. 3,000 each per year. These 20 factories also undertake to purchase the improved cane

from the Co-operative Society, paying a commission to it for organising and regulating the supply. Two factories pay Rs. 6,000 a year but do not incur, any obligation to purchase the cane through the Co-operative Society of growers. All these factories are represented on the directorate of the societies and have thus a voice in directing the methods of improvement.

15. (A) *Difficulties of cane-growers in the cultivation of cane:*—

(1) Lack of capital for sinking wells. This is particularly noticeable in the east of the province. The cultivator has not means to sink pucca wells, while kacha wells do not last and do not give a sufficient supply of water.

(2) Absence of arrangements for the supply of good seed, fertilizers and implements.

(3) Lack of proper communications. Village roads have usually been encroached upon, culverts either do not exist or are in a state of disrepair. There are deep ruts all over and the result is that it is both difficult and costly for the cane-growers to transport their cane to the factory gate.

(B) *Difficulties of the grower in the disposal of the cane to the factory:*—

(1) Difficulties in finding carts,

(2) Long waiting at purchasing centre,

(3) Cheating by various agencies,

(4) Late payment, and

(5) Absence of parking facilities.

A description of some of the frauds to which the grower is subject given by an Assistant Registrar who has first-hand experience of the organization of the supply of cane is given below. It should be understood that these frauds are not practised by all the contractors or all the factories.

"The various modes by which the grower is deprived of his legitimate dues are described as follows:—

(1) Some weighbridges have hollow hangers attached to the arms. Adjustments to balance is made by putting small pebbles into the hollow space. But the scale may be made to overweigh or underweigh by putting greater or less weight into the hanger. Mills are known to use it to underweigh the cane of the grower. Of course, this cannot be known to the grower or to any casual visitor.

(2) Weighbridges are so cleverly adjusted as to show correct weights upto a certain point say 3 or 4 maunds but to show 1 maund less if the total weight is 10 maunds, two maunds less if the total weight is 20 maunds and so on. Of course the Cane Inspector or any one else would test the machine by weighing himself or something of similar weight whose correct weight is known to him. And there the machine would give absolutely correct weight. But cart loads of cane weighing 16 to 30 maunds would be under weighed.

(3) Purchase on *Koot* though prohibited under the cane rules has not altogether disappeared. It was particularly noticed this year because of the cane crop being much more than was required by mills. This was general in a few mills at certain stages of the season, *viz.*, when there was a glut and there was no other mill in the neighbourhood to which the grower could take his cane.

(4) A very obvious method is to record less than the weight shown by the scale. The system is certainly crude and open to quick detection. But is not so uncommon as might be imagined.

(5) When the cart is underweighed sometimes the purzi is not issued until the cart is unloaded. Chances of detection are then reduced.

(6) Cane when brought on the weighbridge is declared to be state or of inferior quality, and is refused. At the same time it is suggested to the grower that he may allow a deduction of 3 to 5 maunds in the cart load. To this he must agree and sell his cane.

(7) Similarly a cart which has been waiting long is offered early weighment if it allows a deduction of 3 to 5 maunds.

(8) One mill assured purchase of one cart daily on payment by the grower of Rs. 5 to the Arya Samaj fund started by the mill. This is ostensibly for charitable purposes. Some mills deduct a few pies per cart for a Gaushala, a school or some such other object.

(9) Another factory levied a non-returnable deposit of Rs. 50 per cart of daily supply.

(10) Some mills adopt the more direct method of demanding some money in consideration of fixing a preferential schedule of daily supply.

NOTE.—General under-weighment is sometimes done under instructions of the mill. But more often than not the mill employees do it on their own account, and obtain payment of the price on a farzi purzi issued in a fictitious name in collusion with the cashier.

(11) An indirect method is this. The contractor was allowed to supply cane to the mill, but he did not receive commission and had even to pay the railway freight. Of course the contractor had to extract his due by under-weighing the cane of the grower, and also by selling supply tickets.

(12) Some mills which have farms of their own weigh carts of others in the name of their farm and detain a portion of the price payable to the grower.

(13) The staff of the mill give priority in weighment to carts which pay them a little tip.

(14) Peons sometimes take out some cane from every cart and get it weighed in their own name at the end of the day.

(15) The cashier does not lag behind. He keeps the grower waiting till he is allowed his share from the amount due. It is only then that payment is made.

(16) Cane is refused as bad or stale and when the cart is returning a peon approaches it with a supply ticket which is sold to the grower. Then the grower feels no difficulty in getting his cane weighed. The gains thus collected are divided at the end of the day between the cane Superintendent and other members of the staff.

(17) The peon or the Jamadar of the mill would not allow a cart to enter the line unless he gets a tip.

(18) Even if the cart passes all these ordeals the cane may be declared bad when it reaches the spot where it has unloaded. But it is passed as good and allowed to unload on payment of a small tip.

(19) Very often contracts are given to influential zamindars or money lenders who deduct their own dues before paying the price to growers. Sometimes these contractors get the cane weighed in their own name and then the grower gets the price after a great deal of delay, and occasionally the contractors keep a part of it to himself.

(20) Perhaps it need not be noted that generally carts have to wait for days in the season of glut and the cane loses in weight".

16. The Co-operative Department helped the grower from the marketing fund first. It was usual for factories to engage contractors for obtaining their supplies and to pay them a commission which three years ago was usually a pice per maund for cane supplied. These contractors exploited the growers and cane-growers' societies were formed to displace them. There are two types of societies. The first type embraces a whole district or tahsil within its area of operations with individual members scattered in a large number of villages. The society takes stock of the cane available with its members and on that basis obtains a contract from one or more factories and then distributes those indents among the members. The other type consists of a central society with a number of affiliated primary societies. Contracts are obtained from the mill and distributed among the primary societies. The primary societies are usually based on the one-village-one-society rule. The staff for the organisation of supply and for the maintenance of accounts is maintained out of the commission obtained from the mill. Loans are also advanced by the central society on the security of the cane mortgaged to it. They are advanced not merely for the agricultural operations of the area under the mortgaged cane but also for other necessary purposes the aim being to secure supplies rather than to finance cultivation. This was done on account of the competition from contractors who supplied similar facilities. There are punchayats elected by the general body in the primary societies who are utilised in the day to day work of organisation of supply. The general direction of the central society is in the hands of directors elected from the constituent societies. An inspector of the Department is usually made responsible for the proper administration of the society and the Collector or the Sub-Divisional Officer is the Chairman of the society. The latter have been of great help in obtaining contracts from the mills. Loans advanced are collected by short payment of the price of the cane sold through the society. The usual rate of interest on those loans is nine per cent.

The most efficient society is that of Dehra Dun which deals with more than 70 per cent. of the cane grown in that district. The members have been able to secure one anna more than the Government minimum price on account of the superior quality of their cane and as the result of organisation, waiting at the factory gate has been eliminated, correct weighments are ensured and timely finance has been given to members for the purchase of seed and manure and for expenses of cultivation. Propaganda has also been carried out for improvement in methods of cultivation and the cane is of high quality. There is another society in Meerut District which deals with 4 or 5 factories and supplies them cane from outside their home zones. Its difficulty has been in obtaining regular contracts but this society also has been successful in being able to stand on its own legs without outside financial help and in saving its members the trouble and expense of waiting in ensuring them correct weighments and in supplying some approved seed and manure and finance. There is a similar small society in Muzaffarnagar district and a recently started society in Moradabad district which deals in rail-borne cane supplied to the factories in Meerut and Bijnor districts. A feature of these societies has been the collaboration between the sale society and the credit societies of that area. The dues of the credit societies are collected through the sale society with advantage to both, one society supplies credit, the other markets and ensures good collections.

The above societies have supplied over 45 lakhs maunds of cane to factories in the last crushing season.

The Tarai and Bhabar Central Co-operative Bank last year started working as a contractor for the Baheri sugar factory. Its work was popular and financially profitable to the Bank.

There are small cane supply societies in the Hardoi, Lucknow and Kheri districts which have worked on the same lines. There is also a small society at Ghugli in Gorakhpur district.

The biggest Co-operative Society is in Deoria tehsil, district Gorakhpur —the Cane Marketing Board, Deoria—which contracted to supply 37 lakh maunds of cane last year.

There is a co-operative factory at Biswan which pays for the organisation and regulation of the supply of its cane. There are a number of primary societies round about the factory which are its members. Last year the factory resolved to pay its member-growers one pice more than the Government minimum price. This arrangement will have to be revised this year on account of the fall of the price of sugar and the additional excise duty.

The only financial assistance given by Government to the above societies was a grant of 10,000 in 1935. Most of the societies have built up funds of their own and have met their working expenses from their own income. The weakness in the programme of work of there societies has been that sufficient arrangements could not be made for improving the quality and cultivation of the sugarcane. The reason was lack of funds and uncertainty regarding the future. With the increase in the production of sugarcane the position of these societies *vis-a-vis* the mill has grown steadily weaker and contracts are getting more and more difficult to obtain.

In addition to the above societies which were organised by the Co-operative Department there are 22 zones in which the Cane Development and Marketing scheme referred to in the answer to question No. 11 is in operation. The scheme is jointly run by the Agricultural and Co-operative Departments, half of the zones being under the control of the Director of Agriculture and half under that of the Registrar of Co-operative Societies. The Director of Agriculture is assisted by an officer of the Co-operative Department who has an agriculturally qualified assistant under him. The Registrar of Co-operative Societies has an agriculturally qualified assistant under him in immediate control of the scheme with an officer of Co-operative experience under him. The subordinate staff are all agriculturally trained and have also been given training in the methods of Co-operative Sale Societies.

The total number of members in the Eastern Range of this scheme, which is under me, was 15,000 on March 31, 1937. The statistics regarding the area under improved cane the quantity of improved seed and mannure have already been given. It may be stated that there is difficulty at present on account of several factories asking for a revision of the scheme on the allegation that they are not now able to afford payment of the contribution and commission they agreed to pay two years ago.

20. The cost of transport from Kasia to Padrauna (District Gorakhpur) a distance of 12 miles has been found on local inquiry to be anna 1 to As. 1-6 per maund or 1½ pies per maund per mile. In Deoria the cost for 22-30 miles is As. 2 to As. 3 per maund or 1½ pies per maund per mile.

Thus, the cost for long distances, the cost of transport by bullock cart is 1½ pies per maund per mile in Gorakhpur District. In the west of the province, the cost is reported to be 2 pies per maund per mile.

For short distances, the cost is much higher, as the period of waiting is the same as for long distances. The estimated cost for both the east and the west of the province is 3 pies per maund per mile.

21. In Gorakhpur, the estimate is that 40 per cent. of the growers have their own carts. I have no reliable estimate for the middle-west of the province.

Carts and bullocks are hired together. Rates of hire are given above. In Gorakhpur, a cart carrying 18 maunds of cane for a distance of less than 10 miles can be hired at Rs. 1-7 a day.

22. The Bengal and North-Western Railway maintain a special Cane Control Superintendent for the proper arrangement of empty wagons during the crushing season. This arrangement is useful.

Roads are badly neglected and soon become difficult to use even after the poor repairs occasionally done by the District Boards. There is considerable cruelty and hardship on bullocks owing to the state of the roads

I am not aware of anything done towards the development of feeder roads.

As regards tramways, I have no exact information but I believe some assistance was given to the Doiwala mill in Meerut and some is proposed for Saraiya in Gorakhpur.

I consider that the question of feeder roads and tramways needs detailed examination by an expert.

25. There is one Co-operative Sugar Factory at Biswan in this province. It started work in the 1933-34 season. Management is in the hands of a board of directors some of whom are elected by individual shareholders, some by growers of cane supply societies affiliated to the factory and some are co-opted or nominated members. There is a Resident Director with large powers. Owned capital was raised by sale of shares. The bulk of the shareholders are private individuals. A commission is payable to Co-operative supply societies on supplies and the factory has been paying the staff required for the regulation of supplies. In the beginning there was a 300 ton plant; since last year the plant has been extended to 800 tons. The factory has not been working well. In the first year the milling plant was found defective, in the second year there was breakage which caused an extensive stoppage and now with the fall in the price of sugar and the additional excise duty the factory is in difficulties. Apart from part of the plant being defective and ill-balanced there are difficulties also on account of lack of capital. The factory does not possess sufficient capital to pay for the extensions made last year. The control of the factory is not in the hands of the representative of the cane-growers and this is a defect from the co-operative point of view. From the business point of view also the management has not been efficient.

31. (1) The introduction of the zone system will place the grower at the mercy of the factory and I see no advantage in zoning the areas of supply unless at the same time factories are forced to make arrangements for regulating supplies within this zone. Otherwise the grower will be exploited as he will have no alternative means of disposal. Factories are most unlikely to undertake the regulation of the disposal of the cane in the zone areas themselves. The correct solution seems to be to arrange for this regulation through co-operative societies of the growers of a particular area. The whole gate supply of a factory should be undertaken by a co-operative society and since factories are unlikely to give such contracts to co-operative societies, legislative compulsion will be needed. Zoning without safeguarding the position of the grower will be most undesirable.

(2) I do not feel competent to express an opinion on this.

(3) In view of the amount of sugar that is being produced licensing of new and extensions of existing factories is desirable.

39-40. I am unable to answer these questions.

47. The Sugar Excise Duty of 1930, affected the manufacturer and possibly the consumer but it certainly did not affect the cane-grower. The additional duty of 1937, however, fell on the cane grower, as deductions in the minimum price were allowed. The manufacturer last season suffered when his dealings with the cane-grower were absolutely honest. If, as is likely, there is a reduction in the area under cane next year, he will suffer more as he will not be able to impose his terms on the cultivators as much as he could in the last season. Also, the cultivator will make more gur next year and will not depend as much on the factories as he did last season.

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(2) *Letter dated July 12, 1937, from the Government of the United Provinces, Industries Department, Lucknow.*

I am directed to forward herewith (with six spare copies) the Provincial Government's replies to the questionnaire forwarded with your letter No. 172, dated May 11, 1937. The delay in submission is regretted.

The following table shows the total area under sugarcane and the area under improved varieties during each of the last seven years:—

Year..	Total area under sugarcane.	Area under improved varieties.
	acres.	acres.
1930-31	1,488,419	527,237
1931-32	1,576,280	678,774
1932-33	1,773,211	989,920
1933-34	1,713,183	1,289,337
1934-35	1,813,230	1,445,478
1935-36	2,211,932	1,670,971
1936-37	2,469,210	*2,166,553

About 75 per cent. of the area under improved varieties is covered by Co. 213, while the rest of the area is divided more or less equally between Co. 244, 290, 312, 313 & 331.

2. The United Provinces may be divided into a number of well-marked natural divisions from the climatic point of view:—

(1) The hill tracts where there is practically no sugarcane except in Dehra Dun where cane forms 7½ per cent. of the cultivated area and there is a sugar factory. The cane in this district does not deteriorate owing to the heat as early as it does elsewhere.

(2) The submontane tracts, which may be sub-divided into west and east. There is in these areas a proportionately large amount of unirrigated cane. In the western portion of this area, cane forms some 13 per cent. of the cultivated area and 60 per cent. of it is unirrigated; in the east the percentage of unirrigated cane is nearly 50; cane forms nearly 7 per cent. of the area under cultivation and there are a large number of sugar factories to take up the cane.

(3) The Gangetic plain which may be sub-divided into (*a*) east, (*b*) east-central, (*c*) west-central, (*d*) west and (*e*) south-west. There are no adequate facilities for irrigation in the eastern section where all irrigation is from wells and the cane area is 7 per cent. of the total area cultivated; there is only one factory in the tract. The east-central portion has half a dozen sugar factories but cane forms only 3 per cent. of the cultivated area; almost all the cane is irrigated partly from the Sarda Canal and partly from wells. The west-central portion has been the home of the khandsari sugar industry for generations and contains some 40 per cent. unirrigated cane. This area is being further developed as the result of the construction of a number of tube-wells. At present 9 per cent. of the area is under cane. The western section is all good cane area almost all canal irrigated; cane forms 13 per cent. of the cultivated area but the cane season is comparatively short as the cane starts deteriorating early in April. In the south-western portion the cane area is very small, chiefly being only 3 per cent. of the cultivated area owing to difficulties of irrigation; the tract is naturally devoid of sugar factories.

(4) The Central India Plateau where the cane are is negligible.

The methods of cultivation do not vary appreciably in the different tracts except that in the Bijnor District, a good deal more hoeing is required for unirrigated cane than elsewhere.

* Final forecast, dated January 31, 1937 (Land Records Department).

Sugarcane in 1935-36.

District.	Total cultivated area in thousands of acres.	Total Acres.	Irrigated Acres.
Dehra Dun . . .	103	5,347	45,011
Submontane west—			
Saharanpur . .	839	100,461	42,505
Bareilly . . .	764	109,322	55,506
Bijnor . . .	649	93,656	27,582
Pilibhit . . .	388	60,539	32,132
Naini Tal . .	156	11,975	6,190
Sitapur . . .	981	103,309	51,537
Kheri . . .	828	107,314	35,478
Total .	4,605	586,576	250,930
Submontane east—			
Gorakhpur . .	2,171	213,452	98,483
Basti . . .	1,325	76,332	64,221
Gonda . . .	1,171	56,714	23,827
Bahraich . . .	977	12,635	362
Total .	5,644	359,133	186,893
Gangetic plain, east—			
Benares . . .	2,323	27,170	26,343
Jaunpur . . .		45,252	45,234
Ghazipur . . .		39,509	38,346
Ballia . . .		43,337	38,430
Azamgarh . .	940	84,535	78,018
Total .	3,263	239,803	226,371
Gangetic plain, east-central—			
Cawnpore . .	837	19,502	19,402
Fatehpur . . .	572	16,605	16,513
Allahabad . . .	1,031	14,462	1,336
Lucknow . . .	341	9,009	8,800
Unao . . .	618	12,451	12,340
Rae Bareli . .	599	5,739	5,734
Hardoi . . .	958	59,864	48,843
Fyzabad . . .	703	44,597	41,592
Sultanpur . .	638	20,804	20,647
Partabgarh . .	521	9,797	9,793
Barabanki . .	696	55,215	34,822
Total .	7,514	268,045	231,846

Sugarcane in 1935-36—contd.

District.	Total cultivated area in thousands of acres.	Total Acres.	Irrigated Acres.
Gangetic plain, west-central—			
Budaun	969	53,913	26,096
Moradabad	1,087	104,329	62,830
Shahjahanpur	751	84,352	59,836
Total	2,807	242,594	148,762
Gangetic plain, west—			
Muzaffarnagar	729	116,110	105,218
Meerut	1,089	166,343	159,038
Bulandshahr	867	59,046	57,475
Total	2,685	341,499	321,731
Gangetic plain, south-west—			
Aligarh	911	19,186	16,597
Muttra	663	20,708	20,518
Agra	778	11,004	10,923
Mainpuri	589	16,178	15,578
Etah	708	27,706	13,234
Farrukhabad	622	29,032	20,100
Etawah	561	19,342	19,334
Total	4,832	143,156	116,284
Central India Plateau—			
Jhansi	763	2,185	2,140
Jalaun	603	3,110	3,110
Hamirpur	859	4,007	3,929
Banda	887	663	658
Mirzapur	698	15,814	14,472
Total	3,810	25,779	24,309

3. A statement is appended giving the irrigation rates for sugarcane on the principal canals of the United Provinces. These rates were mainly determined in consideration of the value of the crop. The history of the rates is given in the attached memo. There has been no variation in the rates during the last seven years.

The state tube well irrigation system is of recent origin and the charges which are still tentative are based on the discharge per unit of electricity consumed. Owing to the volumetric system in force, it is not possible to quote more than an average figure. Irrigation Department officers consider that the cost of one normal sugarcane watering is between Rs. 3 and Rs. 4 per acre and hold that the annual rates per acre may vary from as low

a figure as Rs. 8 in a wet year to a rate possibly exceeding Rs. 16 in a drought year. Some persons, however, are inclined to put the figure of cost of irrigation of one acre at between Rs. 4 and Rs. 4-8.

The cost of irrigation from ordinary wells has been estimated at Rs. 3-8 to Rs. 4 per acre for each watering but there are no reliable data on the subject.

List showing irrigation rates for sugarcane on the principal canals in the United Provinces.

Canals.	Per year. Flow. Rs. A.	Lift. Rs. A.
Upper Ganges and Eastern Jumna Canals	10 0	4 0
Lower Ganges and Agra Canals	9 0	3 0
Agra Canal in Delhi and Gurgaon	12 0	6 0
Dun Canals	10 0	5 0
Bijnor Canals	4 8	2 8
Canals and Tanks in Bundelkhand	5 0	2 8
Sarda Canal	10 0	5 0

MEMO.

The rates charged for sugarcane on the principal canals in the United Provinces in the years 1862-63 to 1920-21 were as follows:—

Canal.	1862-63. Rs. A. P.	1867-68. Rs. A. P.	1873-74. Rs. A. P.	1878-79. Rs. A. P.	1905-06. Rs. A. P.	1920-21. Rs. A. P.
Upper Ganges—						
Flow	4 6 3	5 0 0	5 0 0	6 10 8	6 10 8	7 8 0
Lift	3 0 0	3 5 4	3 5 4	3 5 4	3 5 4	3 0 0
Eastern Jumna—						
Flow	...	...	...	...	...	...
Lift	...	...	...	...	...	...
Lower Ganges—						
Flow	...	...	6 10 8	6 10 8	6 10 8	7 8 0
Flow	...	...	3 5 4	3 5 4	3 5 4	3 0 0
Area Canal—						
Lift	...	...	3 5 4	3 5 4	3 5 4	3 0 0
Lift	...	...	6 10 8	6 10 8	6 10 8	7 8 0

In 1922 the rates were reviewed. It was shown that the mean value of cane in 1901-02 was Rs. 100 per acre and in 1920-21 was Rs. 271 per acre, an increase of 171 per cent.

The ratios of water rate (flow) to the value of cane crop per acre in 1920-21 in the United Provinces, America and Egypt were as follows:—

Value of crop per acre.	Flow rate in force.	Ratio of water rate to value of crop in the United Provinces.	Ratio in America.	Ratio in Egypt.
Rs. 271	Rs. 7-8	1/36th	1/5th to 1/6th	1/6th.

The rates charged in the Punjab in 1920-21 varied from Rs. 9 to Rs. 12 per acre (flow).

The rates on the four major canals (Upper Ganges, Lower Ganges, Eastern Jumna Canal and Agra Canal) were increased to Rs. 10 flow and Rs. 4 lift in 1923. It was considered that the existing rates of Rs. 7-8 and Rs. 3 were very low in comparison to the value of the crop. The Irrigation Branch proposed rates of Rs. 12 and Rs. 4 but Government finally accepted rates of Rs. 10 and Rs. 4.

The increase was not made on any definite basis. The general rate on the major Punjab Canals is Rs. 11 flow and Rs. 5-8 lift.

4. No reliable figures are available showing the costs of production of sugarcane. These costs vary not only from tract to tract, but from village to village and from field to field. In estimating these costs a great deal depends on the rate at which the labour of the cultivator and his family are evaluated. Moreover the costs of cultivation per acre depend on the indensity of cultivation. While the costs per maund of cane produced vary with the nature of the season and the state of the crop. The best estimates can therefore be only a rough and ready approximation.

The expenditure on the cultivation of one acre of sugarcane, cultivated in the normal way that is usually adopted by villages, has been estimated as being from Rs. 60 to Rs. 90 in irrigated areas. The figure may be taken as Rs. 75 on an average, and the outturn per acre at 400 maunds. This gives As. 3 per maund of cane as the costs of cultivation in irrigated areas. Where labour is more expensive as in the west the figure may increase; where the cultivator and his family supply the labour, the apparent cost may be less; where cultivation is more intensive both the costs per acre and the outturn would increase and the costs per maund would come down. But for plant cane, As. 3 a maund may be taken as a fair average for the province as a whole for irrigated areas.

For unirrigated areas the figures are less reliable. The usual estimates are self contradictory. The cost per acre is often estimated at from Rs. 40 to Rs. 60 and the outturn is said to be 300 maunds an acre which gives a cost of As. 2-8 per maund. On the other hand the general impression is that in many areas unirrigated cane does not cost more than As. 2 a maund. The figure probably varies with the nature of the soil and may be taken to be As. 2 in some tracts and As. 2-6 in others where more labour is required. The outturn would be 250 maunds in the former and 300 maunds an acre in the latter, for plant cane.

In short, for plant cane it may be said that the cost of cultivation and the outturn per acre are as follows:—

	Costs of cultivation per maund.	Out turn in maunds per acre.
	As. P.	
Unirrigated land (special) . . .	2 0	250
,, ,, (ordinary) . .	2 6	300
Irrigated land (,,) . .	3 0	400

The costs of cultivation may have gone down slightly in the past 7 years, but no figures are available in support of this. The general impression is that the actual expenditure on labour, etc., has decreased, but this is not appreciable enough to affect the costs of cultivation per maund of cane. This, however, does not take into account the effect of the introduction of improved varieties of cane; the outturn of desi varieties on irrigated land was only about 300 to 350 maunds an acre, while the expenditure per acre was not appreciably less than what it is now. In other words the cost of cultivation per maund was As. 3-6 with desi varieties and it is now As. 3 with improved varieties and to this extent costs of cultivation have come down.

5. The determination of what may be regarded as a fair price for the grower depends on a number of factors such as the costs of production, of cartage and of profits made by sugar manufacturers. If the costs of cultivation are taken as As. 3 a maund, and cartage comes to anna 1 a maund, and some profit is to be allowed to the grower a fair price would be in the neighbourhood of As. 4-3 to As. 4-6 per maund. In the majority of cases, however, the actual cartage charges are negligible, as cultivators use their own carts and bullocks; but even for such cases the minimum price should not be allowed to go below As. 3-6 a maund.

6. The cane area in the province as a whole was 47½ per cent. higher in 1936-37 than the average of the 5 years 1930-34. This increase is general throughout the province and must be attributed primarily to the cultivator finding that it was more remunerative for him to grow sugarcane rather than other crops, and his expectation that this state of affairs would continue.

The chief factors which contributed to this are the low price of other crops, the comparatively high price realised for cane from sugar factories, the new facilities for irrigation made available by the opening of the Sarda Canal and the establishment of tube wells in the west of the province and the price realised for gur. Wherever irrigation facilities have been improved or sugar factories have been established, the cane area has increased. But the increases are not confined to such tracts; for instance the areas under cane in Hamirpur and Agra where there are no factories and no additional facilities for irrigation have increased by 83 and 163 per cent.; on the other hand Sultanpur and Benares which are in a similar position show increases of only 4 and 20 per cent. The explanation probably is that Agra gur fetched a higher price as it is eating gur and can be exported; while Benares gur which is more suited for refining did not have this advantage. The extent of correlation between the price of gur and the area under cane seems to need further study.

The price realised both for cane and for gur by the cultivators in 1936-37 being very low, the area under sugarcane that will be available for crushing next season has decreased considerably; it has been estimated that this area will be under 21 lakhs of acres as against 24½ lakhs in 1936-37. This shows how the price prevailing in one year affects the area in the following year.

Climatic factor do not appear to affect appreciably the area under cane except indirectly through the outturn and the price. Thus, in 1934-35 owing to climatic conditions the cane was badly damaged; the outturn was poor but the price realised was high; the result was a remarkable increase in the cane area in 1935-36.

In short it may be said that the price of cane and gur, relative to the price realised for other crops, is the most potent factor in determining the area under cane, other considerations being important in so far as they affect such prices or increase facilities for production at lesser cost.

7. In certain areas in the province, some surplus cane was left over at the close of the 1936-37 season which could not be crushed, in spite of the best efforts of factories to take it up. On the other hand in certain other areas factories had to close down early for lack of cane. On the basis of these facts it has been held by the Sugarcane Conference which met recently at Naini Tal that there was no overproduction of cane but only mal adjustment of the area under cane. In support of this view it can also be urged that the cane was left over owing to miscalculation and bad organisation. Cultivators seem to have considered that factories would be able to take up more cane than they really could, and owing to this incorrect expectation they did not take steps in time to make gur; if they had manufactured gur at the proper time there would have been no surplus.

This argument, however, appears to ignore the price factor. It is true cultivators could have made more gur; but it must be seen whether it would

have paid them to do so. In the west of the province gur was selling at Rs. 2-8 a maund; allowing As. 10 a maund costs of manufacture and 10 maunds of cane to one of gur, this works out at As. 3 a maund of cane; it has been reported that cultivators in Meerut are not prepared to make gur if they get less than Rs. 2-8 a maund for it. Be that as it may, it does seem that a price below Rs. 2-8 is not an economic price. If therefore more gur had been produced, it might only have resulted in the price of gur dropping to an uneconomic level—unless the demand for gur could have been stimulated. The consumption of gur in the United Provinces *per capita* per year is nearly 100 lbs. but the figure for India as a whole is under 30 lbs., so there may be some scope for the export of more gur from the United Provinces to other Provinces and States; the present exports amount to 450,000 tons. Again, on the Gorakhpur side, refining gur went down to Rs. 1-5 a maund; allowing As. 6 as costs of manufacture there, the price of cane works out at As. 1-6 a maund which appears to be definitely uneconomic. It would therefore appear that there was really little scope for the making of more gur.

It has been suggested by some persons that if rab were made instead of gur, there would be no difficulty about its disposal. Khandsaris would buy up the rab and make it into sugar and there is scope for the sale of such sugar. There does appear to be some scope for this on the Moradabad side but it is doubtful if the east of the province could produce rab suitable for making sugar at a price which would leave a margin of profit. The price of rab may have been high in 1936-37 but it might be dangerous to act on the assumption that it will continue to be high in subsequent years; in fact if rab is made in large quantities its price is likely to come down.

The only other outlet for cane is the sugar factory. In Gorakhpur factories took as much cane as they could, yet there was a surplus in some tracts. It may therefore be said that there was overproduction of cane in certain limited areas such as the north of the Gorakhpur and Kheri districts and to some extent in Moradabad, in the sense that it could not be taken over by the existing factories. In view, however, of the fact that several factories could not get enough cane, it cannot be said that there was general overproduction; in fact there appears to be scope for increasing the area under cane in certain tracts.

In view of this finding no restriction of the area under cane as a whole is needed; even if it were needed it is doubtful if any practical scheme of restriction could be evolved in the case of a crop which is cultivated by a couple of million different individuals. The practical thing to do appears to be to have some form of zoning round factories; the cane of the zone would be taken by the factory concerned and the production would be adjusted, more or less automatically, to the needs of the factory; the unzoned areas would devote themselves primarily to gur or rab and would know exactly where they stand. A scheme something along these lines is likely to be more effective in securing the adjustment of the supply to the demand than any scheme of artificial restriction of area.

8. The chief crops which are sold for cash by cultivators apart from sugarcane or gur are wheat, rice cotton and oil seeds and in one or two areas potatoes, opium used to be an important cash crop but the area is now very small; tobacco; sunn hemp and arhar are also produced in small quantities for sale. The area under wheat is now 8 lakhs of acres less than the average for the years 1930-34 which corresponds almost exactly to the increase in the cane area. This is perhaps only a coincidence, but the greater part of the increased area under cane has probably been at the expense of wheat; and it is likely that if the price of wheat goes up, cane will to some extent be replaced by wheat. Attempts are also being made to encourage cotton and oil seeds (groundnuts, linseed, etc.), in suitable areas.

It does not appear to be feasible to give any estimate of the return per acre from the various crops other than sugarcane as the costs of cultivation

have not been studied. The gross value of the outturn of such crops has been worked out at about Rs. 30 to Rs. 40 per acre and from this rent and costs of cultivation have to be deducted. Figures which show Rs. 45 and 60 as the net income per acre are probably very wide off the mark.

9. The Director of Agriculture estimates the amount spent directly for sugarcane improvement as follows:—

Year.	Economic Botanist (Sugarcane Budget expenditure at Shahjahanpur.	Approximate amount of grant-in-aid to Farm Owners for improved Sugarcane cultivation.	Amount of animal subsidies spent by Deputy Directors on the transport charges of Sugarcane seed for distribution.	Amount received from Government of India as contribution from sugarcane Excise Fund spent in cane development Zones & State tube well areas.	Amount contributed by the Imperial Council of Agricultural Research for Sugarcane Research.	
					For seedling at Shahjahanpur.	(a) For physiological work at Shahjahanpur. (b) For Agronomical and Entomological at Muzaffarnagar.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
1930-31 .	..	5,500	..	..	6,000	..
1931-32 .	..	..	20,781	..	..	..
1932-33 .	40,245	..	14,145	..	..	..
1933-34 .	46,936	..	7,972	..	..	..
1934-35 .	46,194	2,360	26,338	..	..	1,11,880
1935-36 .	50,447	..	8,112	1,26,853	..	..
1936-37 .	43,020	..	..	*3,01,767	5,230	..
Total .	2,26,842	7,860	77,348	4,28,620	11,230	1,11,880
Grand Total .	..	..	..	..	..	8,63,780

* Budget estimate.

10. For the two years 1934-35 and 1935-36 together, the amount allotted to the United Provinces from the Sugar Excise Fund, on the basis of the production of white sugar in the province was Rs. 5,40,000 out of a sum of Rs. 10,00,000 earmarked for distribution among provinces. In 1936-37, the amount available for distribution to provinces was Rs. 8,53,000, out of which this province got Rs. 4,76,000 as the production of white sugar in the United Provinces had increased during the year 1935-36 from 54 to 56 per cent. of the total. The amount to be allotted during the current financial year is not yet known.

(2) The grant is utilised in financing the following schemes which have received the previous approval of the Government of India.

(*a*) Staff for the administration of the Sugarcane Act and Rules.

(*b*) Development of cane cultivation in the State Tube-well Area.

(*c*) Improvement and marketing of cane of improved varieties in the areas around such sugar factories as have agreed to contribute towards the cost of such improvement.

Notes about these items are enclosed.

The amount allotted is in the opinion of the provincial Government quite inadequate to meet requirements. As one district officer put it "there is a universal grievance that we do not benefit as we should from the very large sums paid in sugar excise duty". From the amount allotted to this province, it has been possible to take up the work of cane development and supply in the neighbourhood of only 22 factories which is less than ⅓rd of the total. Moreover, factories are beginning to find that they cannot afford to pay commission for the supply of cane at the rates they have been giving in the past and wish to cut down their contributions. Further, cane traffic does a lot of damage to the roads and it is generally felt that some money out of the Sugar Excise Fund should be allotted for road improvement. Representations have been made to the Central Government on the subject but without any result. A resolution was passed by the Legislature asking that the Government of India be moved to allot a portion of the Sugar Excise duty for road improvement and forwarded to that Government. More recently it has again been pointed out to the Central Government that with the increase in the Sugar Excise Duty, the amount placed in the Sugar Excise Fund should no longer be 1 anna per cwt. but should be correspondingly enhanced. The Sugarcane Conference which met in Naini Tal on the 18th and 19th June resolved that the Government of India be moved to place As. 3 per cwt. in the Sugar Excise Fund and a copy of this will shortly be sent to that Government.

11. The Provincial Government have nothing to add to the replies to this question submitted by the Director of Agriculture and the Registrar Co-operative Societies and endorse the same. It may be mentioned, however, that there is a complaint on the part of some factories that efforts have hitherto been concentrated on improving the yield per acre, and that more attention is required towards securing an increase in the sugar content of the cane.

12. The provincial Government have nothing to add to the information supplied by the Director of Agriculture and the Director of Industries on the subject.

13. A few factories have co-operated with the Agriculture Department in the introduction of new varieties and have obtained from the department good seed for multiplication on factory farms or by their growers.

The co-operation of factories in the Cane Development and Supply Scheme has been referred to in the reply to question 10; 22 factories have joined this scheme so far.

14. The total amount of cane available for crushing from 24½ lakhs of acres during 1936-37 would be about 100 crores of maunds. Out of this factories took 20 crores of maunds. The amount of sugar manufactured by open pan factories and khandsaris is roughly 100,000 tons; presuming that their average extraction is between 4½ and 5 per cent., the amount of cane used by them works out at 6 crores of maunds. Formerly it was estimated that the amount of cane used for chewing and for seed was 10 per cent.; Recent enquiries show that 45 maunds of cane seed go to the acre; as the area planted with cane for the next season is only 15 lakhs of acres (another 6 lakhs being ratoon) it appears that nearly 7 crores of maunds have been used as seed. The amount of cane used for chewing in this province must be very small; in particular Co. 213 the predominant variety is so hard that it is unsuitable for chewing; the amount used for

this purpose as well as that left standing at the close of the season would between them not exceed a crore of maunds. Thus the percentages for the last season work out as follows:—

	Per cent.
Crushed in sugar factories	20
Utilised by open pan factories and khandsaris . .	6
Used for seed	7
Used for chewing and left standing at the close of the season	1
Turned into gur	66

15. The enormous increase in the cane area in the past few years would seem to show that there are no particular difficulties in the way of the cultivation of cane in this province. There are however a number of tracts in the province where cane cannot be grown because of lack of adequate irrigation facilities. Another difficulty is shortage of organic manure; this does not affect the area, but does affect the outturn and if more manure were available, the outturn per acre and therefore also the profit therefrom (presuming that prices do not fall) would also increase. To some extent lack of capital also stands in the way of effective cultivation, as growers hesitate to spend money to obtain the best seed cane and concentrated fertilisers; this can however be largely overcome by adequate propaganda.

The difficulties in the way of supply of cane to factories are: (1) in some cases, lack of carts resulting in high cartage charges, (2) bad communications and (3) lack of organisation in supply resulting in delays in weighments and overcrowding at the factory gate or other purchasing centre. Malpractices such as underweighment, the holding up of carts, delayed payments, etc., are also not as uncommon as they ought to be.

16. The Co-operative Department have organised a number of societies the primary object of which is to supply cane to factories. Details of these organisations have been sanctioned in the reply of the R. C. S. and need not be repeated here. It must however be pointed out that these societies have not been popular with factories; in some cases these co-operative societies have taken on more than they can conveniently manage and the supply is not properly organised; factories allege that various malpractices are also being resorted to by the employees of these societies. Better control and better organisation of supply seem to be necessary in the case of many of these societies. Moreover these supply societies do comparatively little for cane development.

Societies for development and supply have been established in the neighbourhood of 20 factories with the aid of a grant from the Sugar Excise Fund and for development only near 2 factories. Factories do not object to development but are generally opposed to supply by these societies, they allege various malpractices on the part of societies and point out that factories are getting no advantage by helping in supply, as the cane would come to them in any case; at the back of their minds there is the fear that these societies may become so strong that they may be able to dictate terms to the factories—as they actually seem to have done in the Dehra Dun district. In spite of all these criticisms and fears—many of which may be not unjustified—the fact remains that on the whole these societies have been able to secure for their members prompt and correct weighments. Some of the complaints doubtless emanate from those whose incomes (licit or otherwise) have been affected, but others are probably genuine. It is proposed shortly to look into the working of the whole scheme with a view to introduce such modifications and improvements as may be found necessary.

Co-operative production of sugar has also been attempted. Four or five open pan factories were put up by co-operative societies but it was found that they could not run at a profit and had to be closed. In two cases

attempts were made to manufacture rab in the villages and send it to a central place for making sugar, but difficulties were experienced in connection with the disposal of sugar and the experiments had to be given up after 2 or 3 years. A vacuum pan sugar factory was started on a co-operative basis at Biswan but has not so far been very sucessful, partly on account of defective machinery purchased in the first instance and partly because of inexperienced management.

17. A minimum price for cane is fixed in the United Provinces as laid down in Rule 7 of the United Provinces Sugarcane Rules, 1936 (copy enclosed). It is proposed shortly to make a few alterations in this rule and to lay down that the scale for the fixation of the minimum price should be as follows:—

Market price of sugar (calculated as at present).	Corresponding basic price of sugar (market price *minus* excise duty).	Minimum price of cane.
		As. P.
		3 0
Less than Rs. 6 0	Less than Rs. 4 8	
Rs. A.	Rs. A.	
6 0 to 6 8	4 8 to 5 0	3 9
6 8 to 7 0	5 0 to 5 8	4 0
7 0 to 7 8	5 8 to 6 0	4 3
7 8 to 8 0	6 0 to 6 8	4 6
8 0 to 8 8	6 8 to 7 0	4 9
8 8 to 9 0	7 0 to 7 8	5 0
9 0 to 9 8	7 8 to 8 0	5 3
9 8 to 10 0	8 0 to 8 8	5 6

and so on.

It may be mentioned that the market price is taken as the average of the ten highest price quotations f.o.r. factory at Cawnpore. It is now proposed to take quotations in a market in the Meerut Division also. It is further intended to try and secure the same minimum price in the United Provinces as in Bihar by either taking the average of the 18 highest price quotations (12 in the United Provinces and 6 in Bihar) or taking the weighted average of the market price as worked out independently in the United Provinces and in Bihar the weights being 2 for the United Provinces and 1 for Bihar.

The minimum price has been working reasonably well on the whole. There was a little difficulty when the excise duty on sugar was suddenly enhanced towards the end of February, 1937; the rules provided that the minimum price of cane should be As. 5 when the price of sugar was between Rs. 8 and Rs. 9; this provided for excise duty at Re. 1 per maund and the intention clearly was that when the basic price of sugar (market price *minus* the excise duty) was between Rs. 7 and Rs. 8, the minimum price should be As. 5. It was therefore necessary now to provide that the minimum price of cane should be As. 5 when the market price was between Rs. 8-8 and Rs. 9-8, so that the minimum price would be As. 4-9 when the market price of sugar was between Rs. 8 and Rs. 8-8, As. 4-6 when it was between Rs. 7-8 and Rs. 8 and so on. As the amendment of the rule required a long notice, the situation was met by allowing a deduction of 3 pies from the minimum price which had precisely the same effect as an alteration of the rule.

Further complications however arose in March. On the one hand factories threatened to close down on account of the excise duty; on the other there was a large amount of cane which would have remained unerushed.

To meet the situation a further deduction of 3 pies was allowed from the 16th April and of 6 pies from the 1st May. The circumstances are explained fully in the communiqués issued on the subject by the Provincial Government and the speech of the Hon'ble Minister when opening the recent sugarcane conference at Nainital (copies enclosed).

The question of bonus or premia for cane will be referred to in reply to question 19. But here it may be mentioned that there have been repeated suggestions that the cost of railway freight should be borne by the grower and not by the factory. The facts are that when the question of a minimum price was first discussed in 1934, cane growers pressed for a minimum price of As. 5-6 while factory owners were prepared to give only As. 5. On the basis of the formula which though not embodied in the rules was in everyones minds at the time, the price of cane should have been, when the price of sugar was Rs. 7-8=As. 120 (apart from the excise duty) and the percentage of extraction 9 per cent., $\frac{120 \times 9}{200}$ =As. 5·4. After much discussion it was agreed as a compromise that the minimum price should be As. 5 but the railway freight should be borne by the factory. It was also claimed for this that it would encourage factories to develop the area in their neighbourhood to avoid having to pay railway freight. It appears however that some factories have now resorted to the device of making cultivators deliver their cane f.o.r. factory by rail and pay the minimum price for cane so delivered. The question was re-examined at the recent sugarcane conference at Nainital, but it was decided to make no change for the present.

18. There is very little competition between factories on the whole. In the Gorakhpur Division, the Bengal and North-Western Railway has at the request of the factories adopted the Home Convention, practically refusing to book cane by rail from a station where there is a sugar factory to any other station, thus effectively preventing the sending out of cane by rail from such station to other factories. In the Meerut Division the factories have formed an association and all agree to give the same price. During the last season there was abundance of cane and little competition to buy—the competition being all to sell. In 1935-36, however, there was some competition among factories towards the end of the season and prices paid for sugarcane went up, irrespective of the minimum price prescribed. Normally, however, it may be said that the element of competition only comes in in so far as a cultivator can and does select which of 2 or 3 factories he will sell his cane to, both in localities where there are a large number of factories and elsewhere when different factories establish a purchasing centre at the same place.

19. It is generally agreed that it is desirable to pay a higher price for cane of better quality. But there appear to be many practical difficulties in the way of giving a bonus (or, as Bihar prefer to term it a premium) over the minimum price for cane of superior quality. The only way in which it appears to be feasible is for the Agriculture Department to decide which are superior canes for the purpose in consultation with factories and what premia they deserve; and to lay down that such premia should be paid in the case of carts containing these superior varieties; it would be easier to do this in areas which have been taken up for cane development and supply, for the local officers could then certify for each cart whether it contains superior cane or not. At the Sugarcane Conference in 1936 it was decided to appoint a sub-committee to put up concrete suggestions but it was found that adequate data were not available to decide which varieties should be classed as superior at what times during the season. Some data have now been collected and it is proposed to ask the sub-committee to meet during the next few months and put up a definite scheme.

20-21. Questions 20 and 21 may be taken up together. No detailed enquiries have been made but most officers hold that "generally the growers use their own carts". On the Gorakhpur side it is estimated that half

the cane is transported in hired carts, but it is admitted that this is largely guess work.

The average cost of hiring carts appears to be from Rs. 1-4 to Rs. 1-8 a day. Enquiries show that the cost of hire does not depend so much on the mileage to be covered as on the probable period of detention at the factory or purchasing centre; in other words the cost of cartage is more or less the same for 5 miles as it is for 10, though of course for longer distances the rates do increase.

In view of this it does not appear to be feasible to work out the cost of hiring per maund per mile. All that can be said is that for usual carting distances, *i.e.*, those not exceeding 10 or 12 miles the cost of hiring is from anna 1 to As. 1-6 a maund.

22. *Railway facilities.*—The number and distribution of railway lines in the sugarcane areas is on the whole adequate. Judging from repeated requests for assistance to the Provincial Government, the number of wagons and the arrangements for supplying them have not kept pace with the increased demand. The increasing tendency to draw supplies of cane from near by areas is likely to do away with the difficulties of wagons shortage before long. It may be mentioned in this connection that the Shahdara-Saharanpur Light Railway will not make lateral branch lines to assist the Baraut and Shamli factories.

There appears to be scope for better co-ordination between the different railways in the province. For instance, there are often delays in the transport of cane at junctions; again when cane has to be transported over 2 railway systems, both administrations charge the minimum rate, even though the distance over which the cane is transported by each is very short; thus if cane has to be transported 9 miles on one railway and 10 miles on the other, each railway charges its minimum rate for 25 or 50 miles as the case may be. The Provincial Government consider it necessary that each railway should appoint a liaison officer who could help in making the necessary arrangements for quick transport of cane and remove difficulties when they arise.

Road facilities.—The number of roads is inadequate; owing to shortage of funds for maintenance from revenue, they cannot be maintained up to the standard required by the increased volume of cart traffic. This refers both to provincial and local roads. The Provincial Government are engaged in a five-year programme of road reconstruction and development including new metalled roads and feeder roads. The programme amounts to be about Rs. 1 core, and is based on income in the Central Fund and on borrowings on the strength thereof. The income in the Provincial Road (Motor Taxation Fund) is required mainly for the reconstruction of deteriorated local roads. There are practically no provincial or local funds for the construction of new or feeder roads on a substantial scale, nor is there any likelihood of funds becoming available for the purpose, unless the Central Government take over the main trunk roads, thus enabling the Provincial Government and local bodies to rehabilitate the remaining roads and to construct new roads. It may be added, however, that where there is heavy cane traffic, metalled roads soon get badly cut up. The crying need is for improvements in lateral communication; the katcha roads over which most of the cane has to be brought at present quickly become extremely bad, making haulage by bullocks very difficult.

Tramway facilities.—The Provincial Government have constructed a tramway 28 miles long to the Daurala factory in the Meerut district. In the districts of Bijnor and Gorakhpur the Provincial Government and the local district boards have given facilities to factory owners to construct tramways, one of which has been constructed and is being extended, the other being under construction. The Provincial Government are sympathetic towards proposals of this nature, which relieve the excessive strain on the roads; but neither they nor local boards are in a position to give financial assistance to such projects.

23. The Provincial Government have nothing to add to the reply given by the Director of Industries to this question except to point out that the Provincial Government put up an experimental sugar factory at the H. B. T. I. with the aid of a grant from the Imperial Council of Agricultural Research and have been spending Rs. 70,000 a year on the Sugar Section, which has since 1st October, 1936, been converted into the Imperial Institute of Sugar Technology.

24. In 1922 a loan of 6 lakhs was given for completing and working the Lucknow Sugar Mills and in 1924 a further loan of 1½ lakhs was given to it for the purchase of sugar machinery. The greater part of these loans proved irrecoverable. Since then no money has been advanced to sugar factories in this province.

Government have helped 11 factories to acquire land aggregating over 80 acres for the construction of roads, improving drainage, supplying parking space, etc. No other concessions have been given. A co-operative open pan sugar factory was allowed the use of Government land on a nominal rent of Re. 1, but that factory worked at a loss and had to be closed down.

No special concessions have been given to sugar factories as regards water rate charges.

25. There is nothing to add to the reply of the Registrar Co-operative Societies to this question; it states the position correctly. Defective machinery, lack of capital and inefficient management are the chief defects of the only co-operative sugar factory in the province.

Four or five co-operative open pan sugar factories were tried but it was found that it was not possible to manufacture sugar by the open pan process without incurring loss, and so they have all been closed.

26. There have been no complaints as regards the conditions of labour in sugar factories except that it was extremely hot in factories which remained open during May.

There is, however, a general complaint that many factories dispense with the services of their technical staff as soon as the crushing season is over to save expense; such staff has therefore no stability of tenure.

27-28. A statement prepared by the Director of Statistics is enclosed. It does not, however, show the real retail price to the consumer. The following figures which have been given by one District Officer may be compared with those worked out by the Director of Statistics:—

	Per maund.
	Rs. A.
1930	12 5
1931	11 7
1932	10 0
1933	8 14
1934	9 5
1935	8 14
1936	8 0

It will be seen that the margin between the two sets of prices has come down very considerably and was negligible in 1935 and 1936. But the accuracy of the above figures cannot be vouched for.

The variations between the wholesale and retail prices are so small that the question of giving reasons for the difference does not arise.

STATEMENT PREPARED BY THE DIRECTOR OF STATISTICS.

Annual average prices of sugar.

(In Rupees per maund.)

	1930.	1931.	1932.	1933.	1934.	1935.	1936.
	Rs. a. p.	Rs. a.	Rs. a.	Rs. a.	Rs. a. p.	Rs. a. p.	Rs. a.
Wholesale prices of sugar—							
Marhowrha crystal No. 1.	9 8 0	9 13	10 9	9 7	8 14 0	8 12 0	8 8
Padrauna No. 2 .	..	..	9 1	7 11	7 13 0	8 1 0	6 15
Cawnpore Special	10 0 0	8 13	9 6	8 8	8 8 0	8 14 0	7 15
Retail prices of sugar.—							
Cawnpore Special	9 9 3	8 15	9 7	8 8	3 10 4	8 14 10	7 15

29. The production of sugar in the United Provinces in 1935-36 amounted to 608,000 tons. Exports from the United Provinces were 368,000 tons and it was generally estimated that some 50,000 tons were left over at the end of the season. It appears therefore that 190,000 tons were consumed in the province. This is equivalent to 4,256 lakhs of lbs. and for a population of 500 lakhs gives a consumption of 8·5 lbs. *per capita*. This is considerably higher than the average consumption in India which is 6·4 lbs. per head.

In view of the fact that the consumption of sugar in India in 1929 was 13 lakhs of tons while in 1936 it was under 11 lakhs, it may be concluded that there are possibilities of increasing the consumption of sugar in India. In fact 13 lakhs of tons works out to 8½ lbs. per head—which is precisely the present consumption in the United Provinces. It is difficult to say whether consumption of sugar in the United Provinces can be increased. The consumption of gur in the province was 95·7 lbs. per head in 1936 and taking both gur and sugar, the United Provinces appears to be consuming more than many richer and more advanced countries. Its consumption of sugar has reached the peak figure for 1929, while its consumption of gur has exceeded it. Perhaps, however, more sugar will be consumed if the purchasing power of the people increases.

30. There are no manufacturers of confectionery in the province, other than the ordinary Halwais (sweetmeat makers). They use both refined and raw sugar.

31. The question of zoning was considered at the recent sugarcane conference at Nainital. A copy of a note put up on the subject is enclosed together with a copy of the proceedings relating to this item. It will be seen that it has been decided to prepare a concrete scheme for zoning and put it up before another conference. The Provincial Government favour the introduction of a zone system, provided the practical difficulties can be overcome. They also consider that the licensing of the new factories and of extensions of existing factories is advisable, in order to prevent the overcrowing of factories in certain localities.

The question of the fixation of a quota for sugar manufacture by factories is primarily a matter for the industry itself to consider, but in view of the general opinion that there is scope for consumption of more sugar in India, the time does not appear to have arrived yet for such fixation. Moreover, quotas cannot be fixed unless all factories are prepared to abide by them or there is an overwhelming majority and the few that do not agree can be coerced by legislation.

32. The possibilities of establishing industries such as the manufacture of sweets and syrups, fruit preservation and canning, etc., have not been fully explored and opinions differ as to the chances of success. The matter is being looked into by the marketing staff to ascertain what scope there is for the consumption of these articles in the province. Steps have also been taken in the meanwhile to provide funds for the training of some educated young men in fruit preservation and canning.

33. There are no reliable figures and the outturn of gur varies considerably with the condition of the sugarcane, the extraction of juice from cane and the efficiency of boiling. Some 7 years ago the general estimate was that 9 maunds of gur could be produced from 100 maunds of cane; the present estimate is that 100 maunds of cane give 10 maunds of gur. The improvement is probably due to the more general use of better crushers which give a higher percentage of extraction of juice rather than to any improvements in boiling methods.

A scheme is enclosed showing the lines along which it is proposed to take up the development of the gur industry in this province.

34. No appreciable quantity of gur is made in the United Provinces from any materials other than sugarcane.

35. Broadly speaking there are 3 chief kinds of gur, *viz.*, (1) Eating—superior, which usually goes under the name of Meerut gur, (2) Eating—ordinary and (3) Refining for which the chief market is Siswa Bazar in the Gorakhpur district. The price of the latter is governed by the demand of gur refineries. That of Meerut gur is also a comparatively reliable factor but price quotations of ordinary eating gur vary so widely that they are almost worthless for purposes of comparison. For instance the following figures are quoted for 3 tahsils in the same district (Moradabad):—

	Tahsil 1.	Tahsil 2.	Tahsil 3.
	Rs. A.	Rs. A.	Rs. A.
1931	4 6	3 8	3 10
1932	4 4	4 0	2 8
1933	4 0	2 11	2 0
1934	3 8	5 0 (sic)	2 9
1935	2 12	4 0	4 3
1936	2 4	3 3	2 14
1937	1 12	2 0	2 14

It will therefore be convenient to confine attention to Meerut gur and to Siswa Bazar gur for the purposes of comparison.

A statement prepared by the Director of Statistics showing (1) the wholesale price of refining gur, (2) the wholesale and retail prices of Meerut gur and (3) the retail price of ordinary eating gur at Basti is enclosed. The annual averages work out as follows:—

	Wholsale price of refining gur.	Price of Meerut gur.		Retail price of ordinary eating gur at Basti.
		Wholesale.	Retail.	
	Rs. A.	Rs. A.	Rs. A.	Rs. A.
1930 . .	4 15	...	...	...
1931 . .	3 3	...	2 14	...
1932 . .	2 11	...	3 0	...
1933 . .	2 9	3 14	2 14	3 6
1934 . .	2 12	4 9	4 12	3 10
1935 . .	3 8	4 6	4 12	4 2
1936 . .	2 11	3 5	3 11	3 3
1937 . .	1 5	2 8	...	...

It is curious to find that the retail price in 1933 was less than the wholesale price. The trend of prices is however fairly clear; while the price of gur in Meerut fell in 1935, it actually rose at Siswa Bazar and Basti but in 1936 and 1937 there was a general all round fall.

Owing to the difficulties connected with the price quotations of gur, it is hardly feasible to correlate these prices with other factors. But taking the price of Meerut gur as a standard it is possible to trace some correlation between the price and the outturn of gur available for purposes of consumption. Here again, however, the figure of outturn is hardly reliable, and depends on an assumed outturn of 15 tons per acre of cane in most years and 14 tons in a poor year and a uniform percentage of 10 maunds of gur from 100 maunds of cane. The figures work out somewhat as follows:—

	Gur available for consumption in lakhs of maunds.	Price of gur (Meerut).
		Rs. A.
1932-33	18·9	2 9
1933-34	16·9	3 0
1934-35	16·6	5 0
1935-36	22·5	3 8
1936-37	24·2	2 7

It will be seen that as the amount of gur available for consumption increases or decreases, the price of gur falls or rises. Apart from that there does not appear to be much real correlation.

It does not appear that the price of gur has been affected appreciably by the price of Indian factory sugar in the past, for the steep rise in the price of gur in 1934-35 was not accompanied by any rise in the price of sugar. It may be surmised, however, that a big fall in the price of sugar such as has occurred recently is bound to be accompanied by a fall in the price of gur. The matter needs further study but it seems doubtful whether in view of the paucity of reliable data, any conclusions of value can be drawn.

36. Taking the outturn of cane at 15 tons an acre in normal years and 14 tons in a bad year, allowing for cane used by vacuum pan factories, khandsari and seed and chewing, assuming that the rest of the cane is made into gur at 10 maunds gur to 100 maunds cane, and deducting the amount used by gur refineries, the amount of gur available for consumption, the amount exported and the amount consumed in the province work out as follows:—

	Amount of gur in lakhs of tons.		
	Available for consumption.	Exported.	Consumed in the United Provinces.
1932-33	18·9	...	16·2
1933-34	16·9	2·7	14·2
1934-35	16·6	2·8	13·8
1935-36	22·5	3·6	18·9
1936-37	24.5	4·5	20·0

The variations are due to the increase in the area under cane and in the outturn of cane, as well as the fact that for some time the increased outturn of cane was absorbed by sugar factories but from 1936 they were unable to do so

37-38. The following table shows the figures of exports from and imports into the United Provinces of gur:—

	Exports.	Imports.	Net exports.
1933-34 . . .	74,17,705	8,20,902	65,95,803
1934-35 . . .	53,34,068	6,22,968	49,11,100
1935-36 . . .	96,44,207	2,94,207	93,50,000

The imports appear to be chiefly from Bihar into the neighbouring areas in the United Provinces. The exports are chiefly to the Punjab, Rajputana and Central India and the Bombay side including Sind as also the Central Provinces. Some gur also goes to Bihar, Bengal and Assam.

39. This question has already been dealt with in the reply to question 35.

40. As the consumption of both sugar and gur have increased during the past few years, it is not possible to ascertain to what extent sugar has replaced gur. The general impression, however, is that sugar has replaced gur to a small extent in towns, but this decrease has been accompanied by increased consumption of gur in the villages. It is, however, reported that low grade sugar is also replacing gur in villages in the neighbourhood of factories, as gur is not now made in such villages.

41. So far very little research has been undertaken with a view to improve the methods of manufacture of gur. A copy of a scheme which the Provincial Government propose to put into operation shortly is enclosed.

42. There are some 44 registered open pan factories in the province. The number of khandsaris is not known but a rough estimate must have been made in connection with the enquiry financed by the Imperial Council of Agricultural Research into the production of khandsari sugar. The total outturn of sugar by open pan factories and khandsaris has been estimated to be about 100,000 tons. These factories and khandsaris do not manufacture gur.

43. The costs of manufacture in open pan factories vary with their efficiency and the quality of the cane available. In a couple of co-operative open pan factories it was found that the costs of manufacture, as distinct from the cost of the raw material came to about Rs. 2 per maund of sugar.

The costs of manufacture by khandsaris is probably in the same neighbourhood; but the figures are apt to be masked by the fact that they purchase not cane but juice and part of the costs of manufacture are thus inculded in the price they pay for the juice.

44. No reliable figures are available to show the extent to which Khandsaris have had to close down owing to the availability of cheap factory sugar. In four districts out of five where the khandsari industry was most prevalent, it is estimated that from 35 to 60 per cent. of khandsaris have closed down, while the 5th district reports that they are unaffected. It appears that some khandsaris whose factories used to be registered have closed down those factories, and split themselves up into separate concerns so as to employ less than 20 men in each and so escape excise duty. If allowance is made for this factor, the reduction in the khandsari industry may be about 30 per cent.

Open pan factories have been found to be definitely uneconomic except where a big landlord has his own farm the cane of which he cannot otherwise dispose of.

45. There are many who consider that the Khandsari industry is definitely wasteful in that the percentage of extraction of sugar comes to under 5 per cent. as against over 9 in the case vacuum pan factories and there is thus an unnecessary loss of sugar. On the other hand the fact remains that the khandsari does supply a real local need in many areas, especially in out of the way tracts from where it is difficult to transport cane to factories at a reasonable cost. If adequate improvements are introduced in the crushing and the methods of manufacture so as to increase

the percentage outturn of sugar, it is not improbable that khandsaris will survive the competition of vacuum pan factories; especially if the excise duty on khandsaris is abolished. It has in fact been suggested that excise duty should only be levied on khandsaris who employ 50 men or more in their concerns instead of 20 as at present; the present system by which khandsaris have to split up their operations in order to escape the duty only adds to the expense without helping anyone. There is some force in this and it cannot be decided that the honest khandsari has to pay the duty at present while the one who resorts to evasion within the four corners of the law can escape it. This might also encourage the production of rab by villagers, which could then be sent to a central place to be made into sugar by khandsaris.

46. The Provincial Government have nothing to add to the replies of the Director of Industries and the Director of Agriculture to this question save to point out that various further researches are being carried out by the Imperial Council of Agricultural Research. Four or five co-operative open pan factories were started in 1931 and may be regarded as large scale experiment. Khan Bahadur Syed Md. Hadi gave a considerable amount of help in this connection but he was ultimately compelled to admit that at present prices of sugar, open pan factories are unable to thrive.

47. The Sugar Excise Duty of 1934 appears to have been borne primarily by the consumer and to some extent by the manufacturer; the latter was at the time making sufficiently large profits to be able to stand this burden. The cane grower does not seem to have been affected, except that he gained indirectly owing to the fixation of a minimum price which was the corollary to the imposition of the excise duty on sugar.

It appears to have been expected that the increase in the sugar excise duty in 1937 would be borne again by the consumer and the manufacturer. Actually however so far the consumer has borne no share of this increase the burden of which has been divided between the cane grower, the manufacturer and the dealer. The deductions that had to be made in the minimum price of sugarcane were due in part to the increase in the excise duty and in part to the large amount of cane available; but for the enhancement in the excise duty factories would not have decided to close down early and so the crisis would not have been so acute as it actually became. In practice the greater part of the direct burden was borne by the cane growers; factories and merchants suffered also indirectly because owing to the reductions in the minimum price of cane, the price of sugar went down and so those who held stocks of sugar had to bear the losses.

48. The protective duty has resulted in the establishment of the sugar industry which is now able to supply sugar to the consumer at a cost considerably lower than what he would have had to pay otherwise. Taking the price of Cuban sugar in New York as the standard for world sugar prices, it will be seen from the enclosed statement that previous to the imposition of the protective duty on sugar in India the price of Java sugar in India (excluding Indian duty) was usually about Rs. 1-8 a maund higher than the world price. It may be presumed that but for the development of the Indian sugar industry this tendency would have continued; on this assumption the price of Java sugar in India would in 1936 have been in the neighbourhood of Rs. 11-8 exclusive of duty or Rs. 15 if a small revenue duty of Rs. 3-8 is allowed for. Instead of paying Rs. 15 the consumer was able to get his sugar in 1936 in India at less than half this price. On a million tons of sugar consumed in India, the consumer would have had to pay Rs. 40 crores but actually he paid Rs. 20 crores in 1936 and there was a saving to him of no less than 20 crores in one year alone. In 1935 the potential saving was less as the world price was Rs. 8·7 a maund, and so the price of sugar in India would have been Rs. 10-8 a maund or including duty Rs. 14 while the price of Indian sugar was Rs. 8-8; the saving was thus Rs. 5-8 a maund or Rs. 15 crores during the year.

Statement showing average annual prices of sugar.

Year.	Cuban sugar at New York.		Java white at Calcutta (in Rupees per maund).		Cawnpore Special (in Rupees per md).	
	In Cents per lb.	In Rupees per md.*	Including duty.	Excluding duty.	Including excise.	Excluding excise.
1921 . .	3·15	9·86	...	...	...	...
1922 . .	2·85	8·14	15·25	11·69	16·25	16·25
1923 . .	5·24	13·82	17·19	12·89	17·25	17·25
1924 . .	4·17	10·80	15·94	11·96	16·31	16·31
1925 . .	2·56	5·82	11·25	8·16	13·00	13·00
1926 . .	2·56	5·82	11·69	8·40	12·62	12·62
1927 . .	2·95	6·70	10·62	7·33	10·94	10·94
1928 . .	2·43	5·47	9·94	6·65	10·31	10·31
1929 . .	1·99	4·51	9·19	5·80	10·37	10·37
1930 . .	1·47	3·34	8·69	4·46	10·00	10·00
1931 . .	1·33	3·24	9·44	3·95	8·87	8·87
1932 . .	0·93	2·90	10·69	4·06	9·37	9·37
1933 . .	1·22	4·02	10·37	3·74	8·50	8·50
1934 . .	1·50	5·45	9·81	3·18	8·62	7·90
1935 . .	2·33	8·72	9·81	3·18	8·81	7·85
1936 . .	2·68	9·96	9·70	3·07	7·91	6·95

49. There appear to be no such industries.

50. The statistics of acreage are collected by the revenue staff (patwaris) based on a field to field survey and have a high degree of accuracy.

Statistics of production are unreliable. A "normal" production, based on a few crop cutting experiments, is taken as the basis for calculation; the actual crop is then adjudged from village to village as so many annas per rupee of the normal and the outturn of the crop calculated accordingly. In many cases the figure of normal production is open to grave suspicion. Again, in actual practice, the estimate of production is usually in the neighbourhood of 12 annas in the rupee so that the normal production figure is regarded not as the normal but as very nearly the maximum. In the case of gur, a further error is introduced in calculating the percentage of gur from cane. Nor must the effect of ratooning be lost sight of; the area under ratoon is not known correctly nor is the "normal production" of a ratoon crop known; the statistics at present available are calculated without making any distinction between plant and ratoon cane. There may be an error of anything up to 20 per cent. in the figures of outturn.

The wholesale price of sugar is obtained after careful enquiries and is reasonably accurate. The retail price of sugar has been obtained from selected sugar merchants and may not be far wrong as regards the price at which sugar is supplied to retail dealers. But no figures are available as to the price at which retail dealers sell to ordinary consumers.

The wholesale prices of gur as quoted at Meerut and Siswa Bazar may be taken as reasonably accurate. But the retail prices of gur which are given from time to time in the Government Gazette appear to be unreliable for the purposes of comparison, as there is no uniform quality of gur to which the prices quoted relate. As has been mentioned before the price quotations vary widely not only from district to district but also within a district from tahsil to tahsil. The error in these figures may be anything up to 100 per cent. and in some cases even more.

51. Further comments of the Provincial Government will be sent later.

* Converted at the rate of exchange in each year.

(3) *Letter dated the 19th July, 1937, from the Government of the United Provinces, Industries Department, Lucknow.*

In continuation of my letter, dated the 12th July, 1937, I am directed to refer to the reply to question No. 43 of the questionnaire and to say that it has been worked out after local enquiries by a student of the Lucknow University that the cost of crushing cane and extracting the juice therefrom is 8 pies per maund of cane. The cost of boiling the juice into rab works out at As. 8 per maund of rab, apart from the price of the juice or cane. Hence the cost of manufacture of one maund of rab from cane (9 maunds) is As. $9 \times \frac{3}{2} = 14$. Approximately 2-1/5 maunds of rab are required for 1 maund of sugar; thus the cost of the manufacture of the rab required for 1 maund of sugar is 31 annas. Enclosure I shows that the cost of manufacture of sugar from rab works out at As. 12 per maund of sugar. Thus the total costs of manufacture of 1 maund of sugar by the open pan or khandsari system come to $31+12=43$ annas or Rs. 2-11.

2. These figures are borne out to some extent by the experience of co-operative open pan factories which found some 3 or 4 years ago that the costs of manufacture of sugar varied between Rs. 2-8 and Rs. 3-4 a maund, including crushing by power crushers, rab boiling and sugar manufacture proper by centrifugals.

3. I am also to enclose copies of 2 schemes prepared by Khan Bahadur Sayed Muhammad Hadi which show that the costs of manufacture work out at Rs. 3-6 per maund of sugar in one case and Rs. 2-9 in the other allowing for a recovery of 7 per cent. sugar which is on the high side.

Enclosure 1.

Annual Working Cost.

The sub-joined table shows the working results of a 'Khandsal' in Bareilly for a particular season:—

Particulars.	Amount.
	Rs.
'Dere Ka Shagun'	10
Tools and Implements	296
Other accessories	62
Furniture fixture	45
Utensils	27
Salaries and Wages	1,508
Rent of the 'Khandsal'	300
Electric Consumption	600
Total working expenses for the season	2,848
Add the value of 17,000 'Kalsis' of 'rab' consumed in 60 days at Rs. 3 a maund	25,500
Total cost of production	28,348
Yield of sugar on the above rab (43 per cent. of sugar to rab) 3,642 maunds.	
Yield of molasses—17,800 'naps' (each being equal to 15 seers—6,775 maunds).	
Price obtained for the sugar at Rs. 7-8 a maund	27,315
Price obtained for the molasses (6,775 maunds) at Rs. 9 a maund	3,560
Total price of the products sold	30,875
Less total cost of production	28,348
Profit	2,527

SCHEME I.

One medium or two miniature Hadi bels with two hand-driven centrifugals of 18" diameter having 9" deep basket and seven bullock mills to be worked by hired bullocks.

EXPENDITURE.

I.—*Capital or non-recurring*—

	Rs.	Rs.
(*a*) Buildings—		
1. Thatched sheds for the juice and molasses boiling bels	75	
2. Kachcha store room with country tiled roofing	200	
3. Construction of the furnaces	50	
4. Masonry tanks for storing the final molasses	75	
5. One shed for the centrifugals	40	
6. Room for housing the staff	200	
7. Pata floor	40	
Total	680	680
(*b*) Machinery—		
1. The juice boiling plant	150	
2. One molasses boiling bel	40	
3. Two hand-driven centrifugals (18" × 19") with railway freight foundation, etc.	1,000	
4. Iron tanks or barrels for storing juice and molasses I	20	
5. Seven bullock mills* at Rs. 65 each	455	
Total	1,665	1,665
(*c*) Miscellaneous—		
1. Pata (tat carpet to spread the sugar on for crushing in the sun)	35	
2. One beam balance with weights	75	
3. Sundries including bags, tins, nands, etc.	300	
Total	410	410
Total non-recurring expenses	...	2,755

* Seven bullock mills have been provided here instead of 6 to be regularly worked in order to yield the required quantity of juice. One mill remains in reserve to take the place of any that may get out of order as generally happens in actual working.

	Rs.	Rs.
II.—*Working or recurring expenses*—		
(*a*) Staff—		
1. One manager at Rs. 30 per month for 6 months	180	
2. One supervisor and accountant at Rs. 20 per month for 6 months	120	
3. One chowkidar at Rs. 6 per month for the whole year	72	
4. One boiler for 4 months at Rs. 30 per month	120	
Total	492	492
(*b*) Labour (calculated in accordance with the village rates generally prevailing in Oudh)—		
(i) Crushing—		
Hire of 12 pairs of bullocks including driver's wages at Re. 1 each per day for 80 days	960	
(ii) Juice boiling—		
One nikhara at As. 5 per day for 80 days	25	
Seven labourers to work on the bel at As. 4 each per day for 80 days	140	
(iii) Centrifuging for 110 days to cure I and II rab—		
20 labourers at As. 4 each per day to work on the 2 centrifugals (16 to operate the machine and 4 for extra work)	550	
(iv) Molasses boiling—		
6 labourers at As. 4 each per day for 70 days	105	
(v) Drying bagasse for 100 days—		
2 labourers at As. 4 each per day to dry and collect the bagasse	50	
(vi) Pata (drying sugar in the sun)—		
3 labourers at As. 4 each per day for 100 days	75	
(vii) Miscellaneous—		
4 labourers at As. 4 each per day for 30 days	30	
Total	1,935	1,935
(*c*) Price of Cane—		
160 maunds of cane at As. 3-6 per maund to give 100 maunds of juice daily at 63 per cent. extraction for 80 days	...	2,800
(*d*) Contingencies—		
Earthen pots	30	
Fuel for 1st year	100	
Stationery	10	
Travelling Allowance and Cartage	30	
Defecants and lighting	40	
Miscellaneous	100	
Total	310	310
Total recurring expenses	...	5,537

	Rs.	Rs.
Yield and Income.		
(i) Total sugar (dry) at 7 per cent. on cane (12,800 maunds)—896 maunds. Price of the above at Rs. 7 per maund	...	6,272
(ii) Total final molasses at 4·5 per cent. on cane (12,800 maunds)—576 maunds. Price of the above at As. 8 per maund	...	288
Total .	...	6,560
Profit and Loss Account.		
Total income	...	6,560
Deduct—		
(i) Working expenses	5,537	
(ii) Interest on the working expenses for 3 months at 5 per cent.	69-4	
(iii) Depreciation on the initial outlay at 10 per cent.	275-8	
(iv) Interest on the initial outlay at 4 per cent. for 1 year	110-4	
Total .	5,992	5,992
Net profit	...	568
Cost of production of Sugar per maund.		
Total expenditure	5,992	
Deduct price of molasses	288	
Net expenditure on making 986 maunds of sugar .	5,704	
Cost per maund	6·36 or 6-5-6	
Profit on total expenses	9·5%	

SCHEME II.

EXPENDITURE.

I.—*Capital*—	Rs.	Rs.
(*a*) Buildings—		
1. Masseys 5 rollers crusher	2,400	
2. Kirloskar's 3 roller 'Vasant Crusher' . .	675	
3. 5 Centrifugals (18″ × 9″)	2,500	
4. Platform Balance	500	
5. Juice and molasses boiling bels	525	
6. One 34-B. H. P. Oil Engine	3,500	
7. Shafting belts, etc.	400	
Total .	10,500	10,500
(*b*) Buildings—		
Buildings, furnaces, thatched sheds pata-floor, juice pump, accessories and railway freights, etc.	...	3,500
Total non-recurring expenses .	...	14,000

	Rs.	Rs.
II.—*Working or recurring expenses*—		
(*a*) Staff—		
1. One manager at Rs. 40 per month for 7 months .	280	
2. One storekeeper for the whole year (who will besides being responsible for the stock supervise also the centrifuging operations during the working season) at Rs. 15 per month .	180	
3. One accountant clerk (English knowing) at Rs. 25 per month for 7 months	175	
4. Two professional boilers at Rs. 30 per month each for 4 months	240	
5. Two centrifugers at Rs. 15 each for 4 months .	120	
6. One engine driver at Rs. 30 per month for 5 months	150	
7. One assistant driver (Oil-man) who will look after the machinery in the off season at Rs. 15 per month for the whole year . . .	180	
8. One weighman at Rs. 10 per month for 4 months	40	
9. Two watchmen for the rab breaking room and the sugar drying yard at Rs. 5 per month each for 4 months	40	
10. Four watchmen for bels and rab stores at Rs. 5 per month for 4 months	80	
11. Two labourers peons at Rs. 5 each for the whole year	120	
12. Gratuities and perquisites	15	
Total .	1,620	1,620
(*b*) Labour (calculated according to the rate prevailing in Oudh, *i.e.*, at As. 4 per head)—		
(i) Crushing—		
6 labourers in the weighing shed at As. 4 each for 80 days	80	
13 labourers in the two crushers at As. 4 each for 80 days	260	
Total .	340	340
(ii) Juice boiling—		
21 labourers on the bels at As. 4 each for 80 days	...	420
(iii) Centrifuging (both I and II rab)—		
5 labourers on 5 machines at As. 4 each for 110 days	137-8	
6 labourers for other work such as digging of rab, warning water, etc., at As. 4 each for 110 days	220	
Total .	357-8	357-8

	Rs.	Rs.
(iv) Molasses boiling for 80 days—		
7 labourers at As. 4 each per day for 80 days .	...	140
(v) Drying bagasse and collecting and storing other fuel—		
4 labourers at As. 4 each per day for 100 days .	...	100
(vi) Pata (drying sugar in the sun)—		
6 labourers at As. 4 each per day for 110 days	...	165
(vii) Miscellaneous—		
6 labourers for 1 month's extra work such as sifting sugar breaking lumps, cleaning the premises, etc., at As. 4 each per day . .	...	45
		450
(*c*) Cost of Sugarcane—		
36,000 maunds of cane (450 maunds daily) for 80 days at As. 3-6 per maund	...	7,875
(*d*) Contingencies—		
(i) Travelling Allowance and Cartage, etc. . .	150	
(ii) Stationery	25	
(iii) Miscellaneous	25	
Total .	200	200
(*e*) Other expenses—		
1. Crude oil, kerosene oil, lubricants, etc., for the machinery	1,100	
2. Dhaki (butea frondosa), old bagasse and other fuel for the 1st week of boiling and for the boiling of molasses	150	
3. Defecants, chemicals, etc.	30	
4. Sajji 10 maunds	60	
5. Cloth, basket, etc.	25	
6. Bags, tins and other materials	125	
7. Earthen nands for storage or rab . . .	125	
Total .	1,615	1,615
(*f*) Unforeseen charges	...	250
(*g*) Repairs to machinery during the season . . .	...	250

Yield and Income.

1. Total sugar from 36,000 maunds of cane at 7 per cent. on cane—2,520 maunds. Price of the above at Rs. 7 per maund . . .	...	17,640
2. Total final molasses from 36,000 maunds of cane at 4·5 per cent. on cane—1,620 maunds. Price of the above at As. 8 per maund . .	...	810
Total Income .	...	18,450

	Rs.	Rs.
Profit and Loss Account.		
Total Income	...	18,450
Deduct—		
1. Working expenses	13,377-8	
2. Interest on the working expenses at 5 per cent. for four months	223	
3. Depreciation on the capital outlay . . .	1,400	
4. Interest on the capital outlay at 4 per cent. for the whole year	560	
5. Excise duty on 2,520 maunds of sugar at As. 7-4 per maund	1,115	
Total .	16,715-8	16,715-8
Net profit	...	1,734
P. C. profit on total expenditure	10·38%	
Cost of production per maund.		
Total Expenditure	16,715-8	
Deduct price of molasses	. 810	
Cost of production of sugar (2,520 maunds) . .	15,905-8	
Cost of production per maund	6-3 or 6-4-9	

(4) *Letter dated the 22nd July, 1937, from the Government of the United Provinces, Industries Department, Lucknow.*

In continuation of my letter, dated the 19th July, 1937, I am directed to enclose a statement showing the area, outturn and value of the principal crops grown in the United Provinces. It will be seen that the total value of the agricultural produce of the province may be roughly estimated at 130 crores delivered in the mandis or say 117 crores in the villages (allowing for a reduction of 10 per cent. in the price to cover cartage, etc.) out of which the value of the sugarcane crop alone amounted to 31 crores at the prices prevailing in 1935-36. In other words, sugarcane is the most important crop of the province from the point of view of its money value and accounts for one-fourth of the total agricultural income. The fall in the price of gur from Rs. 3-8 in 1935-36 to Rs. 2-8 in 1936-37 has meant a decrease of 9 crores in the income of the cultivators.

2. In actual practice sugarcane plays an even more important part in the cash economy of the province than the above figures indicate. For, many of the crops which are mentioned in the enclosed statement are primarily food crops and are rarely sold; their price does not, therefore, affect the cultivators to any appreciable extent. It is, of course, not possible to make any accurate estimate of the amount of cash which the cultivators really get. But roughly speaking it may be said that barley juar, bajra, madua, kodon, sawan, maize and fodder crops are kept almost entirely for home consumption, while half the rice, wheat, gram and pulses produced are also retained in the villages and are not sold; on the other hand potatoes, fruits and vegetables, oilseeds, hemp, tobacco and sugarcane are meant primarily for sale and are not retained in any appreciable quantities for consumption, except perhaps to some extent, say about 10 per cent., in the case of gur if it does not fetch a remunerative price.

3. Working on these assumptions, the cash income of cultivators, may be said to be as follows:—

Crops.	Amount Crores of Rupees.	Crops.	Amount Crores of Rupees.
Rice . . .	11·1	Oil seeds . . .	2·4
Wheat . . .	9·5	Sugarcane . . .	28·0
Gram	4·7	Cotton . . .	1·8
Potatoes . . .	3·1	Hemp	·8
Vegetables . . .	4·5	Tobacco . . .	·7
Pulses . . .	4·4	Total .	72·0

It will be seen from these figures what an extremely important part is played by sugarcane in the cash economy of the province. It is 2½ times as important as any other single crop and accounts for two-fifths of the cash income of the cultivators. The recent fall in the price of sugarcane and gur means, on the basis of these figures a reduction in cash income of 8 crores or 11 per cent.

4. It will thus be seen how extremely important the sugarcane crop is for the welfare of the agriculturists in the United Provinces. The provincial government wish to emphasise that no action should be taken which may result directly or indirectly in affecting adversely the interests of cultivators or which might endanger their position. In particular, there appears to be no advantage in reducing the protective duty on sugar; such a course may have unfortunate repercussions on the delicately balanced mechanism of the agricultural economy of the province, which depends to such a large extent on the sugarcane crop, and I am therefore to urge that the protective duty may be maintained at the present figure.

5. I am to add that in the opinion of the provincial government the principal requirements of the industry at present are the introduction of canes of better yield and sucrose content suitable for crushing at different times during the crushing season and the organisation of the supply of cane to factories. The latter can, it seems, best be secured by laying down that every factory should "bond" at least 75 per cent. of its cane requirements, *i.e.*, enter into contracts with growers of co-operative societies of growers for the supply to them in an organised way of 75 per cent. of their cane requirements spread over a longer period than at present. The mere improvement of cane without organised supply will not be of much assistance to cane-growers nor are they likely to take up improvements unless they can be assured that their improved cane will be taken up by factories. Better communications are also an important need and the provincial government consider that the central government should allot a larger share of the sugar excise duty to the provinces for these purposes, specially now that the rate of excise duty has been increased.

6. I am further to point out that of late there has been a big increase in the cane area. The area under cane for the next season has been reduced in the United Provinces but it seems that the area is still increasing in other provinces. This is likely to result in further internal competition in respect of the manufacture and sale of sugar, and it is for consideration whether provinces and states where sugarcane is not an established crop should be dissuaded from encouraging an increase in the area of the crop.

7. A copy each of the agenda of the recent Sugarcane Conference held at Naini Tal and of the proceedings thereof (with six spare copies) is enclosed for the information of the Tariff Board

Statement showing the area, outturn and value of the principal crops grown in the United Provinces.

—	Area in lakhs of acres.	Outturn in lakhs of maunds.	Price per maund in 1935-36.	Value of produce in crores of rupees.
			Rs. A. P.	
Early rice . .	40·12	528·50	4 3 6	22·3
Late rice . .	26·14			
Wheat . .	70·53	679·45	2 13 0	19·1
Barley . .	37·84	426·70	1 13 3	7·8
Juar . .	22·37	122·13	2 0 0	2·4
Bajra . .	22·92	124·30	2 3 0	2·7
Madua . .	·83	9·96	1 8 0	·15
Kodon . .	12·88	128·8	1 12 0	2·25
Sawan . .	6·31	37·8	1 8 0	·57
Maize . .	21·20	219·78	2 5 0	5·08
Gram . .	56·80	467·30	2 0 0	9·35
Potato . .	1·49	208·6	1 8 0	3 13
Fruits and Vegetables . .	4·51	252·00	1 13 0	4·54
Other foods (peas Ahrar, etc.) .	48·65	389·2	2 4 0	8·76
Linseed . .	1·95	9·25	4 12 7	·44
Til . .	2·58	8·16	8 0 0	·65
			(approximately)	
Rapeseed . .	2·48	12·51	4 12 1	·59
Other oilseeds .	1·27	15·24	4 8 0	·69
Sugarcane (gur)	22·12	891·57	3 8 0	31·2
Cotton (lint) .	5·88	9·52	18 2 0	1·8
Hemp . .	2·36	12·13	7 8 0	·85
			(approximately)	
Tobacco . .	·84	14·7	5 0 0	·74
			(approximately)	
Fodder Crops .	14·84	11·39	0 6 0	4·27
				129·36

(5) *Letter dated the 30th July, 1937, from the Government of the United Provinces, Industries Department, Lucknow.*

With reference to your letter No. 181, dated the 15th May, 1937, I am directed to enclose seven copies each of notes furnished by the Provincial Directors of Industries and Agriculture and the Provincial Registrar, Co-operative Societies, about the rate of interest at which cultivators can borrow in this province. Broadly speaking, it may be said that the usual rate of borrowing is from 18 to 24 per cent. although the rate at which taqavi advances can be obtained by cultivators for the purchase of seed, etc., is 5½ per cent. per annum at present.

NOTE BY THE DIRECTOR OF INDUSTRIES, UNITED PROVINCES.

Rate of interest at which cultivators can borrow.

The rate of interest on which money can be borrowed by the cultivators ordinarily varies between 15 per cent. and 27½ per cent. The most common (modal) rate prevailing at present appears to be Rs. 2 per Rs. 100 per month, *i.e.*, 24 per cent. per annum.

2. Seed is, however, often lent on the Sawai and in some cases the *deori* system. Under these systems the cultivator repays the seed at the harvest time along with 25 per cent. or 50 per cent. more of the quantity of seed borrowed. If the period between the sowing and harvesting times be taken as six months, the rate of interest works out at 50 per cent. per annum, compound interest payable half-yearly.

Generally, however, prices are appreciably lower, at the harvest time than at the sowing time, so that the actual rate of interest paid by the cultivator amounts to a correspondingly lower figure. It is not possible to calculate the average difference between the prices at the harvest and sowing times as it varies not only from year to year but also from one locality to another within the same year.

NOTE BY THE DIRECTOR OF AGRICULTURE, UNITED PROVINCES.

Rate of interest at which cultivators can borrow.

The rate of interest at which cultivators can barrow to finance their cane crop varies with the locality, the source of borrowing, and the standing of the borrower. Thus the present rate of interest on taqavi loans is 5¼ per cent. The application of these to cane crop is very limited. Some factories make advances to their cultivators against bonded cane at rates which may be assumed to be reasonable but are not available. The average grower pays from a minimum of Rs. 10-12 per cent. in the case of big farmers to as much as 40 per cent. for the smaller cultivator. The rates reported for different circles by the Deputy Directors of Agriculture are as follows:—

Sarda.—12½ to 37½ per cent.

Western.—18 to 24 per cent., generally, though many money lenders issue loans repayable in monthly instalments at Re. 1 per mensem for 12 months for each Rs. 10 advances, being 40 per cent. per annum or 3⅓ per cent. per mensem.

North Eastern.—10 to 24 per cent. according to standard of borrower.

Eastern.—12 to 25 per cent.

Cane Development Western Range.—For private loans 18 to 25 per cent., Co-operative Societies 9 per cent.

Cane Development Eastern Range.—Through Co-operative Societies 6 per cent.

NOTE BY THE REGISTRAR, CO-OPERATIVE SOCIETIES, UNITED PROVINCES.

The interest factor in the cost of cultivation of sugarcane.

Borrowing by sugarcane-growers falls into two categories, (*a*) loans entailing an obligation to sell the contracted cane to the creditor—in many places known as dadni—and (*b*) the ordinary loans which cultivators take not for a particular crop but for their miscellaneous needs including the cultivation expenses of their various crops, the payment of rent and irrigation dues, expenses of ceremonies, repair of houses, replacement of cattle, maintenance and the like. Such loans are not taken for a specific purpose and not even the borrower can tell how much of a particular loan goes towards the purchase of seed of payment for irrigation and how much is spent on maintenance. The difference between the two classes of loans is

mainly in security, and neither are crop loans. The amount of the dadni is not related to the expenses of cultivation; its sole object is to secure supplies and the size of the loan per acre is dependent more on competition, that is to say, demand and supply, than on the needs of cultivation.

2. I take first the loans given against agreements to sell the crop. There are three sources: (1) factories, (2) contractors and (3) co-operative sale societies.

I cannot quote the exact number of factories giving such loans but till the 1934-35 season, the practice was common in Gorakhpur, Sitapur, Shahjahanpur and Meerut districts. Advances were usually made about May and November when money was needed for weeding and earthing, and for such needs as rent and maintenance. It was not usual to give loans for seed or for preliminary operations. The objection of the lender was to secure supplies and no interest was charged. Against breach of contract, interest usually at 12 per cent. was stipulated, in addition to other penalties. With the increase in the production of sugarcane, advances by factories have now ceased almost everywhere and may be neglected for the purpose of calculating the cost of loans needed for the cultivation of sugarcane.

Contractors are another source of such finance. Quite often the money comes from the factory. Their rates vary from *nil* to 9 per cent., the exact rate depending on the contractor's local influence and the competition.

The third sources is co-operative supply societies. Their rates are: Meerut, Muzaffarnagar and Dehra Dun 7 per cent., Deoria 9 per cent. The newly established ten societies under the cane development scheme in Gorakhpur, Basti and Sitapur lend at 9 per cent. The Hardoi and Gola factories lend direct to the members at 5½ and 6 per cent.

3. A small amount is also advanced by Government as Takavi at 5½ per cent. in areas where Government schemes of development are operating and finance cannot be arranged from co-operative societies.

4. The total number of cultivators financed from the above sources is such a small fraction of the cane-growers in the province, that the above figures are of no importance in the calculations under reference. The bulk of the cultivators are financed by mahajans. The rates of interest in Meerut and Rohilkhand are between 12 and 37½ per cent. depending on the custom in the locality and the circumstance of the borrower. Detailed enquiries made by my staff from 500 cultivators of 25 villages in Basti and Gorakhpur districts show that the usual rates in Basti are 18 per cent. while those in Gorakhpur are 24.

5. The position of those cane-growers who make forward sales of cane juice the Khandsalis is in a class by itself. Usually no interest is payable but the price given them always include more than a fair margin for interest. There is a large element of speculation in the price at which contracts for juice are made, and the person who suffers is usually the grower. Also, it is commonly believed, there is another margin in favour of the Khandsali on account of dishonest weighment. Furthermore, accounts run from year to year and get so complicated that though no amount of research can disentangle the interest factor, it may be safely assumed that the cultivator does not get the prices he thinks he is getting. The position is worse when the Khandsali is also the Zemindar.

6. It will be apparent that in all the above transactions, crop loans, meaning thereby loans taken specifically for the cultivation of sugarcane, are obscured beyond recognition and the calculations under reference must therefore be based on assumed amounts required at different stages of cultivation. The interval between investment and the realisation of price will vary with the different items of expenditure. All cultivators will not have to borrow all these items; in actual practice some will borrow for seed and some for irrigation and some for manure, and some will not borrow at all. Also there will be variations from year to year for the same individual not merely in the total amount borrowed but also in its distribution

among the various items. The logical method appears to be to calculate interest on the amounts spent at various times for the periods intervening between the time of investment and the time of sale.

7. In view of the bulk of the borrowing being from money-lenders, the average rate of interest may be taken to be 24 per cent. The following calculation for the cost per acre on account of interest.

Some cane is disposed of in December and some in March. For the purpose of this calculation, February may be assumed to be the time when the cultivator cashes his investment.

(*a*) Seed at 40 maunds per acre at As. 5 per maund cost Rs. 12-8.

Period between expenditure and sale—1 year.

Interest at 24 per cent.—Rs. 3-2.

(*b*) Manure at 20 carts at As. 4 per cart, cost Rs. 5 (I exclude cases of use of chemical manure).

Period between expenditure and sale—9 months.

Interest at 24 per cent.—As. 15.

(*c*) Three irrigations at Rs. 2-8 each, cost Rs. 7-8. (The figure will be different in canal irrigated areas.)

Period between expenditure and sale—6 months.

Interest at 24 per cent.—As. 15.

Hoeing and rent may be disregarded.

Total cost of interest on account of lag between expenditure and return is Rs. 5 per acre.

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(6) *Letter dated the 30th July, 1937, from the Government of the United Provinces, Industries Department, Lucknow.*

Subject:—CONSUMPTION OF MOLASSES BY DISTILLERIES IN THE UNITED PROVINCES.

With reference to your letter No. 303, dated the 18th June, 1937, I am directed to forward a statement showing the quantity and price of molasses consumed during the last three years by the distilleries in the United Provinces for the manufacture of rectified or denatured spirit, and to say that there is no concern manufacturing rectified or denatured spirit in the United Provinces other than the distilleries.

Serial No.	Name of Distillery.	Total quantity of molasses.			Price paid for molasses.									Source of supply.			Remarks.
		1934-35.	1935-36.	1936-37.	1934-35.			1935-36.			1936-37.			1934-35.	1935-36.	1936-37.	
		Mds.	Mds.	Mds.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	From Bijnor.			
1	Saharanpur Distillery.	7,623½	8,327	14,515 & 35 seers.	9,880	9	4	8,729	11	2	6,477	8	0	From Bijnor and Meerut Districts.	Saharanpur and Muzaffarnagar Districts.	From Muzaffarnagar District only.	
2	Dyer's Distillery, Lucknow.	19,174	20,806	27,583	The Manager is not prepared to give this information.									Lucknow Sugar Works.			
3	Fyzabad Distillery	10,542	10,098	3,124	2,251	0	0	5,538	0	0	2,474	0	0	Nawabganj Sugar Mills and also from Local Kundus retail dealers.			
4	Indian Distillery, Cawnpore.	28,300 & 25 seers.	22,223 & 33 seers.	24,560 & 16 seers.	8,437	11	0	6,944	15	0	7,675	2	0	(*a*) Baijnath Balmakund Sugar Mills, Cawnpore, (*b*) Kamlapat Motilal Sugar Mills, Cawnpore.			
5	Rosa Distillery, Shajehanpore.	53,149	48,727	51,201	8,304	8	6	7,601	1	6	8,000	2	6	By the Sugar factory of the firm.			
6	Cawnpore Sugar Works, Limited, Cawnpore.	133,849 Gur & 21,949 cane.	95,657 Gur & 33,476 cane.	98,066 Gur & 21,949 cane.	25,491	9	0	35,871	0	0	36,774	12	0	Gur molasses from Cawnpore and cane molasses from Balrampore and Tulispur factories.			
					11,991	10	9	16,214	15	0	16,631	8	9				
	Total	158,606	129,133	120,015	37,483	3	9	52,086	5	0	47,406	4	9				
	Grand total	277,395	239,314	24,099	66,357	0	7	80,900	0	0	72,033	0	0				

(7) *Letter dated the 11th September, 1937, from the Director of Industries, United Provinces, Cawnpore.*

While giving evidence before the Tariff Board on 7th September at Cawnpore I was asked by the President to supply, if possible, a list showing the number of open pan factories during the last seven years. Here is the required information:—

Year.	Total number of Factories.	No. of factories that actually worked.
1930	6	5
1931	40	39
1932	55	55
1933	67	67
1934	69	47
1935	51	24
1936	42	34

I should add that the statement gives merely the number of registered factories and no distinction has been made between open pan factories and Khandsars.

(8) *Letter dated the 22nd September, 1937, from the Director of Agriculture, United Provinces, Lucknow.*

I have the honour to remind you that during oral examination by the Tariff Board in Lucknow, I promised to supply such further details as were available of the costs of production of sugarcane. I enclose for your information a copy of a note to Provincial Government which discusses such information as is available. I regret that this is not more definite and extensive. I consider, however, that the figures given for the basic cost of production are approximately correct under present conditions in the United Provinces.

A NOTE ON THE COST OF PRODUCTION OF SUGARCANE IN THE UNITED PROVINCES.

The estimated cost of production of cane by the average grower who keeps no cost account is difficult to arrive at with any assurance of accuracy. A number of estimates is available of which the most reliable are those obtained in the cost of production enquiry upon Sugarcane and Cotton financed jointly by the Imperial Council of Agricultural Research and the Indian Central Cotton Committee. This enquiry covered the whole of the sugarcane and cotton growing tracts of British India; data for the United Provinces being derived from three areas (1) Bulandsahar-Meerut, (2) Bareilly-Moradabad-Shahajahanpur, (3) Gorakhpur. The data, which were collected under the supervision of the Statistician Industries Department, are now under examination for publication by the Imperial Council of Agricultural Research. Summarised data, with detailed cost figures for some of the holdings concerned, are available with me and will be discussed below.

Other estimates of cultivation cost, supplied by the Circle Officers of the department, are also submitted. These are not based upon a detailed analysis of the individual items but are approximate figures derived from general experience and enquiry.

Costs of production are also available from departmental arms. These are on the basis of the standard cost accounts of the department, with the payment for wages at a markedly higher rate than is paid to similar workers in the villages.

2. *Imperial Council of Agricultural Research cost of production of crops enquiry.*—Chapter I of the report has very recently been issued, a copy of this, and of the standard form for the record of cost of production in individual holdings, will be available for inspection by members of the Conference who may not be familiar with this work. The details of the items into which costs were analysed are given in Chapter III, pages 8 to 11.

In each of the three enquiry units in the Province six typical villages were selected for enquiry. For each village a village investigator was provided who collected the primary data from 8 to 10 holdings over a period of three years. The collection of the primary data was supervised and checked by District Supervisors, and assembled by the Provincial Officer-in-charge.

The average figures thus derived for individual items are displayed villagewise, for the six villages in the Gorakhpur district for the first year of the enquiry, in Appendix I. These are not the final figures which are prepared from the average of the costs over the whole period of enquiry. Along with these for comparison, are shown similar figures for other villages in the remaining two enquiry units.

In Appendix II are tabulated the village yields, average cost of production per acre and per maund, and income per acre as supplied by the Provincial Officer-in-charge. These show the calculated average costs for plant cane and ratoon cane for the whole period.

It should be noted that in the figures as summarised in Appendix II the item "insurance" which appears in Appendix I at 15 per cent. of the actual costs has been excluded. The cost per acre and per maund thus displays the average cost including all out-goings and charging the labour of the farmer and his family at the rates current in the villages concerned for hired labour. This is the explanation of the apparent anomaly, that in many cases the total income is less than the cost of production. In effect this means that in such cases the cultivator and his family are working for less wages than they would obtain if they hired out their labour at local rates.

3. *Cost of production on cultivator's fields as reported by Departmental Officers.*—Three estimates are attached in Appendix III for the Gorakhpur Meerut and Muzaffarnagar and Rohilkhand tracts respectively. As these are not drawn up on an identical plan, they are not strictly comparable between themselves, or with the figures provided by the cost of production inquiry which include implement and other charges and interest on capital. Moreover the Gorakhpur and Meerut-Muzaffarnagar estimates are based on the local rates for labour while the Rohilkhand estimate, which appears in the Economic Botanist Sugarcane's Bulletin on Improved Methods of Cane Cultivation, provides for labour at the farm rate of As. 5 per man a day. To reduce this discrepancy, the Rohilkhand costs have been recomputed with labour charged at As. 3 and the results shown in a parallel column.

The Rohilkhand figures exclude cost of cutting, as well as implement and other charges, and interest on capital. The adjusted figures for Rohilkhand, include cost of harvesting, but with the labour rate reduced from As. 5 to As. 3 so as to bring the figures into comparison with the other two examples given.

None of these estimates includes the cost of transport to market. The figures, therefore, represent an approximate estimate of the cost of cane cut and delivered in the field. Cartage of cane delivered at gate, for an average distance of five miles, cannot be placed at less than ½ anna per maund; and according to the figures of the cost of production inquiry, and to departmental delivered at gate or purchasing centre.

The estimated cost of production of cane in these three areas is thus:—

	As.	P.
1. Gorakhpur Division	3	1
2. Meerut Division	2	9
3. Rohilkhand Division	2	5
Average .	2	9

or an average of As. 2-9 for the three areas as compared with As. 4-5 average for plant cane given by the cost of Production Inquiry, the latter figure includes cartage which at anna 1 a maund leaves As. 3-5 as the cost of producing 1 maund of cane.

4. *Cost of production of sugarcane on Government farms.*—The average cost of the sugarcane crop at the various Government farms is summarised below:—

Actual average cost of sugarcane crop at the various Government farms works out as below:—

	Produce in maunds.	Cost* Rs.	Cost per maund in annas.
Nawabganj (Bareilly) . .	760	97	2·0
Gorakhpur	752	159	3·4
Bahraich	874	155	2·8
Kalyanpur	767	201	4·2
Hardoi	878	152	2·77
Benares	652	234	5·75
Fyzabad	764	173	3·63
Muzaffarnagar . . .	774	181	3·74
Meerut	637	165	4·4
Atarra	963	124	2·0
Bichpuri (Agra) . . .	736	117	2·5
Etawah	771	154	3·2
Kalai	951	169	2·8
Average .	769	160	3·25
Add rent	...	15	...
	...	175	3·55

* Includes cutting but not carting.

These costs represent the "real cost on field" except that land rent which is not paid by Government is not included. The inclusion of this at Rs. 15 per acre would bring the all in cost up to about Rs. 175 per acre and spread over the whole crop increases the cost per maund by 0·3 anna, thus bringing the average cost to 3·55 annas per maund.

The costs are based on the hour unit system which is adopted on Government farms. It includes all expenditure incurred on labour, seed, manure, bullocks or machinery power for water lift and all operations from the preparation of the land to the harvesting of the crop. It excludes cartage and handling expenditure for marketing or disposal; as well as overhead charges for superior supervision, interest and depreciation on capital assets.

The average cost of production at the Shahjahanpur Sugarcane Farm is given in the Bulletin on improved methods of cane cultivation referred to above, but slightly rearranged to permit of ready comparison, is shown in Appendix IV for cane planted in trenches and sown on flat respectively.

On an anticipated yield of 950 maunds of cane, the cost of production per maund is thus 2·5 annas on the field or 2·95 annas if depreciation and supervision charges are included.

For comparison with private farm production, and assuming that the private farms attain the same degree of efficiency and soil fertility as the Shahjahanpur at As. 3 instead of As. 5 daily. This provides a minimum figure of As. 2/08 per maund, which would appear to be the lowest cost at which cane can be expected to be produced in the United Provinces under the most efficient conditions and with the present available types.

It should be borne in mind that much of the cane produced on the Shahjahanpur farm is under high nitrogen manuring which has a tendency to reduce the sucrose percentage in juice. A standard outturn of 600 maunds, with the application of 80 to 100 lbs. of nitrogen, appears likely to be the most satisfactory to the growers and the factory. It will be a long time before the average standard of cane production for factory consumption can be raised even to this assumed optimism.

By using 100 to 150 maunds of farmyard manure, giving 40 to 60 lbs. nitrogen, and augmenting this by green manuring or concentrated fertiliser 40 to 60 lbs. which will cost Rs. 12 to Rs. 18 per acre, a good crop of 600 maunds may reasonably be expected at a cost per acre of about Rs. 120 under good cultivation on good soil. This cost would be 3·2 annas on the field; or 4·2 annas at factory gate exclusive of any profit to the grower.

5. *Summary and discussion.*—The cost of production of sugarcane in the United Provinces as reported by the enquiry staff is seen to vary between As. 1-10 and As. 7-1 per maund for plant cane, and As. 1-2 and As. 5-5 for ratoon with averages of As. 4-5 and As. 3 respectively for gate cane.

As estimated by experienced officers of the Agricultural Department, the cost on the field in the Meerut, Rohilkhand and Gorakhpur divisions for plant cane is As. 2-9, total visible cost. To this must be added charges approximately Rs. 12 per acre for implement, general, and interest charges to give the real cost in the field; about 5 pies per maund on an yield of 400 maunds.

The actual production cost on departmental farms (total visible cost) range between As. 5-9 and As. 2; with an average real cost for seed and demonstration farms of As. 3-7. Details are given for Shahjahanpur sugarcane farm, showing that with a high average yield of 950 maunds per acre, the cost is As. 2-11 per maund (real cost on field).

A hypothetical illustration, providing for high farming on good soil with low paid labour indicates that the lowest real cost at which a good crop of good cane could be raised under present conditions is As. 2-2 per maund. This, however, allows for a rate of payment of labour which is iniquitously low; and for a standard of yield which is generally unattainable, and probably highly undesirable to the sugar factories. It can therefore not be held up an ideal to aim at, *agriculturally, economically* or morally.

There is a fair measure of agreement between the various actual and estimated costs, which put the average real cost of a production per maund at about As. 3-3. This may be taken to be the approximate average production cost. It must be remembered that there will be approximately as many who cannot produce at the average figure as those at or below the average. At this figure half the crop would be grown at a loss. To arrive at a basic figure for cost of production, which would ensure that a great majority—say 80 per cent. of the growers would not be producing at a loss

would necessitate statistical examination of crop costing data which is not at present available. The cost of Crop Production enquiry figures, when published, may give an indication of this. I assume that the figures would be at least six pies above the average cost of production. If so, the basic price would be not less than As. 3-9 per maund cut, on the field.

Such a figure cannot be accepted as the direct basis of a minimum price; for to it must be added a reasonable sum for reward to the grower, as this price only recompenses him for his outgoings, and his labour at sweeted rates. A profit of Rs. 12-8 per acre cannot be regarded as excessive, considering that the crop occupies the land, in preparation and growing, for two rabi and one kharif seasons. Even this small reward adds six pies per maund on an average outturn of 400 maunds, which is probably above the present average of the province. This, then, brings the minimum price on the field to As. 4-3 which should be the net return to the grower. Add to this transport to the factory at a cost of half an anna per maund average on a haulage up to ten miles, and one arrives at a bed-rock minimum price for cane of As. 4-9 per maund at gate.

APPENDIX I.

Estimated cost of cultivation of sugarcane per acre.

—	Gorakhpur District.						Wair Buland Shahr.	Sarai Sunderpur Pilibhit.	Jaetpur-Gurar Moradabad District.	
	Shyamderwa.	Dhara.	Lola-chapra.	Deokaun.	Khadda.	Baluchaha.				
	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.
1. Preparatory Tillage .	12 0 0	13 7 0	11 10 0	15 10 0	16 3 0	10 10 0	5 1 8	28 0 0	6 0 0	16 0 0
2. Sowing . . .	3 7 0	3 7 0	3 6 0	3 7 0	3 6 0	3 6 0	1 14 0	2 8 6	2 7 6	2 6 0
3. Interculture . .	6 12 0	6 12 0	3 6 0	12 3 0	5 10 0	4 8 0	5 4 0	11 8 8	10 14 0	17 12 0
4. Harvesting . .	0 10 0	0 15 0	0 13 0	0 15 0	0 15 0	0 13 0	1 9 9	..	..	..
5. Cost of seed . .	12 8 0	12 8 0	12 8 0	12 8 0	12 8 0	12 8 0	5 10 9	11 5 1	7 0 0	6 4 0
6. Cost of fertilizers .	9 0 0	8 4 0	7 8 0	7 8 0	10 0 0	5 0 0	6 3 3	12 12 5	9 8 0	12 0 0
7. Irrigation . . .	8 7 0	6 5 0	..	11 4 0	..	..	0 8 11	2 14 8	7 13 9	16 12 0
8. Irrigation rates . .	..	..	..	..	..	..	0 10 7	10 0 0	..	..
9. Land revenue or rent .	3 6 0	5 1 0	3 2 0	4 8 0	3 12 0	3 12 0	13 7 7	5 1 1	5 4 0	7 8 0
10. Other cesses if any .	2 12 0	3 0 0	2 4 0	3 8 0	3 0 0	2 8 0	..	..	..	..
Total visible cost .	58 14 0	59 11 0	44 9 0	71 7 0	55 6 0	43 1 0	49 3 9	84 12 5	48 15 3	78 12 0

11. Implement charges .	0 12 0	0 12 0	0 12 0	0 12 0	0 12 0	0 12 0	1 3 3	2 12 5	1 0 0	1 0 0
12. General charges .	4 2 0	4 8 0	4 2 0	3 1 0	4 2 0	4 0 0	1 8 0	3 0 0	4 0 0	4 4 0
13. Interest on capital .	6 0 0	7 8 0	6 0 0	5 0 0	7 8 0	6 0 0	6 3 8	9 0 0	6 0 0	10 0 0
Real cost on field .	69 12 0	72 7 0	55 7 0	80 4 0	67 12 0	53 13 0	58 2 3	99 8 10	59 15 3	94 0 0
14. *Add* cost of transportations for marketing.	25 12 6	28 2 0	14 1 0	21 14 0	18 12 0	15 10 0	12 14 0	28 2 0	13 2 0	25 0 0
5. *Add* insurance against Crop failure (15%).	10 7 2	10 13 10	8 5 0	12 0 7	10 2 7	7 15 2	8 11 6	14 7 8	8 15 10	14 1 7
Grand Total .	105 15 8	111 6 10	77 13 0	114 2 7	96 10 7	77 6 2	79 11 9	142 2 6	82 1 1	133 1 7
Yield per acre (Maunds)	275 0 0	300 0 0	225 0 0	350 0 0	300 0 0	250 0 0	206 0 0	405 0 2	210 0 0	400 0 0
Cost per 100 maunds .	38 8 9	37 2 3	34 9 4	32 9 0	32 3 6	30 15 3	38 11 3	39 9 5	39 1 3	34 4 0
Cost per maund .	0 6 2	0 5 11	0 5 6	0 5 2½	0 5 1	0 4 11	0 6 4	0 5 0	0 6 3	0 5 4
Cost per maund excluding 14 and 15.	0 4 0	0 3 10	0 3 11	0 3 8	0 3 7	0 3 5	0 4 6	0 3 11	0 4 6	0 3 9
Total visible cost per maund.	0 3 5	0 3 2	0 3 2	0 3 3	0 2 11	0 2 9	0 3 9	0 3 4	0 3 9	0 3 2

APPENDIX II.

Cost of Cultivation Enquiry, United Provinces.

(SUGARCANE NOW.)

Name of Circle and Village.	Average yield per acre.	Average cost of production. Per acre.	Per maund.	Average income per acre.
	Mds. Srs.	Rs. A.	As. P.	Rs. A.
Meerut Circle—				
Bhaunra (Buland-Shahr) .	254 0	112 15	7 1	84 13
Bilaspur (Buland-Shahr) .	298 11	86 14	4 3	99 2
Parsaul (Buland-Shahr) .	205 39	74 7	5 9	65 15
Wair (Buland-Shahr) . .	277 11	120 12	6 11	86 9
Jalalabad (Meerut) . .	504 38	104 2	3 4	183 10
Baksar (Meerut) . .	247 30	91 6	5 11	87 1
Average .	298 1	98 7	5 7	101 3
Bareilly Circle—				
Abheyrajpur (Bareilly) .	338 7	83 0	3 11	129 4
Gopalpur (Bareilly) . .	327 6	75 13	3 8	125 2
Sarai Sunderpur (Pilibhit) .	285 20	92 13	5 2	57 1
Gurair (Moradabad) . .	360 25	82 5	3 8	109 3
Jaitpur Patti (Moradabad) .	467 28	93 15	3 2	160 13
Gadapur (Shahjahanpur) .	392 30	44 0	1 10	134 0
Average .	361 39	78 10	3 7	125 15
Gorakhpur Circle—				
Dharabuzurg . . .	349 37	112 11	5 2	142 4
Deokuan	299 5	90 7	4 10	115 8
Balucchaha . . .	316 36	55 2	2 9	109 7
Khada Kalan . . .	309 16	66 15	3 5	108 8
Lalachhapra . .	238 21	60 4	4 0	87 11
Shyamdurwa . . .	349 8	96 7	4 5	121 13
Average .	310 20	80 5	4 1	114 3
Average of All Circles .	323 20	85 13	4 5	113 12

(SUGARCANE RATOON.)

Meerut Circle—				
Baksar (Meerut) . .	163 14	44 12	4 8	55 8
Jalalabad (Meerut) . .	326 18	52 11	2 7	85 3
Bhaunra (Buland-Shahr) .	141 8	39 11	4 6	43 10
Parsaul (Buland-Shahr) .	274 0	61 7	3 7	85 11
Bilaspur (Buland-Shahr) .	177 30	40 1	3 7	65 8
Wair (Buland-Shahr) . .	166 35	36 5	5 6	34 4
Average .	196 24	45 13	4 1	61 10

APPENDIX II—*contd.*

(SUGARCANE RATOON)—*contd.*

Name of Circle and Village.	Average yield per acre.	Average cost of production. Per acre.	Per maund.	Average income per acre.
	Mds. Srs.	Rs. A.	As. P.	Rs. A.
Bareilly Circle . . .	...	...	...	...
Gorakhpur Circle—				
Baluchaha	243 20	18 4	1 2	82 14
Deokuan	469 25	50 10	1 9	192 15
Dharabusurg	145 0	28 4	3 1	57 5
Khada Kalan . . .	164 5	18 12	1 10	58 8
Lalachhapra	223 26	25 1	1 9	78 7
Shyamdurwa	443 18	60 5	2 2	155 10
Average .	281 22	33 9	2 0	102 9
Average of All Circles .	239 3	29 11	3 0	82 2

APPENDIX III.

Cost of growing an acre of sugarcane under cultivators conditions in irrigated areas of Gorakhpur and Meerut-Muzaffarnagar.

	Gorakhpur.	Meerut-Muzaffarnagar.
	Rs. A.	Rs. A.
1. Rent of one acre land . . .	10 0	25 0
2. Preparation of land . . .	5 0	8 0
3. Cost of manure and manuring at 10 to 15 carts	10 0	15 0
4. Artificial manure (one maund) .	4 10	...
5. Cost of seed	15 0	12 8
6. Labour for sowing . . .	...	1 8
7. Irrigation dues	11 4	10 0
8. Hoeing	3 0	6 0
9. Hainga	1 0	...
10. Trying of cane, etc. . . .	2 0	2 0
11. Harvesting	1 4	2 8
12. Miscellaneous including gratification	...	4 0
Total cost .	63 2	86 8
Yield per acre (maunds) . . .	325	500
Cost per maund (total visible cost) .	As. 3-1	As. 2-9

APPENDIX III—*contd.*

Average cost of cultivation of sugarcane per acre on cultivator's field in Rohilkhand tract.

	Labour. At 5 As. per day.	Labour. At 3 As. per day.
	Rs. A.	Rs. A.
Ploughing and preparation—		
1. 15 ploughings by desi plough at Re. 1 per ploughing . .	15 0	15 0
Manuring—		
2. 5 carts loads of cattle dung at Rs. 1-4 per cart . . .	6 4	6 4
3. 4 labourers for application of manure	1 4	0 12
Planting of cane—		
4. 50 maunds of seed at 5 annas per maund	15 10	15 10
5. 6 labourers for planting . .	1 14	1 2
Irrigation—		
6. Canal dues (two or three irrigations are generally given) .	10 0	10 0
7. 4 men for irrigating the field for 1 day	1 4	0 12
Hoeings—		
8. 5 hoeings (6 men for each hoeing—total number of men required 30)	9 6	5 10
9. Land rent for one acre . . .	10 0	10 0
	70 10	65 2
10. Tying of cane	3 4	2 0
11. Harvesting	3 2	1 14
Total visible cost .	77 0	69 0
Yield per acre 450 maunds.		
Cost per maund (total visible cost) .	As. 2-9	As. 2-5

APPENDIX IV.

Average cost of cultivation of cane per acre when planted in trenches at Government Farm, Shahjahanpur.

	Labour. At 5 As. per day.	Labour. At 3 As. per day.
	Rs. A. P.	Rs. A. P.
Ploughing and preparation—		
1. 2 ploughings by desi plough for sowing sanai (2 men and 2 pairs of bullocks for 1 day)	4 2 0	3 14 0
2. Ploughing in of sanai by soil turning Punjab or Victory plough (6 men and 1 pair of bullocks) . . .	3 10 0	2 14 0
3. 10 ploughings by desi plough (10 men and 10 pairs of bullocks for 1 day) . .	20 10 0	19 6 0

APPENDIX IV—*contd.*

Average cost of cultivation of cane per acre when planted in trenches at Government Farm, Shahjahanpur—contd.

	Labour. At 5 As. per day. Rs. A. P.	At 3 As. per day. Rs. A. P.
Ploughing and preparation—contd.		
4. 8 plankings by 2 men and 2 pairs of bullocks . .	4 2 0	3 2 0
5. Trench making 20 men for 1 day	6 4 0	3 12 0
6. Sub-soiling 12 men for 1 day .	3 12 0	2 4 0
7. Two subsequent hoeing 5 before planting (14 men at 5 annas)	4 6 0	2 10 0
Manuring—		
8. 1 maund of sanai seed at Rs. 3 per maund . . .	3 0 0	3 0 0
9. 15 maunds of castor cake at Rs. 1-4 per maund . .	18 12 0	18 12 0
10. 3 men for spreading manure .	0 15 0	0 9 0
Planting cane—		
11. 40 maunds of cane seed at 5 annas per maund . .	12 8 0	12 8 0
12. Planting cane 6 men per acre .	1 14 0	1 2 0
Irrigation—		
13. Canal dues	4 0 0	4 0 0
14. Five irrigations	7 10 6	7 10 6
15. 10 labourers for conducting irrigation	3 2 0	2 13 0
16 One skilled man for two days at Re. 1 per day . .	2 0 0	0 6 0
Hoeing and interculture—		
17. 5 hoeings after irrigation (7 men at each hoeing, *i.e.*, total 35 men) . .	10 15 0	6 9 0
18. 5 subsequent hoeing (each irrigation is followed by two hoeings) 5 men at each hoeing—25 men . .	7 13 0	4 11 0
19. Earthing at 12 men per acre .	3 12 0	2 4 0
20. Rent	10 0 0	10 0 0
21. Miscellaneous charges—watching, etc.	14 0 0	10 0 0
	147 3 6	122 2 6
22. Cutting, etc.	1 14 0	1 2 0
A	149 1 6	123 4 6
23. Depreciation and interest .	10 0 0	8 0 0
24. Supervision	15 14 6	...
B	175 0 0	131 4 6
Yield 950 maunds.		
Cost per maund (total visible cost) .	A 2·5 annas.	2·08 annas.
Real cost on field	B 2·95 ,,	2·21 ,,

APPENDIX IV—*contd.*

Cost of cultivation of cane per acre when sown on flat followed by Earthing at the Government Farm, Shahjahanpur.

	Lobour.	
	At 5 As. per day.	At 3 As. per day.
	Rs. A. P.	Rs. A. P.
Ploughing and preparation—		
1. Two ploughings by desi plough for sowing senai (2 men and 2 pairs of bullocks for 1 day)	4 2 0	3 14 0
2. Ploughing in sanai by a soil turning Punjab or Victory plough (6 men and 1 pair of bullock) . . .	3 10 0	2 14 0
3. 15 ploughings by desi plough trenches) 15 men and 15 (5 extra ploughings than in pairs of bullocks . .	30 15 0	29 1 0
4. Plantings (12) 3 men and 3 pairs of bullocks . .	6 3 0	5 11 6
Manuring—		
5. 15 maunds of castor cake at Rs. 1-4 per maund . .	18 12 0	18 12 0
6. 4 men for spreading manure .	1 4 0	0 12 0
7. 1 maund sanai at Rs. 3 per maund	3 0 0	3 0 0
Planting cane—		
8. Seed cane 45 maunds at 5 annas per maund (generally sown at 3½ feet apart and hence more seed) . .	14 1 0	14 1 0
9. Planting cane by 6 men per acre	1 14 0	1 2 0
10. Canal dues	4 0 0	4 0 0
11. 5 irrigations including Palewa irrigation . . .	7 10 0	7 10 0
12. Labour required for irrigation (ten)	3 2 0	1 9 0
13. One skilled man for 2 days .	2 0 0	0 6 0
Hoeings and interculture—		
14. 4 hoeings one after each irrigation—7 men at each hoeing—total 28 men . .	8 12 0	5 4 0
15. 6 hoeings subsequently—5 men at each hoeing—total 30 men	9 6 0	5 10 0
16. Earthing by 14 men . .	4 6 0	2 10 0

APPENDIX IV—*concld.*

Cost of cultivation of cane per acre when sown on flat followed by Earthing at the Government Farm, Shahjahanpur—contd.

		Labour.	
	At 5 As. per day.	As 3 As. per day.
	Rs. A. P.	Rs. A. P.
17. Rent	10 0 0	10 0 0
18. Miscellaneous charges, watching, etc.	14 0 0	10 0 0
	147 1 0	126 1 6
19. Cutting, etc.	1 14 0	1 2 0
A	148 15 0	127 3 6
20. Depreciation and interest .	10 0 0	8 0 0
21. Supervision	15 11 0	...
B	175 0 0	135 3 6
Yield 930 maunds.		
Cost per maund (total visible cost) .	A 2·5 annas.	2·1 annas.
Real cost on field	B 2·95 ,,	2·2 ,,

(9) *A brief account of the Research Work pertaining to Sugarcane in the United Provinces forwarded by the Economic Botanist (sugarcane and paddy) to Government United Provinces.*

Research work on Sugarcane in the United Provinces is mainly in progress at Shahjahanpur and at two Sub-stations, namely, Muzaffarnagar and Gorakhpur. The three Stations are typical representatives of the chief cane growing tracts in the United Provinces, namely, the Central, Western and the Eastern tract. Besides these, most of the Government Experimental Farms in the Provinces, conduct yield tests of the varieties recommended for propagation in respective localities, by the Central Research Station at Shahjahanpur.

From the outset it has been the policy of the Station to concentrate all its researches on one main object, *i.e.*, the improvement of sugarcane crop. All the researches, therefore, are dedicated to a very definite problem and converge towards the solution of this crucial matter of how to improve the general condition of the sugarcane crop.

The work embraces all aspects of economic and scientific investigations comprising:—

(1) Selection of new varieties and their relative performance.

(2) Agronomic trials in connection with practices of cultivation and irrigation as well as manurial and cultural requirements with a view to explore their economic possibilities.

(3) Chemical work for ascertaining the time of maturity and the analysis of juice and soil content under different conditions.

(4) Physiological work on sugarcane.

(5) Entomological investigations on sugarcane crop.

(6) Seed distribution of the improved varieties.

The above items now need a brief description in turn.

(1) SELECTION OF NEW VARIETIES AND THEIR RELATIVE PERFORMANCE.

The selection of new varieties is made from the plants raised at Government Sugarcane Research Station, Shahjahanpur, from the setts imported from Coimbatore as well as from the imported Coimbatore seedlings.

Coimbatore Sett Canes.—After a preliminary selection at Coimbatore, promising varieties are given the Station numbers and despatched in the form of setts for further trials at Shahjahanpur. At Shahjahanpur these varieties are grown on a larger scale and undergo rigid tests of performance in the first two years. Only the more promising varieties are selected for the final yield tests to be conducted in the third year on proper randomised system of replicated lay-out.

In 1935-36 only seven different varieties were received from Coimbatore as compared to 36 in 1934-35. From the 36 varieties two early (Co. 428 and Co. 508) and four medium and late varieties (Co. 421, Co. K. 10, Co. 431 and Co. 514), were selected in 1935-36 for final yield tests to be carried out in 1936-37.

Coimbatore Seedlings.—The Central Institute at Shahjahanpur communicates its requirements to the Sugarcane Expert at Coimbatore who very kindly effects crosses between different varieties of cane for raising a progeny suiting our demand; the crossing of sugarcane varieties being not possible in Northern India on account of adverse climatic conditions.

The importing of seedlings from Coimbatore and their study at Shahjahanpur has only been possible with the financial aid of the Imperial Council of Agricultural Research. The old practice of importing new varieties from Coimbatore in the form of setts has the disadvantage of getting varieties whose performance is tested under varied meteorological conditions. There is, therefore, every possibility of a variety being discarded on account of its poor performance at Coimbatore which might have flourised under conditions prevailing in Northern India. For selecting all the desirable plants for Northern India conditions from the progeny of the crosses it was decided to import 3—4 months old F seedlings and conduct all subsequent studies at Shahjahanpur. This line of action has been quite successful ever since its inception about five years ago. Transportation of the seedlings, however, is cumbersome and only a limited amount of material can be brought. In order to overcome this difficulty actual seed of desired crosses is now being requisitioned for the last two years. The seeds is then germinated under controlled conditions at Shahjahanpur and seedlings are subjected to necessary tests for making a final selection of new varieties.

In 1935-36 three lots of material were under study. The 1933 lot was secured from a general collection comprising that of Co. 285, Co. 290 and Co. 312. There were 49 types available in all out of which four earlies (Co. S. 48, Co. S. 50, Co. S. 53 and Co. S. 73) were selected for final trials. From the 1934 lot consisting of 161 plants raised from the cross Co. 290 × Co. 281, 48 plants were selected for further studies. The third lot was 5,000 seedlings, raised from two crosses (Co. 349 × Co. 312 and Co. 349 × Co. 313) which were imported from Coimbatore in 1935. 3,000 of these survived. Besides these there were 800 seedlings raised at Shahjahanpur by germinating the seed of the above crosses. A total of 180 seedlings from the entire stock deserved further propagation.

From the final trial of 13 varieties in 1935-36, Co. 378 (early) Co. 393 and Co. 411 (medium) warranted distribution to the Government Experimental Farms in the Provinces.

In the improvement of agriculture, varieties play an important part. Consequently, varieties are being produced to suit different conditions, *e.g.*, drought, water-logging, frost, poor and intensive cultivation conditions, varieties resistant to the attacks of various pests and diseases.

In order to extend the crushing period of Sugar factories, it has been the policy of the Station to produce and bring into extensive cultivation some very early maturing varieties, varieties medium in maturity and some very late ripeners.

(2) *Agronomic trials.*

Besides the work on varieties, other problems concerning improvements in crop are under investigation and efforts are being made for devising manurial and cultural methods to suit every purse.

Manurial trials.

Some urgent problems of economic importance needing imminent solution were tackled. All experiments were conducted on proper randomised block system of replicated lay-out and the results were analysed by Fisher's method of Analysis of Variance. The experiments conducted at Shahjahanpur together with the results achieved are enumerated below:—

(*a*) *Complete Nutrient Experiment.*—Three doses of N. (0 lb., 100 lbs. and 200 lbs. per acre) three of P_2O_5 (0, 75, and 150 lbs. per acre) and three of K. (0, 75 and 150 lbs. per acre) were given in all combinations. After analysis the results indicate:—

(i) The profitable limit of N. application is reached at 100 lbs.

(ii) There is no effect of P_2O_5 or K. on yield.

(iii) The quality of juice deteriorates with the increase of N.

(iv) There is no effect of either P_2O_5 or K. on the quality where N. remains at 100 lbs. or below. P_2O_5 and K. improve the quality of juice at 200 lbs. of N. which clearly shows the effectiveness of P_2O_5 and K. only at higher doses of N.

(*b*) *Effect of green manure in combination with other manures.*—Efficiency of green manure alone and in combination with castor cake, Ammonium Sulphate and Cow-dung was tested. The combined effect proved to be superior to green manure alone, but significance between various combinations was negligible.

(*c*) *Molasses as manure.*—Three quanties of molasses namely 90, 180 and 270 maunds to an acre were applied alone and in combination with Castor cake or Ammonium Sulphate each at 60 lbs. N. basis per acre. 270 maunds of molasses gave the best yield, the two combinations with Ammonium Sulphate and Castor cake were equal in themselves but superior to Molasses alone.

(*d*) *Water requirement and its relation to N.*—Four different numbers of irrigations (3, 4, 5 and 6 irrigations) were combined with three doses of N. (60, 100 and 200 lbs.). The two factors produced an independent effect with no interaction. Progressive increase in yield was noticed with increased number of irrigations upto 6 irrigations and profitable limit of N. was reached at 100 lbs. The quality of juice deteriorates with increase in N. but the number of irrigations has no effect on juice quality.

(*e*) *Spacing and fertility of soil.*—Three spacings (1½′, 2½′ and 3½′) were given between rows and four grades of N. fertility (0, 50, 100, 200 lbs. per acre) were secured. The limit of profitable application of manure is reached at 100 lbs. of N. and there seems no effect of spacing on yield. There is an interaction between spacing and fertility; the richer the soil, the broader should be the spacing and *vice versâ*. The quality of juice deteriorates with increase in fertility but there is no effect of spacing on quality of juice.

(*f*) *Methods of planting.*—Planting in trenches was compared with that on flat followed by earthing up of the cane and no earthing, with different distances (3′, 3½′ and 4′). Neither the method of planting nor earthing had any effect on yield while with the increase in distance there was an increase in yield. The quality of juice slightly deteriorates both in trenches and with earthing while distance does not effect the juice.

(*g*) *Interculture of Sugarcane.*—Different depths (surface about 1″, shallow 2½″ and deep 4″) of hoeing were combined with different number of hoeings

(1, 2 and 3) after each irrigation. Hoeing was found to be very necessary for obtaining good yield, depth of hoeing being more important than the number of hoeings. Two deep hoeings after each irrigation gave the best results. Quality of juice is not affected either by the depth or number of hoeings.

(*h*) *Time of planting and portion of cane used as seed.*—Four dates of planting (in January, February, March and April) were combined with three types of seed (from top portion of cane only, whole cane used as seed and the lower portions only). Yield decreased with later planting; the best time of planting being from end January to end February. Uptil March, it did not matter what portion of cane was planted but in the April planting, top portion gave the best yield. The general trend is one of lower sucrose with late planting but the results are not significant. There is, however, no effect of seed on quality of juice. In the Western districts, however, best results are obtained when the crop is shown from 15th February to 15th of March. The effect of late planting is more marked on the early varieties than on the lates. Selection of varieties capable of giving satisfactory yield even when sown late is in progress.

(*i*) *Time of application of manure.*—For this purpose manures will have to be divided in two categories:—

(1) *Organic manures.*—These require proper fermentation in the soil before their manurial constitutents are available to the plant. Therefore these should be applied well in advance of planting season.

(2) *Inorganic manures.*—These may be applied any time from planting to end of May, which will depend on manurial scheme. If inorganic manures have to be applied alone, then they should preferably be applied in two doses, *viz.*, one at planting time or at germination (2) by the end of May. If it is a combination of an organic manure and an inorganic manure then the best policy is to apply organic manure well in advance of the planting season and the inorganic manure by the end of May.

(*j*) *Ratooning.*—Ratooning finds an important place in the economics of Sugarcane production. The problem has been taken up by the Station and it is hoped that important results will follow.

The Sub-station at Muzaffarnagar is being run with the financial grants made by the Imperial Council of Agricultural Research. The main object of the Station is to investigate the suitability of Cane varieties received from Coimbatore and those considered promising at Shahjahanpur, when grown under conditions prevalent in the Western part of the United Provinces with due regard to disease, insect pests and drought resistance; also to investigate the manurial, water and cultural requirements of the varieties as well as their best relations. The experiments are as under:—

(*a*) *Different combination of manures.*—Farm yard manure, Neem cake and Ammonium Sulphate were applied singly and in various combinations at a total N. basis of 120 lbs. per acre. The results indicate that the inorganic manures can be best utilized in combinations with the organic manures. Well balanced manures give a better purity of juice.

(*b*) *Relative efficiency of Molasses, F. Y. M. and Neem cake as manures.*—The three manures were applied at uniform N. basis, *i.e.*, 47 lbs. N. per acre. Neem cake and molasses proved superior to F. Y. M. and the Control. It seems, however, doubtful if the use of molasses as manure will be economical in localities, far away from the sugar factories on account of heavy expenditure on cartage. Under favourable conditions molasses can be profitably used as manure.

(*c*) *Manure and varieties.*—Differential response of varieties (Co. 244, Co. 300 and Co. 312) to varying quantities of N. (0, 60, 120 and 180 lbs. per acre) was tested. Co. 312 shows the highest response and 244 is least effected by heavy doses of N. Definite interaction exists between the varieties and N. quantities. Response to N. beyond 60 lbs. per acre is not

appreciable in the case of Co. 244. Purity of juice differs in different varieties. Co. 300 having the highest purity. Juice purity is also effected though not quite as appreciably as with the varieties, by increasing N. quantity; no manure being better than the plots supplied with N.

(*d*) *Yield tests of different varieties.*—EARLIES.—Seven new varieties were compared with the standard on a well designed layout of field plots. In yield Co. 312 proved best of all. Co. 385 though inferior to Co. 312 in yield, is the earliest of the group and is fit for crushing in the middle of October. Co. 370 is slightly better yielder but not quite so early. Co. 313 has good yield but is more susceptible to mosaic. Co. 350 equals Co. 385 in yield but is not quite so early and drought resistant as Co. 385.

MEDIUM AND LATES.—Eight varieties were put under trial. Co. 312 again showed its superiority over others—Co. 331 was significantly superior to all except Co. 312. Under normal conditions of fertility Co. 331 does not seem to be superior to Co. 312 but it is expected that Co. 331 might prove its worth better under high fertility and water-logged conditions.

(*e*) *Spacing and Seed rate.*—The experiment indicated that closer spacing 2½′ to 3′ with more seed rate (10,000 to 12,000 setts per acre) will give better yield than 3½′ spacing with 8,000 setts. It appears that spacing will depend upon manuring and perhaps on the variety as well.

(*f*) *Irrigation experiment.*—At Muzaffarnagar no significant interaction was found due to high fertility of soil and water—5 irrigations gave better results than 4 irrigations and 180 lbs. N. was better than 60 lbs. N.

A detailed report on the work of the Sugarcane Research Station at Muzaffarnagar has been submitted separately.

Experiments at the Government Agricultural Farm, Gorakhpur.

For testing the performance of different varieties and manures under varying meteorological conditions some varietal and manurial experiments are being carried at Gorakhpur.

(*a*) *Relative efficiency of different manures and their economics.*—Castor, Mahua and Neem cakes were applied both at uniform N. basis and at uniform price basis. When each was used supplying 74 lbs. N. per acre, Castor cake gave the best results. Whereas when the three were applied at uniform price basis (Rs. 20 worth of each manure per acre) Mahua cake proved most profitable, followed by castor cake and Neem cake in order of merit.

(*b*) *Effect of Molasses and Castor cake on ratoon Sugarcane.*—The two manures were applied singly. Castor cake proved superior to Molasses and Molasses gave a significantly higher yield over the control.

(*c*) *Yield tests of varieties.*—The experiment was conducted on ten varieties under different conditions of fertility—medium and rich.

Under medium fertility, Co. 393 gave the highest yield. Co. 331 and Co. 395 followed in the order of merit. Co. 312 proved a failure, with lowest yield.

On rich soil, however, Co. 395 was heaviest in yield, the sequence of merit of the other varieties was in the order of Co. S. 5, Co. 356, Co. 331. Co. 312 was again a failure; thus the cane does not seem to be suitable at least for Gorakhpur conditions.

Chemical Studies.

Besides the routine work of juice analysis of different varieties and testing the effect of various factors involved in the agronomical trials, on juice quality, investigations on a few other problems of economic importance are in progress, which are:—

(*a*) The different stages of fermentation and production of N. by the application of molasses.

(*b*) Eestimation of suitable age for burying *Sanai* for green manuring purposes in the locality. *Sanai* was buried after 30, 40, 50

and 60 days of growth and production of N. in the soil in all the cases was studied. The sequence of merit, as far as N. conservation is concerned, is in the order of 50, 60, 40 and 30 days' growth.

(c) Different portions of *Sanai* crop for green manuring:—

Different portions, *viz.*, whole plant, above ground portions only and roots only were used for green manuring. The production of N. at different periods and the total N. content of the different treatments were estimated. Whole plant results were significantly superior to other treatments but there was no significant difference between the above ground portion and the roots.

Broadly speaking an average crop of sun hemp (1) yields about 200-250 maunds of green matter (2) supplies about 60 lbs. of N. (3) increases the yield of cane by about 200 maunds per acre over the control plots.

(3) Chemical Work.

Prior to the 1932 Sugarcane sowing season when the Government Sugarcane Farm, Shahjahanpur, was under the charge of late K. B. Naib Husain, Deputy Director of Agriculture, Rohilkhand Circle, experiment on "The Utilization of green manure for Sugarcane" formed the major part of the work done in the Laboratory. A plot of land about 2 to 3 acres in area was taken for the experiment and was divided into two equal portions, half of which was green manured and the other half was left un-manured in both these plots a strip of land of 30 ft. width was left uncropped to determine Nitrate and total organic Nitrogen in the soil. The modern system of layout of the field experiments was first started in 1932 when the farm was under the charge of the Economic Botanist. In 1933-34, the experiment on "The Utilization of green manure for sugarcane" was repeated in a replicated and randomised scheme, but that year unfortunately Nitrates and Nitrogen were not estimated, only the yield of sugarcane was carried out. The broad inferences drawn from these experiments were that the crop (i) yields about 200-250 maunds of green matter, (ii) supplies about 60 lbs. of N. and (iii) increases the yield of cane by about 200 maunds per acre. In June, 1934, the problem of—

I. "*The Utilization of different portions of* Sanai (*Crotolaria Juncea*), *for Nitrogen fixation in soil and also for sugarcane crop, maturity of cane, sucrose contents and yield, etc.*", was started on a replicated and randomized scheme and continued for 2 years, *i.e.*, for 1935 and 1936, the details of which are as under:—

In order to ascertain the various nutritive values, in the role of Nitrogen, of the different parts of *Sanai*, four different treatments were resorted to, *e.g.*, (i) Whole *Sanai*, (ii) Top *Sanai*, *i.e.*, stem and leaves, (iii) Roots and (iv) Control, no *Sanai*. which were replicated 4 times and randomised. The area of such plots being about 1/20th of an acre. *Sanai* was sown in June and inverted in the beginning of August. It was thought interesting to see what is the percentage of *Sanai* left in the ground, in the form of roots and the cut stem (after the cutting of the *Sanai*). To achieve this end, several pounds of *Sanai* were uprooted from the ground, the adhering particles of foreign matter were removed by washing with a gentle stream of water which was subsequently removed firstly by drying with a piece of cloth and finally by means of filter papers. All the green manuring yields per acre, the always mentioned, without taking into account the portion left in the soil, so this method was a sort of innovation, in finding the percentage of error introduced into the yield. Then the *Sanai* was cut, approximately at the line of demarcation of the roots and stems (as is usually done by means of a scythe when cutting the *Sanai* for weighing) and the two portions were separately weighed. From this data, (root and cut stem) percentage was calculated and was found to be about 8 per cent.

of the stem and leaves, so that all the green-manuring yields, generally given, uptil now, should be corrected by the addition of 8 per cent. of the total weight found. The analysis of the whole *Sanai*, top portions of the *Sanai* and the roots with regards to dry matter and nitrogen content at the time of their being ploughed in the soil were done. Whole plant contained about 21 per cent. dry matter, followed by about 22 per cent. in roots and 22·5 per cent., in stems and 20·5 per cent. in leaves. The nitrogen percentage, as would be expected, were greatest in leaves, about 3 per cent. followed by whole *Sanai* about 1·6 per cent., stems about 0·9 per cent. and roots about 0·7 per cent. The yield of whole *Sanai* was about 290 maunds per acre, tops were about 262 maunds and the roots about 26 maunds. Monthly soil sampling, upto 1st and 2nd foot for the estimation of nitrogen and available nitrogen was undertaken from October till August. The data so obtained are shown in graphs, which in addition contains the soil Nitrogen data, before sowing of *Sanai*, as it is thought that this would bring out a clear conception of the progress of nitrogen accumulation in the soil. In April, analysis of each bed of the four treatments were resorted to so as to find out the deviation in the percentage of N. from plot to plot. The data were statistically analysed and it was found that whole *Sanai* is better than roots and Control (no *Sanai*, and both roots and tops are better than control (no *Sanai*). The data obtained corroborates last 2 years' findings namely that the accumulation of nitrogen, due to different treatments of *Sanai*, goes on increasing for 2 to 3 months after being buried in the soil and the consequent rotting of the leaves and fibrous materials contained therein; then it keeps a sort of constant level for a few months, followed by a gradual decline. The sequence of merit, as far as N. conservation is concerned is in the order of whole *Sanai*, top *Sanai* roots and Control (no *Sanai*). The nitrates data also follows the same order as that of total organic nitrogen. The accumulation of nitrates, goes in increasing from October till May and June when it reaches its maximum value and afterwards follows a gradual decline.

Juice analysis for Brix, sucrose and glucose percentage and purity co-efficient were undertaken every month from November till March. The results obtained are given in table and the data are also statistically analysed. No manure has been found better than whole and top *Sanai*, whereas the differences manifested between whole *Sanai* and roots are insignificant. The yield of Cane, borne by the various treatments was determined and statistically analysed. The difference in yield between whole *Sanai*. Top *Sanai* and Control was found to be significant, that between whole *Sanai* and roots were not actually significant but highly suggestive.

From 1935, another Green Manuring Experiment, *viz.*:—

(II) "*Effect of ploughing in* Sanai *after 30, 40, 50 and 60 days' growth on the Nitrogen fixation in soil, maturity of cane, sucrose contents and yield, etc.*", has been started. There are 5 treatments of this experiment. (i) Control, No *Sanai*, (ii) Ploughing in of *Sanai* after 30 days' growth, (iii) Ploughing in of *Sanai* after 40 days growth, (iv) Ploughing in of *Sanai* after 50 days' growth and (v) Ploughing in of *Sanai* after 60 days' growth. It was found that the percentage of stem to the whole plant increased, while the percentage of roots and leaves to the whole plant and of roots to tops decreased, as the age of *Sanai* advanced. The dry matter percentage in all the cases increased with the age of *Sanai*. The method of procedure followed was exactly the same as that outlined in Experiment I previously. Monthly sampling of the soil up to 1st and 2nd foot, for the estimation of total organic nitrogen and available nitrogen were undertaken from September till August. The data so obtained is illustrated by means of graps in which is incorporated the data of the sample taken before sowing of *Sanai*. In April, analysis of each bed of the various treatments was resorted to so as to find out the deviation in the percentage of nitrogen from plot to plot of the same treatment. The data are statistically analysed. The results obtained show that the amount of nitrogen turned in, in the form of *Sanai* is the largest in the case of 50 days' growth followed by

60, 40 and 30 days' growth. The yield of *Sanai*, both in 50 and 60 days' growth, is about the same. The accumulation of total organic nitrogen goes on increasing for 2 to 3 months, except in the case of 30 days' growth when it is for 1 to 2 months, after the inversion of *Sanai* and the consequent rooting of the leaves and fibrous materials contained therein; then it keeps a sort of constant level for a few months, followed by a gradual decline. The sequence of merit, as far as nitrogen conservation is concerned, is in the order of 50, 60, 40 and 30 days' growth, and indications are forthcoming that the nitrate accumulation in the soil follows the same order as that of total organic nitrogen.

This year, *i.e.*, in 1936, this experiment is repeated but with slight alterations, *viz.*, the treatments are of 50, 60, 75 and 90 days' growth. The same method of procedure is adopted.

(III) *Effect of Organic and Inorganic manures on the maturity of Cane, sucrose contents, yield, etc., and to find out Selective Absorption of common manurial ingredients at different periods of life of the Cane.*

The Experiment has been carried out for two successive years, treatments were as follows:—

(*a*) Farmyard manure at the rate of 120 lbs. of nitrogen per acre.

(*b*) Am_2SO_4 to supply 120 lbs. of N. per acre; Superphosphate and Potassium Sulphate to provide P_2O_5 and K_2O equivalent to the amounts contained in farmyard manure.

For the first part of the Experiment, Brix, per cent. sucrose and per cent. glucose in juice, Expression and Purity co-efficient were determined every month from November till March. The data is given in Table I and illustrated by means of a graph. It seems that the organic manure is slightly better than the balanced chemical manure. The yield of the crop for both the manures was determined and was found to be satistically insignificant. For the second part of the Experiment, chemical analysis of cane after every month of growth for the 1st year and after every two months of growth for the 2nd year, were resorted to and consisted of dry matter per cent., Organic N. per cent., Ash per cent., P_2O_5 per cent. CaO per cent., and K_2O per cent. The data are given in Table II. The intake of plant foods, *i.e.*, N. P_2O_5, K_2O and CaO, were computed from the above data, at every two months of growth. The results are tabulated in Table III and illustrated by means of graph. It is observed that the intake of all the plant foods, *i.e.*, N. P_2O_5, CaO and K_2O is more in the early stages of the growth of cane. Again from November onwards, when the cane begins to mature, the intake of the mineral ingredients especially K_2O increases. Chemical analysis of soil, upto 1st and 2nd foot was undertaken before sowing of cane and after harvesting of the crop and consisted of moisture per cent., loss on ignition per cent., total organic N per cent., total P_2O_5 per cent., total K_2O per cent., available K_2O, available P_2O_5 and available nitrogen. The results obtained are given in Table IV. It would be observed the plants used up nutrients more from the first than from the second foot soil and in fact the drain of the ingredients in the order of increasing amounts being N., CaO, P_2O_5 and K_2O.

(IV) *To study the effect of application of molasses on denitrification or otherwise and also on the Nitrogen fixation in the soil, maturity of cane, sucrose contents and yield, etc.*

There have been differences of opinion between different workers, regarding the value of Sugar (Molasses) in increasing soil fertility and incontestable proof for the fixation of Nitrogen by the application of molasses is still lacking. "Increased yields of sugarcane have followed the application of molasses to soils at the Station Agronomigne and on Mr. Ebbel's estate in Mauritius, where the residual effect is well shown and also in Antigna. Peck in Hawaii, on the other hand, observed marked losses of Nitrate, as also did Harrison in British Guiana." It is with an idea of throwing more light on the vexed question of nitrogen fixation or otherwise in soils on

the application of molasses that this experiment of 10 treatments was undertaken. This experiment has already been carried out for two years and will be continued for the third year, this year in December. Molasses were incorporated to the plots in December as Preliminary experiments carried out here, showed that molasses should be applied to the fields at least 2 or 3 months before the sowing of cane, in order to get the best effects by its incorporation to the soil. The treatments of three different doses of molasses of 90 maunds, 180 maunds and 270 maunds per acre alone and in combination with (i) Castor cake and (ii) Am_2SO_4 to supply 60 lbs. of N. per acre, and no molasses (Control) were 4 time replicated and randomised. Area of each plot being equal to about 1/20th of an acre. Monthly soil sampling up to 1st and 2nd foot, for the estimation of total organic Nitrogen and Nitrates, was undertaken from December till August. The data is presented in a collective form (Table) and is illustrated by means of graphs of the results so obtained. In April, analysis of each bed of the various treatments, was resorted to so as to find out the deviation in the percentage of Nitrogen from plot to plot of the same treatment. It was observed that the conservation of nitrogen is the greatest in the plots receiving a doze of 270 maunds of molasses per acre, followed by 180 maunds, 90 maunds and no molasses (Control). Denitrification, *i.e.*, loss of Nitrates sets in after a month of the incorporation of the molasses to the plots. This low level of Nitrates in the molassed plots keeps on for further 3 to 4 months, after which the values in the molassed as well as in the non-molassed, *i.e.*, control plots become the same, followed by an accumulation of more nitrates in the former than in the latter plots. The Nitrates data of the various treatments, from December till August are given in tables.

Juice analysis for Brix, percentage of sucrose and glucose, expression and purity co-efficient was undertaken from November till March. The results so obtained are given in table and the data are statistically analysed. The differences observed between (1) 90 maunds and 180 maunds and (2) 180 maunds and 270 maunds are significant. The differences observed between different forms (Castor cake + Am_2SO_4) are insignificant, but the interaction between molasses and nitrogen is significant.

The yield of all the 10 treatments was estimated and statistically interpreted. The difference in yield between Control (no molasses) and all the other 9 treatments is significant; the difference between 180 maunds and 270 maunds of molasses per acre and 90 maunds and 270 maunds of molasses, are also significant. It is rather interesting to note that the application of 90 maunds of molasses per acre is by far the most economical; addition of another 90 or 180 maunds of molasses per acre does not increase the yield in the same proportion.

The experiment is going to be continued for 3rd year, in December, 1936.

(V) Pot culture experiments were arranged to test on sugarcane *the fertiliser value of the molasses ash* supplied by Messrs. W. J. Alcock & Co., Calcutta (1935-36), especially the availability of the potash content wash tested. Eight combinations in pots were accordingly set up consisting of 3 different doses of molasses ash, with an without nitrogen at the rate of 120 lbs. per acre. The mediums chosen were sand and loam. Representative samples of the sand, the loam soil and the molasses ash were analysed, before sowing of cane in pots for total organic nitrogen, total phosphate, total potash and available potash to get an idea of the common manurial ingredients present in them. Judging from the analytical figures, one would expect the molasses ash to be a good fertiliser and definite indications are forthcoming from the data obtained by analysis of Brix, sucrose percentage in juice, expression and purity co-efficient of the various treatments that the molasses ash is easily assimilable. In combination with nitrogen in the form of Am_2SO_4 at the rate 120 lbs. per acre, this effect is manifested in much higher yield than the control, *i.e.* (no molasses ash), in some case this increase being 100 per cent. Hastening of maturity was also observed.

Influx of work owing to the Sugarcane season from October till April.—

In addition to the above about 1,000 samples in 1934-35 and 2,000 samples in 1935-36, have been analysed for Brix, sucrose percentage and glucose percentage in juice, expression and purity co-efficient. In the current season 1936-37 about 2,800 samples are going to be thus analysed. These samples are the outcome of the Agronomic, Chemical, Physiological Experiments laid down at the Government Farm, Shahjahanpur, only. Three rounds of trials of the Experiments at Government Farms, Gorakhpur and Muzaffarnagar have been carried out and will be continued this year also.

Miscellaneous samples.—Numbering easily a hundred, of varied nature, have been analysed. Nitrogen, phosphate, potash, available phosphate, available potash, available Nitrogen, Iron, Lime, Polarization, per cent. sucrose, per cent. glucose, moisture per cent. loss on ignition, etc., have thus been estimated in the samples received from Muzaffarnagar, Nagina, Gorakhpur, Sultanpur (from Khan Bahadur S. M. Hadi), Lucknow (from the Registrar of Co-operative Societies) and Shahjahanpur.

B. *Scheme of work to be carried out in the near future.*

Experiment No. I.—"The Utilisation of different portions of *Sanai*, for Nitrogen fixation in soil, and also for sugarcane crop, maturity of cane, sucrose contents and yield, etc." (3rd year, started in June, 1936).

Soil sampling, up to 1st and 2nd foot, for the estimation of Nitrogen, Nitrates and Carbon/Nitrogen ratio (for the 1st foot soil), from October, 1936, till August, 1937, is to be done for the various treatments. In April analysis of separate beds of the various treatments up to 1st and 2nd foot, for the estimation of N, NO_3, and C/N ratio is to be carried out for Statistical Interpretation.

For the 2nd year of the same experiment, *i.e.*, which has been laid down in June, 1935, juice analysis for Brix, percentage sucrose and glucose, expression and purity co-efficient, every month from November, 1936 till April, 1937, of separate beds, is to be done. Statistical analysis of the sucrose data is to be carried out.

Experiment No. II.—"Effect of ploughing in of *Sanai*, after 50, 60, 75 and 90 days of growth, on the nitrogen fixation in the soil, maturity of cane, sucrose contents and yield, etc."

Soil sampling, up to 1st and 2nd foot, for the estimation of nitrogen, Nitrates and Carbon/Nitrogen ratio (for the 1st foot soil) from October, 1936, till August, 1937, is to be done for the various treatments. Statistical Interpretation of the results, obtained from separate beds of the various treatment, up to 1st and 2nd foot, in April, 1937, is to be done.

For last year's experiment, *i.e.*, started in June, 1935, Juice Analysis for Brix, per cent. sucrose and per cent. glucose, expression, purity co-efficient, every month from November, 1936, till April, 1937, of separate beds, is to be carried out. Statistical analysis of the sucrose data is to be also done.

Experiment No. III.—"*Green manuring Experiment*".—New Experiment, started on the suggestion from the Director of Agriculture, United Provinces. There are 9 treatments for this investigation, but we are concerned with only 7 treatments.

Analysis of soils, as outlined in Experiments II and III, will be carried out in this case as well.

VI. *To study the effect of application of molasses on denitrification or otherwise and also on the Nitrogen fixation in the soil, maturity of cane, sucrose contents and yield, etc.* (3rd year, to be started in December, 1936).

Soil sampling, up to 1st and 2nd foot, for the estimation of Nitrogen, Nitrate, Ammonia, Carbon/Nitrogen ratio and PH value, every month from December, 1936, till August, 1937, is to be carried out. Statistical Interpretation of the data obtained from separate beds of the various treatments, up to 1st and 2nd foot, in April, is to be carried out.

For the 2nd year of this experiment, *i.e.*, the experiment which was laid down in December, 1935, Juice analysis will be done as outlined in Experiments II and III. Statistical analysis of the sucrose data is also to be carried out.

From October, 1936, till April, 1937, about 2,800 samples of juice are to be analysed.

VII. *The PH estimation* of the soils, representative of various plots, at Shahjahanpur, Nagina, Muzaffarnagar and Gorakhpur, are to be carried out.

VIII. *The mechanical Analysis* of the soils at Shahjahanpur, Nagina, Muzaffarnagar and Gorakhpur are to be carried out. *As time permits.*

IX. *The chemical analysis* of the soils mentioned in VII and VIII, are to be completed as far as possible.

TABLE I.—*Sugarcane juice analysis—Variety : Co. 290.*

Date.	Particulars.	Organic beds.				Mean.	Inorganic Beds.				Mean.
		Bed No. I.	Bed No. IV.	Bed No. V.	Bed No. VIII.		Bed No. IV.	Bed No. III.	Bed No. VI.	Bed No. VII.	
31st Oct. 1934.	Brix	14·57	14·18	14·57	14·67	14·75	14·37	14·48	14·17	14·17	14·30
	Per cent. Sucrose in juice	11·38	11·52	11·55	12·15	11·65	11·36	11·86	11·03	11·08	11·33
	Per cent. Glucose in juice	1·97	1·95	2·03	1·60	1·89	2·18	2·16	2·13	2·16	2·16
	Purity co-efficient	78·11	81·24	79·27	82·82	80·36	79·05	81·90	77·84	78·19	79·25
1st Dec. 1934.	Brix	15·68	15·36	15·91	15·10	15·76	15·53	15·80	15·71	15·44	15·62
	Per cent. Sucrose in juice	13·08	12·79	13·54	13·46	13·22	12·74	12·82	13·03	12·49	12·77
	Per cent. Glucose in juice	1·47	1·49	1·30	1·42	1·42	1·47	1·44	1·52	1·57	1·50
	Purity co-efficient	83·42	83·27	85·10	83·60	83·85	82·03	81·86	82·94	80·89	81·93
5th Jan. 1935.	Brix	16·33	16·83	16·33	17·46	16·74	16·73	16·43	16·83	16·33	16·58
	Per cent. Sucrose in juice	14·32	14·95	14·09	15·92	14·82	14·90	14·49	14·92	14·46	14·69
	Per cent. Glucose in juice	0·79	0·69	1·00	0·76	0·81	0·74	0·72	0·92	0·91	0·82
	Purity co-efficient	87·69	88·83	86·28	91·18	88·50	89·06	88·19	88·65	88·55	88·61
1st Feb. 1935.	Brix	17·70	18·16	18·12	18·22	18·05	17·70	18·10	18·12	17·72	17·91
	Per cent. Sucrose in juice	15·43	16·02	16·16	16·33	15·99	15·40	15·60	15·64	15·43	15·52
	Per cent. Glucose in juice	0·63	0·52	0·45	0·43	0·51	0·65	0·74	0·90	0·69	0·75
	Purity co-efficient	87·18	88·21	89·18	89·63	88·55	87·01	86·21	86·31	87·08	86·65
1st Mar. 1935.	Brix	19·27	19·57	19·83	19·89	19·64	19·97	19·47	20·03	19·19	19·67
	Per cent. Sucrose in juice	17·28	17·47	17·85	18·28	17·72	18·04	17·13	17·82	17·03	17·51
	Per cent. Glucose in juice	0·37	0·33	0·32	0·24	0·32	0·32	0·40	0·54	0·56	0·46
	Purity co-efficient	89·67	89·27	90·02	91·91	90·22	90·34	87·98	88·97	88·74	89·01
1st Apl. 1935.	Brix	21·04	20·94	19·98	21·24	20·80	21·74	21·24	20·44	21·24	21·17
	Per cent. Sucrose in juice	18·19	18·63	17·59	19·14	18·39	18·89	18·37	18·11	18·73	18·53
	Per cent. Glucose in juice	0·74	0·48	0·59	0·34	0·54	0·86	0·65	0·85	0·77	0·78
	Purity co-efficient	86·45	88·97	88·04	90·11	88·39	86·89	86·49	88·60	88·18	87·54

TABLE II.—*Chemical analysis of plants (Co. 290) after every two months' growth. (Plot : D. 1.)*

Date of taking sample.	Particulars.	Mean Percentage in the green matter.	Organic manure beds.				Mean.	Mean Percentage in the green matter.	Inorganic manure beds.				Mean.
			Bed No. I.	Bed No. IV.	Bed No. V.	Bed No. VIII.			Bed No. II.	Bed No. III.	Bed No. VI.	Bed No. VII.	
4th May 1934.	Percentage Dry matter	..	23·59	22·28	21·87	23·37	22·78	..	23·82	23·34	23·85	23·62	23·66
2 months' growth. Percentage in the dry matter.	Organic Nitrogen	0·312	1·340	1·366	1·388	1·379	1·368	0.329	1·383	1·399	1·401	1·379	1·391
	Ash	..	11·44	11·91	11·920	11·50	11·69	..	11·72	11·29	11·72	11·55	11·57
	Phosphate P_2O_5	0·219	0·904	0·984	1·003	0·952	0·961	0·216	0·919	0·883	0·938	0·921	0·915
	Potash K_2O	0·162	0·771	0·811	0·800	0·780	0·791	0·173	0·756	0·694	0·743	0·734	0·732
	Lime CaO	0·157	0·690	0·709	0·676	0·684	0·690	0·143	0·626	0·581	0·626	0·590	0 606
4th July 1934.	Percentage Dry matter	..	15·29	14·87	15·34	16·17	15·42	..	15·12	14·20	16·00	14·20	14·88
4 months' growth. Percentage in the dry matter.	Organic Nitrogen	0·189	1·151	1·255	1·253	1·253	1·228	0·194	1·349	1·360	1·191	1·303	1·301
	Ash	..	9·83	9·84	12·21	10·65	10·63	..	12·63	11·95	12·46	10·77	11·95
	Phosphate P_2O_5	0·081	0·473	0·486	0·560	0·577	0·524	0·096	0·631	0·623	0·663	0·662	0·645
	Potash K_2O	0·089	0·572	0·591	0·553	0·600	0·579	0·071	0·494	0·480	0·457	0·489	0·478
	Lime CaO	0·101	0·624	0·601	0·731	0·668	0·656	0·096	0·686	0·630	0·662	0·607	0·646

Date of taking sample.	Particulars.	Mean Percentage in the green matter.	Organic manure beds.				Mean.	Main Percentage in the green matter.	Inorganic manure beds.				Mean.
			Bed No. I.	Bed No. IV.	Bed No. V.	Bed No. VIII.			Bed No. II.	Bed No. III.	Bed No. VI.	Bed No. VII.	
4th Sept. 1934.	Percentage Dry matter	..	17·60	17·23	18·63	17·02	18·12	..	17·30	16·79	16·04	17·29	16·86
6 months' growth. Percentage in the dry matter.	Organic Nitrogen	0·108	0·587	0·636	0·587	0·567	0·594	0·101	0·612	0·602	0·576	0·594	0·596
	Ash	..	6·97	7·10	7·82	6·75	7·16	..	6·74	6·27	5·96	6·04	6·25
	Phosphate P_2O_5	0·100	0·577	0·545	0·548	0·537	0·552	0·110	0·652	0·642	0·653	0·664	0·653
	Potash K_2O	0·049	0·321	0·224	0·258	0·274	0·269	0·030	0·179	0·177	0·189	0·167	0·178
	Lime CaO	0·065	0·356	0·371	0·381	0·340	0·362	0·063	0·389	0·347	0·380	0·382	0·375
4th Nov. 1934.	Percentage Dry matter	..	25·32	27·49	26·03	25·42	23·07	..	23·06	20·93	24·37	24·41	23·19
8 months' growth. Percentage in the dry matter.	Organic Nitrogen	0·103	0·412	0·391	0·386	0·389	0·395	0·103	0·445	0·512	0·408	0·412	0·444
	Ash	..	5·02	4·86	4·25	4·11	4·56	..	3·885	4·625	3·435	3·575	3·88
	Phosphate P_2O_5	0·084	0·320	0·328	0·328	0·312	0·322	0·058	0·244	0·276	0·225	0·257	0·251
	Potash K_2O	0·069	0·286	0·299	0·255	0·242	0·271	0·054	0·235	0·244	0·222	0·224	0·231
	Lime CaO	0·065	0·280	0·248	0·232	0·235	0·249	0·057	0·240	0·262	0·236	0·242	0·245
3rd Jan. 1935.	Percentage Dry matter	..	27·16	27·80	26·65	23·34	26·24	..	27·28	26·90	27·98	28·38	27·64
10 months' growth. Percentage in the dry matter.	Organic Nitrogen	0·081	0·322	0·336	0·269	0·312	0·310	0·106	0·375	0·356	0·413	0·394	0·385
	Ash	..	3·13	3·72	3·25	3·40	3·38	..	4·34	5·11	4·31	4·99	4·44
	Phosphate P_2O_5	0·093	0·321	0·350	0·364	0·387	0·356	0·103	0·362	0·388	0·369	0·367	0·372
	Potash K_2O	0·170	0·637	0·654	0·636	0·672	0·650	0·190	0·698	0·707	0·698	0·640	0·686
	Lime CaO	0·068	0·240	0·259	0·259	0·274	0·258	0·088	0·336	0·314	0·327	0·297	0·319

TABLE III.—*Selective absorption of common manurial ingredients at different stages of life of the sugarcane plant.*

Particulars.	Mean percentage in the green matter (Sugarcane.)					Intake of plant food per 100 mds. of cane in lbs.				
	2 months' growth. 4th May 1934.	4 months' growth. 4th July 1934.	6 months' growth. 4th Sept. 1934.	8 months' growth. 4th Nov. 1934.	10 months' growth. 3rd Jan. 1935.	2 months' growth. 4th May 1934.	4 months' growth. 4th July 1934.	6 months' growth. 4th Sept. 1934.	8 months' growth. 4th Nov. 1934.	10 months' growth. 3rd Jan. 1935.
Organic manure—										
Organic Nitrogen . .	0·312	0·189	0·108	0·103	0·081	25·68	15·55	8·89	8·48	6·67
P_2O_5	0·219	0·081	0·100	0·084	0·093	18·02	6·67	8·23	6·91	7·65
K_2O	0·162	0·089	0·049	0·069	0·170	13·33	7·32	4·03	5·68	13·99
CaO	0·157	0·101	0·065	0·065	0·068	12·92	8·31	5·35	5·35	5·60
Inorganic manure—										
Organic Nitrogen . .	0·329	0·194	0·101	0·103	0·106	27·08	15·97	8·31	8·48	8·72
P_2O_5	0·216	0·096	0·110	0·058	0·103	17·78	7·90	9·05	4·77	8·48
K_2O	0·173	0·071	0·030	0·054	0·190	14·24	5·84	2·47	4·44	15·64
CaO	0·143	0·096	0·063	0·057	0·088	11·77	7·90	5·18	4·69	7·24

TABLE IV.—*Chemical analysis of soil before sowing of cane and after harvesting of the crop.*

Particulars.	Before sowing of cane.				After harvesting of cane.			
	Percent. on air dry soil.				Percent. on air dry soil.			
	Organic bed I foot.	Organic bed II foot.	Inorganic bed I foot.	Inorganic bed II foot.	Organic bed I foot.	Organic bed II foot.	Inorganic bed I foot.	Inorganic bed II foot.
Moisture	1·025	2·01	0·92	1·825	0·74	1·00	0·72	1·02
Loss on ignition	1·303	1·430	1·197	1·263	1·102	1·348	1·189	1·214
Total N	0·0467	0·0486	0·0470	0·0467	0·0428	0·0446	0·0420	0.0452
Total P_2O_5	0·783	1·033	0·770	1·076	0·595	0·656	0·570	0·759
Total K_2O	0·887	0·784	1·040	0.680	0·438	0·625	0·507	0·666
Total CaO	0·916	0·803	0·825	8·791	0·732	0·795	0·692	0·704
Available P_2O_5	0·0552	0·0552	0·0611	0·0547	0·048	0·0514	0·0516	0·0504
Available K_2O	0·0117	0·0115	0·0131	0·0127	0·0105	0·0100	0·0120	0·0113
Available N, *i.e.*, Nitrates (Parts per million).	3·0	1·5	3·0	0·6	0·2	0·4	0·2	0·4

(4) PHYSIOLOGICAL STUDIES.

This scheme of work is being financed by the Imperial Council of Agricultural Research. The investigations in progress chiefly concern the interaction of three important factors, *i.e.*, the quantity of N., water and the time of planting. It also aims at discovering the water relations of different cane varieties, the relative importance of various plant food elements in the growth of sugarcane and lastly the correlation of various meteorological factors with the growth of the cane plant.

Detailed report is as follows:—

Introduction.—The Scheme for Physiological research at the Sugarcane Research Station, Shahjahanpur, commenced in January, 1934. Besides the Cane Physiologist, the Staff consists of a Research Assistant, a Fieldman, a Laboratory Assistant and an Attendant. The first six months were largely occupied in procuring and fitting up the laboratories with apparatuses for meteorological observations and other works. The principal problem of cane growth and yield resolved into a detailed study of the various external factors, nutritional, cultural and climatic which limit growth and production.

With a view to study the affects of the different factors on cane growth, singly as well as in combination, the following lines of investigations have been carried out during 1934 to 1935:—

I. Interrelationship of Nitrogen and water-duty.

II. Interrelationship of Nitrogen, water-duty and time of planting.

III. Interrelations of Nitrogen and Spacing.

IV. Climatic conditions at Shahjahanpur and their relation to cane growth.

In addition, work in progress also consists of—

V. Studies in the water relations of cane varieties and VI. Pot culture studies in the nutrition of the cane plant.

I. *Nitrogen and Water-duty.*—For the purposes of this study three levels of Nitrogen application (no additional—N_1, 100 lbs.—N_2 and 200 lbs.—N_3, per acre) were combined with three of water-duty (W_1 – 240,000; W_2 – 360,000 and W_3 – 540,000 gallons per acre, per year) giving in all nine different treatments each replicated four times over an area of 2·5 acres. In the plants thus grown, tiller production, the accumulation of fresh weights, the increase in leaf areas was periodically determined. Data with regard to height, thickness and number of internodes, arrowing, sucrose and reducing sugars was also collected.

Tiller numbers increase as the quantity of nitrogen applied to cane is increased. The effect of increasing water is seen to be more marked where nitrogen is supplied in increasing amounts.

As indicated by the *fresh weights* of the sampled plants there is a marked response to an addition of nitrogen at the rate of 100 lbs. per acre; a further increase to 200 lbs. reflects no proportionate increase. At all levels of water-duty plants show a marked response to nitrogen application, also at all levels of nitrogen, enhanced water-duty increases the utility of nitrogen.

Leaf area on the plant depends chiefly on nitrogen, and a better utilisation of the increased nitrogen supply takes place with heavier water-duty. Where nitrogen is deficient a heavier application of water leads to a decreased leaf area. Individual leaves also are larger in size where nitrogen is in excess.

Height of canes similarly increases with the first 100 lbs. per acre of nitrogen, no proportionate increase being obtained when the dose is doubled; actually with low and medium water-duty height shows a decrease with increased nitrogen. *Thickness* of canes, on the other hand, increases consistently with increasing nitrogen at all levels of water and same is true

of the *quantity* of juice expressed. Any increase in water does not appear to effect the thickness materially.

Increasing nitrogen, however, progressively lowers the *sucrose* content and "*purity*" of the juice and proportionately, the *reducing sugars* increase. Minimum nitrogen when combined with minimum water-duty provides the highest sucrose in the plants grown.

Marked differences in the flowering of sugarcane are noticeable as a result of nitrogen application. Largest number of "arrows" shown on plants grown under a deficiency of nitrogen while none appear in heavily manured plants.

Final yield of cane clearly shows that at all levels of water, plants respond markedly to an application of nitrogen and the increase obtained by increasing the dose of nitrogen to 200 lbs. is not proportional. Further, at all levels of nitrogen, increased application of water increases the efficiency of nitrogen. Optimum yield is obtained when maximum nitrogen is combined with medium water, a further increase in water lowering the yield appreciably. Delaying the harvest of plants to April amounts to a general decline in plant weights in all treatments of nitrogen and water. Under high nitrogen (N_3), however, the decline is very marked, so much so, that the yields in lower nitrogen series (N_2) are found to be more. Dryage or water loss with advance in season would therefore appear to vary with increase in nitrogen.

II. *Nitrogen, Water-duty and time of planting.*—The planting of sugarcane was carried out at five-week intervals on February 1 (S_1), March 8 (S_2) and April 12 (S_3). The levels of nitrogen and water-duty have already been indicated.

The time taken to reach maximum *germination* depends on the time of planting cane, maxima being reached earlier by several weeks as the time of sowing is delayed. Late sowing on the whole gives considerably better germination than early planted series.

On the other hand, irrespective of the quantity of nitrogen and water the number of *tillers* formed per plant decreases as the sowing time is delayed after February; better tillering being obtained in crop planted early. In all sowing dates tillers decrease with increase in water duty. Further with respect to tillering the individual effectiveness of both nitrogen and water, has been found to decline with the delay in planting.

For both nitrogen series (N_1 and N_2) optimum *leaf areas* and *yields* are obtained in plants sown early and the weights decline under subsequent sowings. The effectiveness of nitrogen application is clearly brought out for all water levels and at all sowing dates but it seems to fall off as the time of planting is postponed. With minimum water-duty (W_1), additional nitrogen does not provide any increase in plant weights, in fact, a slight decrease is noticeable in all the three sowing dates, till before the rains commence. With low nitrogen, in all the sowing dates considered, optimum yield obtains with medium watering.

Nitrogen significantly increases the *height*, *width* and *internode length* of canes cultured in all sowing dates, increasing water does not affect to the same degree. As sowing time is delayed height, thickness and internode lengths gradually decrease. Additional nitrogen decreases the *number* of internodes throughout.

The quantity of juice in cane ("*extraction*"), its *quality* and *sucrose* content are all lowered in plants sown later and in all planting dates nitrogen leads to an increase in juice quantity and a decrease in "quality" and sucrose.

III. *Nitrogen and Spacing.*—Three spacings between plants (Sp_1, Sp_2 and Sp_3; respectively 15, 19½ and 24 inches apart in rows) combined with two levels of nitrogen (low and high) have been tried and data so far obtained goes to show that under low nitrogen conditions optimum *tiller* numbers are reached with medium spacing. The numbers decline on either side whether spacing is decreased or increased. When nitrogen supply is

enhanced this maximum shifts to a higher spacing or in other words given a ready supply of nitrogen, tillering increases with increase in spacing between plants.

With respect to final plant *yields* too similar relationships are noticeable. Optimum yields are obtained in the case of medium and maximum spaced plants under low and high nitrogen, respectively. At all spacings, application of nitrogen is effective in increasing the number of tillers formed and final cane yields. The effectiveness of additional dose of nitrogen, as reflected by the increased weights obtained, increases with increase in spacing.

Sucrose content early in the season, January and February, contrary to conventional expectations, is higher when nitrogen is increased for all the spacings considered. In the March sample conditions are actually reversed, the low nitrogen series ripens quickly attaining, finally, a higher percentage of sucrose in the juice. Spacing of plants affects sucrose formed in January in as much as it is lowered by increased spacing, both under low and high nitrogen. With the advance of season to February more sucrose is found to accumulate in the higher spaced plants till in March, sucrose increases progressively with spacing. Optimum with respect to sucrose content falls when high spacing is combined with a low supply of nitrogen. Yield in weight, as already pointed out, is optimal when along with the highest spacing additional nitrogen is also given.

Height of canes is greatest when maximum spacing and medium nitrogen are combined and same is true of the *thickness* and the *number of internodes* formed in canes. When the level of nitrogen is low, optimum height of plants, internode lengths and numbers occur in medium spaced plants. A general shifting of the maxima to lower spacing as nitrogen diminishes is clearly noticeable once more. Further in all spacings, additional nitrogen leads to taller and thicker canes with greater number of internodes which in their turn are considerably larger in size.

IV. *Climatic conditions at Shahjahanpur in relation to cane growth.*—

With regard to growth of cane, in addition to the nutritional and cultural factors, climatological factors namely, Solar radiation, rainfall, wind, atmospheric and soil temperatures, humidity, saturation deficiency, evaporation, etc., are being examined and certain data obtained are very briefly outlined below.

(*i*) *Solar Radiation.*—A Kipp and Zonens' Solarigarpah is being used for recording the radiation from the sun. The total energy received reaches a maximum in May and June, declines appreciably during the monsoon and shows a secondary but much lower maximum at the end of that period in September. The minimum occurs in December followed by a rise which culminates in the summer maximum. The duration of sunshine is similarly, maximum in May and June and the period falls to a minimum in December and January rising again, till the length of the day reaches its height in May and June.

The *intensity* of radiation, on cloudless days, is generally greatest at about 12 o'clock (midday) irrespective of the season. The absolute total quantity of energy registered as already mentioned, is maximum during the summer, but the absolute rate is found to be largest, usually, during the bright clear periods in the monsoon months of July and August.

(*ii*) *Rainfall.*—The total rainfall in 1934 was 38·04 inches, the major part (32·12 inches) being received during June, July and August. August contributed 16·14″ and the heaviest shower during a single day amounted to 3·90″. Rainfall for 1935 reached a total of 25·75″ only which was 12·29″ less than the preceding year. The months of June, July and August contributed 17·67″ the heaviest record for a day being 1·75″. The current year has been peculiarly characterised by an earlier outbreak of the monsoon, by at least a month giving 3·69″ in May against 0·00″ and 0·06″ during 1934 and 1935. Further, the railfall for June alone amounts to 25·27″ of which at least

9·72″ came down in a single day, causing the well known unprecedented floods in the locality.

(iii) Wind.—The velocity of wind is greatest during May or June reaching a minimum in October followed by a gradual rise till February. The rise in velocity during February and March is very sharp, and slows off again till the maximum is reached.

(iv) Atmospheric Temperature.—During 1935 the highest average temperature which occurs in May, reached 93·1° F. Temperatures fall off in the earlier and later parts of the year and reached a minimum of 53·9° in January. Highest temperature of 114·5° F. was attained on May 28 and the number of days during the year when the maximum temperature touched 105° F. and above was fifty. Minimum temperature was lowest on January 19, touching 28° F. and there were not more than seven days when the temperature went to 32° F. and below.

A typical day is characterised by the minimum temperature epoch occurring just before sunrise and the maximum about 2 o'clock, *i.e.*, about two hours after the time of maximum solar intensity. Atmospheric humidity finds an inverse relationship with temperature with respect to the time of its occurrence; maximum temperature and minimum himidity and *vice versâ*, *i.e.*, minimum temperature and maximum humidity occur at the same time.

The atmospheric temperature rises sharply after sunrise and when the maximum epoch is passed, it falls off equally abruptly. The fall in temperature after sunset is only gradual.

At Shahjahanpur, leaving aside the monsoon period (June to September, when it fluctuates from 15 to 26° F.) average daily fluctuations of temperature throughout the year appear to be similar, varying from 32 to 37° F., except for March when the average (42·4° for 1935) is widest.

(v) Humidity.—From an average figure of 71·5 per cent. in January (1935), the humidity falls each month to a minimum of 25·9 per cent. in May and rises during the rainy season to 89·5 per cent. in July and August. Humidity decreases once again in September, reaching a much lower secondary minimum of 62·6 per cent. in November.

(vi) Evaporation.—A self recording Evaporimeter is being used to register the evaporation from a free water surface. Largest evaporation seems to occur in April and smallest in December. From December onwards there is a gradual rise and after the high evaporation as experienced in April, May and June there is a sharp decline from 509·8 to 111·0 gms. per 400 Sq. Cm. due to the onset of the monsoon.

(vii) Saturation Deficiency.—Saturation is highest during January and steadily falls afterwards, in other words, the dryness of the atmosphere increases reaching a maximum about May and drops off sharply at the commencement of monsoon in July. After a secondary minimum of the same magnitude in August values increase till the beginning of the cold weather. The " Saturation Deficiency " of the atmosphere during rains it is interesting to find is of much the same magnitude as during the cold months of December and January.

(viii) Growth Data.—Germination is retarted when cane planting is practiced early in the season and the time taken decreases with advancing sowing dates. For February, March and April sowings germination was first noticed respectively, after 4, 3 and 2 weeks.

Tillering.—Irrespective of the time of planting of cane maximum tiller numbers are reached just at the beginning of the monsoon period about July in other words both early and late planted canes reach their respective maxima at about the same time. Their absolute numbers, however, as already pointed out vary with the time of planting, April and March sown plants showing very much reduced numbers. Under optimum conditions of nitrogen, water and sowing date tillers increase very rapidly during May and June, the numbers culminating in the July maximum. As the monsoon

advances further tillering stops and actually a decrease is noticeable. This decline also corresponds to the time when the plants resume a rapid growth in height.

Plant weights.—Absolute quantity of plant matter does not accumulate to any appreciable amount till the end of June, continues to rise during July and August, when tillering has completely stopped and speaking generally obtains a maximum at the beginning of the cold weather. During winter growth remains stationary and in December the fresh weights commence to decrease which is, in all probablity due to the rising evaporation and consequently increasingly greater loss in dryage. The proportion of dead leaves continues to increase and that of green leaves decrease during this period.

Lead area.—Maximum leaf area on the plants is similarly reached at the end of monsoon in early September about 9 to 10 weeks later than the time for maximum tiller numbers.

Final yield and cane height.—Maximum yield is obtained by harvesting cane in February and figures for subsequent harvests fall off each month, showing a loss in tonnage. Canes reach at their maximum with respect to *height* and *thickness* at the beginning of cold weather in November, no further increase being obtained afterwards.

Expression.—Quantity of juice extracted increases steadily from December onwards, reaches an optimum value in February, just about the time when maximum tonnage also occurs. Towards March the quantity declines.

Sugars.—Sucrose content from January to March increases continuously as the atmospheric temperatures increase. The reducing sugars on the other hand show correspondingly a fall, reaching a minimum value in February. In the end of March the invert sugars rise once again.

Broadly it would appear that *maximum* yield is attained in the beginning of February earlier in the life of the cane plant, is followed in the latter part of February by *minimum reducing sugars* and in the end of March by *maximum sucrose*. Thus where largest tonnage determines the maximum returns, early harvesting may be advisable, but where maximum sucrose be the end in view, final harvest may be delayed considerably.

V. *Studies in the water relations of cane varieties.*—Eleven different varieties of cane have been selected on the basis of their established characteristics with respect to drought resistance or otherwise. The varieties are being grown under minimum and optimum conditions of water supply. Detailed studies are being carried out periodically with a view to study varietal differences concerning germination, tillering, yields, leaf areas, leaf length and widths and water content. By this method it is hoped certain characters, morphological or otherwise would be available to form a basis for the classification of varieties of unknown performance into drought resistant or susceptible types. The method is likely to be of assistance to cane breeders who desire to sort out plants raised from first year seedlings on these characteristics.

VI. *Pot culture studies in the nutrition of the cane plant.*—About 100 glazed pots are being used for a sand culture experiment. Plants are being grown on a completo nutrient solution and series deficient in nitrogen, potash, phosphorous, magnesium, calcium, manganese, iron and boron are under study.

Problems which require investigation and the probable enhancement of equipment needed.

Besides further work on the lines suggested above it seems necessary that physiological research be also directed to the study of the undermentioned problems:—

VII. *Interrelation of various cane varieties to levels of nitrogen and water.*—Besides critical physiological observations detailed chemical analyses of plants would be necessary to find out the uptake of nutrients by varieties under different condition.

VIII. *Drought Resistance.*—The principal problems which require plant physiological investigation consist in:—

(i) Establishing methods for evaluating degree of xerophytism in cane varieties. This is likely to enable cane breeders to assess the value of existing varieties with facility and without which a quantitative estimate of varieties can not be made.

(ii) Finding methods for increasing drought resisting qualities in cane. Under these conditions the plant should not only survive, but possesses faculty to produce greatest possible yield especially under prolonged dry periods.

It would be necessary to regulate the period of exposure to drought artificially and the resistance of the varieties recorded. Under present conditions of equipment a control of this nature is not practicable, particularly when the tropical monsoon period is likely to set at a complete stop any studies of this nature. A glass house with sufficient accommodation for pot and soil culture experiments is especially needed.

IX. The differential *water requirement of cane varieties* requires attention. Work on these lines in pot culture would again require a glass house to eliminate the influence of natural rains during the monsoon period.

The present annual allotment for contingencies amounts to Rs. 1,240 and if a sufficient field of the physiological problems concerning cane culture is to be covered, a proportionate increase in the annual grant would be essential. With the increased work both physiological and chemical, an additional research assistant and a laboratory assistant would seem appropriate.

(5) Entomological investigations on Sugarcane crop.

This line of study too, is in progress with the financial grants made by the Imperial Council of Agricultural Research. The work is being conducted at the Sugarcane Research Station, Muzaffarnagar. Detailed studies on the sugarcane insect pests chiefly on the cane borers, leaf hoppers, white fly, white ants, etc., are being made. Their life histories, incidence of attack and effect upon various canes grown under different cultural treatments and control measures either by parasites or by mechanical and chemical methods are being worked out. Observations on the nature, life histories and economical value of their natural parasites are also being taken. Detailed report has been submitted separately.

(6) Seed distribution.

Seed of different improved varieties suiting different requirements and meteorological conditions is being multiplied and distributed all over the provinces by the Agriculture Department.

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(10) *Note on the possibilities of zonal distribution of cane-supply within the Gorakhpur District, supplied by Mr. Rajeswari Prasad Mathur, Deputy Collector, Gorakhpur.*

Rule 6 (2) of the United Provinces Sugarcane Rules, 1936, requires factories to make purchases of cane within a radius of five miles of the factory from the grower direct [or his authorised representative or a co-operative society for cane supply]. In furtherance of this Policy Rule 6 (3) prohibits purchasing agents from operating within this area. Instruction 6 (page 30) indicates the lines which a factory will have ordinarily to adopt in order properly to discharge its responsibilities in respect of such purchases survey of the area, preparation of a list of recognised growers, issue and regulation of passes. This rule will take full effect from the next season.

2. A glance at the map of Gorakhpur and the location of factories would show that any distribution of the 5 mile basis would be impracticable. In many cases the factories are at a distance of less than 10 miles from each other, which means that the 5 mile circles would intersect each other. There are also at least 3 stations having a factories each, and at these factories there can be no question of distribution on the 5 mile basis. It may also be stated that if the intention of the 5 mile rule is to encourage the factories to organise their cane-supply it appears necessary to devise methods which would lead to the organisation of the *whole* and not part of a factor's supply. To attempt organisation of only part of supply would defeat its purpose because the unorganised supply would upset all attempts at organisation of the selected areas. It follows, therefore, that the factories should be asked to arrange the whole of their supply on the ticket system and not only a part of it.

3. This raises the question of zonal distribution. No factory can confidently take up a costly process of cane organisation unless it is sure of its area of supply. With the approval of the Collector of Gorakhpur I have discussed this question with almost all the factories in this district. Nearly all the factories welcome the idea of being allotted a zone which be called their own. Some consider that such an arrangement is possible by an agreement among the factories themselves and some are definitely sceptical about it. One factory has said definitely that it will agree to a system of zoning only if the Government force it by means of legislation or rules. It seems, therefore, that time is ripe for a serious discussion of zonal distribution within this district.

4. I may briefly state the out-lines of a possible system of zone as they have occurred to me:—

(*a*) The principle of formation of zone should be somewhat as follows. Suppose there are 2 factories, A and B. Join AB and draw a perpendicular line bisecting AB. This line represents the line of zonal division between the 2 factories. The principle underlying this division is that a particular village should go to the factory situated nearest to it. .

(*b*) Since it is not feasible to allot compact areas to each of the 2 factories situated at one station a joint compact zone should first be allotted to these factories. The factories can make a village-wise distribution among themselves.

(*c*) A division similar to (*b*) above may be made where the factories are less than 5 miles apart.

(*d*) Since the Bihar factories have been making considerable purchases in this district and since some factories of this district get part of their supply from Bihar, a zone or zones might be set apart towards the East of the district for purchases by Bihar factories. I suggest areas round Taria Sujan, Bharpar, Bhatpar, Rani and Bankata.

(*e*) In order to redress inequalities in division, which would inevitably arise out of the suggested zonal distribution areas might be set apart for the purpose of adjusting these deficits. I suggest areas round Barhaj, Satraon, Salimpur and Lar Road Stations; areas round Dudahi station; and possibly some other might be added after discussion.

NOTE.—I have drawn out zonal lines on a sketch map of Gorakhpur and find that distribution on the lines indicated above is quite a practicable proposition.

5. After a distribution of areas satisfactory to all parties a number of questions will arise. What will be the powers of factories within their areas, what will be their duties and what their obligations? What protection will they get against intrusion or any other acts of hostility by a neighbouring factory, etc? The grower, too, would be entitled to ask many

questions affecting his interests. How is he to be protected against the misuse of this monopoly by the factory concerned? What assurances about the minimum price and what guarantee for the purchase of cane shall be given by the factories. Will he not be subjected to the tyranny of the capitalists?

6. My view is that these questions should be raised with a view to find a solution and not in order to create insurmountable obstacles in the way of zoning. Zoning should be looked at not so much from the point of view of the difficulties connected with it but from the view point of numerous benefits that will accrue from it to all the interests. For instance, the Mill owners will be assured of measured supply of cane; they would get fresh cane of high purity; they can introduce improvement in the quality of cane in their area; they can establish direct touch with the grower; and they can introduce improved means of communications. The grower would not have to wait for long days and nights; he will have to pay less towards cart-hire; his bullocks will be saved from premature death; and he will get into direct touch with the factory without the necessity of relying on middlemen, which is another word for swindlers. From the Government view-point the administration of Sugarcane Rules would become easier and many of the present abuses would disappear. Of course, it would be necessary to maintain for sometime at least a special Government staff for guiding and co-ordinating organisation by the various factories, and probably it would be necessary to frame special rules laying down the principles for ticket distribution. I make this suggestion because a number of factories made a hash of the ticket system of cane-supply this year.

7. I have drawn the briefest out-line of the picture. The details have to be filled in with much labour and precision. I am frankly very optimistic about the working of zones and would commend to the factories to pool their heads and to give the scheme at least a trial.

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(11) *Letter dated the 8th October, 1937, from the Government of the United Provinces, Industries Department, Lucknow.*

I am directed to enclose for the information of the Tariff Board a copy of a note, prepared by the Provincial Director of Agriculture, on the payment of a bonus above the minimum price for sugarcane of superior quality.

2. I am also to state, for the information of the Tariff Board that during the last season the produce of some 11,000 acres of sugarcane is estimated to have been destroyed in this province or fed to cattle as fodder because it could not otherwise be disposed of. Half this area is in the Gorakhpur district, 1,100 acres are reported from Azamgarh where there are no factories, 500 from Gonda, 600 from Bahraich, 300 from Barabanki, 1,200 from Kheri, 600 from Sitapur, 200 from Moradabad and 500 from Saharanpur.

3. The provisional decision of the Provincial Governments of the United Provinces and Bihar as regards the minimum price is that during the coming season it should be As. 5-3, but a deduction of 3 pies may be allowed for rail-borne cane. There is also a proposal for levying a tax on cane and using the proceeds for helping to establish a suitable marketing organisation for sugar or for gur or for both. It has been decided to appoint a committee which will go into the question of a marketing organisation and another committee which will go into the question of zoning. A copy of a note on the latter subject which was placed before the recent conference is enclosed.

4. The Provincial Government are impressed by the necessity for doing something to enable the cane grower who makes gur to get a better price for it. In this connection they would like to suggest that the excise duty on sugar made in gur refineries may be reduced, so that the latter may be

induced to take up this work more extensively than they do at present. I am further to suggest that in order to enable khandsaris to pay a better price for cane, the excise duty levied on Khandsari sugar may be altogether abolished, provided that they are treated as factories for purposes of the Factories Act.

5. I am further to bring to the notice of the Tariff Board that it appears to be desirable to establish a suitable marketing organisation for sugar, for the whole of India under Government auspices, and to compel all factories in India to join the same, either by means of licensing or in some other suitable manner.

6. I am also to enclose for the information of the Tariff Board a proof copy of the Provincial Government's Bulletin entitled "A Survey of the Prospects of Sugar Industry in Rohilkhand".

NOTE UPON THE PAYMENT OF A BONUS ABOVE THE MINIMUM PRICE FOR SUGARCANE OF SUPERIOR QUALITY.

The criterion of value of sugarcane to the factory is the percentage of recovery in sugar to cane crushed. The standard cane for most of the province, which has constituted the bulk of the supplies to the sugar factories in recent years, is Co. 213. It may be assumed that the factory recovery figures from this cane are the basis upon which the minimum price was agreed. Co. 213 still represents the bulk of the cane of the centre and east of the province, but in the west of the province is being largely replaced by Co. 312. In assessing the relative merits and values of other canes, the sucrose in juice ratio of these two canes on the respective Government farms provides an apprporiate datum line.

2. The ultimate determination of values must depend upon reliable factory data of recovery spread over the season and representative of the different cane tracts. Attempts to obtain comparative recovery figures for different canes from representative factories have met with little success. A number of causes is responsible for this; primarily that adequate stocks of newer canes, sufficient to provide for a full day's crushing at each trial, have not yet become available to most of the factories, and that factories are reluctant to put through commercial trials with smaller deliveries of these canes, as this naturally interferes with the factory efficiency through the stoppages entailed before and after the sample crushing. Such tests are definitely in the interest of the factories themselves, in determining the most suitable canes for their localities; and it is hoped in the future that full co-operation in this ultimate test of sugarcane values to the mills will become a regular practice. In the absence of such factory data the only reliable data upon which the base tentative conclusions are those derived from the periodical examinations for expression, sucrose in juice, and of purity, of routine samples of canes under experiment or trial on the Shahjahanpur, Muzaffarnagar, and Gorakhpur farms.

3. In the appended tables (Annexure A) are summarised the yield and sucrose percentage of cane varieties of these farms during 1936-37, along with such figures as are available from sugar factories, showing the yield per acre in maunds and the sucrose percentage in juice. Canes are classified as early, medium, and late—a classification based roughly upon the data at which a cane has been considered profitable for crushing. For the purpose of this discussion the figure of 13 per cent. has been arbitrarily chosen as the point at which the sucrose in juice provides profitable commercial crushing. As factory recovery is dependent also upon the juice to cane ratio (expression) and purity, the sucrose in juice percentage does not afford a true picture of factory values but is convenient to take in the absence of adequate factory data.

From the Shahjahanpur Experimental crushings the recoverable sugar has been computed from the 1936-37 data and is displayed in detail in the tables constituting Annexure B.

The data from farms are derived from small samples expressed by bullock mill. Factory expression is more efficient; and recovery would thus be greater for a given percentage sucrose in juice of similar purity.

So far as can be judged from the figures available, each increase of 1 per cent. sucrose in juice permits of recovery of an additional 0·6 to 0·8 sugar on cane, given efficient expression and factory technique. This is a matter upon which the factories—and they only—can give precise data. Until such is available, these figures may be accepted.

4. Examination of the sucrose data presented shows that for certain periods some of the canes available for development are markedly superior to those taken as standard. It is obviously in the interest of the factory that the growers should supply these canes at or about the period of maximum sugar recovery. In most cases this profitable period coincides with the few weeks before the peak of per cent. sucrose in juice and for a short time after the peak has been passed. This requires that the approved canes shall be grown in such proportion that there is a full and constant supply of each at its optimum. There appears to be two ways in which this can be achieved:—by paying a bonus, for each approved cane during its optimum period for sugar recovery, on its estimated excess sucrose over the standard canes; or by statutory regulation of the proportion in which these canes are to be grown by each sugar cultivator and fixing an average bonus on such approved canes over the whole season. Both require—

(*a*) that the average increased value to the mill in terms of sugar recovered should be assessed;

(*b*) that the proportion in which this is to be shared between grower and processor should be agreed.

Moreover, either will entail a regional variation in bonus, and possibly in data of application, according to the variations in behaviour under different regional conditions.

5. Taking Rs. 6 as an average price for sugar of all grades, and Rs. 1-8 as excise deduction, the net value per maund is Rs. 4-8.

The additional recovery on 1 per cent. increase in sucrose in juice has been taken to be between 0·6 and 0·8 per cent. of cane as the sucrose percentage rises. The value of such increased sugar recovered, per maund of cane is approximately—

for 0·6 per cent. increase, 5·2 pies per maund;

for 0·7 per cent. increase, 6 pies per maund;

for 0·8 per cent. increase, 6·9 pies per maund,

or say, over the whole of the effective crushing season for the cane in question, half an anna per maund. If this is shared equally between grower and producer, the grower of the better cane would receive three pies above the market price for standard canes for every 1 per cent. by which the sucrose in juice has been found to exceed that of the standard canes during the period in which the improved cane is tenderable, and over the tract concerned. Thus a cane which, during the months of December-February, say, has been found to average 2 per cent. higher sucrose than Co. 213 or Co. 312 for the region would receive a bonus during those months of half an anna per maund. Actually this would represent less than half the value of the increased sugar, as fractions of 1 per cent. are not taken into consideration in the proposed calculation of bonus. It may, however, prove sufficient inducement to growers to cater for factory requirements voluntarily, in the requisite proportions indicated by the representatives of the factories, or development and sales associations working with them. It must, however, be remembered that the very early canes tend to have a low tonnage, and that late canes lose weight in the hot weather. If a seven months crushing season from October 15—May 15 is aimed at, it may therefore be necessary to offer the inducement of a further bonus

at the commencement and end of the season. The cultivator will naturally wish to grow heavy yielding, mid-season canes unless his earlies or lates pay him just as well. If factories want cane for early and late crushing they should be willing to pay extra for them; and indeed it is unlikely that they will be produced voluntarily in the absence of such inducement. This is, however, beside the point under consideration, which is bonus for crushing quality and not for " out of season " supply.

The alternative method of ensuring proportional supply of early, mid, and late canes would be preferable if practicable. This visualises the planting, within factory zones, of the approved canes in a determined proportion by each grower; and a spread of the bonus for high sucrose over the whole crop of the season. This would, however, require statutory enforcement, and presents so many difficulties and possibilities of dispute as to make its consideration at present more academic than practical. It may become a workable proposition in the future when both factories and growers have organised their zonal development and supplies.

6. Before discussing the ways and means of obtaining the best cane at the right time for each factory, attention is directed to some of the data provided. In annexure A, sheet 1, early maturing varieties, the standard canes Co. 213 and Co. 312 are displayed at the bottom. These are classed as mid-season canes, but are generally accepted by factories early in the season.

Co. 313 compared with standard, is seen to be at least 1 per cent. better from the beginning of November to March at Shahjahanpur, representative of Rohilkhand conditions; while the muzaffarnagar figures, representative of the North-Western tract suggest that its superiority is not attained here until two or three weeks later.

Co 385 at Shahjahanpur displays an average increase from October to March of between 2 per cent. and 3 per cent. at Shahjahanpur but up to the end of February only in Muzaffarnagar. The yield is 25 per cent. or more below that of the standard canes.

Co. 508 gives promise of being a wonder cane for the factory, crushable with profit in October, and holding its own with the best up to May. On the calculated increased sugar recovery, this cane with 4 per cent. increase of sucrose in juice is worth two annas per maund more than the standards from early October to end of March; of which one anna is assumed to go to the grower. This does not compensate him for decrease of 33 per cent. in yield.

Turning now to sheet 2, mid-season canes, another cane of outstanding promise is Co. S. 60. Muzaffarnagar farm figures only are available. This shows an increase in sucrose in juice of 2 per cent. to 3 per cent. from February to May; although it is crushable with profit from November. Its yield has not been established but it expected to be about 750 maunds under farm conditions.

It would appear desirable to develop such canes as Co. 508 for very early supply for October-January only, with appropriate bonus, and thereafter other canes in succession, with possibly less sucrose but higher outturn. In theory this is excellent but its application in practice involves a knowledge of growth behaviour and factory performance in detail for each cane in each tract of the province to determine which is the best cane and when and by how much better than the standards in each area. This is only possible by pooling the experience of the Department, the growers, and the factories and establishing regional committees by which quotas, values, and prices could be determined periodically.

The history of Co. 331 illustrates the impossibility of fixing a standard for the whole of the province. Data are given in sheet 3, late maturing varieties. In some areas it is a good late cane. It is everywhere popular with the growers, and in the West and Central tracts with the factories. Its factory performance falls off in the East, for reasons which are not

clear, but which brought forth requests to stop its distribution, especially in areas from which it might spread to Bihar.

8. It is clear that some canes are appreciably more valuable to the factories as raw material than others; it is evident that the best of these should be grown on a co-ordinated system to ensure a constant supply of raw material of the highest sugar producing quality consistent with the welfare of the growers; and it is obvious that a bonus can and should be paid for canes which are known to give better average recovery than the standards. How is the value to be assessed, the bonus determined and the supply assured

Departmental information is insufficient to assess values except on very general lines. Its chemist staff barely suffices to conduct the mass of routine examination of cane samples at Shahjahanpur and Muzaffarnagar farms; no such determinations being possible at other farms. The important eastern cane tract is thus largely unrepresented. Moreover, the data is derived from small samples, which may be subject to considerable error and thus not representative of the crop. Expression is by small mills lower in efficiency than good factory plant. Also the cane is grown under a standard of farming and fertility which is much higher than of the average good cultivator's field, affecting both yield—beneficially—and sucrose production—probably adversely.

Much more provision requires to be made for extending such scientific examination of sugarcane values, both in the present research farms, and by expansion in other cane areas, notably the Eastern Districts. This is necessary preliminary work to the widespread examination for yield and sugar survey under growers' and factory conditions. For this, representative factories, if not all factories, should undertake experimental crushings periodically—say monthly—of the trial canes in comparision with Co. 213 or Co. 312, previous arrangements for production having been made with bonded growers, or through the Cane Development or Supply organisations. The data for yield and sugar should be supplied to the advising authority as the basis for recommendation of the types to be grown, their quantities, the dates between which they are tenderable, and the bonus applicable to each. The recommendations if approved by Government would be duly notified for particular areas. The advising authority should also be empowered to determine the canes tenderable against minimum price for each area and to exclude for the whole or part of the season any type which had been proved to be below the standard canes in sugar recovery. Where any considerable change in cane production programme is indicated, two years notice from November would have to be given to enable the provision of seed cane.

Supply according to the desired factory programme must at present depend upon the relative return to the cultivator from standard or better canes. All that seems possible for the moment is that adequate seed cane supplies are arranged for by factory, development organisation, or sales society, and planting up to the full quota be determined by the growers according to the comparative returns from the approved canes.

8. The organisation for advising upon these matters should be a number of small committees one for each region, consisting of two factory and two growers representatives, with an official chairman. A Provincial Sugar Committee consisting also in the main of equal representation of growers and manufacturers, through which the regional proposals are submitted to Government for approval. This committee should co-ordinate, and if necessary modify the proposals of the regional bodies. It should also serve as an advisory body to Government on sugar research and development generally. In addition to the factories and growers, it should include representatives of the sugar trade and of Government. The Economic Botanist Sugarcane might well be its Secretary. He would require extra ministerial staff to deal with considerable tabulation of field and factory data and correspondence.

(12) *Letter dated the 28th October, 1937, from the Director of Industries and Commerce, United Provinces, Cawnpore.*

I have the honour to give below details of the two loans granted to the sugar factories by the Industries Department, referred to in the evidence tendered by me before the Tariff Board on 7th September, 1937:—

(1) A loan of Rs. 6,00,000 was sanctioned under G. O. No. 879L, dated 25th October, 1922, to the Karundia Industrial Development Co., Ltd., Lucknow, for completing and working the Lucknow Sugar Mills. The amount was repayable in five instalments of Rs. 1,20,000 *plus* interest at 8 per cent. per annum up to December, 1928, the company paid only Rs. 1,94,000. In 1930 Government accepted Rs. 4,06,000 in full settlement of the loan and waived recovery of the balance due, *viz.*, Rs. 2,23,781 *plus* all outstanding interest. The sugar mill was defective from the beginning and never worked successfully.

(2) A loan of Rs. 1,20,000 was sanctioned under G. O. No. 2080, dated the 12th November, 1924, to the Shri Mahalakshmi Sugar Corporation Ltd., Lucknow, for the purchase of sugar machinery. The amount was recoverable in four equal instalments of Rs. 30,000. The company paid the first instalment in 1926-27 but subsequent payments were made by the People's Bank of India who paid Rs. 88,000. A sum of Rs. 2,000 *plus* all outstanding interest was written off. The loan was a failure.

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(13) *Memorandum by Sir William Stampe, I. S. E., Chief Engineer, Irrigation Development and Secretary to Government, United Provinces, Irrigation Branch, dated Lucknow, August 31, 1937.*

Introductory.—Formal replies to questions nos. 2, 3, 20, 24, 47 and 50 of the Tariff Board questionnaire were sent to the Secretary, Industries, United Provinces, with my No. C-1245, dated June 19, 1937, and are presumably before the Board. The following additional information may be of value and will form the basis of the opinions I propose to state before the Board in my interview on September 1, 1937. In regard to my answer to question (2) and list B forwarded as above in June last, I would add that actual information as to the areas irrigated on the Western and Sarda Canals for the 1937-38 sugarcane crop is now available. On the Western Canals excluding Ramganga and tube-wells, the total area under cane is 468,076 acres of which 289,047 acres are new sugarcane and 179,029 acres are ratoon. Including the Ramganga canal and State tube-wells, the area under sugarcane is 589,030 acres against 450,828 last year. The total canal irrigated area in the Sarda tract is 174,000 acres against 246,000 acres last year and in the IV Circle 14,500 acres as against 16,500 acres last year.

2. My experience of sugarcane irrigation in the West United Provinces the main cane-growing area, is as follows:—

Superintending Engineer, I Circle, I. W. (the principal cane-growing circle), 1925 to 1930 inclusive.

Chief Engineer, Western Canals, 1931-1934 inclusive.

Chief Engineer, Development, including Hydro-electric, all tube-wells and developments works, 1935 to date.

I have thus had more than 12 years administrative experience of canals and electric irrigation dealing mainly with sugarcane.

3. Prior to 1933 when factories were first erected in the western sugarcane zones (*i.e.*, west of Bareilly), practically the whole of the sugarcane grown on the western canals was converted into gur and only a very small proportion into country-made sugar.

By far the largest proportion of the total cane grown (*i.e.*, between 75 and 90 per cent.) is still converted into gur and so-called desi sugar. Only in the immediate neighbourhood of factories such as the Meerut-Muzaffarnagar areas, does the factory demand really control the price of cane.

I have always held, and on the information available, I still hold that the gur situation really controls the demand for (and the price of) cane—*not* the sugar market as is frequently believed.

Alleged over-production of 1936-37 season.—It is a fact that during the last cane season (1936-37) more sugarcane was grown in the province as a whole than could be commercially absorbed by the existing methods of manufacture, *i.e.*, (1) gur production and (2) white sugar making. There were to my mind two reasons for this (*a*) seasonal and (*b*) instrumental.

In regard to (*a*) the monsoon rainfall* of 1936 began a month earlier than the normal (*i.e.*, May 15 to 20 instead of June 15 to 22). It continued almost without intermission until October and was, broadly speaking, 60 per cent. above the average for the United Provinces. This resulted in a larger amount of cane being sown* and matured than would normally be the case. Also considerable areas of "haphazard" cane were sown (*i.e.*, that without irrigation) in the hope of getting some sort of yield under good rainfall conditions.

(*b*) River supplies were much above the average owing to early rainfall in the hills resulting in larger canal irrigated areas than usual. Further, between 300 and 400 additional State tube-wells, each irrigating 100 to 120 acres of cane, were installed in the west under the Irrigation Development Circle (West) tube-well programme. Moreover the 600 or 700 earlier tube-wells (completed in 1935-36) all irrigated increased areas. Briefly, means were provided for irrigating an additional 80,000 acres by tube-wells. There were also larger numbers of private tube-wells in operation in the Ganges Grid area.

Absorption of cane into the market.—When a crop such as cane—expands due to the gradual completion of a large irrigation scheme (the Sarda Canal for instance) the increasing yield is absorbed year by year by the normal means of utilisation which develop *pari passu* with the crop. In 1936-37, the cultivators relied largely on the mills (or on the anticipated availability of bullock driven crushers or kolhus) for disposing of their cane. In the spring of 1937 both strings to the cultivators' bow failed, or, rather, did not come up to expectations. In many cases, the factories on having surplus cane at their gate or near at hand abandoned their contracts with the more distant cultivators. The season was then too far advanced for the cultivators to procure kolhus to crush the surplus themselves. Thus in many cases they were badly let down and Government had to step in with the result that the factories were persuaded to keep their mills running to absorb as much cane as possible (but at a lower purchase rate) from the cultivators. This certainly accentuated the trouble in several of the western cane tracts.

One possible solution of the cane problem, on which we have concentrated our attention lately in Development is as follows:—

Accepting the hypothesis that 75 to 95 per cent. of the cane is converted into gur, we have investigated how the cost of producing gur from cane can be lowered. Even at the present price of gur there is sufficient demand still unmet in Rajputana, Punjab and the North-West Frontier as well as in Nepal and the hill tracts of the United Provinces to absorb some of the surplus gur from the United Provinces if better marketing facilities can be organised, *e.g.*, direct booking from Railway Stations in the gur area, etc. Figures from the exporting railways show that the export of gur from the United Provinces into the Western States and the Punjab

* The 1936 late rabi and early khariff rainfall was also abnormally high.

has increased by leaps and bounds of late years. But it is impossible on the statistics at present available to estimate the amount of gur which leaves the United Provinces *viâ* the cold weather "non-rail" routes, *e.g.*, (1) bullock cart and camel across the Jumna, (2) pack ponies into the hills and (3) other methods. Nor is it possible to estimate the gur consumption of horses, cattle, etc. These animals undoubtedly absorb large quantities as the Jats of the Western United Provinces are in the habit of feeding their cattle with gur.

Figures obtained from the various hygiene and diet experts show the optimum quantity of gur which should be consumed by normally healthy people. There is still no doubt that the human consumption of gur is not yet as high as is desired. But the question of purchasing power (and its relation to the standard of living) comes into this so that we have been unable to proceed far on statistical lines. My definite impression is that even at a rate only slightly lower the market is capable of absorbing larger quantities of gur.

On the other hand if the price of gur can be lowered (with economy to the producer) as a result of reduction in the cost of production, the demand for gur would rise especially from the so-called "marginal consumer" who, at the present sale price in the Punjab, etc., cannot afford to eat as much as a healthy man requires.

One solution of the cane surplus problem thus is the introduction of cheaper means of gur production by the villagers themselves. Various methods are being examined:—

(*a*) The Industries Department are endeavouring to procure additional bullock kolhus and pans of a more efficient type for gur production on the ordinary desi lines. There was a shortage of kolhus and pans also of trained boiler-men last season.

(*b*) Hydel current can be used for operating mechanical crushers (25 maunds per hour) at cheap rates. The normal rate for electric current in the grid area is 1 anna per unit for agricultural purposes. If the crusher is worked at "off-peak" time (*i.e.*, when current is surplus to irrigation requirements), a cheaper rate cane be quoted—6 pies per unit is proposed.

Provided that village gur societies can be organised to work electric crushers on the Committee system, it is believed that the manufacturing costs can be reduced. These experiments are now being organised. I can explain this in greater detail if the Committee so desire.

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(14) *Letter dated the 4th December, 1937, from the office of the Superintending Engineer, Development Circle, Meerut.*

At Sir William Stampe's request, I send you a copy of his preliminary note on village gur-making plants, together with analysis of the cost of making gur in the (late) West and East Development Circles according to method (*a*), which is actually being tried out this winter on four cane crusher plants in the West and three in the East.

PRELIMINARY NOTE REGARDING DEVELOPMENT OF VILLAGE INDUSTRIES ON THE GANGES GRID.

Village Gur Making Plants.

Preliminary.—Finance Department have intimated in their Un-official No. 104, dated April 27, 1937, that the last date for acceptance in Finance Department of notes for the schedules of new expenditure in 1937-38 in connection with the various development and village improvement proposals is May 20, 1937.

One of the proposals we are putting forward in connection with village development is for introducing village gur making plants in the grid area. A full note based on the results of preliminary experiments of the 1936-37 season is under preparation, but cannot be ready until all the data available from divisions have been correlated. A detailed note will be put up to H. M. R. in early June. In the meantime, in order to give Finance Department preliminary notice of our requirements under this head, the following précis of the case is submitted.

The last and the present Governments have approved in general of the preparation of a programme for various village improvements including the development of minor industries, both agricultural and "cottage" types.

A definite start can be made at once in this direction by developing gur-making plants in the grid area, and the experiments are already in progress as the outcome of H. E.'s suggestions during his inspection of the grid area in February, 1936.

Apart from the general question of improving the means of utilization of cane in areas where cane is surplus to present requirements, the introduction of village gur-making plants at the tube-wells furnishes a nucleus point for introducing other village industries. It is believed, for instance, that if cane crushing plants can be made an economic success in the cane areas village ginning plants and oil crushing installations will follow in other areas where these crops prevail.

Crushing Plants.—About a dozen crushing plants, some of which were also equipped with boiling pans, were installed in the grid area in the last cane season, but owing to their having been operated for only part of the season, full results are not yet available.

Briefly, it is proposed that additional 30 cane crushing plants, each consisting of a 25 maund per hour cane crusher and two sets of boiling pans, should be installed at the tube-wells in selected villages in the grid districts for the crushing season 1937-38. 12 will be required in Meerut, 12 in Moradabad and Bijnor and 6 in North Budaun. The total cost involved at Rs. 2,500 per plant will be Rs. 75,000.

The general idea of the proposal is that cultivators should have an alternative means of disposing of their cane other than selling it to (*a*) factories and (*b*) Khansaries. At present roughly 1/5th of the cane is sold to factories and 4/5th is crushed locally by means of bullock driven kolhus, the juice from which is made into gur directly by the cultivator or sold to Khansaries, who make high profits on the transaction.

Ordinarily bullock kolhus will only crush from 2 to 5 maunds per hour, and with the rapid increase of cane in the tube-well zones it has been found that there are insufficient cattle to work kolhus in addition to performing the normal agricultural operations.

Preliminary experiments show that if a rate of As. 1-9 per unit is charged for electrically operated kolhus including the cost of energy, interest, depreciation and working expenses on the crushers and boiling pans, there is a ready market for these crushers.

Cheap rates for "off-peak" hour working.—It has been lately proposed that a lower rate be offered for energy for use in crushing at night when the tube-wells are not generally in use, and spare current is therefore available on the grid. It is proposed to charge As. 1-6 for crushing during the so-called "off-peak" hours, from 8 P.M. to 10 A.M. the next morning.

The question of the most efficient means of letting out these gur plants to cultivators is under examination and will be considered at length in the report to follow. The alternatives are as follows:—

(*a*) That the I. B. should provide the plants at tube-well centres where cane is at present in excess and operate them departmentally, the cultivators bringing their cane, crushing it at the

Analysis of cost of making gur, "Development Circle, West".

I. *Capital cost*—

	Rs.
(*a*) Crusher with motor, shaft and pulley (20 Mds. per hour)	1,050
(*b*) Carriage, fixing and connection	150
(*c*) Boiling pans, 2 sets	700
(*d*) Sheds and furnaces	200
(*e*) Juice pump with pipes	90
Total	2,190

II. *Working expenses for 1,680 hours running (120 days × 14 hours)*—

(i) Operator for 4 months at Rs. 15	60
(ii) Electrical energy—	
120 × 6 = 720 hours "on peak" working at 6 units = 4,320 units at 9 pies per unit	202-8
120 × 8 = 960 hours "off peak" working at 6 units = 5,760 units at 6 pies per unit	180
(iii) Oil and waste	40
(iv) Repairs	40
(v) Interest on Rs. 2,190 at 3½ per cent.	77
(vi) Depreciation on crusher and pump (I, 1 & 5) Rs. 1,140 at 12½ per cent.	142-8
(vii) Depreciation on boiling pans at 10 per cent.	70
Total	812

III. *Annual revenue*—

Sale of 4,320 units "on peak" at As. 1-6	405
Sale of 5,760 units "off peak" at As. 1-3	450
Total	855

Thus, the revenue anticipated will cover expenditure.

Total cane crushed will be 30,240 maunds. Rate per maund of cane crushed = $\frac{855 \times 192}{30,240}$ = 5·43 pies. This compares fairly with the rate that works out for Bullock "Kolhus".

Labour for making gur—

2 men for bringing cane from stack and feeding crusher, at Rs. 8 per mensem, for 4 months	64
1 Karigar with 2 assistants at Rs. 50 per mensem, for 4 months	200
5 Trash driers and furnace feeders, at Rs. 8 per mensem, for 4 months	160
Total	424

Cost of crushing 30,240 maunds will be $\frac{424 \times 192}{30,240}$ = 2·7 pies.

Therefore the total cost of making 1 maund of gur will be 8·1 pies per maund of cane crushed or As. 6 per maund of gur.

departmental rate, boiling it themselves and taking away the juice.

(*b*) That the crushers should be provided by the I. B. maintained departmentally, but hired out to village Co-operative Societies, who would carry out the actual operation of the crushers and boiling plants themselves.

(*c*) That the I. B. should provide the plants and hire them out on contract to village contractors, who would buy the cane locally, crush it and dispose of the resulting produce themselves.

There is something to be said for and against these different methods, but in view of the fact that our main object is to encourage the villager to process his own cane, we are inclined to recommend the adoption of method (*a*). This will be discussed in greater detail in the main report.

For the moment it is requested that an item of Rs. 75,000 may be included in the capital budget for development for the purchase of 25 gur-making plants. A preliminary financial statement is attached which indicates that allowing for working expenses, interest and depreciation, the plants are likely to be self-supporting.

Village Electrification in the Ganges Grid area—Note on Tube-well Cane Crushing Plants—Approximate Estimate of Cost.

	Rs.
(1) *Estimate of cost*—	
Crusher with motor and shafting (25 maunds per hour).	1,200
Carriage, fixing and connection	200
Boiling pans, 2 sets	800
Sheds	200
Juice pump	100
Total	2,500
(2) *Working expenses for 1,500 hours running (100 days × 15 hours)*—	
(*a*) Operator for 4 months at Rs. 15 per mensem	60
(*b*) Electric energy	
750 hours "on peak" working at 6 units=4,500 units at 9 pies per unit	211
750 hours "off peak" working at 6 units=4,500 units at 6 pies per unit	141
(*c*) Oil and waste	50
(*d*) Repairs	75
(*e*) Interest on Rs. 2,500 at 3½ per cent.	87-8
(*f*) Depreciation on crusher and pump Rs. 1,300 at 15 per cent.	195
(*g*) Depreciation on pans Rs. 800 at 10 per cent.	80
Total	899-8
(3) *Annual Revenue*—	
Sale of 4,500 units "on peak" at As. 1-9	492
Sale of 4,500 units "off peak" at As. 1-6	422
Total	914

Analysis of cost of making gur, "Development Circle, East".

I. *Capital cost—*

	Rs.
(1) Crusher with motor, shaft and pulley (25 Mds. per hour)	1,050
(2) Carriage, fixing and connection	150
(3) Boiling pans, 2 sets	700
(4) Sheds and furnaces	200
(5) Juice pump with pipes	90
Total	2,190

II. *Working expenses for 1,200 hours running (100 days × 12 hours)—*

(*a*) Operator for 4 months at Rs. 15	60
(*b*) Electrical energy—	
600 hours "on peak" working at 6 units = 3,600 units at 9 pies per unit	169
600 hours "off-peak" working at 6 units = 3,600 units at 6 pies per unit	112
(*c*) Oil and waste	50
(*d*) Repairs	75
(*e*) Interest on Rs. 2,190 at 3½ per cent.	77
(*f*) Depreciation on crusher and pump (I, 1 & 5) Rs. 1,140 at 12½ per cent.	142-8
(*g*) Depreciation on pans, Rs. 700, at 10 per cent.	70
Total	755-8

III. *Annual revenue—*

Sale of 3,600 units "on peak" at As. 2	450
Sale of 3,600 units "off-peak" at As. 1-9	394
Total	844

Total cane crushed = $1,200 \times 25 = 30,000$ maunds.

Rate per maund of cane crushed $= \frac{844 \times 192}{30,000} = 5{\cdot}4$ pies.

The total cost of making gur will include the above charges *plus* the following men who are needed for crushing cane and making gur. This labour will be supplied by the users of the plant.

	Rs.
2 men for bringing cane from stack and feeding crusher at Rs. 8 per month	64
1 Karigar with 2 assistants at Rs. 50 for 4 months	200
5 Trash driers and furnace feeders, at Rs. 8 for 4 months	160
Total	424

If 30,000 maunds of cane and crushed this will involve labour rate of $\frac{424 \times 192}{30,000} = 2{\cdot}7$ pies per maund of cane crushed.

The total cost for the entire operation of "gur" making will thus be roughly 8·1 pies per maund of cane crushed, or As. 6 per maund of gur made.

Replies from the Government of the Punjab.

(1) *Letter dated the 2nd August, 1937, from the Government of the Punjab, Development Department, Lahore.*

Subject:—PROTECTION REQUIRED BY THE INDIAN SUGAR INDUSTRY.

I am directed to make the following observations on the various points raised in your letters No. 147, dated the 30th April, 1937, and No. 172, dated the 11th May, 1937.

I. *Letter No. 147, dated the 30th April 1937.*

1. The views of the Director of Industries, Punjab, the Director of Agriculture, Punjab, the Director of Land Records, Punjab, and the Registrar, Co-Operative Societies, Punjab, on the questions in the Questionnaire for Local Governments are being forwarded herewith.

2. Statements showing the fortnightly retail prices of gur, jaggery and sugar at important markets in the province, *viz.*, Ambala, Rohtak, Jullunder, Amritsar, Gurdaspur, Sialkot and Lyallpur during 1930-36 are closed. Attention is also invited to the replies given to question Nos. 27 and 35 of the Questionnaire for Local Governments.

3. Confidential enquiries undertaken by the field staff of the Industries Department have not brought to light any of the evils complained of by you. The supply of sugarcane being smaller than the demand in this province, the supplier of cane has received a fair price for his cane and also fair treatment at the hands of the factory owners. The law requiring the fixation of minimum price for sugarcane under the Sugar Industry (Protection) Act, 1932, or the Sugarcane Act of 1934 has not been enforced in this province, and accordingly there has been no question here of the issue of false receipts for payments made or of surreptitious sale of passes to bring cane to the factories. Only one case of a refusal to take delivery of a consignment of sugarcane, whereby growers are reported to have suffered a loss, has so far been brought to the notice of the Director of Industries, Punjab, namely, at the Bhalwal Sugar Mills Company, Limited, Bhalwal, District Shahpur, in 1933-34. The Mill authorities, however, allege that the cane was damaged and of bad quality, and consequently they did not take delivery of it. A copy of a note supplied by Mr. Kailash Chandra, a cane-grower of Abdullapur, district Ambala, containing his suggestions for safeguarding the interests of cane-growers, etc., is appended. Attention is also invited to the reply given to question No. 15 of the Questionnaire for Local Governments.

4. There is no prominent cane-grower in this province and the majority of the ordinary small growers are illiterate. The Director of Industries, Punjab, has, however, recommended the name of Mr. Kailash Chandra of Abdullapur, district Ambala, who in his capacity as a progressive cane-grower, may be of assistance to the Board in their enquiry.

II. *Letter No. 172, dated the 11th May, 1937.*

1. The replies to the questions in the Questionnaire for Local Governments are enclosed herewith, with six spare copies of each.

2. The Punjab Government have no comments to make on any of the points raised in the Questionnaires. Replies to certain selected questions therefrom have, however, been received from the Director of Industries, Punjab, and are enclosed, herewith, for the information of the Board.

ANSWER TO THE QUESTIONNAIRE FOR LOCAL GOVERNMENTS.

1. The area under sugarcane in the Punjab during the last seven years is given below:—

Year.	Area.	Year.	Area.
1930-31 . . .	425,729	1934-35 . . .	462,442
1931-32 . . .	474,655	1935-36 . . .	474,200
1932-33 . . .	558,152		
1933-34 . . .	465,991	1936-37 . . .	554,300

The common improved varieties at present in the province are:—

Co. 205.	Co. 223.
Co. 285.	Co. 290.
Co. 213.	Co. 244.

More recent additions are Co. 312 and Co. 313, but the areas under them are not much yet. There is no means of ascertaining the approximate acreage under each improved variety. It is estimated that the total area under improved canes in the province is 250,000 acres approximately.

2. A statement showing area under sugarcane irrigated and unirrigated separately in each of the homogeneous blocks of the Punjab is attached

Homogeneous.	1930-31.		1931-32.		1932-33.		1933-34.		1934-35.		1935-36.		1936-37.	
	Irrigated.	Unirrigated.	Irrigated.	Unirrigated.	Irrigated.	Unirrigated.	Irrigated.	Unirrigated.	Irrigated.	Unirrigated.	Irrigated.	Unirrigated.	Irrigated.	Unirrigated.
South Western dry tracts—														
Hissar . .	568	..	1,062	..	1,704	1	1,077	..	758	..	1,263	9	2,678	..
Rohtak . .	35,113	309	27,342	371	37,595	294	31,626	427	29,973	1,439	29,166	409	38,113	54
Gurgaon . .	9,494	11	11,704	6	12,114	116	7,266	46	7,192	2,613	10,853	865	13,374	547
Karnal . .	27,508	2,331	23,796	1,815	29,022	3,158	22,052	3,743	21,703	3,392	26,885	3,578	34,506	3,123
Ferozepore . .	3,971	22	5,385	37	10,439	195	7,319	114	6,010	87	8,970	54	15,754	58
Total .	76,654	2,673	69,289	2,229	90,874	3,764	69,340	4,330	65,636	7,531	77,137	4,915	1,04,425	3,782
Hontons and Sub. Hontons—														
Simla . . .	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Kangra . .	1,470	1,649	1,972	2,287	2,201	2,561	1,896	2,405	1,834	2,483	2,069	2,466	2,323	2,961
Ambala . .	4,671	8,792	5,991	11,049	7,283	17,304	3,712	18,652	4,603	19,887	5,797	22,488	6,398	23,434
Hoshiarpur . .	5,953	15,123	7,561	18,906	9,784	24,269	7,367	21,094	8,278	19,460	9,290	18,926	10,605	19,918

Gurdaspur . .	27,675	21,938	34,736	23,661	41,059	21,525	31,994	22,226	35,796	19,283	32,412	21,395	39,732	24,202
Sialkot . .	27,991	6,804	27,202	5,618	31,718	5,910	31,567	5,691	32,129	5,477	30,546	5,840	35,436	7,585
Gujrat . .	9,063	240	8,641	323	13,069	307	15,400	375	15,071	367	10,915	544	12,136	364
Total .	76,823	54,546	86,103	61,844	1,05,114	78.876	91,936	70,449	97,711	66,957	91,029	71,659	1,06,630	78,464
South Western—														
Multan . .	8,925	3	12,947	6	15,585	9	12,164	14	9,742	10	12,400	19	14,906	77
Dera Ghazi Khan.	102	..	127	..	168	..	200	5	138	..	190	..	383	..
Mianwali . .	14	..	29	..	67	..	95	..	47	..	71	..	102	28
Montgomery .	13,138	..	19,801	..	19,775	..	13,544	1	11,378	..	12,913	..	14,497	1
Muzaffargarh .	4,001	..	5,983	..	8,560	7	7,299	5	4,957	1	6,631	..	9,124	..
Total	26,180	3	38,887	6	44,155	16	33,302	25	26,262	11	32,205	19	39,012	106
Gentral—														
Lahore . .	14,741	78	25,073	287	28,249	291	18,399	184	16,422	195	19,520	293	27,843	377
Amritsar . .	20,691	1,374	24,386	1,372	30,977	1,542	27,149	1,575	28,645	1,387	27,524	1,208	28,928	1,061
Jullundur . .	26,853	791	30,834	804	35,844	1,251	28,928	1,140	33,301	1,123	34,187	1,065	38,192	1,060
Gujranwala . .	22,762	486	21,517	289	24,923	507	26,844	675	27,391	619	26,428	630	29,165	723
Sheikhupura .	19,732	72	19,637	123	21,846	377	21,539	251	17,970	300	15,921	519	20,028	465
Ludhiana . .	8,040	3,342	10,347	3,778	14,203	4,667	9,748	4,434	10,876	3,901	13,016	4,298	16,385	4,635
Total .	1,12,819	6,143	1,31,794	6,653	1,56,942	8,635	1,32,607	8,259	1,34,605	7,525	1,36,596	8,013	1,60,541	8,321

Homogeneous.	1930-31.		1931-32.		1932-33.		1933-34.		1934-35.		1935-36.		1936-37.	
	Irrigated.	Unirrigated.	Irrigated.	Unirrigated.	Irrigated.	Unirrigated.	Irrigated.	Unirrigated.	Irrigated.	Unirrigated.	Irrigated.	Unirrigated.	Irrigated.	Unirrigated.
North Western—														
Attock . .	776	1	818	2	833	1	496	1	516	1	720	1	981	9
Rawalpindi . .	62	..	73	..	85	1	98	..	94	3	87	27	73	24
Jhelum . .	107	21	160	30	231	21	227	9	293	18	216	10	190	17
Total .	945	22	1,051	32	1,149	23	821	10	903	22	1,023	38	1,244	50
Jhang . . .	4,288	12	4,697	7	4,452	30	3,693	6	4,368	10	3,787	1	3,285	6
Lyallpur . .	55,762	..	63,549	2	55,472	3	41,670	5	42,635	..	40,915	3	41,281	..
Shahpur . .	8,822	37	8,455	57	9,497	50	9,468	70	8,240	26	6,837	23	7,124	44
Total .	68,872	49	76,701	66	69,421	83	54,831	81	55,243	36	51,539	27	51,690	50
Grand Total .	3,62,293	63,436	4,03,825	70,830	4,66,755	91,397	3,82,837	83,154	3,80,360	82,082	3,89,529	84,671	4,63,542	90,773

3. A statement giving the rates for sugarcane on the various canals of the province is attached. Irrigation rates are based on (*a*) water required for crops, (*b*) profits from cultivation of crops. In 1933-34 the rate for sugarcane was reduced by Re. 1 per acre.

Statement showing the Occupiers' rates for sugarcane on the various canals in the Punjab.

Year.		Western Jumna Canal.	Sirhind Canal.	Upper Bari Doab Canal.	Lower Bari Doab Canal.	Upper Chenab Canal.	Lower Chenab Canal.	Upper Jhelum Canal.	Lower Jhelum Canal.	Pakpattan Canal.	Dipalpur Canal.	Eastern Canal.	Mailsi Canal.	Sidhnai Canal.	Chenab Inundation Canal.	Shahpur Inundation Canals.	Ghagga Canals.	Indus Inundation Canals.	Muzaffargarh Inundation Canals.
1		2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
		Rs.	Rs.	Rs. a. p.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs. a.	Rs.	Rs. a.	Rs. a.	Rs. a.	Rs. a.
1924-25 to Kharif 1933	P	12	12	12 1 7	12	12	12	12	12	12	..	..	..	..	..	..	..	..	..
	K	10	10	10 1 4	10	10	10	10	10	10	10	10	10	2 1 (*a*) 2 3 (*b*) 1 15 (*c*)	3	2 8	8 8	1 4	1 8
Rabi 1933-34 to-date.	P	11	11	11 0 0	11	11	11	11	11	11	..	..	..	..	..	..	..	..	..
	K	9	9	9 0 0	9	9	9	9	9	10	10	10	10	2 1 (*a*) 2 3 (*b*) 1 15 (*c*)	3	2 8	8 8	1 4	1 8

(1) P denotes Perennial channels.
(2) K denotes Kharif channels.
(3) The above rates are for flow irrigation whereas for lift irrigation the rates are half of the above, except on Indus Inundation Canal where rates for flow and lift are the same. On Chenab Inundation Canals the rates for flow and lift irrigation are Rs. 3 and Rs. 2-4 respectively.
(4) The rate for Sugarcane on Lower Chautang Nala Canal (Western Jumna Canal) is Rs. 4-2.
(5) In the case of Lower Bari Doab Canal, only one Schedule rate has been taken.

(*a*) Sidhnai Canal proper—Multan tahsil.
(*b*) „ „ „ Kabirwala and Khanewal tahsils.
(*c*) Subsidiary Canals in Kabirwala and Khanewal tahsils.

4. The following figures giving an estimate of the cost of cultivation of cane to the cultivator in Lyallpur, Jullundur and Gurdaspur districts during the years 1933-34, 1934-35 and 1935-36 are only available:—

District.	Class of area.	1933-34.	1934-35.	1935-36.
		Rs. a. p.	Rs. a. p.	Rs. a. p.
Lyallpur . .	Canal Irrigated . .	122 1 2	139 12 8	124 7 6
*Jullundur .	Well Irrigated . .	225 4 11	234 12 5	236 15 5
†Gurdaspur .	Partly canal Irrigated and partly barani.	101 13 2	156 7 9	126 7 6

* The high costs in Jullundur are due to high costs for lifting water.

† Separate figures for barani area are not available. The figures given above do not represent the actual outlay of the cultivator as many of the items included in the cost of cultivation are not items of actual expenditure (in cash) by the cultivator. The actual outlay (in cash) would be very much less than the figures above indicate.

No information is available as to variations in cost during the last seven years.

Only the following figures showing the average yield per acre are available:—

District.	1927-28 to 1931-32.	1933-34.	1934-35.	1935-36.
	Mds.	Mds.	Mds.	Mds.
23 districts	32·4	...	...	...
Lyallpur	...	25·6	33·1	32·2
Jullundur	...	44·4	39·0	42·7
Gurdaspur	...	18·5	19·7	16·3

The sucrose content of various canes in different districts of the province is as follows:—

District.	Average for Coimbatore varieties.	Average for local cane.
Lahore	10·2	10·8
Montgomery	10·8	10·2
Multan	10·2	10·4
Lyallpur	9·5	10·2
Sheikhupura	9·6	9·3

A statement showing estimated cost of cultivation of sugarcane per acre in important cane-growing districts is also appended as furnished by the Director of Land Records, Punjab.

ANNEXURE A.

Estimated cost of cultivation of sugarcane per acre in important cane-growing districts.

Year.	Lyallpur.		Ambala,		Amritsar.		Gurdaspur.		Jullundur.		Rohtak.	
	Irrigated.	Unirrigated.	Irrigated.	Unirrigated.	Irrigated.	Unirrigated.	Irrigated.	Unirrigated.	Irrigated.	Unirrigated.	Irrigated.	Unirrigated.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs. a.	Rs. a.	Rs.	Rs.
1930-31												
1931-32												
1932-33												
1933-34	70	..	60	50	50 to 70	..	80	60	105 12	84 12	57	27
1934-35												
1935-36												
1936-37												

5. A fair price for cane may be estimated at As. 5 to As. 5-6 per maund, according to the various conditions prevailing in the various parts of the province.

6. The reasons for marked variations in the cultivation of sugarcane (as recorded in the Season and Crop Reports) are noted below:—

Year.	Reasons.
1930-31 .	Increase was due to favourable season and sufficient supply of canal water at sowing time.
1931-32 .	Increase was due to favourable season and high prices of gur.
1932-33 .	The increase, apart from favourable season at sowing time, was due to the fall in prices of cotton last year with a consequent decrease in the area of cotton.
1933-34 .	The decrease was due to fall in the prices of gur last year.
1934-35 .	The decrease was due to unfavourable season at the time of sowing.
1935-36 .	The increase was due to good prices of gur and to a sufficient supply of canal water at the time of sowing.
1936-37 .	The increase was due to sufficient rainfall at sowing time and good prices of gur obtainable last year.

7. The estimated production of gur in the Punjab in 1936-37 was 433,500 tons which was considerably more than that during the preceding three years, but was less than that in 1932-33 when it was 444,100 tons. The extent of increase in 1936-37 does not justify the imposition of any restriction on cultivation of cane in this province.

8. The principal competitor with sugarcane is cotton. The only figures available are reproduced below for what they are worth:—

Gross income per acre.

District.	1933-34.		1934-35.		1935-36.	
	Cotton.	Sugarcane.	Cotton.	Sugarcane.	Cotton.	Sugarcane.
	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.
Lyallpur	44 15 1 (Desi) 55 15 11 (American)	90 12 7	40 14 4 97 10 2	159 3 5	53 12 3 69 14 7	152 3 5
Jullundur .	23 1 9	176 9 7	49 10 4	196 1 5	55 11 9	199 2 1
Gurdaspur .	20 13 3	66 6 6	..	..	..	..
Net income (profit or loss per acre.)						
Lyallpur	8 13 7 (Desi) 19 15 2 (American)	31 4 7	3 6 3 49 13 8	19 6 9	11 10 1 25 4 0	27 11 11
Jullundur .	25 2 3	48 11 4	17 14 0	38 11 0	4 3 7	37 13 4
Gurdaspur .	10 1 7	35 6 8	..	..	..	..

It will be observed that under net income on many occasions the crop has been produced at a net loss according to the above figures. In considering this matter, however, it must be borne in mind that figures of expenditure in all cases include various items many of which are not items of actual expenditure. The net income shown above, is, therefore, more theoretical than real.

A statement is also appended as furnished by the Director of Land Records, Punjab.

ANNEXURE B.

District.	Crop.	Return per acre.*	Expenditure.	Balance.
		Rs. a.	Rs. a.	Rs. a.
Lyallpur . .	Cotton (irrigated) . . .	33 8	28 8	5 0
Amritsar . .	1. Cotton (irrigated) . .	35 3	25 0	10 3
	2. Toria (irrigated) . .	40 15	23 8	17 7
Gurdaspur .	Cotton (irrigated) . . .	60 0	40 0	20 0
	„ (unirrigated) . .	45 0	30 0	15 0
	Rice (irrigated) . . .	40 0	25 0	15 0
	Wheat and Toria. (irrigated) . . .	70 0	40 0	30 0
	Wheat and Toria. (unirrigated) . .	50 0	32 0	18 0
Jullundur . .	Wheat (irrigated) . . .	..	73 8	..
	„ (unirrigated) . .	..	42 0	..
	Cotton (irrigated) . . .	..	73 8	..
	„ (unirrigated) . .	..	63 0	..
	Tobacco (irrigated) . . .	..	83 8	..
Rohtak . .	Cotton (Irrigated) . . .	45 0	..	..
	„ (unirrigated) . .	33 8	..	..
Ambala . .	Cotton (irrigated) . . .	40 0	..	..
	„ (unirrigated) . .	30 0	..	..

9. No separate figures are maintained for sugarcane as distinct from any other crop.

10. A grant of Rs. 31,740 was given by the Government of India from the Sugar Excise Fund during 1935-36 and it is expected that a further allotment of Rs. 25,500 will be made for expenditure during the current financial year. The contribution is used to employ staff for the spread of improved canes in the areas from which sugar factories draw their supplies; for an improvement in the methods of cultivation, manuring, etc., for chemical analyses of cane and for adopting measures to protect cane crops from insect pests and other diseases in those areas. The contribution is adequate.

*After excluding land revenue and abiana.

11. Experiments have been carried out for very many years on all the principal experimental farms of the Agricultural Department. These experiments include the growing of very large numbers of improved canes imported from Coimbatore in order to determine those most suitable for local conditions; improved methods of cultivation, a study of the economics of manures, as well as a study of the life history and methods of control of the various insect pests which attack sugarcane.

12. The only financial assistance obtained was from the Imperial Council of Agricultural Research, which supplied the following:—

(i) a grant of Rs. 13,060 for devising an improved sugarcane mill;

(ii) a grant of Rs. 1,32,970 spread over five years for research into the improvement of sugarcane.

The funds are adequate for present purposes.

Large numbers of new seeding canes are obtained annually from the Coimbatore Sugarcane Research Station for testing in the province.

13. Only one factory, that at Sonepat, has co-operated with the Agricultural Department or made any attempt to introduce improved varieties of cane. For a number of years this factory imported into the area, from which it draws its supplies, improved varieties of cane from the United Provinces and some parts of the Punjab. It advanced this cane as seed to the growers after entering into a contract with them, collecting the cost after the crop had been harvested. The Agricultural Department assisted by meeting incidental expenses connected with the transport and distribution of these canes.

14. It is difficult to give exact figures. The bulk of the crop in the province is converted into gur. A certain amount is fed to cattle when there is a scarcity of ordinary fodder crops. Sale to factories is comparatively rare, except in those areas which adjoin the few sugar factories which exist. Such figures as were collected during the inquiry into the cost of production of cane indicated the following:—

		Per cent.
(1) Coimbatore seed cane—		
Made into gur or sold to factories		80
Kept for seed	about	15
Fed to cattle	,,	5
(2) Co. Ratoon Cane—		
Made into gur or sold to factories	,,	90
Kept for seed	,,	3
Fed to cattle	,,	7
(3) Desi Sugarcane—		
Made into gur or sold to factories	,,	56
Kept for seed	,,	12
Fed to cattle	,,	32.

No open pan sugar factories or khandsaris worked in the province during the last season.

15. So far as cultivation is concerned the limiting factors are the availability of irrigation supplies, the manure required and the labour necessary. Under delivery to the factory the following difficulties are reported to be prevailing in the chief cane-growing districts:—

(1) Bad roads which become impassable during rains.

(2) Delay in taking delivery.

(3) Defective weighment.

(4) Delay in weighment.

(5) Undue deduction in weighment and price.

(6) No sheltering place at the factory for growers and their cattle.

(7) Payment of lower prices by contractors than those fixed by the factory people.

(8) Payment of lower rates by factory agents at local centres than those paid at the factory.

(9) The terms of agreement for sale of cane between the factory and the grower are all one-side from contractors.

(10) Difficulties in recovering payments from contractors.

(11) Absence of information of the closure of the factory on account of damage to the machinery, etc.

16. As the funds allotted by the Government of India in 1935 were insufficient to finance the Co-operative as well as the Agricultural basis of the Cane-Growers Organizations proposed by the Punjab Government, provision could only be made for the latter. Co-operative Organizations of Cane-Growers has therefore not been possible, and no unions and societies of this nature are in existence. The ground has, however, been explored, and the organization could be started if funds were available.

17. Rules were framed in June, 1933, under the Sugar Industry (Protection) Act, 1932, *vide* copy of Punjab Government, Industries and Labour Department, notification No. 15730, dated the 1st June, 1933, appended as Appendix No. 1), requiring sugar factory owners to post notices on the morning of 1st and 15th days of every month during the cane crushing season, showing the price of cane worked out according to the prescribed scale on the "Cane Rate Notice" form (copy appended as Appendix II). It was proposed to enforce the rules as from the cane crushing season 1934-35. In view, however, of the extreme infancy of the industry and practical difficulties and disabilities of sugar factories, the Punjab Government thought it fit to cancel the rules in November, 1933. It has not been considered necessary so far to fix minimum prices for sugarcane under the Sugarcane Act for the undermentioned reasons:—

(1) The supply of sugarcane is less than the market demand and the local growers are assured of a fair price by the interaction of the law of supply and demand.

(2) The average yield of Punjab sugarcanes is lower than that of sugarcanes produced in United Provinces, Bihar, etc., and the sugar manufacturer in the Punjab is already at a disadvantage as compared with sugar manufacturers in most other parts of India where better quality canes grow. Even now he has to import cane from the United Provinces and distant places within the province and the price of imported canes to him varies from 6 to 7 annas per maund at the factory gate.

APPENDIX I.

INDUSTRIES AND LABOUR DEPARTMENT.

The 1st June, 1933.

No. 15730.—In exercise of the powers conferred by section 6 of the Sugar Industry (Protection) Act, 1932, the Punjab Government (Ministry of Local Self Government) is pleased to make the following rules under the said Act:—

1. These rules may be called "The Punjab Sugar Industry Protection Rules."

2. The owner of every sugar factory shall post notices on the morning of the first and fifteenth days of every month during the cane purchasing season at each entrance to the factory and in such conspicuous places, if any, near any such entrance as the Director of Industries, Punjab, may in each case appoint, containing the following information:—

(i) The current rate of cane, delivered at the factory.

(ii) The average fornightly price of Java white sugar in the Amritsar market for the fortnights ending on the 7th and 21st days of each month, and

(iii) The price of cane worked out according to the sliding scale described hereinafter, on the basis of the Amritsar price and the previous year's extraction.

3. The sliding scale for a particular factory shall be calculated by the following formula, on the assumption that the price of a maund (82·3 lbs.) of cane shall be equal to half the price of sugar made therefrom (on the basis of the Amritsar price of Java white sugar and the previous year's extraction of sugar per cent. cane for that factory):—

$$C = \cdot 08 \times S \times P.$$

where—

C = price of cane for purposes of the sliding scale (in annas per maund) delivered at the factory gate, including transport charges, dryage, commission and supervision charges.

S = average extraction of sugar per cent. cane for the factory during the previous working season, and

P = average fortnightly price in rupees per maund, as announced by the Director of Industries in the *Punjab Government Gazette* and the Director-General of Commercial Intelligence and Statistics, in the *Indian Trade Journal*, of Java white sugar at Amritsar during the immediate preceding fortnight, ending on the 7th or the 21st day of the month. Provided, however, that the price of cane (that is, the value of C in the above formula) shall not be below five annas per maund whatever the price and the extraction of sugar may be.

Example 1.—The average exrtaction of sugar in Factory A during the cane season 1931-32 was 9·35 per cent., and the average Amritsar price of Java white sugar during the fortnight ending 7th February, 1933, is Rs. 10-4-6 per maund.

The price of cane to be shown in the cane-rate notice during the period from the 15th February to the 28th February, 1933, shall be $\cdot 08 \times 9 \cdot 35 \times 10 \cdot 9 / 32$ annas or seven annas six pies per maund.

Example 2.—Factory B had an extraction of 5·5 per cent. during 1931-32. The price of cane according to the formula for the period from 15th February to the 28th February, 1933, shall be $\cdot 08 \times 5 \cdot 5 \times 10 \cdot 9 / 32$ annas or 4·77 annas. As this figure is below the minimum of 5 annas per maund the price to be shown in the cane-rate notice shall be five annas.

4. The cane-rate notice shall be in English in the form attached to the rules, a translation of which shall also be issued in Hindi, Urdu and Gurmukhi.

5. (*a*) An owner of the factory who fails to post the notices required by rule 2 in the manner required therein shall be punishable with a fine which may extend to rupees five hundred.

(*b*) An owner of a factory who contravenes the provisions of rule 4 shall be punishable with a fine which may extend to rupees fifty.

(*c*) No complaint of an offence under these rules shall be instituted save with the previous sanction of the District Magistrate of the district in which the factory is situated; and no magistrate other than a Magistrate of the 1st class shall have power to try such offence.

APPENDIX II.

DEPARTMENT OF INDUSTRIES AND LABOUR.

The 3rd August, 1933.

No. 20520.—The notice referred to in Rule 4 of the rules published with Punjab Government notification No. 15730, dated the 1st June, 1933, is reproduced below:—

CANE-RATE NOTICE.

Name of factory.....

It is hereby notified under section 6 of the Sugar Industry (Protection) Act, 1932, and the rules framed by the Government of the Punjab, that the price of cane calculated on the basis of the Sliding Scale as applied to this factory, is annas per maund of 82·3 lbs., including transport charges, dryage, commission and supervision charges.

This price has been calculated for the period from to .

The price at which sugarcane is being actually bought by this factory is annas per maund.

Signature.

Date.

F. H. PUCKLE,
Secretary to Government, Punjab,
Finance Department.

No. 20521 (Ind. & Lab.), dated 3rd August, 1933.

A copy is forwarded to the Director of Industries, Punjab, for information, with reference to his letter No. 8858, dated the 22nd July, 1933.

By order, etc.,

F. H. PUCKLE,
Secretary to Government, Punjab,
Finance Department.

18. As the few sugar factories in the Punjab working with cane direct are situated at considerable distances from one another, there does not exist any competition among them in the purchases of their supplies of cane and accordingly the price of cane is not influenced by the conditions of competition except in the case of the factory at Abdullapur, which is situated very close to the eastern boundary of the province touching the United Provinces. The price of sugarcane here is affected by the competition of such United Provinces factories as The Ganga Sugar Corporation, Limited, Deoband; The Amritsar Sugar Mills, Nohana; Upper India Sugar Mills, Limited, Kathauli, and the Diwan Sugar Mills, Sekoti Tanda, all of which purchase their supplies *inter alia* at Sarsawa and Kalanaur, the former being only 10 miles from Abdullapur. Here the internal competition of the factories tends to maintain the price at a high level.

19. Competent interests consulted have been divided in their opinions on this question. I quote below *verbatim* the statement of the Manager, Saraswati Sugar Mills, Abdullapur.

> "The superior, early and late varieties of cane have not proved very successful in our experience. On the 15th of April, the famous late ripening variety Co. 331 did not prove to be a great success. Even Co. 312 proved slightly better (Co. 312, 88 purity and Co. 331, 86) and the early variety like Co. 350 (the much acclaimed early

variety) has not given very satisfactory results. In some cases even Co. 213 has ripened earlier than Co. 315. Our result vary from field to field and therefore, the definite superiority of the so-called late and early varieties has not been established in our opinion and therefore no bonus is recommended.

The introduction of the bonus system for special varieties would have more difficulties in practical working also. The identification of the different varieties of cane would have to be left to the weighment clerks and disputes arising out of the identity of the cane become far more numerous."

The Assistant Manager of the Sonepat Sugar Factory, on the other hand, was of the opinion that the introduction of a system of bonus payments for superior, early or late varieties of cane will help in prolonging the duration of the crushing season and the encouragement to the cultivation of superior varieties will result in sugar factory owners obtaining higher percentages of sugar. He suggested a bonus of 3 to 6 pies per maund, for such varieties. Messrs. Gujranwala Sugar Mills Company, Limited, also supported the suggestion in principle but expressed a doubt whether the scheme will be successful in practice and whether the cultivators would take it seriously.

The supply of sugarcane being insufficient in the Punjab and generally of not very superior quality, the introduction of a system of bonus payment for superior early and late varieties of cane would certainly be of advantage to factory owners both in prolonging the crushing season which terminates much earlier in this province than elsewhere, and in getting a better yield of sugar.

20. The average cost of transportation of cane by carts in the Eastern and Southern Punjab is 1½ pies per maund per mile, while at Rahwali it is 1¼ pies per maund per mile. At Bhalwal it was stated to be As. 1-3 per maund for places within a radius of 8 miles.

21. The cane-growers generally employ their own carts. Sometimes the carts are borrowed and the cultivator puts his own oxen to the carts. In Eastern and Southern Punjab the cost comes to about 2½ pies per maund per mile. At Rahwali and Bhalwal the average cost of hire of carts is about the same as given in reply to question No. 20 above. The hire of carts in Central Punjab varies from anna 1 to As. 1-6 per maund on the weight of cane.

22. Yes, but no special facilities have been effected for the object of transport of cane. Tramway systems do not exist but the feeder road system both metalled and unmetalled have been considerably extended and improved in recent years.

23-24. With the grant of protection to the sugar industry, the Department of Industries received a large number of requests for technical guidance in the establishment of small scale open pan factories from all over the province. Advice was rendered to such enquirers on such matters as most suitable plant for Punjab canes and names and addresses of suppliers thereof, proper localities for the establishment of open pan and other sugar factories, processes of manufacture, economics of the industry, literature bearing on the subject, etc. Financial assistance was rendered to 12 individuals by the grant of loans for the development of sugar industry in the Punjab under the Punjab Industrial Loans Act, 1923, of sums varying from Rs. 1,000 to Rs. 5,000. Particular assistance was rendered to sugar factories on the following counts:—

(1) Purchase of 1,500 shares of the value of Rs. 1,50,000 in the Punjab Sugar Corporation, Sonepat, (now known as the Sonepat Sugar Factory, Sonepat), in 1929.

(2) Reduction in the rate of terminal tax chargeable on sugarcane from As. 1-6 per maund to 6 pies per maund secured for the Punjab Sugar Corporation, Limited, Sonepat, in 1932.

(3) Acquisition of site for the Bhalwal Sugar Mills Company, Limited, Bhalwal, secured in 1933.

(4) Representation to Agent, North Western Railway, for reduction in froight charges on sugarcane imported by the Punjab Sugar Corporation Limited, Sonepat, over Gaziabad-Saharanpur Section in 1934. The relief asked for was not granted on the ground that further relief of 18 to 22 per cent. had been provided as from 1st September, 1934, over the rates in force prior to 1st September, 1934.

(5) Representation to the Agent, North Western Railway, for the provision of siding terminating on the railway land for the sugar factory of Babu Jawar Singh & Sons at Bhutari in 1935. The siding was not granted on the ground that it was " against the policy of the Railway to provide such facilities for private firms wholly within the Railway land ".

(6) Representation to the Agent, North Western Railway, for reduction in freight charges on sugarcane imported from United Provinces to the level of freight rates charged on the East Indian Railway in 1935. The request was not acceded to but in order to give further relief to the sugar industry, I was informed that special wagon rates were being introduced for sugarcane from 1st November, 1935, in local booking over North Western Railway and from the 11th November, 1935, in through booking with foreign railways.

(7) Acquisition of land measuring 10·94 acres for the disposal of the waste water secured for the Gujranwala Sugar Mills, Limited, at Rahwali in the Gujranwala District in 1936.

(8) Representation to the Agent, North Western Railway, for the extension of siding for the sugar factory of the Amritsar Distillery Company, Limited, Amritsar, at Pattoki in 1936. The request was not acceded to as the extension of the existing shunting neck was not justified at that stage. Arrangements were, however, made to provide an approach road from the gate of the mills to the shunting neck of the siding.

Commercial and industrial intelligence has been supplied to sugar factory owners on such matters as statistics of production, import and export of sugar, lists of sugar factories in various provinces, prospects of the industry in the Punjab etc., etc. The Industrial Chemist of the Department rendered technical advice to the sugar factory at Bhalwal and to Batala sugar factory which was later converted with some modifications into a factory for the production of starch.

25. No co-operative sugar factory exists in the Punjab. The Punjab Sugar Corporation was widely advertized as partaking in co-operative principles, but they were never apparent.

26. The condition of labour in sugar factories is generally satisfactory. The rates of wages paid are adequate and residential quarters are generally provided by the larger concerns for their skilled labour. The unskilled labour drawn from the neighbouring villages retire to their homes after finishing their work at the factory. Some factories provide rented quarters for their workers. Skilled labour in some of the factories is imported from United Provinces and efforts are made to train the local workers in the various processes of the work.

27. *Director of Land Records.*—Statements showing the fortnightly wholesale and retail prices of raw sugar (gur) at Ambala, Jullundur, Amritsar, Gurdaspur, Sialkot and Lyallpur markets for seven years—1930-36 and wholesale prices of sugar (refined) for 1936 (figures prior to this year not available) are attached.

Director of Agriculture.—The wholesale prices for Jullundur for a little over six years, collected from Tahsil Records, and for Lyallpur market for a little over two years, collected from the market records, are attached herewith. No retail price data are available.

Director of Industries.—It has not been possible to collect at such a short notice the wholesale and retail prices of sugar at all important markets in the province. The following statements of wholesale and retail prices are appended at the end of the note:—

(1) *Statement No. I* showing monthly the wholesale prices of sugar in rupees per maund at Sialkot from 1930 to 1937 (Maund= 82¾ lbs.).

(2) *Statement No. II* showing monthly the retail prices of sugar in seers per rupee at Sialkot for the years 1930-31 to 1936-37.

(3) *Statement No. III* showing wholesale and retail prices of sugar in rupees per maund at Lyallpur for the years 1930-31 to 1936-37.

(4) *Statement No. IV* showing wholesale prices of sugar—Java imported, Indian Mill made and Khandsari in rupees per maund at Ludhiana for the years 1930-31 to 1936-37.

(5) *Statement No. V* showing retail prices of sugar in annas per seer at Ludhiana for the years 1930-31 to 1936-37.

(6) *Statement No. VI* showing wholesale prices of sugar in rupees per maund at Ambala for the years 1930-31 to 1936-37.

(7) *Statement No. VII* showing retail prices of sugar in annas per seer at Rohtak for the years 1930-31 to 1936-37.

DIRECTOR OF LAND RECORDS.

Statement showing the wholesale prices of raw sugar (gur) in rupees per maund during the years 1930 to 1936.

Fortnight.	Ambala.	Jullundur.	Amritsar.	Gurdaspur.	Sialkot.	Lyallpur.
	Rs. A. P.	Rs. A. P.	Rs. A.	Rs. A. P.	Rs. A. P.	Rs. A. P.
1930.						
15th Jan.	6 4 0	8 0 0	8 0	6 2 0	6 5 0	5 9 0
31st Jan.	6 0 0	8 0 0	7 0	6 8 0	5 11 6	5 8 0
15th Feb.	5 14 0	8 0 0	7 0	6 0 0	4 11 3	5 12 0
28th Feb.	5 8 0	8 0 0	7 0	6 0 0	4 11 3	5 12 0
15th Mar.	6 0 0	8 0 0	7 0	5 8 0	5 0 0	5 4 0
31st Mar.	6 8 0	8 14 3	7 0	...	5 0 0	5 12 0
15th Apr.	6 8 0	8 14 3	6 0	6 0 0	5 0 0	5 0 0
30th Apr.	7 0 0	9 6 9	6 4	7 0 0	5 0 0	6 8 0
15th May	7 4 0	9 6 9	8 0	6 4 0	5 0 0	6 4 0
31st May	7 4 0	9 6 9	9 0	8 0 0	5 0 0	6 4 0
15th June	8 9 0	9 6 9	9 0	8 0 0	5 5 3	6 2 0
30th June	8 0 0	8 14 3	9 0	8 0 0	6 2 6	6 4 0
15th July	7 0 0	8 14 3	9 12	8 0 0	7 4 3	6 8 0
31st July	7 0 0	8 14 3	8 0	7 0 0	7 4 3	6 0 0
15th Aug.	7 0 0	8 14 3	9 0	7 8 0	...	6 4 0
31st Aug.	7 0 0	8 14 3	9 0	8 0 0	6 10 9	6 0 0
15th Sep.	6 6 0	9 6 6	9 0	8 0 0	6 10 9	6 8 0
30th Sep.	6 6 0	8 14 3	9 0	7 8 0	6 10 9	5 8 0
15th Oct.	5 12 0	8 14 3	7 8	7 0 0	7 4 3	5 8 0
31st Oct.	7 4 0	8 0 0	7 0	5 0 0	7 4 3	6 0 0
15th Nov.	7 4 0	6 10 9	7 0	5 0 0	6 6 3	5 8 0
30th Nov.	5 8 0	5 11 6	4 3	4 4 0	6 2 6	4 0 0
15th Dec.	5 0 0	5 0 0	3 7	3 4 0	3 15 3	3 4 0
31st Dec.	4 0 0	...	4 0	4 0 0	3 1 3	3 12 0

Statement showing the wholesale prices of raw sugar (gur) in rupees per maund during the years 1930 to 1936—contd.

Fortnight.	Ambala.	Jullundur.	Amritsar.	Gurdaspur.	Sialkot.	Lyallpur.
	Rs. A. P.	Rs. A. P.	Rs. A.	Rs. A. P.	Rs. A. P.	Rs. A. P.
1931.						
15th Jan.	5 2 0	5 11 6	4 0	4 0 0	3 14 6	3 14 0
31st Jan.	5 2 0	5 0 0	4 8	4 0 0	4 3 3	3 12 0
15th Feb.	4 12 0	5 0 0	4 8	3 12 0	3 10 3	3 12 0
28th Feb.	4 12 0	5 0 0	4 7	3 12 0	3 7 6	3 8 0
15th Mar.	4 12 0	5 0 0	4 7	3 12 0	3 8 9	3 8 0
31st Mar.	4 8 0	5 0 0	4 7	3 12 0	3 10 3	3 8 0
15th Apr.	4 12 0	5 0 0	4 12	3 8 0	3 5 3	3 4 0
30th Apr.	4 12 0	5 0 0	4 4	3 8 0	3 7 6	3 4 0
15th May	4 12 0	5 0 0	4 4	3 8 0	3 7 6	3 6 0
31st May	4 12 0	5 0 0	4 4	3 8 0	3 6 6	3 6 0
15th June	4 12 0	5 0 0	4 14	3 12 0	3 8 9	3 8 0
30th June	4 12 0	5 0 0	4 14	3 8 0	3 8 3	3 8 0
15th July	4 12 0	5 0 0	4 14	3 8 0	3 6 6	3 6 0
31st July	4 12 0	5 0 0	4 14	3 12 0	3 6 6	3 8 0
15th Aug.	4 12 0	5 0 0	4 14	3 12 0	3 10 3	3 12 0
31st Aug.	4 12 0	5 0 0	4 14	3 12 0	3 8 9	3 14 0
15th Sep.	4 12 0	5 11 6	5 0	3 12 0	3 8 3	4 0 0
30th Sep.	4 12 0	5 11 6	5 0	3 12 0	3 14 6	4 4 0
15th Oct.	5 0 0	5 8 0	5 0	3 8 0	3 11 6	4 8 6
31st Oct.	5 0 0	4 7 0	5 0	4 0 0	3 9 6	4 12 0
15th Nov.	5 0 0	4 0 0	5 0	4 8 0	4 11 3	4 4 0
30th Nov.	5 0 0	5 8 6	4 12	3 10 0	4 9 0	3 0 0
15th Dec.	4 3 0	4 0 0	4 0	3 8 0	3 8 9	3 0 0
31st Dec.	4 0 0	4 11 3	4 0	4 0 0	4 1 6	3 8 0
1932.						
15th Jan.	4 3 0	4 0 0	3 12	3 10 0	3 11 6	3 12 0
31st Jan.	3 14 6	4 0 0	3 12	3 10 0	3 15 3	3 6 0
15th Feb.	3 8 0	4 0 0	4 0	3 10 0	3 7 6	3 0 0
29th Feb.	3 8 0	3 11 3	3 14	3 5 0	3 10 9	3 0 0
15th Mar.	3 6 0	3 10 9	3 8	3 4 0	3 3 3	2 12 0
31st Mar.	3 0 0	3 10 3	3 8	3 0 0	3 0 9	2 12 0
15th Apr.	3 0 0	3 10 3	3 8	2 12 0	3 1 3	2 12 0
30th Apr.	3 0 0	3 5 3	3 8	2 12 0	3 6 6	2 12 0
15th May	2 12 0	3 10 3	3 0	2 12 0	3 5 3	3 0 0
31st May	2 5 0	3 10 3	3 0	2 12 0	3 0 3	2 12 0
15th June	2 12 0	3 10 3	3 0	2 10 0	2 13 9	2 8 0
30th June	2 12 0	3 1 3	3 8	2 4 0	2 13 9	2 4 0
15th July	2 10 0	2 8 0	3 8	2 8 0	2 13 9	2 4 0
31st July	2 12 0	2 8 0	3 8	2 12 0	2 13 9	2 8 0
15th Aug.	3 2 0	3 1 3	3 10	2 12 0	2 13 9	2 4 0
31st Aug.	3 4 0	3 5 3	3 10	2 14 0	2 12 0	2 4 0
15th Sep.	3 4 0	3 10 3	3 8	3 0 0	2 15 3	2 4 0
30th Sep.	3 4 0	3 5 3	3 14	3 1 0	3 1 3	2 8 0
15th Oct.	3 0 0	3 13 0	3 14	3 3 0	3 1 3	3 8 0

Statement showing the wholesale prices of raw sugar (gur) in rupees per maund during the years 1930 to 1936—contd.

Fortnight.	Ambala.	Jullundur.	Amritsar.	Gurdaspur.	Sialkot.	Lyallpur.
	Rs. A. P.	Rs. A. P.	Rs. A.	Rs. A. P.	Rs. A. P.	Rs. A. P.
1932—contd.						
31st Oct.	3 0 0	3 13 0	3 12	3 5 0	3 1 3	3 8 0
15th Nov.	3 0 0	3 13 0	4 7	3 1 0	3 1 3	3 8 0
30th Nov.	3 0 0	3 10 3	4 0	3 0 0	3 1 3	3 0 0
15th Dec.	2 12 0	3 5 3	4 0	2 7 0	3 0 0	2 8 0
31st Dec.	2 12 0	3 5 3	3 12	2 8 0	3 2 9	2 8 0
1933.						
15th Jan.	3 1 0	4 0 0	3 8	2 7 0	3 5 3	2 8 0
31st Jan.	2 12 0	3 10 3	3 4	2 6 0	3 2 3	2 8 0
15th Feb.	2 12 0	3 10 3	3 8	2 11 0	3 1 3	2 11 0
28th Feb.	2 4 0	3 10 3	3 8	2 4 0	3 0 3	2 4 0
15th Mar.	2 4 0	3 10 3	3 4	2 4 0	3 3 3	2 4 0
31st Mar.	2 0 0	3 10 3	3 0	2 8 0	3 5 3	2 4 0
15th Apr.	2 8 0	3 1 3	3 8	2 8 0	3 3 3	2 4 0
30th Apr.	2 12 0	3 5 3	3 8	3 5 0	3 3 3	3 0 0
15th May	2 4 0	4 0 0	3 12	3 5 0	3 5 3	3 0 0
31st May	2 4 0	4 7 0	4 0	3 3 0	3 0 3	2 8 0
15th June	2 8 0	4 7 0	4 0	3 1 0	3 10 3	3 4 0
30th June	3 4 0	4 7 0	4 0	3 3 0	3 10 3	3 0 0
15th July	3 0 0	4 7 0	4 4	3 1 0	4 0 0	3 8 0
31st July	3 0 0	4 7 0	4 8	3 3 0	4 7 0	3 0 0
15th Aug.	3 0 0	5 0 0	4 8	3 1 0	4 3 3	3 4 0
31st Aug.	3 0 0	5 0 0	4 0	2 14 0	4 3 3	2 12 0
15th Sep.	3 0 0	4 11 3	5 0	2 15 0	4 3 3	3 0 0
30th Sep.	2 12 0	4 11 3	5 0	3 3 0	4 3 3	2 12 0
15th Oct.	2 12 0	4 11 3	4 0	3 3 0	4 3 3	2 12 0
31st Oct.	2 8 0	5 0 0	4 0	3 3 0	4 0 0	3 0 0
15th Nov.	2 12 0	...	4 0	3 3 0	5 5 3	2 8 0
30th Nov.	2 12 0	5 0 0	4 0	3 10 0	4 0 0	3 8 0
15th Dec.	2 12 0	4 0 0	4 0	2 14 0	3 5 3	3 4 0
31st Dec.	3 8 0	4 0 0	4 0	2 14 0	3 1 3	3 0 0
1934.						
15th Jan.	3 8 0	3 13 0	3 10	2 12 0	2 8 0	3 8 0
31st Jan.	4 0 0	3 10 3	3 10	3 0 0	2 8 0	3 10 0
15th Feb.	3 0 0	3 10 3	3 10	3 0 0	2 10 9	3 8 0
28th Feb.	3 0 0	3 10 3	3 12	3 0 0	2 10 9	3 4 0
15th Mar.	3 0 0	3 10 3	4 0	3 4 0	3 1 3	3 1 0
31st Mar.	3 8 0	3 10 3	4 0	3 4 0	3 5 3	3 4 0
15th Apr.	3 8 0	3 5 3	4 0	3 8 0	3 1 3	3 6 0
30th Apr.	3 12 0	3 5 3	4 14	4 8 0	3 10 3	3 8 0
15th May	3 12 0	4 0 0	5 8	4 8 0	3 10 3	4 4 0
31st May	4 0 0	4 0 0	5 8	4 8 0	4 7 0	4 8 0
15th June	4 0 0	4 7 0	5 8	4 4 0	4 7 0	5 0 0
30th June	4 12 0	5 0 0	5 8	4 8 0	5 0 0	5 4 0

Statement showing the wholesale prices of raw sugar (gur) in rupees per maund during the years 1930 to 1936—contd.

Fortnight.	Ambala.	Jullundur.	Amritsar.	Gurdaspur.	Sialkot.	Lyallpur.
	Rs. A. P.	Rs. A. P.	Rs. A.	Rs. A. P.	Rs. A. P.	Rs. A. P.
1934—contd.						
15th July	5 0 0	5 11 6	...	4 4 0	5 0 0	5 0 0
31st July	6 4 0	5 11 6	...	4 8 0	5 5 3	4 12 0
15th Aug.	5 8 0	5 3 3	...	4 8 0	5 11 6	4 12 0
31st Aug.	5 8 0	6 10 6	...	4 4 0	5 11 6	5 6 0
15th Sep.	7 0 0	6 10 6	...	5 8 0	5 11 6	5 8 0
30th Sep.	7 8 0	8 0 0	8 0	7 4 0	5 11 6	5 8 0
15th Oct.	7 8 0	6 6 6	7 0	5 8 0	5 2 6	5 12 0
31st Oct.	7 0 0	7 4 6	6 0	5 0 0	5 2 3	5 0 0
15th Nov.	7 0 0	6 10 9	6 0	6 2 0	5 0 0	4 12 0
30th Nov.	6 0 0	6 2 3	6 0	4 8 0	5 1 3	5 2 0
15th Dec.	5 8 0	...	6 8	3 8 0	5 0 0	4 0 0
31st Dec.	4 4 0	4 0 0	5 4	3 8 0	4 7 0	4 0 0
1935.						
15th Jan.	4 8 0	4 7 0	5 12	3 8 0	5 0 0	4 6 0
31st Jan.	5 0 0	6 2 0	5 0	5 8 0	4 11 3	5 4 0
15th Feb.	5 0 0	5 5 3	6 0	5 2 0	4 8 0	5 0 0
28th Feb.	5 5 0	5 11 6	6 0	5 4 0	4 9 3	5 0 0
15th Mar.	5 4 0	5 11 6	5 12	5 0 0	4 7 0	4 12 0
31st Mar.	5 4 0	5 5 3	5 12	5 0 0	5 0 0	5 0 0
15th Apr.	5 4 0	5 0 0	5 12	5 8 0	5 0 0	5 2 0
30th Apr.	5 4 0	5 5 3	6 4	5 8 0	5 11 6	5 8 0
15th May	6 0 0	5 5 3	6 4	5 8 0	5 11 6	5 4 0
31st May	5 8 0	6 0 0	6 8	5 8 0	5 11 6	5 4 0
15th June	5 4 0	6 0 0	6 8	5 8 0	5 11 6	5 8 0
30th June	5 4 0	5 11 6	6 8	5 4 0	5 11 6	5 4 0
15th July	5 4 0	5 11 6	6 0	5 4 0	6 10 9	5 2 0
31st July	...	5 11 6	6 0	5 5 0	6 10 9	5 5 0
15th Aug.	5 4 0	5 11 3	5 8	...	6 10 9	5 6 0
31st Aug.	4 12 0	5 9 0	5 8	...	6 10 9	5 6 0
15th Sep.	4 12 0	5 9 0	5 8	5 0 0	6 10 9	5 12 0
30th Sep.	4 12 0	5 8 0	5 8	5 8 0	6 11 0	5 4 0
15th Oct.	5 4 0	5 0 0	7 0	5 8 0	8 0 0	5 4 0
31st Oct.	5 4 0	5 4 6	7 0	4 12 0	7 4 3	5 4 0
15th Nov.	5 0 0	7 4 0	6 8	5 0 0	6 10 9	5 10 0
30th Nov.	5 8 0	5 12 0	5 0	5 5 6	6 2 6	4 12 0
15th Dec.	4 4 0	5 0 0	5 0	4 0 0	5 11 6	4 1 0
31st Dec.	4 2 0	4 7 0	4 0	4 0 0	4 11 3	3 14 0
1936.						
15th Jan.	4 1 0	4 7 0	4 4	3 14 0	5 0 0	4 0 0
31st Jan.	4 1 0	4 7 0	3 14	4 3 6	4 0 0	3 12 0
15th Feb.	4 1 0	4 7 0	3 14	4 3 0	...	3 12 0
29th Feb.	4 1 0	4 7 0	3 14	4 0 0	4 0 0	3 12 0
15th Mar.	3 12 0	4 0 0	3 14	3 12 0	4 0 0	3 14 0

Statement showing the wholesale prices of raw sugar (gur) in rupees per maund during the years 1930 to 1936—contd.

Fortnight.	Ambala.	Jullundur.	Amritsar.	Gurdaspur.	Sialkot.	Lyallpur.
	Rs. A. P.	Rs. A. P.	Rs. A.	Rs. A. P.	Rs. A. P.	Rs. A. P.
1936—contd.						
31st Mar.	3 12 0	4 0 0	3 13	4 1 0	4 7 0	3 15 0
15th Apr.	4 0 0	5 0 0	3 13	4 0 0	5 0 0	3 14 0
30th Apr.	4 0 0	4 7 0	4 0	4 0 0	4 7 0	3 15 0
15th May	4 8 0	5 0 0	4 0	4 0 0	4 7 0	3 11 0
31st May	4 8 0	4 3 6	4 2	4 0 0	4 0 0	3 14 0
15th June	4 0 0	4 0 0	4 0	4 0 0	4 7 0	3 14 0
30th June	3 12 0	4 0 0	4 0	3 8 0	4 7 0	3 14 0
15th July	3 12 0	4 0 0	4 0	3 8 0	5 0 0	3 14 0
31st July	3 12 0	4 0 0	3 12	3 5 3	4 0 0	3 12 0
15th Aug.	3 14 0	4 7 0	4 4	3 1 3	4 7 0	3 12 0
31st Aug.	3 14 0	4 7 0	4 8	3 5 3	4 0 0	3 12 0
15th Sep.	3 14 0	4 7 0	5 0	3 12 0	4 7 0	3 10 0
30th Sep.	3 14 0	4 7 0	5 4	3 12 0	5 0 0	3 6 0
15th Oct.	4 0 0	5 0 0	5 4	4 4 0	5 11 6	4 4 0
31st Oct.	4 0 0	5 5 3	5 8	4 0 0	5 11 6	4 8 0
15th Nov.	4 4 0	5 5 3	5 8	4 0 0	5 14 9	4 6 0
30th Nov.	4 8 0	4 3 3	4 0	3 10 0	4 7 0	3 8 0
15th Dec.	3 12 0	4 11 3	4 0	3 7 3	5 0 0	3 8 0
31st Dec.	3 8 0	5 0 0	4 0	3 1 3	5 0 0	3 12 0

Statement showing the retail prices of raw sugar (gur) in seers per rupee during the years 1930 to 1936.

Fortnight.	Ambala.	Jullundur.	Amritsar.	Gurdaspur.	Sialkot.	Lyallpur.
	Srs. chs.	Srs. chs.	Srs. chs.	Srs. chs.	Srs. chs.	Srs. chs.
1930.						
15th Jan.	6 2	4 0	5 0	7 8	6 12	6 8
31st Jan.	6 6	4 8	5 8	7 8	7 0	6 8
15th Feb.	6 0	4 8	5 8	6 8	8 8	6 0
28th Feb.	7 0	4 8	5 8	6 8	8 8	6 0
15th Mar.	6 6	4 8	5 8	7 0	8 0	6 8
31st Mar.	5 14	4 8	5 8	7 0	8 0	6 8
15th Apr.	5 14	4 8	6 8	6 8	8 0	6 8
30th Apr.	5 6	4 8	6 4	6 0	8 0	6 0
15th May	5 4	4 4	4 12	6 0	8 0	6 0
31st May	5 4	4 4	4 4	5 0	8 0	6 0
15th June	4 12	4 4	4 4	5 0	7 8	6 0
30th June	4 12	4 4	4 4	5 0	6 8	6 0
15th July	5 7	4 8	4 0	5 0	5 8	6 0
31st July	5 7	4 8	4 12	5 8	5 8	6 0
15th Aug.	5 7	4 8	4 4	5 8	5 12	5 8
31st Aug.	5 7	4 4	4 4	5 0	6 0	5 8
15th Sep.	6 0	4 4	4 4	4 12	6 0	5 8

Statement showing the retail prices of raw sugar (gur) in seers per rupee during the years 1930 to 1936—contd.

Fortnight.	Ambala.	Jullundur.	Amritsar.	Gurdaspur.	Sialkot.	Lyallpur.
	Srs. chs.	Srs. chs.	Srs. chs.	Srs. chs.	Srs. chs.	Srs. chs.
1930—contd.						
30th Sep.	6 0	4 4	4 4	5 0	6 0	6 8
15th Oct.	6 10	4 8	5 0	5 12	5 8	6 8
31st Oct.	6 10	4 8	5 8	7 8	6 8	6 0
15th Nov.	5 4	5 0	5 8	7 8	6 4	6 0
30th Nov.	7 0	6 0	9 0	9 0	6 8	10 0
15th Dec.	7 12	6 8	11 0	11 0	10 2	10 0
31st Dec.	9 12	6 8	9 12	9 0	13 0	9 0
1931.						
15th Jan.	7 8	8 0	9 8	9 0	10 4	8 0
31st Jan.	7 8	8 0	8 12	9 0	9 8	9 0
15th Feb.	8 4	8 0	8 12	9 8	11 0	9 0
28th Feb.	8 4	7 0	8 12	10 0	11 8	9 0
15th Mar.	8 4	7 0	8 12	10 0	11 4	10 0
31st Mar.	8 8	7 0	8 12	10 0	11 0	10 0
15th Apr.	8 4	8 0	8 12	10 0	11 4	10 0
30th Apr.	8 4	8 0	9 0	10 0	11 8	11 0
15th May	8 4	8 0	9 0	10 0	11 8	10 0
31st May	8 4	8 0	9 0	10 0	11 12	10 0
15th June	8 4	8 0	8 0	10 0	11 4	10 0
30th June	8 4	8 0	8 0	10 0	11 6	10 0
15th July	8 2	7 0	8 0	10 0	11 12	10 0
31st July	8 2	7 0	8 0	10 0	11 12	10 0
15th Aug.	8 2	7 0	8 0	10 0	11 0	10 0
31st Aug.	8 2	7 0	8 0	10 0	11 4	9 8
15th Sep.	8 2	7 0	8 0	10 0	10 6	9 0
30th Sep.	8 2	7 0	8 0	10 0	10 4	9 0
15th Oct.	7 12	9 0	8 0	11 0	10 12	8 0
31st Oct.	7 12	9 0	8 0	11 0	11 2	7 8
15th Nov.	7 12	7 0	8 0	11 0	8 8	8 0
30th Nov.	7 12	7 0	8 0	11 0	8 12	11 0
15th Dec.	9 4	9 0	10 0	11 0	11 4	10 0
31st Dec.	9 12	8 0	10 0	9 8	9 12	10 0
1932.						
15th Jan.	9 4	9 0	10 0	10 8	10 12	10 0
31st Jan.	10 0	9 0	10 0	10 8	10 2	10 0
15th Feb.	11 4	9 0	9 12	11 0	11 8	11 0
29th Feb.	11 4	10 0	10 0	11 0	10 14	11 0
15th Mar.	10 8	10 0	11 0	11 8	12 8	13 0
31st Mar.	13 0	10 0	11 0	12 0	13 2	13 0
15th Apr.	13 0	10 0	11 0	12 0	13 0	13 0
30th Apr.	13 0	10 0	11 0	12 0	11 12	13 0
15th May	14 0	10 0	13 0	12 0	12 0	12 8

Statement showing the retail prices of raw sugar (gur) in seers per rupee during the years 1930 to 1936—contd.

Fortnight.	Ambala.	Jullundur.	Amritsar.	Gurdaspur.	Sialkot.	Lyallpur.
	Srs. chs.	Srs. chs.	Srs. chs.	Srs. chs.	Srs. chs.	Srs. chs.
1932—contd.						
31st May	16 8	10 0	13 0	14 0	13 4	13 0
15th June	14 4	10 0	13 0	14 0	14 0	14 0
30th June	14 4	10 0	11 0	17 0	14 0	14 0
15th July	14 8	15 0	11 0	15 0	14 0	14 0
31st July	14 0	15 0	11 0	14 0	14 0	14 0
15th Aug.	12 0	13 0	10 8	14 0	14 0	15 0
31st Aug.	12 0	11 0	10 8	13 0	14 8	14 0
15th Sep.	12 4	10 8	11 0	13 0	13 8	15 0
30th Sep.	12 4	10 8	10 0	12 8	13 0	15 0
15th Oct.	13 0	10 0	10 0	12 0	13 0	10 0
31st Oct.	13 0	10 0	10 0	11 8	13 0	10 0
15th Nov.	13 0	10 0	8 12	12 8	13 0	10 0
30th Nov.	13 0	10 0	9 12	12 0	13 0	13 0
15th Dec.	14 4	10 0	9 12	16 0	13 4	13 0
31st Dec.	14 4	10 0	10 0	15 0	12 10	13 0
1933.						
15th Jan.	12 12	9 0	11 0	16 0	12 8	14 0
31st Jan.	15 8	9 0	12 0	16 0	12 12	13 0
15th Feb.	14 0	10 0	11 0	14 8	13 0	13 0
28th Feb.	17 0	10 0	11 0	17 0	13 4	15 0
15th Mar.	17 0	10 0	12 0	17 0	12 8	16 0
31st Mar.	19 0	10 0	13 0	15 8	12 0	16 0
15th Apr.	15 0	11 0	11 4	15 8	12 8	16 0
30th Apr.	14 0	11 0	11 4	11 8	12 8	13 0
15th May	17 8	10 0	10 4	11 8	12 0	13 0
31st May	17 0	8 0	10 0	12 0	12 0	13 0
15th June	15 8	8 0	10 0	12 8	11 0	12 0
30th June	12 0	8 0	10 0	12 0	11 0	12 0
15th July	13 0	9 0	9 4	12 8	10 0	11 0
31st July	13 0	9 0	8 12	12 0	9 0	12 0
15th Aug.	13 0	8 0	8 12	12 8	9 8	12 0
31st Aug.	13 0	8 0	10 0	13 8	9 8	13 0
15th Sep.	13 0	8 0	8 0	13 0	9 8	13 0
30th Sep.	14 4	8 0	8 0	12 0	9 8	13 0
15th Oct.	14 8	8 0	9 0	12 0	9 8	13 0
31st Oct.	15 8	8 0	9 8	12 0	10 0	13 0
15th Nov.	14 0	8 0	9 8	12 0	7 8	13 0
30th Nov.	14 0	8 0	9 8	10 8	10 0	11 0
15th Dec.	14 0	10 0	9 8	13 0	12 0	12 0
31st Dec.	15 8	10 0	10 0	13 0	13 0	13 0
1934.						
15th Jan.	11 4	10 0	11 0	12 12	16 0	13 0
31st Jan.	9 12	11 0	10 0	12 0	16 0	12 0
15th Feb.	12 12	10 0	10 0	12 0	15 0	11 0

Statement showing the retail prices of raw sugar (gur) in seers per rupee during the years 1930 to 1936—contd.

Fortnight.	Ambala.		Jullundur.		Amritsar.		Gurdaspur.		Sialkot.		Lyallpur.	
	Srs.	chs.	Srs.	chs.	Srs.	chs.	Srs.	chs.	Srs.	chs.	Ssr.	chs.
1934—contd.												
28th Feb.	12	12	11	0	10	0	12	8	15	0	12	0
15th Mar.	12	12	10	0	10	0	12	0	13	0	12	0
31st Mar.	11	0	10	0	10	0	12	0	12	0	11	8
15th Apr.	11	0	10	0	10	0	11	0	13	0	11	0
30th Apr.	10	4	9	0	8	0	8	12	11	0	11	0
15th May	10	4	8	8	7	0	8	12	10	0	9	0
31st May	9	12	8	8	7	0	8	8	9	0	8	0
15th June	9	12	8	0	7	0	9	0	9	0	7	8
30th June	8	0	6	8	7	0	8	8	8	0	7	8
15th July	7	8	6	8	...		9	0	8	0	8	0
31st July	6	6	6	4	...		8	0	7	8	8	0
15th Aug.	7	4	5	8	...		7	8	7	0	7	8
31st Aug.	7	4	5	12	...		7	8	7	0	7	0
15th Sep.	5	4	5	0	...		7	4	7	0	7	0
30th Sep.	5	0	5	12	5	0	7	4	7	0	7	0
15th Oct.	5	0	5	8	5	8	7	0	6	10	8	8
31st Oct.	5	0	5	0	6	0	8	0	7	12	5	12
15th Nov.	5	0	6	0	6	8	6	8	8	0	8	0
30th Nov.	6	4	6	0	6	8	8	4	7	14	7	0
15th Dec.	7	0	9	0	6	0	11	0	8	0	9	0
31st Dec.	9	0	6	0	7	8	11	4	8	8	8	8
1935.												
15th Jan.	8	8	6	0	7	0	11	4	9	0	8	8
31st Jan.	7	12	6	4	8	0	7	12	8	8	7	8
15th Feb.	7	12	6	8	6	8	...		8	14	7	8
28th Feb.	7	4	6	0	6	8	7	8	8	12	7	8
15th Mar.	7	10	6	8	6	12	8	0	9	0	8	0
31st Mar.	7	10	6	8	6	12	8	0	7	0	8	0
15th Apr.	7	4	7	0	6	12	7	4	8	0	7	12
30th Apr.	7	4	7	0	6	4	7	4	7	0	7	8
15th May	6	6	7	0	6	4	7	4	7	0	7	8
31st May	7	0	6	0	6	0	7	0	7	0	7	8
15th June	7	4	6	0	6	0	6	12	7	0	7	0
30th June	7	4	6	0	6	0	7	8	7	0	7	8
15th July	7	4	6	0	6	8	7	8	6	0	7	8
31st July	7	4	6	0	6	0	7	8	6	0	7	0
15th Aug.	7	4	6	0	7	0	7	12	6	0	7	0
31st Aug.	8	4	6	0	7	0	8	0	6	0	7	0
15th Sep.	8	4	6	0	7	0	7	0	6	0	7	0
30th Sep.	8	4	7	0	7	0	7	0	6	0	6	8
15th Oct.	7	4	6	0	5	8	7	0	5	0	7	8
31st Oct.	7	4	6	0	5	8	8	0	5	8	6	12

Statement showing the retail prices of raw sugar (gur) in seers per rupee during the years 1930 to 1936—concld.

Fortnight.	Ambala.	Jullundur.	Amritsar.	Gurdaspur.	Sialkot.	Lyallpur.
	Srs. chs.	Srs. chs.	Srs. chs.	Srs. chs.	Srs. chs.	Srs. chs.
1935—contd.						
15th Nov.	7 12	5 8	6 0	7 8	6 0	6 8
30th Nov.	7 12	6 0	8 0	7 4	6 8	7 8
15th Dec.	9 0	7 0	8 0	9 8	7 0	9 4
31st Dec.	9 8	7 0	9 8	9 8	9 8	9 8
1936.						
15th Jan.	9 8	8 0	9 4	10 0	8 0	9 8
31st Jan.	9 8	8 0	10 0	9 4	10 0	9 12
15th Feb.	9 8	8 0	10 0	9 4	10 0	10 0
29th Feb.	9 8	7 0	10 0	10 0	10 0	10 0
15th Mar.	10 4	9 0	10 0	10 0	10 0	9 8
31st Mar.	10 4	9 0	10 0	9 8	9 0	9 8
15th Apr.	9 12	7 8	10 0	9 8	8 0	10 0
30th Apr.	9 2	8 0	10 0	9 8	9 0	9 8
15th May	8 8	7 0	10 0	9 8	10 0	10 0
31st May	8 8	8 8	10 0	9 8	10 0	9 0
15th June	...	9 0	10 0	9 8	9 0	9 0
30th June	10 4	9 0	10 0	11 4	9 0	9 0
15th July	10 4	9 0	10 0	11 4	8 0	9 0
31st July	10 4	9 0	10 0	11 12	10 0	10 0
15th Aug.	10 1	8 0	8 8	12 8	9 0	10 0
31st Aug.	10 1	8 0	8 0	11 8	10 0	10 0
15th Sep.	10 0	8 0	8 0	10 8	9 0	10 0
30th Sep.	10 0	8 0	7 0	10 4	8 0	11 0
15th Oct.	9 12	8 0	7 0	9 4	7 0	8 0
31st Oct.	9 12	7 0	7 0	9 12	7 0	8 0
15th Nov.	9 2	7 0	7 0	9 12	6 12	8 8
30th Nov.	8 8	9 0	9 8	10 12	9 0	9 0
15th Dec.	10 4	8 0	9 8	11 0	8 0	9 8
31st Dec.	10 12	8 0	9 8	12 8	8 0	9 8

Statement showing the wholesale prices of sugar (refined) in rupees per maund during the year 1936.

Fortnight.	Ambala.	Jullundur.	Amritsar.	Gurdaspur.	Sialkot.	Lyallpur.
	Rs. A.	Rs. A.	Rs. A.	Rs. A. P.	Rs. A. P.	Rs. A.
1936.						
15th Jan.	9 0	9 8	...	10 0 0	...	...
31st Jan.	9 8	9 0	...	10 0 0	...	...
15th Feb.	10 0	9 0	...	10 0 0	...	...
29th Feb.	10 0	9 0	9 8	...	10 10 9	...
15th Mar.	9 0	9 0	9 8	10 0 0	10 10 9	...

Statement showing the wholesale prices of sugar (refined) in rupees per maund during the year 1936—contd.

Fortnight.	Ambala.	Jullundur.	Amritsar.	Gurdaspur.	Sialkot.	Lyallpur.
	Rs. A.	Rs. A.	Rs. A.	Rs. A. P.	Rs. A. P.	Rs. A.
1936—contd.						
31st Mar.	9 8	9 0	9 4	10 0 0	13 5 3	...
15th Apr.	9 8	9 0	9 4	10 0 0	10 10 9	...
30th Apr.	9 8	8 14	9 4	10 0 0	11 6 9	...
15th May	9 8	8 14	9 4	10 0 0	11 6 9	...
31st May	9 8	...	9 4	9 10 0	11 6 9	...
15th June	9 0	8 12	9 4	9 6 0	10 0 0	...
30th June	9 0	8 12	9 8	9 4 0	10 0 0	...
15th July	8 0	8 12	9 4	9 4 0	10 0 0	...
31st July	9 0	8 12	9 4	9 6 6	10 0 0	...
15th Aug.	9 0	8 12	9 8	9 4 0	10 0 0	...
31st Aug.	8 0	8 8	9 8	9 2 0	10 10 9	...
15th Sep.	8 0	8 12	9 8	9 1 0	10 0 0	...
30th Sep.	9 8	8 12	9 8	9 2 0	10 0 0	...
15th Oct.	8 12	8 12	9 8	9 2 0	10 0 0	...
31st Oct.	8 0	8 12	10 0	9 2 0	10 0 0	...
15th Nov.	8 8	8 12	10 0	9 2 0	10 0 0	7 6
30th Nov.	9 0	8 12	10 0	9 2 0	10 0 0	7 8
15th Dec.	8 8	8 12	9 0	8 14 0	10 0 0	8 0
31st Dec.	8 8	8 0	9 0	8 0 0	10 0 0	8 0

NOTE.—The price of sugar (refined) are not available from 1930 to 1935.

DIRECTOR OF AGRICULTURE.

Average monthly wholesale prices of sugar and gur per maund in rupees at Jullundur.

Year & Month.	Sugar		Gur.	
	I Grade.	II Grade.	I Grade.	II Grade.
	Rs. A.	Rs. A. P.	Rs. A.	Rs. A.
1931.				
January	10 0	...	6 3	5 0
February	10 5	...	6 0	5 0
March	...	10 7 0	6 11	4 12
April	10 10	10 5 0	6 11	5 0
May	...	10 11 0	...	5 0
June	...	11 1 0	...	5 0
July	...	10 14 0	8 14	5 0
August	...	10 14 0	8 14	5 0
September	...	11 1 0	8 14	5 11
October	...	12 4 0	8 0	4 7
November	...	12 6 0	7 4	4 0
December	...	12 12 0	7 4	4 7

Average monthly wholesale prices of sugar and gur per maund in rupees at Jullundur—contd.

Year & Month.	Sugar.		Gur.	
	I Grade.	II Grade.	I Grade.	II Grade.
	Rs. A.	Rs. A. P.	Rs. A.	Rs. A.
1932.				
January	...	12 8 0	7 4	4 0
February	...	12 8 6	7 4	3 10
March	...	12 2 0	...	3 10
April	...	11 8 0	...	3 5
May	...	11 12 0	...	3 10
June	...	11 11 0	...	3 6
July	...	12 0 0	...	4 0
August	...	11 8 0	...	2 14
September	...	11 10 0	...	3 5
October	...	12 1 0	...	3 13
November	...	11 12 0	...	3 13
December	...	11 8 0	3 10	3 5
1933.				
January	11 8	...	4 0	3 10
February	10 8	10 4 0	...	3 10
March	10 10	10 9 0	...	3 10
April	10 9	10 4 0	3 5	3 1
May	11 4	10 6 0	4 7	4 0
June	...	10 8 0	...	4 7
July	...	10 8 0	...	4 7
August	...	10 8 0	5 0	4 7
September	...	10 8 0	5 0	4 7
October	...	10 8 0	5 11	5 0
November	10 12	10 8 0	7 4	5 11
December	10 8	...	4 3	4 0
1934.				
January	10 4	9 4 0	4 0	3 10
February	9 0	...	4 0	3 10
March	9 8	...	...	3 10
April	9 12	9 4 0	...	3 5
May	10 7	...	...	4 0
June	10 4	...	...	5 1
July	10 0	...	...	5 11
August	10 0	...	5 0	4 7
September	10 8	...	...	7 6
October	10 4	...	7 4	6 11
November	10 4	...	...	6 2
December	9 8	...	...	4 0
1935.				
January	9 4	...	...	4 7
February	9 10	...	5 11	5 0
March	9 8	...	...	3 10

Average monthly wholesale prices of sugar and gur per maund in rupees at Jullundur—concld.

Year & Month.	Sugar. I Grade.	Sugar. II Grade.	Gur. I Grade.	Gur. II Grade.
	Rs. A.	Rs. A. P.	Rs. A.	Rs. A.
1935—contd.				
April . .	9 4	...	...	3 5
May . .	9 15	...	...	5 11
June . .	10 4	...	...	5 11
July . .	9 8	...	...	5 11
August . .	9 8	...	...	5 11
September . .	9 8	...	...	5 6
October . .	10 9	...	...	6 11
November . .	10 4	...	...	7 10
December . .	10 0	...	...	4 11
1936.				
January . .	9 8	...	...	5 0
February . .	9 0	...	...	4 7
March . .	9 0	...	...	4 0
April . .	9 0	...	...	4 7
May . .	9 15	...	...	5 11
June . .	8 12	...	...	4 0
July . .	8 12	...	...	4 0
August . .	...	...	...	4 7
September . .	8 12	...	...	4 7
October . .	8 12	...	...	4 7
November . .	10 12	...	...	4 3
December . .	8 12	...	...	4 7
1937.				
January . .	8 0	...	...	5 0
February . .	8 4	...	...	4 7
March . .	8 8	...	...	4 11
April . .	8 4	...	...	3 5
May . .	7 10	...	...	3 10

Fortnightly wholesale prices of sugar in the Lyallpur market per maund of 82¾ lbs.

Date.	Maholi. Rs. A. P.	Bajnor. Rs. A. P.	Dhampur. Rs. A. P.
1935.			
15th January . .	...	...	...
31st January . .	...	...	...
15th February . .	8 13 0	9 1 0	9 1 0
28th February . .	8 14 0	9 2 0	9 2 0
15th March . . .	8 15 0	9 1 0	9 3 0
31st March . . .	8 15 6	9 2 0	9 5 0

Fortnightly wholesale prices of sugar in the Lyallpur market per maund of 82⅔ lbs.—contd.

Date.	Maholi.	Bajnor.	Dhampur.
	Rs. A. P.	Rs. A. P.	Rs. A. P.
1935—contd.			
15th April	9 0 0	9 2 0	9 5 6
30th April	9 1 0	9 3 0	9 6 0
15th May	9 1 0	9 3 0	9 6 3
31st May	9 0 6	9 3 0	9 5 6
15th June	8 15 0	9 2 0	9 4 0
30th June	8 15 0	9 2 6	9 4 0
15th July	8 10 0	9 2 0	9 4 3
31st July	8 15 0	...	9 4 3
15th August	8 14 6	...	9 4 0
31st August	8 15 6	9 2 0	9 6 0
15th September	9 4 0	...	9 10 0
30th September	9 10 0	...	10 0 0
15th October	9 14 0	...	10 8 0
31st October	9 6 0	...	10 3 0
15th November	9 4 0	9 9 0	9 8 0
30th November	9 1 0	9 7 0	9 7 0
15th December	8 10 0	8 10 0	8 10 0
31st December	8 10 0	8 10 0	8 10 0
1936.			
15th January	8 6 6	8 10 0	8 9 0
31st January	8 6 6	8 10 0	8 9 0
15th February	8 5 0	8 7 0	8 7 0
29th February	8 2 0	8 5 0	8 4 0
15th March	8 4 6	8 8 0	8 8 0
31st March	8 4 0	8 8 0	8 8 0
15th April	8 4 6	8 8 0	8 8 0
30th April	8 1 0	8 7 0	8 6 0
15th May	...	...	...
31st May	7 14 0	8 2 0	8 1 0
15th June	7 12 0	8 0 6	8 0 0
30th June	7 12 0	8 1 6	8 1 0
15th July	7 11 0	7 14 0	7 15 0
31st July	7 11 0	7 14 0	7 13 0
15th August	7 10 6	7 14 6	7 14 0
31st August	7 11 0	...	8 0 0
15th September	7 11 6	...	7 15 0
30th September	7 12 0	7 15 0	7 14 0
15th October	7 12 0	7 15 0	7 12 0
31st October	7 12 0	7 15 0	7 12 0
15th November	7 3 0	7 5 0	7 4 0
30th November	7 2 0	7 4 0	7 3 0
15th December	6 10 0	6 13 0	6 13 0
31st December	6 11 0	6 15 0	7 0 0

Fortnightly wholesale prices of sugar in the Lyallpur market per maund of 82½ lbs.—concld.

Date.	Maholi.	Bajnor.	Dhampur.
	Rs. A. P.	Rs. A. P.	Rs. A. P.
1937.			
15th January . .	6 12 0	6 15 0	7 0 0
31st January . .	6 10 0	6 15 0	7 1 0
15th February . .	6 7 0	6 12 0	6 13 0
28th February . .	6 6 0	6 10 0	6 13 0
15th March . . .	6 9 0	6 13 0	6 13 0
31st March . . .	6 9 0	6 12 0	6 13 0
15th April . . .	6 8 0	6 12 0	6 12 0
30th April . . .	6 5 0	6 8 0	6 8 0

N.B.—The abovementioned prices are the quotations of the rates at the mill godowns. The following amounts are the overhead charges per maund to bring sugar from the mills to the Lyallpur market:—

Maholi—Rs. 1-6. Bajnor—Rs. 1-0-9. Dhampur—Rs. 1-1.

In order to ascertain the wholesale prices of sugar at Lyallpur, these overhead charges should be added to the quotations given in the statement.

STATEMENT No. I *showing monthly the wholesale prices of sugar in rupees per maund at Sialkot from 1930 to 1937 (Maund= 82$\frac{2}{7}$ lbs.)*

Name of the month.	1930.	1931.	1932.	1933.	1934.	1935.	1936.	1937.
	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.
January	..	10 2 0	12 9 6	12 5 3	10 3 0	9 12 9	9 14 6	7 15 3
February	..	10 6 0	12 10 3	11 6 9	9 5 0	10 0 0	9 11 0	7 12 3
March	..	10 8 0	12 10 3	11 3 6	9 12 9	10 8 0	9 10 3	7 12 3
April	..	10 9 9	12 3 9	11 0 3	9 12 9	10 2 6	9 8 0	7 8 4
May	..	10 9 9	12 3 9	10 13 0	10 9 9	10 6 6	9 4 6	7 5 6
June	..	11 0 3	12 3 9	11 0 3	10 9 9	10 3 0	9 3 0	..
July	..	10 14 3	12 3 9	11 3 6	10 9 9	10 8 0	8 15 9	..
August	..	10 14 3	12 3 9	11 3 6	10 11 6	9 14 6	8 15 9	..
September	11 4 3	11 1 0	12 3 9	10 11 6	10 13 0	10 7 3	8 15 9	..
October	11 0 3	12 7 0	12 5 9	10 3 0	10 11 6	10 8 0	8 12 6	..
November	10 0 0	12 5 6	12 3 0	10 9 9	10 9 9	10 6 6	8 9 3	..
December	9 14 6	12 11 3	12 3 9	10 9 9	10 9 9	10 8 0	8 2 9	..
Average for the year	10 9 0	11 2 0	12 6 0	11 0 0	10 5 0	10 4 6	9 2 6	7 11 0

N.B.—Prices kindly supplied by Messrs. Gokal Chand Jagan Nath, Sugar Merchants, Sialkot.

STATEMENT No. II *showing monthly the retail prices of sugar in seers per rupee at Sialkot for the years 1930-31 to 1936-37.*

Name of the month.	1930-31.	1931-32.	1932-33.	1933-34.	1934-35.	1935-36.	1936-37.
	Srs. chs.	Srs. chs.	Srs. chs.	Srs. chs.	Srs. chs.	Srs. chs.	Srs. chs.
March	3 4	3 7	3 0	3 4	3 12	3 4	3 7
April	3 4¼	3 7	3 0	3 4	3 2	3 12	4 0
May	3 5	3 4	3 1	3 8	3 0	3 11	4 0
June	3 2	3 6	3 1	3 4	3 0	3 10	4 0
July	3 2	3 6	3 1	3 8	3 0	3 9	4 0
August	3 4	3 6	3 1	3 2	3 0	3 12	4 0
September	3 3	3 6	3 0	3 8	3 0	3 8	4 0
October	3 4	3 0	3 0	3 8	3 0	3 7	4 0
November	3 8	3 0	3 1	3 8	3 0	3 6	4 0
December	3 12	2 14	3 1	3 12	3 8	3 11	4 0
January	3 10	3 0	3 4	3 13	3 11	3 12	4 0
February	3 8	3 0	3 8	4 0	3 8	3 14	4 8
Price per seer	As. 4-9	As. 5	As. 5-2	As. 4-7	As. 5	As. 4-5	As. 4

N.B.—Prices obtained from Tahsil Records of current prices.

STATEMENT No. III *showing wholesale and retail prices of sugar in rupees per maund at Lyallpur for the years 1930-31 to 1936-37.*

Year.	Wholesale price per maund.	Retail price per seer.
	Rs. A.	As. P.
1930-31	10 12	5 0
1931-32	10 8	4 9
1932-33	10 2	4 6
1933-34	9 14	4 3
1934-35	9 8	4 3
1935-36	9 6	4 3
1936-37	7 7	3 6

STATEMENT No. IV *showing wholesale prices of sugar—Java (imported), Indian Mill-made and Khandsari in rupees per maund at Ludhiana for the years 1930-31 to 1936-37.*

Years.	Sugar—Java (imported).	Indian Mill-made sugar.	Khandsari sugar (Open pan).
	Rs. A.	Rs. A.	Rs. A.
1930-31	14 0	11 0	11 8
1931-32	14 0	11 0	11 8
1932-33	14 0	10 8	11 0
1933-34	14 0	10 0	10 8
1934-35	13 0	9 8	9 12
1935-36	12 4	8 6	8 12
1936-37	11 0	7 2	7 8

NOTE.—There is no arrival of imported (Java) sugar in the Ludhiana town from the last 3 years due to its high price. The figures given for these years only represent the prices at which the sugar would be had. These prices have been obtained from the records of Messrs. Hans Raj Ramji Das, Sugar Merchants, Ludhiana.

STATEMENT No. V *showing retail prices of sugar in annas per seer at Ludhiana for the years 1930-31 to 1936-37.*

Year.	Price.
	As. P.
1930-31	4 9
1931-32	5 0
1932-33	5 3
1933-34	5 0
1934-35	5 0
1935-36	5 0
1936-37	4 0

NOTE.—In retail prices, figures for different qualities are not available. The figures given above were obtained from Tahsil Records.

STATEMENT No. VI *showing wholesale prices of sugar in rupees per maund at Ambala for the years 1930-31 to 1936-37.*

Year.	Sugar made of Indian Mill.	Khandsari sugar (Open pan).
	Rs. A. Rs. A.	Rs. A. Rs. A.
1930-31	14 0 to 18 0	12 4 to 13 0
1931-32	14 0 to 18 0	11 4 to 12 0
1932-33	10 0 to 12 0	10 0 to 10 8
1933-34	8 0 to 10 8	9 8 to 10 8
1934-35	10 0 to 10 12	9 4 to 11 0
1935-36	9 0 to 10 8	9 8 to 10 4
1936-37	7 4 to 9 0	7 8 to 9 4

N.B.—These prices have been obtained from the Tahsil Records.

STATEMENT No. VII *showing retail prices of sugar (Desi) in annas per seer at Rohtak for the years 1930-31 to 1936-37.*

Year.	
	As. P. As. P.
1930-31	4 0 to 4 6
1931-32	5 0 to 5 6
1932-33	4 3 to 4 9
1933-34	4 0 to 4 9
1934-35	4 0 to 4 6
1935-36	3 9 to 4 0
1936-37	3 6

NOTE.—These prices have been obtained from the Tehsil Records.

28. *Director of Industries.*—A comparative statement showing the wholesale and retail prices of sugar at Sialkot, Lyallpur and Ludhiana is attached. It will show the relative movements of wholesale and retail prices at these stations. While at Sialkot and Lyallpur the retail prices follow the downward course of wholesale prices fairly closely, at Ludhiana the retail price does not exhibit this tendency, although the wholesale price falls gradually from Rs. 11 per maund in 1931-32 to Rs. 7-2 per maund in 1936-37. Inspite of the fall in the wholesale price betwen 1933-34 and 1935-36 the retail price remains stationary which accounts for the lack of co-relation in the figures of wholesale and retail prices at this centre.

Director of Land Records.—There are no marked variations between the wholesale and retail prices.

Statement showing wholesale and retail prices of sugar at Sialkot, Lyallpur and Ludhiana.

Year.	Sialkot.				Lyallpur.				Ludhiana.			
	Wholesale.	Variation 1930-31 =100.	Retail.	Variation 1930-31 =100.	Wholesale.	Variation 1930-31 =100.	Retail.	Variation 1930-31 =100.	Wholesale.	Variation 1930-31 =100.	Retail.	Variation 1930-31 =100.
	Rs. A.		As. P.		Rs. A.		As. P.		Rs. A.		As. P.	
1930-31	10 7	100·0	4 9	100·0	10 12	100·0	5 0	100·0	11 0	100·0	4 9	100·0
1931-32	11 11	112·0	5 0	105·3	10 8	97·7	4 9	95·0	11 0	100·0	5 0	105·3
1932-33	12 2	116·2	5 2	108·8	10 2	94·2	4 3	85·0	10 8	95·5	5 3	115·3
1933-34	10 9	101·2	4 7	96·5	9 14	91·9	4 3	85·0	10 0	90·9	5 0	105·3
1934-35	10 5	98·8	5 0	105·3	9 8	88·4	4 3	85·0	9 8	86·4	5 0	105·3
1935-36	10 3	97·6	4 5	93·0	9 6	87·2	4 3	85·0	8 6	76·1	5 0	105·3
1936-37	8 11	83·3	4 0	84·2	7 7	69·2	3 6	70·0	7 2	64·7	4 0	84·2
Average of 5 months January to May 1937.	7 11	73·7	..	..	..	..	..	..	..	..	..	..

NOTE.—Variation in prices in different centres due to different qualities of sugar placed in market.

29. *Director of Land Records.*—The figures of approximate consumption of sugar in the Punjab during the last seven years 1930-31 to 1936-37 are given below:—

Year.	Tons.	Year.	Tons.
1930-31 . . .	405,300	1934-35 . . .	404,900
1931-32 . . .	404,900	1935-36 . . .	408,200
1932-33 . . .	404,900	1936-37 . . .	408,200
1933-34 . . .	404,900		

The consumption is likely to increase with the rise in the general standard of living.

Director of Industries.—An approximate idea of the normal consumption of sugar in the Punjab may be formed from the figures of net imports of sugar in the province as available in the "Accounts relating to the Inland (Rail and River-borne) Trade of India" published by the Department of Commercial Intelligence and Statistics, India, and by adding thereto the quantity of sugar produced by the local sugar factories. The average net import of sugar in the Punjab during the last three years for which figures are available is shown below:—

Year.	Imports.	Exports.	Net Import.
	Mds.	Mds.	Mds.
1933-34	5,232,164	61,280	5,170,884
1934-35	5,079,020	29,445	5,049,575
1935-36	5,405,613	28,512	5,377,101
Average net import during the three years . .	...	...	5,199,187
Add 541,193 maunds representing local production during 1936-37 (Figures of local production for previous years are not available) . . .	...	...	541,193
Total approximate consumption of sugar in the Punjab . . .	...	...	5,740,380

The consumption of sugar in the Punjab is reported to have increased steadily as a result of the fall in its price though not to the extent of the fall in the price. If the price of sugar continues to be low its consumption may be expected to increase further in such industries as syrups and sharbats, preseved fruits, jams and jellis, confectionery of the type of lemon and peppermint drops, etc., etc.

30. There are no large scale manufacturers of confectionery in the Punjab. *Desi* sweetmeats are made by *halwais* all over the province and almost the entire quantity of sugar used is Indian mill-made. A few individuals have started the production of lemon drop type of confectionery and sugar coated almonds, etc., on a small experimental scale. They use Indian mill-made white sugar.

31. (i) As already stated above in reply to Questions 7 and 18 the sugar factories established in the Punjab are situated at considerable distances from one another and the local production of cane is both insufficient and inferior in quality, which necessitates the importation of cane by factory owners from distant places and in some cases from the United Provinces. The introduction of zone system allotting special areas to different factories for the supply of cane to them would not accordingly be of any practical value in this province. The factory owners consulted

also do not consider that a zone system for the supply of cane is called for at this stage of the development of the sugar industry in the Punjab.

(ii) Opinion is divided on the question of fixation of quota for sugar manufacture by the existing factories. The Gujranwala Sugar Mills Company, Limited, have expressed themselves in favour of the suggestion. The fixation of quota would prevent over-production which is detrimental to the interests of sugar manufacturers and is responsible for bringing the price of sugar to the present low level. In fixing quotas due consideration should be given to the quality of raw materials available in different localities, recovery of sugar from cane, duration of the cane season and accessibility to the consuming markets. The guiding principle should be in prevention of over-production so as to stop the cut throat competition. The formula for the fixation of quotas should be so framed as to enable easy readjustment in the event of a natural calamity like wide spread failure of rain or other extraneous causes.

(iii) Opinion is divided on the question of licensing of new factories and extension of existing factories. Some are not in favour of the suggestion while others favour it. The Gujranwala Sugar Mills Company, Limited, are in favour of the licensing of new factories and in the exercise of strict control in the establishment of new sugar mills. They have further added that with the home production already in excess of the demand, there is no reason why in the interests of sugar industry any additions should be allowed in the number of existing factories. There should be no objection to existing factories extending their plants to suit local conditions of the industry.

The question is not of vital concern to the Punjab. The development of the sugar industry in this province has been cut short even in its infancy chiefly on account of the insufficiency and poor quality of cane grown here. The introduction of a system of "zones" for the supply of cane would not suit the Punjab. The fixation of quotas in the production of sugar is, however, welcomed by the sugar manufacturers and would afford some relief to them, while the restrictions on the establishment of new factories would check over-production, and help to maintain prices on an economic level. It would also lead to the consolidation of the existing industry. There should be no restrictions on the extensions of existing factories as those who have already invested capital in the industry should not be debarred from improving their positions.

32. There exist good possibilities of starting the industry of sweets, syrups, fruit preservation and canning, etc., in this province, and there exists an extensive local market for their consumption. Sweets and syrups are already produced. In sweets there is a keen competition from Sukkar and Cawnpore factories. Syrups are mainly made for local markets. Attempts have been made in fruit preservation and canning but they have not generally succeeded owing to foreign competition and lack of technical knowledge. The Fruit Specialist of the Department of Agriculture, Punjab, has conducted researches in these lines and efforts are being made by him to popularise these industries by arranging demonstrations and short courses of training.

33. An estimate of production of gur for the last seven years in the Punjab is given below:—

	Tons.		Tons.
1930-31 . . .	301,600	1934-35 . . .	326,200
1931-32 . . .	367,800	1935-36 . . .	359,600
1932-33 . . .	444,100		
1933-34 . . .	364,300	1936-37 . . .	433,500*

34. Gur and jaggery are not known to be produced from any other material than cane in the Punjab.

* According to final sugarcane forecast, 1936-37.

35. A statement showing the wholesale prices of gur in rupees per maund at Sialkot, Lahore, Ludhiana and Ambala together with the area under sugarcane is given below:—

Statement showing wholesale prices of gur in Rupees per maund at Sialkot, Lahore, Ludhiana and Ambala and the area under Sugarcane in the Punjab for the years 1930-31 to 1936-37.

Wholesale price of *desi* gur at Sialkot.			Wholesale price at Lahore.		Wholesale price at Ludhiana.		Wholesale price at Ambala.		Area under Sugarcane.
		Rs. A.		Rs. A.		Rs. A.		Rs. A. P.	Acres.
	1930-31.								
Highest rate . .	October, 1930 . .	6 6	Highest .	5 8	Desi . .	7 8	Highest .	8 0 6	425,729
Lowest „ . .	February, 1931 . .	3 1	Lowest .	4 13	Purbi . .	6 8	Lowest .	5 8 0	
Average .		4 4							
	1931-32.								
Highest rate . .	November, 1931 . .	4 4	Highest .	4 14	Desi . .	5 0	Highest .	5 0 0	474,655
Lowest „ . .	July, 1931 . . .	3 2	Lowest .	4 6	Purbi . .	4 4	Lowest .	3 4 0	
Average .		3 8							
	1932-33.								
Highest rate . .	December, 1932 . .	2 14	Highest .	2 12	Desi . .	3 4	Highest .	3 2 0	558,152
Lowest „ . .	June, 1932 . . .	2 7	Lowest .	1 8	Purbi . .	4 2	Lowest .	1 10 6	
Average .		2 11							

		1933-34.										
Highest rate		November, 1933	4	8	Highest	2	4	Desi	3	6	Highest . 3 7 0	465,991
Lowest „		January, 1934	2	8	Lowest	1	6	Purbi	3	4	Lowest . 2 6 0	
Average			3	3								
		34-35.										
Highest rate		August, 1934	5	4	Highest	2	12	Desi	6	8	Highest . 7 8 0	462,442
Lowest „		March, 1934	3	0	Lowest	2	9	Purbi	5	4	Lowest . 3 8 0	
Average			4	3								
		1935-36.										
Highest rate		October, 1935	5	10	Highest	3	12	Desi	5	12	Highest . 5 4 0	474,200
Lowest „		January, 1936	3	8	Lowest	2	12	Purbi	5	9	Lowest . 3 12 0	
Average			4	13								
		1936-37.										
Highest rate		November, 1936	4	12	Highest	Not available.		Desi	4	12	Highest . 4 8 0	Figures not available at the time of writing.
Lowest „		January : February 1937	3	6	Lowest	Do.		Purbi	4	10	Lowest . 3 12 0	
Average			3	14								

It will be observed that with the extension in the area under cultivation from 1930-31 to 1932-33 the price of gur continued to fall gradually in these years. The price of gur was the lowest in 1932-33 and remained at about the same level in 1933-34 though inclining towards a slightly upward tendency, which is explained by the fact that the area under cane fell heavily and the crop was damaged by floods and extensive rains in the low lying areas of some districts and "top borar" damaged it in some parts of Rohtak, Gurgaon and Karnal. The total outturn according to the Report on Season and Crops of the Punjab was 18 per cent. less than last year. The area under reference fell again in 1934-35 and prices of gur registered an appreciable increase as compared with the 1933-34 level. The cane crop was also poor. According to the Report on the Season and Crops of the Punjab for 1934-35 "'Top borer' and 'pyrilla' insect pests and frost damaged the crop in parts of some districts. The percentage of the estimated yield per acre varied from 50 to 100 of the normal on irrigated and 40 to 100 on unirrigated areas. The total outturn was 326,200 tons or 2 per cent. below normal". The price of gur was generally better in 1935-36 as compared with 1934-35 in spite of the increase in area and better average outturn per acre wrich was 8 per cent. above the normal. It would thus appear that while the increase in area under cane has tended to bring the price of gur down and the damage to cropping has tended to force the price up, the changes in prices are not found to rise and fall in mathematical proportion to the conditions of cropping.

As regards the effect of competition of India factory sugar on the price of gur it will be observed from the prices of sugar given in answer to Question No. 27 above that while the latter have maintained a steady downward tendency since 1932 the price of gur has been erratic in its movement. The people in the trade also maintain that the movements of the prices of gur are independent of the variations in the price of sugar.

The following statistics of retail prices of gur are given below:—

(*a*) Statement showing retail prices of *desi* and *purbi* gur in annas per seer at Ludhiana for the years 1930-31 to 1937.

(*b*) Statement showing retail prices of gur and shakkar in annas per seer at Ambala for the years 1930-31 to 1936-37.

(*c*) Statement showing retail prices of gur in annas per seer at Rohtak for the years 1930-31 to 1936-37.

(*d*) Statement showing monthly retail prices of *desi* gur produced in the Sialkot district in seers and chataks per rupee for the years 1930-31 to 1936-37.

(a) *Statement showing the retail prices of gur/jaggery at Ludhiana for the last seven years.*

Year.	*Desi* Gur per seer.	*Purbi* Gur per seer.
	As. P.	As. P.
1930-31	3 0	2 6
1931-32	2 0	1 9
1932-33	1 4½	1 6
1933-34	1 4½	1 6
1934-35	2 3	2 0
1935-36	2 3	2 3
1936-37	1 9	1 6

NOTE.—Figures for gur have been obtained from the Tehsil Records. Retail prices of shakkar are not available anywhere.

(b) *Statement showing the retail prices of gur/jaggery at Ambala for the last seven years.*

Year.	Gur per seer.		Shakkar per seer.	
	As. P.	As. P.	As. P.	As. P.
1930-31 . . .	2 0	to 3 0	1 9	to 3 3
1931-32 . . .	1 6	to 2 0	1 6	to 2 3
1932-33 . . .	0 10½	to 1 4½	1 0	to 1 6
1933-34 . . .	1 0	to 1 6	1 1½	to 1 9
1934-35 . . .	1 6	to 3 0	2 0	to 3 6
1935-36 . . .	1 6	to 2 3	1 7½	to 2 3
1936-37 . . .	1 6	to 1 9	1 9	to 2 0

NOTE.—These prices have been obtained from the Tehsil Records.

(c) *Statement showing the retail prices of gur at Rohtak during the last seven years.*

Year.	Gur per seer.		Year.	Gur per seer.	
	As. P.	As. P.		As. P.	As. P.
1930-31 . .	1 6	to 2 6	1934-35 . .	1 0	to 1 6
1931-32 . .	1 6	to 2 9	1935-36 . .	1 0	to 2 0
1932-33 . .	0 9	to 1 0	1936-37 . .	1 0	to 1 6
1933-34 . .	0 9	to 1 0			

NOTE.—These prices have been obtained from the Tehsil Records.

(d) *Retail prices of gur per rupee for the years 1930-31 to 1936-37 at the headquarters of Sialkot District.*

Name of the month.	1930-31.	1931-32.	1932-33.	1933-34.	1934-35.	1935-36.	1936-37
	sr. ch.	sr. ch.	sr. ch.	sr. ch.	sr. ch.	sr. ch.	sr. ch.
Mar. . .	7 4	11 0	13 2	12 0	12 8	8 0	9 12
Apr. . .	8 0	11 8	11 12	12 8	11 8	7 8	9 0
May . .	8 0	11 12	14 0	12 0	9 8	7 0	10 0
June . .	7 0	11 6	14 0	11 0	9 0	7 0	9 0
July . .	5 6	11 12	14 0	9 8	7 12	6 0	10 0
Aug. . .	5 14	11 4	14 0	9 8	7 0	6 0	9 8
Sep. . .	6 0	10 4	13 0	9 8	7 0	6 0	9 0
Oct. . .	6 0	11 2	13 0	9 10	7 6	5 6	7 4
Nov. . .	6 12	8 12	13 0	8 0	7 15	6 2	8 0
Dec. . .	11 8	9 12	12 15	13 4	8 4	7 13	10 8
Jan. . .	9 8	10 2	12 10	15 9	8 12	8 14	10 8
Feb. . .	11 8	10 14	13 2	15 8	8 13	10 4	10 8

N.B.—Prices obtained from Tehsil Records.

36. The figures of consumption of gur are not recorded by any agency in this province. An idea of the consumption of gur may be formed from

the figures of the actual estimated weight of gur produced as recorded in the Season and Crops Reports of the Punjab given below:—

Year.	*Estimated actual weight of gur produced in tons as available in the Reports on the Seasons and Corps of the Punjab.	Area in acres under Sugarcane.
1929-30	203,600	306,696
1930-31	301,600	425,729
1931-32	367,800	474,655
1932-33	444,100	558,152
1933-34	364,300	465,991
1934-35	326,200	462,442
1935-36	359,600	474,200

The variations in the estimated actual weight of gur produced are primarily due to the variations in the area under sugarcane crop. The area continued to increase up to the year 1932-33 as there existed considerable demand for sugarcane by the large number of open pan factories and other large major factories which had sprung up immediately after the grant of protection to the sugar industry. With the imposition of the Excise in 1933-34 and the gradual fall in the price of sugar almost all the open pan factories were obliged to close their doors and the demand for sugarcane also received a set back.

The fall in the direct consumption of gur is also partly due to the lowering of the price of Indian mill sugar.

37-38. There is no agency in the Punjab for recording the statistics of import and export trade of the province in gur/jaggery. The figures of imports of "gur, rab, molasses and jaggery, etc." into the Punjab (which includes Delhi and North-West Frontier Province) and the figures of export of these commodities from the Punjab as available in the "Accounts relating to the Inland (Rail and River-borne) Trade of India for the years 1933-34, 1934-35 and 1935-36" are given below:—

Statement showing imports of gur, rab, molasses and jaggery, etc., in the Punjab in maunds.

Province or Indian State from which Imported.	1933-34.	1934-35.	1935-36.
Bengal . . .	8	14	9
Bihar and Orissa . .	89,901	183,627	217,204
United Provinces .	2,555,610	2,383,313	3,326,907
Sind and Baluchistan .	1,697	1,617	2,253
Central Provinces .	361	135	8
Bombay . . .	1,375	32	2
Rajputana . . .	776	1,845	320
Central India . .	5	...	154
Calcutta . . .	700	8	18
Bombay Port . .	115	1	...
Karachi . . .	849	103	22
Kashmere . . .	5	...	12
Total .	2,651,402	2,570,695	3,546,909

* The figures do not represent the actual amount of gur produced, but only an approximate estimate of production based on the average quality of cane produced.

It will be observed that the preponderating proportion of the imports come from the United Provinces with Bihar and Orissa as the second largest supplier. Imports from other parts of the country are negligible.

The following table shows the exports of gur, rab, molasses and jaggery from the Punjab in maunds:—

Province or Indian State to which Exported.	1933-34.	1934-35.	1935-36.
Bengal	234	9,753	...
Bihar and Orissa	660	231	169
United Provinces	66,124	14,971	2,624
Sind and Baluchistan	90,892	67,326	64,947
Central Provinces	4,889	2	236
Bombay	3,515	360	56,094
Madras	...	1	...
Rajputana	158,777	103,437	99,717
Central India	8,204	408	109
Nizam's territory	1,942	1	1
Kashmere	18,625	23,025	4,189
Calcutta	7	325	185
Bombay Port	382	176	4
Karachi	1,592	66	342
Madras Port	...	154	...
Total	355,843	220,236	228,617

39. A comparative statement showing the wholesale price of gur and of sugar at Sialkot, Ludhiana and Ambala is given below. A cursory glance at the statement will show that no relation whatsoever, exists between the prices of gur and those of sugar. While the price of sugar for instance at Sialkot was the highest in the seven years from 1930-31 the price of gur was the lowest, *viz.*, Rs. 2-11 per maund and while the price of sugar was the lowest in the six years 1930-31 to 1935-36, *viz.*, Rs. 10-3. The price of gur was the highest, *viz.*, Rs. 4-13 per maund. As already stated above in reply to Question No. 35 the movements in the price of gur are independent of the variations in the price of sugar and *vice versâ*.

Comparative statement showing wholesale prices of gur and sugar at Sialkot, Ludhiana and Ambala for the years 1930-31 to 1936-37.

Year.	Sialkot.		Ludhiana.		Ambala.	
	Wholesale price of Gur.	Wholesale price of Sugar.	Wholesale price of Gur.	Wholesale price of Sugar.	Wholesale price of Gur.	Wholesale price of Sugar.
	Rs. A.	Rs. A.	Rs. A.	Rs. A.	Rs. A. P.	Rs. A.
1930-31 . . .	4 4	10 7	7 8	11 0	5 8 0 to 8 0 0	14 0 to 18 0
1931-32 . . .	3 8	11 11	5 4	11 0	3 4 0 to 5 0 0	14 0 to 18 0
1932-33 . . .	2 11	12 2	3 4	10 8	1 10 6 to 3 2 0	10 0 to 12 12
1933-34 . . .	3 3	10 9	3 6	10 0	2 6 0 to 3 7 0	8 0 to 10 8
1934-35 . . .	4 3	10 5	6 8	9 8	3 8 0 to 7 8 0	10 0 to 10 12
1935-36 . . .	4 13	10 3	5 12	8 6	3 12 0 to 5 4 0	9 0 to 10 8
1936-37 . . .	3 14	8 11	4 12	7 2	3 12 0 to 4 8 0	7 4 to 9 0

40. Reliable statistics of the consumption of sugar and gur/jaggery are not available for this province. The figures of net imports of sugar in the Punjab have been given in reply to Question No. 29 above. They are reproduced below along with the figures of net imports of "gur, rab, molasses, jaggery, etc.", which are also taken from the Accounts relating to the Inland (Rail and River-borne) Trade of India:—

Year.	Sugar.			Gur, rab, molasses and jaggery, etc.		
	Imports.	Exports.	Net Imports.	Imports.	Exports.	Net Imports.
	Mds.	Mds.	Mds.	Mds.	Mds.	Mds.
1933-34 . .	5,232,164	61,280	5,170,884	2,651,402	356,082	2,295,320
1934-35 . .	5,079,020	29,445	5,049,575	2,570,696	220,235	2,350,461
1935-36 . .	5,405,613	28,512	5,377,101	3,546,909	228,617	3,318,292

The figures of net imports of sugar as well as of gur, rab, molasses and jaggery in 1935-36 show a considerable increase over the figures of the two previous years. No definite conclusions can, however, be based on them. As a result of the enquiries made from dealers in sugar and gur conflicting reports have been received on the point. The general opinion is that there is no competition between sugar and gur. The consumption of sugar has increased slightly at the expense of shakkar, but the consumption of gur is stated to have remained generally uneffected except perhaps in some towns. Some dealers in Sialkot, however, maintain that as a result of the cheapening of the price of sugar the demand for gur in that area (which imports gur for its local consumption from United Provinces, North-West Frontier Province and other districts of the Punjab) has decreased and its price has gone down in those parts. The replacement of gur by sugar is, however, not very consequential.

41. The main experiments so far have been directed to an improvement in the country furnaces, with a view to reduce the time taken in the manufacture of gur and the quantity of fuel necessary.

42. (i) A list of open pan factories set up in the Punjab after the grant of protection to the sugar industry is given below to show their locations. All of them closed down by the end of 1933-34:—

Name and location of factory.	Capital invested including machinery, land, etc.
1. Saini Sugar Mills, Tanda (Jullundur)	1,200 (Land on rent).
2. Anant Ram Valaiti Ram Sugar Factory, Mandi, Tehsil Phillaur (Jullundur)	... Not available.
3. Kapila Works, P. O. Santokhgarh Fort, Tehsil Una (Hoshiarpur)	9,250
4. Basant Ram Amar Nath Sugar Factory, Upra, Tehsil Phillaur (Jullundur)	... Not available.
5. Pandit Nanak Chand and Sons' Sugar Factory, Jandiala Manjike (Jullundur)	4,500
6. The Swadeshi Sugar Factory, Batala	10,000 (Building on rent).
7. Ram Rakha Mal Sugar Factory, Sujanpur	950
8. Nainkot Sugar Factory, Nainkot (Gurdaspur)	6,155
9. G. M. Bassi Sugar Factory, Nawan Shahr Doaba	4,500
10. Lachman Das Sugar Factory, Dasuya	9,150
11. The Batala Sugar Factory, Batala	12,000
12. Raja Sansi (Sugar Factory) Mills Company, Raja Sansi, Amritsar	8,080
13. Mandi Sugar Factory, Gurdaspur	3,000
14. The Saini Sugar Factory, Manak Kalan, near Tanda Urmar	3,000
15. Amin Chand & Sons' Sugar Factory, Landra, Tehsil Phillaur	... Not available.
16. S. A. Hussain Sugar Mills, Jallowal, (Jullundur)	25,000
17. Grover Sugar Factory, Nawan Shahr Doaba	5,000 (Building rented).
18. Sindh Swadeshi Sugar Factory, Village Yari, P. O. Shahabad (Karnal)	15,000
19. Durga Lakshmi Sugar Factory, Village Bir Balsoe (Karnal)	10,000

Name and location of factory.	Capital invested including machinery, land, etc.
20. Jagat Ratan Sugar Factory, Shahabad Markanda	35,000
21. Tej Farm Tarori (Karnal)	7,000
22. Pir Ali Ahmad & Sons' Sugar Factory, Shahabad, Markanda	5,000
23. Sugar Factory Ghantal (Sialkot)	8,000
24. Colyana Estate Sugar Factory, Okara	4,510
25. The Military Farm Sugar Factory, Okara	19,350
26. The Indar Cotton and Sugar Factory, Mian Channu	7,500

(ii) (*a*) In 1935-36 there were three Khandsari sugar factories. Two of them closed down during the year. Khandsari sugar produced was 530 cwt.

(*b*) The third factory worked up to the end of June 1936 and Khandsari sugar produced during 1936-37 was 31 cwt.

(*c*) At present no Khandsari sugar factories are working in the province.

43. No open pan sugar factory has worked in the Punjab after 1933-34. An estimate of the present cost of manufacture of sugar in open pan factories is accordingly not available. In 1933-34 the cost of production of 1 maund of sugar by the open pan system was estimated at Rs. 8 to Rs. 10 according to local conditions and efficiency of plant and methods. Rough details of the cost of production at the open pan factory of Lala Durga Das at Batala for the year 1933-34 are given below:—

	Rs.	A.
Cost of 300 maunds of cane	75	0
Commission (1 per cent. on the value of cane)	0	12
Labour for 1 day	10	0
Cost of crude oil for engine	6	0
Cost of firewood in addition to bagasse	15	0
Rent of factory, overhead and other miscellaneous charges	5	0
Total	111	12

Sugar obtained from 300 maunds of cane=11 maunds and 10 seers.

Cost of production of 1 maund of sugar Rs. 9-15.

No khandsari is working in the Punjab. The average yield of sugar seldom exceeded 4½ per cent. of the weight of cane.

44. *Director of Industries.*—About 30 open pan sugar factories were set up in the Punjab in 1931-32 and 1932-33. Almost all of them had closed down by 1933-34. The main reasons for the closures of these small scale open pan factories were the competition of factory sugar and the imposition of the excise in 1934. The other contributory causes were the cessation of demand for molasses, the increased demand for cane for larger factories and the poor quality of cane. No open pan factory or khandsari is now working in the Punjab.

Director of Agriculture.—The development on a large scale of sugar manufacture by vacuum pan system in some parts of India is probably entirely responsible for the closing down of open pan factories, since the latter cannot compete with them in sugar extract, etc.

45. For reasons stated in answer to Question No. 44 above there is no scope for open pan sugar factories and khandsaris in the Punjab and such factories cannot be made to work successfully in the Punjab at the present low market rates of sugar and under the other existing disabilities.

46. No research has been undertaken in the Industrial Research Laboratory attached to the Department of Industries, Punjab, to improve the open pan system and the manufacture of rab. Some years ago the Agricultural Department, however, carried out various experiments on the best type of furnace; the most suitable number and size of pans; the suitability of different centrifugal machines, etc., but for the last few years this work has been closed down, as the open pan system has not proved profitable.

47. (*a*) The sugar excise duty of 1934 as stated above was to a certain extent responsible for the closure of open pan factories and thereby it hit the cane-grower whose sales of cane to such factories were stopped. The additional duty imposed in 1937 had the effect of further reducing the price of cane which fell rather too shortly in certain areas as will be seen from the figures of average prices per maund paid by the Saraswati Sugar Mills, Abdullapur, and the Sonepat Sugar Factory Sonepat given below:—

Year.	Average price per maund paid at the gate by Saraswati Sugar Mills, Abdullapur.	Average price per maund paid at the gate by the Sonepat Sugar Factory, Sonepat.
	As. P.	As. P.
1930-31	...	6 0
1931-32	...	5 6
1932-33	...	5 6
1933-34	6 3·8	5 3
1934-35	6 0·17	5 0
1935-36	6 1·47	4 3
1936-37	4 11·42	3 9

The cane-growers of Shahabad-Markanda are reported to have suffered very heavily in respect of their 1936-37 crop and some of their fields had not been cut even by the beginning of June as they had not the means to have them cut. Some sent rail carts to Delhi for sale which fetch only Rs. 6 per rail cart load.

(*b*) The imposition of the excise dealt a heavy blow to the infant sugar industry of the province and some of the sugar manufacturers represented to the Punjab Government in 1935 requesting permanent remission of the excise duty or in the alternative remission of the duty for at least five years and an interim order for the immediate refund of the excise duty paid during the current (1934-35) year. I enclose as Appendix III a copy of my report to the Punjab Government on the representations of the sugar factory owners in which I recommended to the Punjab Government that in view of the heavy losses suffered by the industry and the interests of the development of the sugar industry in this province the Punjab factories may be exempted from the payment of the excise for at least two years for the time being. No remission was however granted. The additional duty imposed in 1937 has further crushed the industry. The price of sugar has continued to fall and after providing and paying the excise duty most of the sugar mills are unable to reserve anything even towards depreciation of plant and similar other charges. Of the factories which worked in 1936-37 some may not work next year.

(*c*) The dealers anticipated a rise in the price of sugar as a result of the enhancement of the excise in 1937, but the price continues to remain on a low level with a downward trend. Those who accumulated stocks in anticipation of the rise in price are reported to have suffered losses.

(*d*) The consumer has benefited from the persistent fall in the price of sugar. The excise of 1934 and the enhancement in the rate of excise in 1937 are not reflected in the price of sugar and have exerted no influence in determining the price of sugar.

APPENDIX III.

Copy of an Un-Official No. 1276, dated the 31st July, 1935, from the Director of Industries, Punjab, to the Secretary to Government, Punjab, Electricity Department.

I attach herewith a statement showing the name and location of each sugar factory established in the Punjab, the quantity of sugar produced in maunds during the years 1933-34 and 1934-35, the amount of excise paid and the profit and loss account as shown by the balance sheets of limited concerns or as ascertained from the factory management. Copies of available balance sheets are also enclosed.

The inter-relation of the figures of the amount of excise paid and the quantity of sugar produced as shown in columns 4 and 3 respectively of the statement requires a word of explanation. The figures in column 4 represent the amount paid by way of excise on sugar actually issued from the factory after 1st April, 1934, and do not take into consideration the stocks in the godowns of factories unless otherwise stated.

Taking up the points raised in the note of Secretary Electricity:—

The manufacture of sugar is an infant industry in this province, which appears to have been strangulated in its infancy. Prior to the grant of protection there were the following seven factories in operation in the Punjab:—

1. Amritsar Sugar Mills Company, Limited, Amritsar: Refinery.
2. Harkishen Sugar Mills, Amritsar: Refinery.
3. The Punjab Sugar Works and Carbonic Acid Gas Company, Sujanpur: Refinery and manufacture direct from cane.
4. L. Keshav Ram Sugar, Oil and Rice Mill, Bajaura (Kulu): Manufacture direct from cane.
5. Sugar Factory at Shahabad (District Karnal): Manufacture direct from cane.
6. Sugar Factory at Yari near Shahabad (District Karnal): Manufacture direct from cane.
7. Sonepat Sugar Factory (District Rohtak): Refinery and manufacture from cane direct.

As a result of the grant of protection to the industry in 1931-32, the manufacture of sugar received certain amount of impetus and a large number of open-pan plants and centrifugals were installed throughout the province, and a number of large-scale factories working both with cane direct and cane and gur were established. The number of regular factories with an investment of Rs. 5,000 or over, besides the smaller plants in 1932-33 increased to 32. Owing, however, to the fall in the price of sugar in 1933-34 and the cessation of demand for molasses almost all the small scale sugar factories had to close down and barely 12 factories worked during this season. The statement enclosed herewith shows that only 11 factories worked during 1934-35 and that most of them worked only fitfully owing to shortage in the supply of cane, damage to the cane crop and high price of gur which made it unprofitable for the refineries to continue working on full pressure. The Amritsar Sugar Mills Company, Limited, Amritsar (a refinery), and the Military Farm Sugar Factory, Okara (working with cane), are the only two concerns which made a profit during this year. I give below the available facts regarding the sugar factories mentioned in the statement to illustrate their difficulties and the causes which have been responsible for their working at a loss during the last two sugar seasons.

The Gujranwala Sugar Mills Company, Limited, Rahwali, and the Bhalwal Sugar Mills Company, Limited, Bhalwal, are designed to manufacture sugar from cane and the *Phulerwan Oil and Sugar Mills Company, Limited, Phulerwan*, both from sugarcane direct and gur. The cane crop grown in the neighbouring areas of these factories has been found quite insufficient to feed them and consequently the factories were obliged to import large

quantities of cane from distant places by rail and motor lorries. In spite of this, these concerns could not get enough cane to keep their factories working at full capacity. The crushing capacity of the Gujranwala Sugar Mills Company, Limited, Rahwali, is 300 tons of cane in a day of 24 hours. The factory was completed towards the close of the cane season in 1933-34 and worked for only 10 days in which it produced 2,870 maunds of sugar. During the season 1934-35 the factory worked from 18th November, 1934, to the end of February, 1935, and crushed 273,000 maunds of cane which was just sufficient for about 32 days if the factory had worked at full capacity. The price of cane paid at the gate was As. 5 per maund. It imported cane from Sangla Hill, Chillanwala and Qadian. Including railway freight the price of cane imported by the factory from outstations worked out at As. 6 to As. 7-6 per maund. The average price realised for sugar during 1933-34 by this factory was Rs. 10 per maund and during 1934-35 Rs. 9-8 per maund. The average yield of sugar during 1933-34 was 5·4 per cent. and during 1934-35 7·5 per cent. The high yield during 1934-35, however, contained for the major portion second class sugar. The investment of the factory is about Rs. 10 lakhs and no dividend has been paid to the share-holders so far, nor is there any prospect of a dividend in the near future. The entire amount of the excise has been paid from the capital of the Company.

The Bhalwal Sugar Mills Company, Limited, Bhalwal, has a crushing capacity of 100 tons of sugarcane daily. The factory worked for 40 days during 1933-34 and crushed only about 58,000 maunds of cane. During 1934-35 the factory worked for 25 days and crushed only 40,000 maunds of cane which, were the factory to work at full capacity, should have been crushed in 10 working days. The average price paid for cane by this factory during 1933-34 was As. 4-6 and during 1934-35 As. 5 per maund. The average price of sugar per maund realised was Rs. 8-8 in 1933-34 and Rs. 9 per maund in 1934-35. The factory has worked at a loss as will appear from the statement enclosed. The entire amount of the excise has been paid from the capital of the Company. No dividends have been paid to the share-holders nor will the Company be in a position to pay any dividends for some time, if at all.

The Phulerwan Oil and Sugar Mills, Limited, Phulerwan, worked during 1933-34 only and closed down in 1934-35. The Company imported gur from the United Provinces on account of the low percentage of sucrose in Punjab gur. Due to rise in the price of gur imported from the United Provinces the Company found it unprofitable to work their factory. This fact coupled with the imposition of the excise obliged the concern to go into voluntary liquidation during this year. The factory has since been purchased by Rahon Sugar and General Mills, Limited.

The Military Farm Factory at Okara was equipped with an open-pan plant till 1933-34. A vacuum pan and a crusher were added to it in 1934-35. As the factory made only a meagre profit of Rs. 2,000 on the season's working, the Army Department has decided to close it down.

The two refineries at Lyallpur, *viz.*, the Lyallpur Sugar Mills, Lyallpur, and the Punjab National Sugar Factory, Lyallpur, worked under full pressure during 1932-33 with gur imported from Bihar and Orissa and made good profits. In 1934 the price of gur began to rise and at one time touched Rs. 5 per maund as compared with Rs. 2-6 per maund in 1932. The high price of gur coupled with the burden of the excise forced these factories to close down. The Lyallpur Sugar Mills, however, once again resumed work for about 2 months in 1935, but is now lying idle without any hopes of re-starting work in the near future. The proprietors of these factories feel that they cannot resume work in their factories at the existing high rates for gur and the low price of sugar with the excise on. Their sugar sells at a discount as compared with cane-sugar.

The Surat Sugar Factory, Lyallpur, which has an open-pan plant did not work during 1934-35 owing to the cane crop having been spoiled by frost and the imposition of the excise.

Of the three refineries in Amritsar, the Amritsar Sugar Mills Company, Limited, has worked at a profit though very largely reduced by the payment of the excise. The Lakshmi Sugar and Oil Mills, Limited, Amritsar, was closed down in 1934-35 on account of the rates of gur being unworkable, and the consequent determination of the proprietor to erect another factory at Harodi in the United Provinces. The Harkishen Sugar Mills, Amritsar, also closed down owing to the death of its proprietor. This factory is not likely to resume work on account of want of working capital with the present owner and no lessee appears to be forthcoming.

The sugar plant of the Punjab Sugar Works and Patent Carbonic Acid Gas Company, Limited, Sujanpur, has remained idle for many years.

The Sri Guru Arjan Dev Sugar Mills, Butari, worked its crusher for 5 days only towards the end of March 1935 during 1934-35. The cane in the neighbouring areas was spoilt by frost and pests and therefore the yield was very poor. The Mills purchased cane at As. 4 per maund the cost at the factory gate being As. 5-6 per maund.

The Dina Nagar Sugar Mills, Dina Nagar, worked for only 20 days in January, 1935, during the year 1934-35 and had to close down at a loss due to inadequate supply of cane and low percentage of sucrose. The factory paid As. 4 to As. 5 per maund of peeled cane. The price of sugar realised by it was Rs. 9-8 per maund.

The Saraswati Sugar Mills, Limited, Abdullapur, worked for 25 days in 1933-34 and 92 days in 1934-35. It crushed 307,784 maunds of cane in 1933-34 and 899,991 maunds in 1934-35, obtaining a yield of 28,337½ maunds of sugar in 1933-34 and 58,292½ maunds in 1934-35. This factory could pay only if it crushed 1,800,000 maunds of cane in a season. The average extraction of this factory was 8·24 per cent. in 1933-34 and 6·5 per cent. in 1934-35. The low yield in this year was due to frost which spoiled the cane and affected the purity of the juice. The supply of cane was also inadequate. The average price for sugar realised in 1933-34 ranged between Rs. 8-2 to Rs. 10 per maund and Rs. 9 to Rs. 9-12 per maund in 1934-35, and for molasses 6 pies to 1 anna in 1933-34 and 9 pies to As. 1-6 per maund in 1934-35. This factory paid As. 5-6 per maund for cane in 1933-34 and As. 5 to As. 6 per maund in 1934-35. The factory suffered a loss of Rs. 90,987-14 in 1933-34 and about Rs. 1,10,000 in 1934-35.

The Punjab Sugar Corporation worked for 139 days in 1933-34 and 88 days in 1934-35. Other relevant statistics regarding this factory are given below:—

——	1932-33.	1933-34.	1934-35.
Average price paid for cane .	As. 5-4½ per md.	As. 5-4 per md..	As. 5 to As. 6 per md.
Cane crushed . . .	632,663 mds. .	814,575 mds. .	521,409 mds.
Sugar produced . . .	44,950 mds. .	59,528 mds. .	26,821 mds.
Average extraction obtained .	7·1 per cent. .	7·3 per cent. .	5·2 per cent.
Price realised for sugar . .	Rs. 9-8-1 per md.	Rs. 8-7-8½ per md.	Rs. 7-13-6 per md.
Price realise d for molasses .	As. 12 per md. .	As. 2 to As. 5 per md.	As. 3 to As. 5-3 per md.

The factory has worked at a loss during the past three years, the net loss being Rs. 14,611-14-6 in the year ending 30th April, 1933, and Rs. 20,695-3-3 in the year ending 30th April 1934. The net loss for the

year ending 30th April, 1935, is Rs. 1,63,225. The Board of Directors have just decided to go into liquidation.

The Muslim Sugar Factory, Shahabad Markanda (District Karnal), is a small open-pan sugar factory. It has continued working as its proprietor owns a cane plantation and is keen on making his own sugar. The Saraswati Sugar Mills, Limited, Abdullahpur, offered to purchase the cane of this plantation at As. 6 per maund but the proprietor refused to accept any offer of less than As. 8 per maund. This factory suffered a loss of Rs. 500 in 1933-34 and about Rs. 2,000 in 1934-35.

It would be abundantly clear from the foregoing account that the sugar industry never got a secure foot-hold in the province. The small-scale open-pan plants and centrifugals which were set up even in remote villages were all obliged to close down as a result of the establishment of large-scale factories which in their turn could not carry on owing to the shortage of supply of cane, damage to crop during the last two seasons by frost and low percentage of sucrose contents, loss of market for molasses and above all, the burden of the excise which even in the case of large producers is being paid out of capital account.

The Director of Agriculture, who has been consulted on the matter, will probably give the comparative value of the Punjab and the United Provinces sugarcanes and their sucrose contents.

I have also received a petition from the Director, Gujranwala Sugar Mills Company, Limited, Rahwali, addressed to Government, similar to the petition of the Bhalwal Sugar Mills Company, Limited, Bhalwal, which I am forwarding herewith in original. The Company request the permanent remission of the excise duty or in the alternative the remission of the duty for at least five years and an interim order for the immediate refund of the excise duty paid during the current year.

It has been generally represented by the sugar manufacturers in the Punjab that it is impossible to carry on the industry with the heavy burden of the excise. I am convinced that in view of the low price of sugar at present prevailing, the inexperience of the people in the industry, poor quality of the cane grown in the Punjab as compared with the United Provinces and Bihar and Orissa and the high price at which gur is imported or cane obtained from distant places and the heavy excise duty to be paid, the sugar factories in this province are placed at a great disadvantage and find it impossible to continue working. The rate of excise is Re. 1-5 per cwt., and taking the average price of sugar at Rs. 8 per maund it amounts to a surcharge of 12½ per cent. which the industry cannot bear to pay. I would accordingly recommend that the Punjab Government be pleased to recommend to the Government of India that the Punjab factories be exempted from the payment of excise for at least two years for the present, at any rate.

Statement showing the names and location of sugar factories in the Punjab, the quantity of sugar produced, the amount of excise paid and their financial position.

Serial No.	Name of sugar factory and location.	Quantity of sugar produced. 3		Amount of excise duty paid.	Financial position and remarks.
1	2	1933-34.	1934-35.	4	5
		Mds.	Mds.		
1	The Gujranwala Sugar Mills Company, Limited, Rahwali.	2,870½	20,785	Rs. 11,158-7 paid during the financial year 1934-35; Rs. 705-10 paid in April 1935; a further provision of Rs. 7,621-11 has been made in respect of sugar in stock. Total Rs. 19,485-12.	The factory suffered a loss of Rs. 11,983-7/2 during the period ending 30th April 1934 as per balance sheet enclosed. The balance sheet for the year ending 30th April, 1935, is not yet available but it shows a loss of Rs. 8,470-8-9. In addition, there is a loss of Rs. 32,717-1-3 on account of interest payable for 1934-35 and Rs. 9,000 on account of commission on the sale of sugar during 1934-35. These amounts have not been shown in the balance sheet for 1934-35 as they have not been paid so far.
2	The Bhalwal Sugar Mills Company, Limited, Bhalwal.	3,250	2,712	Rs. 2,637	The factory suffered a loss of Rs. 1,253-5-6 during the period ending 15th June, 1934, as per balance sheet enclosed. The balance sheet does not include figures of loss on account of interest on capital and wear and tear of machinery amounting to Rs. 18,120 and Rs. 15,000 respectively. The balance sheet for the period ending 15th June, 1934, has not yet been printed. The loss during this period is estimated at Rs. 33,120 by way of interest on capital and wear and tear of machinery and Rs. 5,000 on the working of the factory and business conducted.

3	The Phulerwan Oil and Sugar Mills, Limited, Phulerwan.	13,000 of which 3,000 maunds produced direct from cane and 10,000 maunds from gur.	Factory remained closed.	*Nil*	The factory has gone into voluntary liquidation. The concern has now been purchased by Rahon Sugar and General Mills, Limited, Phulerwan. The factory is designed to manufacture sugar both from cane direct and from gur. This factory and the factory of the Bhalwal Sugar Mills Company, Limited, Bhalwal, are situated at a distance of 9 nine miles of each other and there is not enough cane in the neighbourhood to feed both factories. On account of the high price of gur it was found unprofitable to work this factory with gur.
4	Military Farm Sugar Factory, Okara, District Montgomery.	733	5,399·5	Rs. 5,062	The factory belongs to the Army Department who refused to give any facts and figures regarding its financial position, excepting the statement that the factory earned a profit of Rs. 2,000 on its working during the 1934-35 season.
5	Lyallpur Sugar Mills, Lyallpur.	60,137·5	24,000	Rs. 7,800 (by 29th June 1935)	The figure of excise duty paid shown in the preceding column represents the payment made on account of the sugar sold. The factory had about 18,000 maunds of sugar in stock on 29th June, 1935. Computing at the rate of Re. 1 per maund, the factory will pay about Rs. 18,000 by way of excise on the stocks in hand when sold. The factory made a profit of Rs. 6,300 in 1933. In 1934, there was a loss of Rs. 822 on the working of the factory. The balance sheet for 1935 is not yet ready but the proprietors anticipate a much greater loss than in the previous year.
6	The Punjab National Sugar Factory, Lyallpur.	Exact figures not available. 6,060 in hand on 1st July, 1934.	14,750	Rs. 17,300-13-9 . . .	This factory was established in 1932-33 and made some profit in that year. It worked at a loss during 1933-34 and 1934-35. The figures of loss could not be ascertained as the factory is closed.

Statement showing the names and location of sugar factories in the Punjab, the quantity of sugar produced, the amount of excise paid and their financial position—contd.

Serial No.	Name of sugar factory and location.	Quantity of sugar produced.		Amount of excise duty paid.	Financial position and remarks.
		3			
1	2	1933-34.	1934-35.		5
		Mds.	Mds.		
7	Surat Sugar Factory, Lyallpur.	427·1	Remained closed.	*Nil*	This factory closed down in 1934-35.
8	The Amritsar Sugar Mills Company, Limited, Amritsar.	206,603 (1933)	215,258 (1934).	Rs. 1,68,128-14-3 (from 1st April, 1934, to 31st December, 1934).	*Net profit :* Rs. A. P. 1932 . . . . . 4,14,976 12 0 1933 . . . . . 4,07,697 1 9 1934 . . . . . 3,04,899 11 8
9	The Lakshmi Sugar and Oil Mills, Limited, Amritsar.	59,307 (1st November, 1933, to 31st October, 1934).	3,511 (1st November, 1934, to 30th April, 1935).	Rs. 35,610-11 . . .	*Net profit :* Rs. A. P. 1932-33 . . . . . 50,678 4 10 1933-34 . . . . . 36,736 13 4 1934-34 . . . . . 505 1 1 This factory was closed in 1934-35 on account of the rates of gur being unworkable. Another factor leading to the closure of this factory was the pre-occupation of the managing director in the erection of another sugar factory at Hardoi in the United Provinces.
10	The Punjab Sugar Works and Patent Carbonic Acid Gas Company, Limited, Sujanpur (District Gurdaspur).	..	..	..	The sugar machinery of this factory has remained idle for many years.

11	Harkishen Sugar Mills, Amritsar.	Details not available.	Details not available.	Details not available . .	This factory closed down on account of the death of Rai Sahib Lala Ganesh Das, its proprietor. It is not likely to start work for want of working capital and no lessee appears to be forthcoming. However, this factory, as far as could be ascertained, has never been worked at a loss by its lessees. Statistical data are not available.
12	Sri Guru Arjan Dev Sugar Mills, Butari.	49,660 (May, 1933, to March, 1934).	3,297½ from gur, 362½ from cane.	Rs. 3,413-12-6 . . .	The mill worked its crusher for 5 days only towards the close of March, 1935. The cane was spoilt by frost and pests and therefore the yield was very poor. There was a loss in working on account of poor supply of cane and its bad quality. Statistical data are not available.
13	The Dina Nagar Sugar Mills, Dina Nagar, District Gurdaspur.	..	..	..	The factory is under liquidation and hence no figures are available. This factory could not work for more than 20 days in January, 1935, and had to close down at a loss due to inadequate supply of cane and low percentage of sugar production.
14	Saraswati Sugar Mills, Limited, Abdullapur.	28,337½	58,292½	Rs. 48,502-7 paid; Rs. 11,575 yet to be paid in respect of stocks in hand.	The balance sheet of this factory is issued in combination with another factory in the United Provinces which belongs to the same firm. The manager, however, supplied the following statistical data :—Investment: Rs. 16,38,748-8-9. 1933-34.—Loss on the working of the factory: Rs. 90,987-14. Balance sheet for 1934-35 will be issued in September next. The manager estimated the loss during this year from the books of the factory at Rs. 1,10,000.
15	The Punjab Sugar Corporation, Sonepat.	59,528	26,821	Rs. 21,267-8 . . .	The factory showed a net loss of Rs. 14,611-14-6 during the year ending 30th April, 1933, and Rs. 20,695-3-3 during the year ending 30th April, 1934. The balance sheet for 1934-35 shows a net loss of Rs. 1,63,225.
16	Muslim Sugar Factory, Shahabad Markanda, District Karnal (open-pan factory).	252	252	Rs. 313-12	The total investment in the factory is stated to be Rs. 17,000. The factory suffered a loss of about Rs. 500 in 1933-34 and about Rs. 2,000 in 1934-35.

48. The price of sugar remained at a high level in the years 1930 to 1932 and since 1933 it has been gradually falling from about Rs. 10-8 to Rs. 12-8 per maund for different qualities at different places to nearly Rs. 7-8 per maund in 1937 (April-May) at all important centres like Lahore, Sialkot, Ludhiana, etc. But for the first two years after the grant of protection to the sugar industry, the consumer has stood to gain by the grant of protection to the industry.

49. The industries dependent on the supply of sugar and sugar products or molasses have benefited from the fall in the price of sugar and the very heavy fall in the prices of molasses. The production of confectionery like lemon drops and the industry of preserved fruits, etc., in which a beginning has been made in this province, have been set up as a result of the fall in the price of sugar. The tobacco curing industry which utilises molasses in sweetening hooka tobacco has gained on account of the cheapening of molasses. The liquor industry has, however, not been affected.

50. *Acreage.*—The statistics of acreage are based on the actual crop inspections (girdawari) by patwaris and are sufficiently reliable.

Estimate of production.—The present practice is for Tahsildars to give estimates of outturn in maunds and seers per acre for irrigated and unirrigated areas separately for their tahsils in the final sugarcane forecast on the basis of personal observations, crop cutting experiments and opinions of leading agriculturists. These estimates are sent to Director of Land Records' office through Deputy Commissioners and the total outturn of each district and for the province as a whole is worked out by multiplying the area and the estimated yield per acre. In the Season and Crop Report the yield is expressed in percentages on the average yield per acre after taking into consideration the outturn already reported in the sugarcane forecast. The total outturn is then worked out by the following formula:—

$$\frac{\text{Sown area} \times \text{normal yield per acre} \times \text{percentage of yield per acre.}}{100}$$

Prices.—The prices are collected by the bazar chaudharies who report them to the Tahsildar. The retail prices of each headquarter of the district and wholesale prices of the 24 important markets of the province are received fortnightly in Director of Land Records' office, and before compilation and publication in the gazette, the figures are carefully checked by that office. Discrepancies and mistakes detected in the course of checking are duly enquired into and corrigenda issued where necessary. Instances of inaccuracies in the published prices have come to notice and proposals are under consideration for improving the existing system of collection by remunerating bazar chaudhuries who at present supply the prices free of charge.

The Department of Industries, Punjab, has started the collection of retail prices of commodities entering the family budgets of working classes in the Punjab in connection with the compilation of the working class cost of living index numbers under the auspices of the Board of Economic Enquiry, Punjab, as from the last year. Prices for the various commodities including gur and refined sugar are collected monthly at Lahore, Sialkot, Multan, Ludhiana and Rohtak. Quotations are obtained from prominent dealers at these centres and the data collected is considered to be reliable.

51. *Nil.*

33. Railway freights on the North Western Railway are calculated on the basis of flat rates for trucks. Reductions in freight rates were made in 1935. Maundage freight rates for cane existed prior to 1935-36 season but they proved unworkable for the following reasons:—

(*a*) Small railway stations despatching sugarcane were not equipped with weigh bridges and necessitated the haulage of cane trucks to distant stations for assessment of freight on the maundage basis.

(*b*) Even where weighing arrangements existed at despatching or receiving stations, the weighments entailed considerable detention of trucks with consequent deterioration of cane. In many cases weighed trucks were re-weighed by the checking authorities which caused further delay in deliveries.

(*c*) The recording of weights at stations not equipped with weigh bridges left an elastic discretion with the railway authorities which proved none too happy for the point of view of the consignor.

The present system of flat rates for trucks is accordingly considered suitable and no change therein is advocated or considered desirable.

34. A substantial reduction in railway freight rates for lime stone and manure is desired by the people connected with the sugar industry. Proper care is not bestowed on manuring the cane crop a reduction in railway freights for manures will encourage manuring.

39. No written agreements are entered into by factory owners with cane-growers for the supply of cane. The Saraswati Sugar Mills, Limited, Abdullapur, provides seed and manure to the cultivators but no advances of cash are made, as some unscrupulous cultivators, after taking the advance try to sell their cane to other buyers and it becomes incumbent on the factory owner to take measures to protect his interests. Sri Guru Arjan Dev Sugar Factory at Butari are reported to have made cash advances in certain cases. The Pattoki Sugar Factory made payments against delivery.

40. The Saraswati Sugar Mills, Limited, Abdullapur, pay a commission of 1½ pies per maund to the agents for gate cane and at outstations a commission of 6 pies per maund for supplies up to the end of March and 7½ pies per maund for supplies in the months of April and May. The commission includes handling charges, station expenses, etc., and is payable on weight as recorded by the factory weigh bridges. The Sri Guru Arjan Dev Sugar Factory, Butari, pay a commission of 6 pies per maund of cane.

42. The Saraswati Sugar Mills, Limited, Abdullapur, have 5 weigh bridges for gate-cane which work 24 hours, and a wagon weigh bridge fitted on their railway siding for rail-cane. Payment is made when the receipt is presented to them. The normal interval between the delivery of cane and the demand for payment is two or three days. In certain cases cultivators do not demand payment for as long as two to three weeks and collect as many as 50 receipts before they present them for payment. Sri Guru Arjan Dev Sugar Factory, Butari, make payments on delivery of cane.

43. The prices paid by these factories for cane purchased by them are given below for years for which quotations have been supplied:—

Name of factory.	Years (prices paid per maund).			
	1933-34.	1934-35.	1935-36	1936-37.
Saraswati Sugar Mills, Limited, Abdullapur.	Gate and rail: 0-6-3·8	Gate: 0-6-0·17 rail: 0-6-10·5	Gate: 0-6-1·47 rail: 0-6-11	Gate: 0-4-11·42 rail: 0-5-4·38
Sri Guru Arjan Dev Sugar Factory, Butari.	..	..	0-5-0	0-5-0
Pattoki Sugar Factory .	..	..	..	0-5-0 to 0-3-6 average price 0-4-8

No satisfactory replies have been received for the latter part of the question.

50. The duration of the crushing season of the Saraswati Sugar Mills, Limited, Abdullapur, during the last four years is shown below:—

1933-34—19th January, 1934, to 26th March, 1934.

1934-35—27th November, 1934, to 12th March, 1935.

1935-36—25th November, 1935, to 23rd March, 1936.

1936-37—27th November, 1936, to 5th May, 1937.

The progressive prolonging of the season is stated to be due to encouraging gate-cane. A crushing season of seven months is considered to be sufficiently long for economic working. The Sri Guru Arjan Dev Sugar Factory at Butari worked for November to March. This period was not considered to be sufficiently long for economic working.

54. The sugar factory of Abdullapur has imported 4 Chinese pan men from Java, a Dutch Chief Chemist and a Scottish Engineer. The other staff is all local. The factory at Butari have not imported any skilled labour from abroad but of the total skilled labour employed 50 per cent. were imported from the United Provinces. Some other factories also imported skilled pan men from the United Provinces.

55. The factory at Abdullapur who employ skilled labour imported from abroad have remarked in reply to this question that there is not much imported labour to replace.

57. No factory is reported to have had a surplus of bagasse. In addition to bagasse fire wood and coal have been used to meet the requirements of fuel. The quantities of firewood and coal used by the Abdullapur Factory in the last 4 years have been as under:—

Year.	Firewood.	Coal.
	(Quantity in Maunds.)	
1933-34	15,610	29,658
1934-35	68,812	33,394
1935-36	90,287	170
1936-37	55,285	868

60. The Abdullapur Factory supply their molasses to the Punjab markets and a good proportion is supplied to the distilleries direct. Supply of tank wagons is reported to be very scarce. Freight charged on the carriage of molasses from Abdullapur to the station of despatch is shown below:—

	Per maund.
	As. P.
To Simla	3 10
To Amritsar	2 5
To Karnal	1 3
To Sarsa	3 0
To Rawalpindi	4 4

The Butari Factory supply their molasses in the Gurdaspur District. Molasses are transported in drums supplied by the dealers. Railway facilities are considered adequate and special concession rates are allowed. Some qualities have also been supplied to the Amritsar Distillery.

70. The Abdullapur Factory have reported that they have experienced considerable difficulties sometimes in obtaining wagons for the transportation of sugar specially in 1936-37 when on two different occasions, the railway stopped booking of sugar for 15 and 10 days respectively without any previous notice. The Amritsar Sugar Mills Company, Limited, Amritsar, have also reported to have experienced difficulties in obtaining wagons and have stated that supplies by rail are relayed.

83. The marketing centres in which some of the local sugar factories deal are mentioned below against each:—

(i) *Amritsar Sugar Mills Co., Ltd., Amritsar.*—*Amritsar, Lahore, Gujranwala, Sialkot, Jullundur,* Batala, *Multan,* Peshawar, Kasur, Ferozepur, *Lyallpur,* Toba Tek Singh, Gojra, *Rawalpindi,* of them the italicised are the more important markets.

(ii) *Sri Guru Arjan Dev Sugar Factory, Butari.*—This factory supplies its sugar to the following markets:—Jullundur, Lahore, Amritsar, Gujranwala, Batala, Ferozepur, Kasura, Rawalpindi, Sargodha.

(iii) *The Saraswati Sugar Mills, Limited, Abdullapur.*—The principal markets supplied by this factory are Ambala, Simla, Jullundur, Amritsar, Lahore, Rawalpindi, Peshawar.

(iv) *The Gujranwala Sugar Mills Company, Limited, Rahwali* deals in Gujranwala, Rawalpindi, Gojar Khan, Gujrat and Sialkot Markets.

(v) *The Bhalwal Sugar Mills Company, Limited, Bhalwal,* has supplied its sugar in Bhalwal and Sargodha.

84. The terms of business for the sale of sugar by various sugar factories are given below:—

(i) *The Amritsar Sugar Mills Company, Limited, Amritsar.*—(*a*) Sales are transacted through brokers and commission agents. The mill-owners get into direct touch with the dealers through brokers while the commission agents stock sugar against advance of 75 per cent. of the price of sugar and remit the balance after sale.

(*b*) The retailer buys from the dealer through broker of dalals.

The commission agents charge As. 2-6 per bag of sugar as commission. The brokers also charge the same rate.

(ii) *Sri Guru Arjan Dev Sugar Factory, Butari.*—Sales are arranged through brokers. A commission of As. 8 per cent. is given on the sale value of sugar.

(iii) *The Gujranwala Sugar Mills Company, Limited, Rahwali.*—The Company have appointed their sole sale agent who has under him his own sub-selling agents. The sale agent secures orders from dealers along with contract forms signed by the latter. The goods are despatched against demand draft through banks or payment is received in cash. The sole agent gets a commission of As. 12 per cent.

(iv) *The Saraswati Sugar Mills, Limited, Abdullapur.*—(*a*) The dealers buy from the Company through the selling agents and pay for the sugar against Railway Receipt.

(*b*) The dealer sells it to retailers, not unoften on credit.

88. Suitable godowns for storage of sugar exist in all important sugar markets. The deterioration in storage is reported to be negligible.

90. Java sugar is no longer in general demand. Its consumption is restricted to hotels and restaurants run on European style who will pay up to Rs. 2 per maund higher for Java Sugar. Very limited quantities are used by the medical profession in the preparation of syrups.

92. The stocks are carried by the manufacturers for about a year while the dealers generally carry stocks for about a month or less. The working of the Lahore Sugar Market is explained below:—

During the off-season stocks are jointly carried by the dealers and manufacturers. As the season closes the dealers are left with certain stocks accummulated during the working of the factories. Meanwhile the factory-owners continue to hold stocks and also to despatch goods against forward

booking. Generally the forwarding bookings end by about the month of August and before the factories resume working again the dealers try to exhaust their stocks. In most cases dealers do not hold large stocks but when they do banks readily advance money against stocks. In case the purchased stocks are left in the custody of the mills, they charge for storage and interest on the amount due to them. Bank play the dual role of advancing against stocks and also of collecting the bills.

93. A marketing survey of the sugar industry is generally considered desirable by the dealers in sugar. It is urged that the survey should be undertaken as early as possible as under the present arrangements the dealers are at the mercy of the mill-owners and lower quality goods than stipulated for are supplied.

94. Different views have been received on this question from the persons interested in the trade. The Saraswati Sugar Mills, Limited, Abdullapur, consider a central All-India selling organization an absolute necessity for the very existence of the industry. The Amritsar Sugar Mills Company, Limited, Amritsar, and the Sri Guru Arjan Dev Sugar Factory at Butari have also expressed themselves in favour of a central selling organisation. The Lahore sugar dealers on the other hand do not favour the idea of the establishment of the central selling organisation on the ground that such an organisation will assume a monopolistic role and will act prejudicially to the interests of the consumers by maintaining the price at a level higher than what is now obtained by the interaction of supply and demand and the dealers would suffer as the distribution will be placed in the hands of a few favoured parties. It is contended that the present competition among dealers tends to keep the price of sugar at a lower level which is to the advantage of the consumers.

95. There exists a general concensus of opinion in favour of the standardisation of Indian sugar in the interests of the dealers. The standards prescribed by the Imperial Institute of Sugar Technology are considered suitable. The dealers at Lahore have suggested standardisation for the following qualities:—

(1) White crystal sugar—small grain.

(2) White crystal sugar—large grain.

(3) Brown crystal sugar.

106. Molasses are sold through brokers to distilleries and tobacco manufacturers. The latter some times buy direct from the factories. Some quantities are also sent to the hill districts like Kangra for direct consumption.

107. There have been no exports of molasses to foreign countries from the Punjab.

108. As a result of the grant of protection to the sugar industry a large number of sugar factories for the production of sugar by open pan system and a good many large scale sugar factories were set up in the Punjab but the imposition of the excise in 1934 dealt a heavy blow to the industry as the infant factories were unable to bear its burden. The further increase in excise in 1937 has made the position still worse. The grant of protection acted as a stimulus for investments in the sugar industry but with the general collapse of the industry after 1934 big losses have been incurred by most of the factory owners as a result of the locking up of their capital in buildings and plants which are now lying idle.

109. There is no difference of opinion in favour of the necessity for the further continuance of protection to the sugar industry. It has generally been stated that any reduction in the measure of protection now enjoyed by the industry will result in positive, disaster as the Java manufacturers with their superior organisation and efficiency will re-capture the Indian markets. Most of the factory owners have urged the grant of a larger measure of protection than at present allowed.

110. Further assistance is desired by sugar manufacturers in the Punjab in the following forms apart from a larger measure of protection:—

(i) Greater attention should be paid to the cultivation of sugar-cane and improving the quality of cane produced.

(ii) A part of the excise duty should be utilised for the furtherance of the interests of the industry.

(iii) Railway freight on the carriage of sugar from the mills to the ports should be reduced to enable Indian sugar to compete with imported sugar.

(iv) Railway freight on the carriage of cane should be further reduced.

111. there have been no imports of molasses into Indian during the last two years. The stoppage of imports is stated to be due largely to the increase in Indian production rather than the import duty. No industry utilising molasses as a raw material has suffered owing to the stoppage of imports of molasses from foreign countries. The quantities of molasses available have been in excess of demand and molasses have been available at nominal prices.

QUESTIONNAIRE FOR SUGAR REFINERIES.

Below are given replies to the Questionnaire for sugar refineries obtained from the Amritsar Sugar Mills Company, Limited, Chhehrta (near Amritsar). The factory is a representative refinery in the Punjab. It was established in March, 1925, but it was closed down in 1937 as a result of the excess sugar excise imposed this year.

1. The Amritsar Sugar Mills Company, Limited, started working in March, 1925. The maximum capacity of the plant is 23 tons of sugar per day. It is a refinery only and does not crush cane.

2. Sugar is refined from jaggery. Two qualities of sugar are produced, *viz.*, "Lion Brand" and "Ganesh Brand".

3. The output of the factory in the years 1930 to 1936 and the causes of variations in production are shown below:—

Year.	Output in maunds and seers. Mds.	seers.	Causes of variation in production.
1930 . .	99,763	16	
1931 . .	160,791	15	The plant was doubled in June, 1931.
1932 . .	228,821	15	Worked at full pressure.
1933 . .	206,603	18	Decrease due to late starting of work and stoppages in the work.
1934 . .	215,258	10	Worked more regularly than in the previous year.
1935 . .	209,825	3	Decrease due to fall in the margin of profits on account of imposition of excise duty.
1936 . .	203,862	38	

The mill experienced no difficulty in obtaining sufficient quantities of jaggery required by it. The average prices at which jaggery was purchased during 1930-1936 are given below:—

Year.	Average price of jaggery per maund of 40 seers. Rs.	A.	P.	Year.	Average price of jaggery per maund of 40 seers. Rs.	A.	P.
1930 . . .	4	14	1	1934 . . .	2	14	9
1931 . . .	3	15	3	1935 . . .	3	6	4
1932 . . .	3	13	10				
1933 . . .	2	11	7	1936 . .	3	13	7

5. Jaggery has been obtained from Bihar and the United Provinces. The important stations of supply were: Yousufpur, Mairwa, Ghughle, Pachrukhi, Balia, Rasra, Bhatapokhar, Siwan, Siswa Bazar, Chhitauni Ghat, Basti Bazar, Deoria, Hatwa, Sasoram, Gaya, Palmerganj, Bikram, Piru, Bihea, Saidpur, Bihtri, Chilkahar, Roorki, Golagokarnath, Manglaur, Muzaffarnagar. Supplies were obtained on railway transportation.

6. The average recovery of sugar during 1930-1936 was as under:—

Year.	Average recovery per 100 maunds of Jaggery. Mds. Srs. Chs.	Year.	Average recovery per 100 maunds of jaggery. Mds. Srs. Chs.
1930	58 39 8	1934	58 8 14
1931	58 14 8	1935	58 37 6
1932	59 36 13		
1933	57 13 0	1936	58 7 1

The only possibiliy of improvement appears to lie in the increased production of better quality canes and the manufacture of gur with slow heat.

7. The average cost of manufacture of one maund of sugar in 1930 was Rs. 2. It fell to Rs. 1-2 in 1931 and to Rs. 1-10 in 1932 to 1936. (The details of cost of manufacture have not been intimated.) The fall in the cost of production was due to the doubling of the plant in June, 1931.

8. The sugar produced was comparatively whiter and contained lesser quantity of molasses as compared with the ordinary Khandsari sugar.

The average prices of the two qualities of sugar produced as realised during the 7 years 1930 to 1936 are shown below:—

Year.	"Lion Brand" Price per maund. Rs. A. P.	"Ganesh Brand" Price per maund. Rs. A. P.
1930	10 5 0	10 15 0
1931	9 10 2	10 4 2
1932	9 14 8	10 8 8
1933	9 7 9	10 1 9
1934	9 3 0	9 13 0
1935	9 7 2	10 1 2
1936	7 10 6	8 4 6

9. The more important markets besides Amritsar to which sugar produced in the factory was supplied are Lahore, Gujranwala, Sialkot, Jullundur, Batala, Lyallpur, Peshawar, Toba Tek Singh and Gojra. Among the less important markets are Multan, Kasur and Ferozepur, which took smaller quantities. The freight rates to these places from Amritsar are given below.—

Station.	Freight rate per maund. As. P.	Station.	Freight rate per maund. As. P.
Lahore	2 1	Toba Tek Singh	6 7
Gujranwala	3 4	Gojra	6 0
Sialkot	3 7	Multan	9 1
Jullundur	2 8	Kasur	2 11
Batala	1 9	Ferozepur	3 4
Lyallpur	5 0	Amritsar	2 0 per bag.
Peshawar	11 9		

10. The output of molasses and the prices obtained from 1930 to 1936 are shown in the statement below :—

Year.	Output of molasses in Mds. Srs.	Price per maund Rs. A. P.
1930	61,579 19	3 10 3
1931	101,968 0	2 3 0
1932	134,691 28	0 14 6
1933	137,483 27	0 8 8
1934	135,980 3	0 9 8
1935	119,692 15	0 12 9
1936	123,122 4	0 13 10

11. The sugar excise duty imposed in 1934 swept away the profits of the mill-owners, but the excess imposed in 1937 has resulted in the closing down of the mills.

12. The mill can restart the work only if the duty chargeable for refineries is reduced to the rate charged from Khandsari sugar factories.

A few relevant facts regarding the Phulerwan Sugar and Oil Mills, Limited, Phulerwan, are given below in connection with the Questionnaire for sugar refineries. This factory is fitted up with a second hand plant designed to manufacture sugar both from cane and gur. It was completed in 1933 and worked for only one season, *viz.*, 1933-34 after which it went into voluntary liquidation. It has remained closed since that year. The maximum daily crushing capacity of the plant is 100 tons of cane. The sugar refined from gur was of second quality. Its output in 1933-34 was 13,000 maunds of sugar of which 3,000 maunds was produced from cane direct and 10,000 maunds refined from gur. The factory closed down as sufficient quantities of sugarcane were not available and it did not pay to refine sugar from gur imported from United Provinces owing to its high price. The Punjab gur was not found suitable for refining sugar on account of the low yield of sucrose.

QUESTIONNAIRE FOR MANUFACTURERS OF SUGAR BY THE OPEN PAN SYSTEM AND KHANDSARS.

No Khandsar was established in the Punjab. All open pan sugar factories in the Punjab had closed down by 1934, as stated in reply to question No. 42. Replies to the Questionnaire for manufacturers of sugar by the open pan system as obtained from L. Durga Pershad, Proprietor of an open pan sugar factory at Batala, are given below as representing the conditions of work in the open pan sugar factories in the Punjab between the years 1932 and 1934 during which such factories worked in this province.

1. The factory was put up in 1932 and closed down in 1934. Sugar was manufactured directly from cane which was crushed and converted into rab in open pans. The rab was then put into cement tanks and allowed to stay till crystals were formed after which it was transferred to centrifugals for forming out sugar.

2. Cane was obtained from the growers through commission agents who were paid a commission of 1 per cent. on the value of cane purchased through them.

3. A uniform rate of As. 4 per maund (maund: 82-2/7 lbs.) was paid for cane No. 185 during all the three years 1932, 1933 and 1934.

4. The rate for cane did not fluctuate all through these years.

5. (i) The amount of juice extracted from 100 maunds of cane was 75 per cent.

(ii) The amount of rab manufactured from 100 maunds of juice was 20 per cent.

(iii) The amount of sugar extracted from 100 maunds of rab was 25 per cent.

Sugar obtained from 100 maunds of cane = 3¾ maunds.

6. Only one quality of sugar was manufactured during the 3 years that the factory was in operation. The statistics of output were not available.

7. The rough details of the cost of manufacture of sugar are as below:—

	Rs.	A.
Cost of 300 maunds of cane at 4 annas per maund	75	0
Commission on the purchase of cane at 1 per cent. on the value of cane	0	12
Labour for one day	10	0
Cost of Crude oil for engine	6	0
Cost of fire-wood required over and above bagasse	15	0
House rent overhead and Miscellaneous Charges	5	0
Total .	111	12

Sugar obtained from 300 maunds of cane = 11 maunds 10 seers. Cost of one maund of sugar was therefore: Rs. 9-15.

8. The sugar produced was purchased by the local dealers personally from the factory.

9. The prices obtained for the sugar during the three years 1932, 1933 and 1934 were as below:—

1932—Rs. 10 per maund.

1933—The sugar produced was stocked and was not sold.

1934—Rs. 8 per maund.

10. The sugar produced was preferred to gur and Indian factory sugar by the dealers.

11 & 12. The Indian factory sugar completely replaced sugar produced by open pan factories and it was due to the competition of Indian factory sugar that the open pan plants owners had to shut their doors.

13. All open pan factories closed down in 1934 and none resumed operation after the imposition of the excise in 1934 as they could not afford to pay the excise.

14. The chief cause of failure of open pan factories was the low percentage of sugar obtained by them from cane which varied from 3¾ per cent. to 4½ per cent. as compared with up to 8 per cent. obtained by large sugar factories fitted with modern plants.

REPLIES TO SELECTED QUESTIONS FROM THE QUESTIONNAIRE FOR GUR/JAGGERY MERCHANTS AT SELECTED CENTRES.

Information was collected for purposes of the enquiry into the questions contained in the Questionnaire for gur/jaggery merchants at Amritsar and with the eastern markets of Ludhiana, Ambala and Rohtak which deal both in local and imported gur and at Batala which is a market for the collection of gur produced in the Gurdaspur District to show the working of a small local market.

2. In the Amritsar market 6 different varieties of gur are marketed. The cakes are of different shapes, *viz.*, oval round, etc., and weigh from 1 chhitak to 5 seers each as detailed below:—

(1) 1 chhitak cakes produced in Jullundur District.

(2) 1 and 1¼ seers balls produced in the Gurdaspur and Amritsar Districts.

(3) "*Chakkoo*" gur in two to five seers pieces imported from United Provinces.

(4) *Bhela* or cakes of 5 seers each imported from United Provinces.

(5) "Shivji" or oval tapered pieces 1' long and about 3 to 7 inches in diameter imported from United Provinces.

(6) "Ladoo" or small balls imported from United Provinces. In the eastern centres of Ludhiana, Ambala and Rohtak gur is marketed under two main varieties, *viz.*, (i) *Desi* (local) and (ii) *Purbi* imported from United Provinces.

Dealers in Batala collect gur from villages in the Gurdaspur District for distribution and consignment to other markets of the province, which is made up in balls of 1 to 1¼ seers.

3. The six varieties of gur marketed at Amritsar are obtained respectively from the undermentioned areas:—

(1) Phagwara, Phillaur, Banga and Nawanshahr.

(2) Batala, Gurdaspur and villages in Amritsar District.

(3) Muzaffarnagar, Samli, Roorki and Meerut in United Provinces.

(4) Meerut, Muzaffarnagar, Baraut and Kandla in United Provinces.

(5) Saharanpur in United Provinces.

(6) Muzaffarnagar, Meerut and Samli in United Provinces.

In the eastern markets referred to above supplies are obtained from Saharanpur, Muzaffarnagar, Meerut and Bareilly.

Reliable statistics of imports of gur from various centres could not be obtained but the dealers both at Amritsar and the eastern markets allege that the figures of total imports during the last seven years do not exhibit any marked variations and the quantities imported have remained at a stationary level. The arrivals of gur in the Batala market also are reported not to vary from year to year. It is estimated that about 140,000 maunds of gur is brought into this market annually of which about 20,000 maunds goes to Amritsar and the balance is consigned to Lala Musa, Gujrat, Jhelum, Pind Dadan Khan, Lahore, Patti, Tarn Taran and other towns within the province.

4. The quality of gur imported from United Provinces is reported to have improved in recent years due to improved varieties of cane introduced there. The quality of gur brought to the Batala market from different centres has not varied during the last 7 years.

8. Gur remains in good condition for about 9 to 12 months if stored in new bags in rooms with wooden floors. It becomes loose and moist during rainy season and its market price decreases. The keeping qualities of United Provinces gur are better than that of *desi* (local) gur. It is, however, reported from Sialkot market that gur from *desi* varieties of sugarcanes keeps better than the one produced from imported varieties.

Lyallpur.—Retail prices of gur and sugar of different qualities for the recent years are given below:—

Year.	Gur. Seers per rupee.	Year.	Gur. Seers per rupee.
1930	10	1934	7½
1931	12	1935	10¼
1932	16		
1933	14½	1936	6½

Year.	Sugar (*desi*). Seers per rupee.	Sugar (Java). Seers per rupee.
1930	...	3½
1931	...	4
1932	...	3⅞
1933	3½	...
1934	3¾	...
1935	4	...
1936	4½	...
1937	5	...

Ambala.—The retail price of gur was 9 seers 4 chhatanks per rupee in December, 1935, and 10 seers 6 chhatanks per rupee in December, 1936.

There is only one kind of sugar for which rate is shown in our register. The rates were Rs. 9-8 in December, 1935, and Rs. 8-8 in December, 1936, per maund. It is now between Rs. 7 and Rs. 8 per maund for sugar. It is not possible to give separate figures for imported and Indian-made sugar of this district, but the sugar consumed generally is Indian-made, and it compares favourably well in quality with imported sugar.

Gurdaspur.—The imported sugar does not find a place in the markets of this district while the retail prices of gur and Indian made sugar are as follows:—

(1) Gur—	(2) Sugar (*desi*)—
1st class Rs. 3 per maund.	1st class Rs. 8 per maund.
2nd class Rs. 2-8 per maund.	2nd class Rs. 7-12 per maund.
3rd class Rs. 2-4 per maund.	Other Rs. 7-6 per maund.

Jullundur—

Year.	Retail prices per rupees in seers. Gur.	Sugar.
1930-31	8	5
1931-32	...	...
1932-33	9	5½
1933-34	9½	5
1934-35	9	5
1935-36	8	5
1936-37	9	5

Rohtak.—The retail prices of gur/jaggery is Rs. 1-8 and Rs. 1-4 per maund and

Sugar Rs. 8 per maund.

Statement showing the retail prices of gur and Indian-made sugar in Amritsar District.

Name of month.	1932.		1933.		1934.		1935.		1936.		1937.	
	Gur.	Sugar.	Gur.	Sugar.	Gur.	Sugar.	Gur.	Sugar.	Gur.	Sugar.	Gur.	Sugar.
	Srs. Ch.		Srs. Ch.	Srs. Ch.	Srs. Ch.		Srs. Ch.		Srs. Ch.		Srs. Ch.	Srs. Ch.
January	10 0	Figures not available.	11 0	Figures not available.	10 0	Figures not available.	7 5	Figures not available.	9 10	Figures not available.	9 8	4 8
February	9 14		11 14		10 0		6 10		10 0		9 8	4 10
March	10 12		12 8		10 0		6 12		10 0		9 8	4 12
April	11 0		11 4		9 0		6 9		10 0		13 0	4 12
May	12 12		10 2	3 0	7 0		6 5		10 0		13 0	4 12
June	13 0		10 0	3 0	7 0		6 0		10 0		13 0	..
July	11 0		9 0		..		6 8		10 0		..	..
August	10 8		9 10		..		6 15		8 4		..	..
September	10 12		8 0		..		7 0		7 8		..	..
October	10 0		9 0		6 0		5 8		7 0		..	..
November	9 0		9 8		6 8		6 9		8 4		..	..
December	9 12		10 0		6 6		8 12		9 8		..	..

Statement showing the retail prices of raw sugar (gur) in seers per rupee during the years 1930 to 1936.

Fortnight.	Ambala.	Jullundur.	Amritsar.	Gurdaspur.	Sialkot.	Lyallpur.
	Srs. chs.	Srs. chs.	Srs. chs.	Srs. chs.	Srs. chs.	Srs. chs.
1930.						
15th Jan.	6 2	4 0	5 0	7 8	6 12	6 8
31st Jan.	6 6	4 8	5 8	7 8	7 0	6 8
15th Feb.	6 0	4 8	5 8	6 8	8 8	6 0
28th Feb.	7 0	4 8	5 8	6 8	8 8	6 0
15th Mar.	6 6	4 8	5 8	7 0	8 0	6 8
31st Mar.	5 14	4 8	5 8	7 0	8 0	6 8
15th Apr.	5 14	4 8	6 8	6 8	8 0	6 8
30th Apr.	5 6	4 8	6 4	6 0	8 0	6 0
15th May	5 4	4 4	4 12	6 0	8 0	6 0
31st May	5 4	4 4	4 4	5 0	8 0	6 0
15th June	4 12	4 4	4 4	5 0	7 8	6 0
30th June	4 12	4 4	4 4	5 0	6 8	6 0
15th July	5 7	4 8	4 0	5 0	5 8	6 0
31st July	5 7	4 8	4 12	5 8	5 8	6 0
15th Aug.	5 7	4 8	4 4	5 8	5 12	5 8
31st Aug.	5 7	4 4	4 4	5 0	6 0	5 8
15th Sep.	6 0	4 4	4 4	4 12	6 0	5 8
30th Sep.	6 0	4 4	4 4	5 0	6 0	6 8
15th Oct.	6 10	4 8	5 0	5 12	5 8	6 8
31st Oct.	6 10	4 8	5 8	7 8	6 8	6 0
15th Nov.	5 4	5 0	5 8	7 8	6 4	6 0
30th Nov.	7 0	6 0	9 0	9 0	6 8	10 0
15th Dec.	7 12	6 8	11 0	11 0	10 2	10 0
31st Dec.	9 12	6 8	9 12	9 0	13 0	9 0
1931.						
15th Jan.	7 8	8 0	9 8	9 0	10 4	8 0
31st Jan.	7 8	8 0	8 12	9 0	9 8	9 0
15th Feb.	8 4	8 0	8 12	9 8	11 0	9 0
28th Feb.	8 4	7 0	8 12	10 0	11 8	9 0
15th Mar.	8 4	7 0	8 12	10 0	11 4	10 0
31st Mar.	8 8	7 0	8 12	10 0	11 0	10 0
15th Apr.	8 4	8 0	8 12	10 0	11 4	10 0
30th Apr.	8 4	8 0	9 0	10 0	11 8	11 0
15th May	8 4	8 0	9 0	10 0	11 8	10 0
31st May	8 4	8 0	9 0	10 0	11 12	10 0
15th June	8 4	8 0	8 0	10 0	11 4	10 0
30th June	8 4	8 0	8 0	10 0	11 6	10 0
15th July	8 2	7 0	8 0	10 0	11 12	10 0
31st July	8 2	7 0	8 0	10 0	11 12	10 0
15th Aug.	8 2	7 0	8 0	10 0	11 0	10 0
31st Aug.	8 2	7 0	8 0	10 0	11 4	9 8
15th Sep.	8 2	7 0	8 0	10 0	10 6	9 0
30th Sep.	8 2	7 0	8 0	10 0	10 4	9 0
15th Oct.	7 12	9 0	8 0	11 0	10 12	8 0

Statement showing the retail prices of raw sugar (gur) in seers per rupee during the years 1930 to 1936—contd.

Fortnight.	Ambala.	Jullundur.	Amritsar.	Gurdaspur.	Sialkot.	Lyallpur.
	Srs. chs.	Srs. chs.	Srs. chs.	Srs. chs.	Srs. chs.	Srs. chs.
1931—contd.						
31st Oct.	7 12	9 0	8 0	11 0	11 2	7 8
15th Nov.	7 12	7 0	8 0	11 0	8 8	8 8
30th Nov.	7 12	7 0	8 0	11 0	8 12	11 0
15th Dec.	9 4	9 0	10 0	11 0	11 4	10 0
31st Dec.	9 12	8 0	10 0	9 8	9 12	10 0
1932.						
15th Jan.	9 4	9 0	10 0	10 8	10 12	10 0
31st Jan.	10 0	9 0	10 0	10 8	10 2	10 0
15th Feb.	11 4	9 0	9 12	11 0	11 8	11 0
29th Feb.	11 4	10 0	10 0	11 0	10 14	11 0
15th Mar.	10 8	10 0	11 0	11 8	12 8	13 0
31st Mar.	13 0	10 0	11 0	12 0	13 2	13 0
15th Apr.	13 0	10 0	11 0	12 0	13 0	13 0
30th Apr.	13 0	10 0	11 0	12 0	11 12	13 0
15th May	14 0	10 0	13 0	12 0	12 0	12 8
31st May	16 8	10 0	13 0	14 0	13 4	13 0
15th June	14 4	10 0	13 0	14 0	14 0	14 0
30th June	14 4	10 0	11 0	17 0	14 0	14 0
15th July	14 8	15 0	11 0	15 0	14 0	14 0
31st July	14 0	15 0	11 0	14 0	14 0	14 0
15th Aug.	12 0	13 0	10 8	14 0	14 0	15 0
31st Aug.	12 0	11 0	10 8	13 0	14 8	14 0
15th Sep.	12 4	10 8	11 0	13 0	13 8	15 0
30th Sep.	12 4	10 8	10 0	12 8	13 0	15 0
15th Oct.	13 0	10 0	10 0	12 0	13 0	10 0
31st Oct.	13 0	10 0	10 0	11 8	13 0	10 0
15th Nov.	13 0	10 0	8 12	12 8	13 0	10 0
30th Nov.	13 0	10 0	9 12	12 0	13 0	13 0
15th Dec.	14 4	10 0	9 12	16 0	13 0	13 0
31st Dec.	14 4	10 0	10 0	15 0	12 10	13 0
1933.						
15th Jan.	12 12	9 0	11 0	16 0	12 8	14 0
31st Jan.	15 8	9 0	12 0	16 0	12 12	13 0
15th Feb.	14 0	10 0	11 0	14 8	13 0	13 0
28th Feb.	17 0	10 0	11 0	17 0	13 4	15 0
15th Mar.	17 0	10 0	12 0	17 0	12 8	15 0
31st Mar.	19 0	10 0	13 0	15 8	12 0	16 0
15th Apr.	15 0	11 0	11 4	15 8	12 8	16 0
30th Apr.	14 0	11 0	11 4	11 8	12 8	13 0
15th May	17 8	10 0	10 4	11 8	12 0	13 0
31st May	17 0	8 0	10 0	12 0	12 0	13 0
15th June	15 8	8 0	10 0	12 8	11 0	12 0
30th June	12 0	8 0	10 0	12 0	11 0	12 0

Statement showing the retail prices of raw sugar (gur) in seers per rupee during the years 1930 to 1936—contd.

Fortnight.	Ambala.	Jullundur.	Amritsar.	Gurdaspur.	Sialkot.	Lyallpur.
	Srs. chs.	Srs. chs.	Srs. chs.	Srs. chs.	Srs. chs.	Srs. chs.
1933—contd.						
15th July .	13 0	9 0	9 4	12 8	10 0	11 0
31st July .	13 0	9 0	8 12	12 0	9 0	12 0
15th Aug. .	13 0	8 0	8 12	12 8	9 8	12 0
31st Aug. .	13 0	8 0	10 0	13 8	9 8	13 0
15th Sep. .	13 0	8 0	8 0	13 0	9 8	13 0
30th Sep. .	14 4	8 0	8 0	12 0	9 8	13 0
15th Oct. .	14 8	8 0	9 0	12 0	9 8	13 0
31st Oct. .	15 8	8 0	9 8	12 0	10 0	13 0
15th Nov. .	14 0	8 0	9 8	12 0	7 8	13 0
30th Nov. .	14 0	8 0	9 8	10 8	10 0	11 0
15th Dec. .	14 0	10 0	9 8	13 0	12 0	12 0
31st Dec. .	15 8	10 0	10 0	13 0	13 0	13 0
1934.						
15th Jan. .	11 4	10 0	11 0	12 12	16 0	13 0
31st Jan. .	9 12	11 0	10 0	12 0	16 0	12 0
15th Feb. .	12 12	10 0	10 0	12 8	15 0	12 0
28th Feb. .	12 12	11 0	10 0	12 8	15 0	12 0
15th Mar. .	12 12	10 0	10 0	12 0	13 0	12 0
31st Mar. .	11 0	10 0	10 0	12 0	12 0	11 8
15th Apr. .	11 0	10 0	10 0	11 0	13 0	11 0
30th Apr. .	10 4	9 0	8 0	8 12	11 0	11 0
15th May .	10 4	8 8	7 0	8 12	10 0	9 0
31st May .	9 12	8 8	7 0	8 8	9 0	8 0
15th June .	9 12	8 0	7 0	9 0	9 0	7 8
30th June .	8 0	6 8	7 0	8 8	8 0	7 8
15th July .	7 8	6 8	...	9 0	8 0	8 0
31st July .	6 8	6 4	...	8 0	7 8	8 0
15th Aug. .	7 4	5 8	...	7 8	7 0	7 8
31st Aug. .	7 4	5 12	...	7 8	7 0	7 0
15th Sep. .	5 4	5 0	...	7 4	7 0	7 0
30th Sep. .	5 0	5 12	5 0	7 4	7 0	7 0
15th Oct. .	5 0	5 8	5 8	7 0	6 10	8 8
31st Oct. .	5 0	5 0	6 0	8 0	7 12	5 12
15th Nov. .	5 0	6 0	6 8	6 8	8 0	8 0
30th Nov. .	6 4	6 0	6 8	8 4	7 14	7 0
15th Dec. .	7 0	9 0	6 0	11 0	8 0	9 0
31st Dec. .	9 0	6 0	7 8	11 4	8 8	8 8

Statement showing the retail prices of raw sugar (gur) in seers per rupee during the years 1930 to 1936—contd.

Fortnight.	Ambala.	Jullundur.	Amritsar.	Gurdaspur.	Sialkot.	Lyallpur.
	Srs. chs.	Srs. chs.	Srs. chs.	Srs. chs.	Srs. chs.	Ssr. chs.
1935.						
15th Jan.	8 8	6 0	7 0	11 4	9 0	8 8
31st Jan.	7 12	6 4	8 0	7 12	8 0	7 8
15th Feb.	7 12	6 8	6 8	...	8 14	7 8
28th Feb.	7 4	6 0	6 8	7 8	8 12	7 8
15th Mar.	7 10	6 8	6 12	8 0	9 0	8 0
31st Mar.	7 10	6 8	6 12	8 0	7 0	8 0
15th Apr.	7 4	7 0	6 12	7 4	8 0	7 12
30th Apr.	7 4	7 0	6 4	7 4	7 0	7 8
15th May	6 6	7 0	6 4	7 4	7 0	7 8
31st May	7 0	6 0	6 0	7 0	7 0	7 8
15th June	7 4	6 0	6 0	6 12	7 0	7 0
30th June	7 4	6 0	6 0	7 8	7 0	7 8
15th July	7 4	6 0	6 8	7 8	6 0	7 8
31st July	7 4	6 0	6 0	7 8	6 0	7 0
15th Aug.	7 4	6 0	7 0	7 12	6 0	7 0
31st Aug.	8 4	6 0	7 0	8 0	6 0	7 0
15th Sep.	8 4	6 0	7 0	7 0	6 0	7 0
30th Sep.	8 4	7 0	7 0	7 0	6 0	6 8
15th Oct.	7 4	6 0	5 8	7 0	5 0	7 8
31st Oct.	7 4	6 0	5 8	8 0	5 8	6 12
15th Nov.	7 12	5 8	6 0	7 8	6 0	6 8
30th Nov.	7 12	6 0	8 0	7 4	6 8	7 8
15th Dec.	9 0	7 0	8 0	9 8	7 0	9 4
31st Dec.	9 8	7 0	9 8	9 8	9 8	9 8
1936.						
15th Jan.	9 8	8 0	9 4	10 0	8 0	9 8
31st Jan.	9 8	8 0	10 0	9 4	10 0	9 12
15th Feb.	9 8	8 0	10 0	9 4	10 0	10 0
29th Feb.	9 8	7 0	10 0	10 0	10 0	10 0
15th Mar.	10 4	9 0	10 0	10 0	10 0	9 8
31st Mar.	10 4	9 0	10 0	9 8	9 0	9 8
15th Apr.	9 12	7 8	10 0	9 8	8 0	10 0
30th Apr.	9 2	8 0	10 0	9 8	9 0	9 8
15th May	8 8	7 0	10 0	9 8	10 0	10 0
31st May	8 8	8 8	10 0	9 8	10 0	9 0
15th June	...	9 0	10 0	9 8	9 0	9 0

Statement showing the retail prices of raw sugar (gur) in seers per rupee during the years 1930 to 1936—concld.

Fortnight.	Ambala.	Jullundur.	Amritsar.	Gurdaspur.	Sialkot.	Lyallpur.
	Srs. chs.	Srs. chs.	Srs. chs.	Srs. chs.	Srs. chs.	Srs. chs.
1936—contd.						
30th June .	10 4	9 0	10 0	11 4	9 0	9 0
15th July .	10 4	9 0	10 0	11 4	8 0	9 0
31st July .	10 4	9 0	10 0	11 12	10 0	10 0
15th Aug. .	10 1	8 0	8 8	12 8	9 0	10 0
31st Aug. .	10 1	8 0	8 0	11 8	10 0	10 0
15th Sep. .	10 0	8 0	8 0	10 8	9 0	10 0
30th Sep. .	10 0	8 0	7 0	10 4	8 0	11 0
15th Oct. .	9 12	8 0	7 0	9 4	7 0	8 0
31st Oct. .	9 12	7 0	7 0	9 12	7 0	8 0
15th Nov. .	9 2	7 0	7 0	9 12	6 12	8 8
30th Nov. .	8 8	9 0	9 8	10 12	9 0	9 0
15th Dec. .	10 4	8 0	9 8	11 0	8 0	9 8
31st Dec. .	10 12	8 8	9 8	12 8	8 0	9 8

NOTE BY MR. KAILASH CHANDRA OF ABDULLAHPUR, A CANE-GROWER.

The progress of the Sugar Industry in India has been phenomenal during these few years of protection, so far as its expansion and consequent production goes. Area under sugarcane has also developed largely and this can be safely said that lot of cane has been left standing this season in the fields. But the quality of cane has not been keeping pace with its quantity and the millers are responsible to a great extent for this deficiency. However hard the mill-owners may try to put their house in order, reduce working expenses, employ highly technical men and latest machinery but they cannot stand on their own legs and compete with other countries in open market. If the load of excise and the crutches of protection are removed simultaneously, even then the industry would fall. Their salvation lies in improved cane. This the millers can encourage. At present they pay a flat rate for all their cane and the grower of better cane has no inducement. A premium paid by millers over the current rate for freshness and higher sucrose contents will directly induce the cultivators to meet with the situation. The method of judging the cane is very simple and the ignorant cultivators can also test their own cane. The hand refractometer can be used with advantage and no elaborate tests in the laboratory are necessary.

The relations between the millers and cane-growers should be cordial and all traces of exploitaton on either side should be removed so that the parties may have mutual benefit.

Payments.—These should be made daily and without causing any inconvenience to the cultivators. All tips to the scale clerks and cashiers must be stopped.

Weighments.—The cart weighbridges should be periodically tested and weighed carts should be checked by high Government officials on surprise visits. Enough weighbridges should be provided so that 24 hours requirements are weighed during the day and the cultivators are not required to wait outside in winter whole nights.

Amenities.—Drinking water for cattle and men should be provided by the miller and sufficient ground space should be provided, so that free movements are not hampered. Shops for selling ordinary and simple and cheap food for cultivators under the control of the factory doctor. Propagandists of the Agricultural Departments should give lectures to the cultivators assembled there on better methods of farming and manuring.

Stoppages.—These for clearing, etc., can be foreseen by the management and timely notice to the cultivators should be given. In case of breakdown, all cane-indented carts should be weighed and reports sent with all possible haste in the neighbourhood of the time for which cane will not be required.

Indents.—In order to control suppliers indents mentioning date and quantity should be issued to the growers.

Rate.—Change of rate should be very well notified before two or three days so that cultivators may have time to think.

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(2) *Letter, dated the 6th August, 1937, from the Senior Secretary to the Financial Commissioners, Punjab, Lahore.*

In reply to your letter No. 181, dated the 15th May, 1937, to the address of the Secretary to Government, Punjab, Industries Department, I am directed to inform you that the rate of interest at which the cultivators in the Punjab can borrow money, for the purchase of seed, etc., from the various sources open to them is as follows:—

(1) 4 per cent. per annum on the money borrowed from Government in the form of taccavi loans.

(2) 7 to 12½ per cent. per annum on the money borrowed from the Co-operative Credit Societies.

(3) 6 to 12 per cent. per annum on the money borrowed from money-lenders on the security on landed property or ornaments, and 12 to 18 per cent. per annum or even more on money borrowed without such security.

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(3) *Letter, dated the 23rd August, 1937, from the Marketing Officer, Punjab, Lahore.*

I have the honour to send herewith information supplementary to our oral evidence given in Simla on the 17th instant:—

(1) Area under sugarcane in the Punjab since 1929-30 is given in the attached statement to bring up-to-date the table given on pages 11 and 12 of the Report of the Indian Tariff Board on the Sugar Industry (1931). Due to fall in the price of gur in 1936-37, decrease in the area under sugarcane was expected. The first forecast of sugarcane crop in the Punjab has just appeared and it shows the total area under sugarcane to be 527,600 acres only. In the important cane growing districts the largest decrease is reported from Lahore being 19·0 per cent. Rohtak shows decrease of 11 per cent., Karnal and Lyallpur of 8 per cent., Jullundur and Sialkot of 5 per cent. while Hoshiarpur shows an increase of 4 per cent.

(2) (*a*) *Division of the Punjab into various tracts.*—There is some difference of opinion on this point. Mr. Darling for instance includes Jullundur in the Central Punjab, but I would put it in the sub-montaneous tract because larger part of it resembles Hoshiarpur district which is sub-montaneous. Again he puts Multan in the Western Punjab, and I agree

that this is so, but large part of it is irrigated by canal. I would, therefore, put it along with canal colonies. I feel that from sugarcane growing point of view this will be quite suitable division of tracts.

(*b*) As regards the area in each tract and increases or decreases as compared with the past years there are wide fluctuations from year to year and it will not be advisable to take the figures of any one year for comparison. For instance the area under sugarcane in 1916-17 was only 414,110 acres as against 502,836 acres in 1917-18. Similarly the area under sugarcane in 1928-29 was only 400,904 acres as against 498,624 acres in 1927-28. Again in 1934-35 the sugarcane area was 462,442 acres as against 554,348 acres in 1936-37. I have, therefore, thought it proper to take the average figures for three years of each period, *i.e.*, 1916-17 to 1918-19 when the Indian Sugar Committee wrote its report, 1926-27 to 1928-29 when the Indian Tariff Board submitted its report on the Sugar Industry and 1934-35 to 1936-37 when the present Tariff Board is dealing with this question.

The detailed figures are given in the attached table. Column No. 2 gives the actual area in each district for each period. Column No. 3 gives the percentage distribution of sugarcane area while column No. 4 gives the percentage of area under sugarcane to total area cropped. The last column gives an indication of the intensity of sugarcane crop. It will be observed from this table that the sub-montaneous districts show an increase in the area particularly in the last period. Jullundur and Ambala, the two districts in which sugar factories have been working for the last three years, indicate very large increase in the area. The third column shows that about 38 per cent. of the sugarcane area is located in this tract and the fourth column shows that with the exception of Amritsar and Gujranwala, in the Central Punjab, this tract shows comparatively higher percentage of sugarcane area to the total area cropped. The second tract (*i.e.*, the Central Districts) contributes about 25 per cent. of the total area under sugarcane in the province. There was a decrease in the second period of about 2·5 per cent. but the third period shows an increase of about 21 per cent. Barring Amritsar and Gujranwala, the percentage of area under sugarcane to total cropped area is lower as compared with the sub-montaneous tract. The third tract (South Eastern Districts), shows a considerable decrease in the area under sugarcane since the first period, though there has been a little increase in Karnal and Gurgaon in the third period. It is rather strange to note that Rohtak district where Sonepat Factory was located should show a regular decrease. This anomaly will be explained if figures of individual years are studied. The figures for the last three years given below show a big increase in 1936-37 as compared with the two previous years:—

Year.	Sugarcane area. Acres.
1934-35	31,412
1935-36	29,575
1936-37	38,167

The Canal Colonies area contains about 15 per cent. of the total sugarcane area in the Punjab. Leaving aside Lyallpur, the percentage of sugarcane area to total cropped area, is very low. It will be observed that there is a regular increase in the area under sugarcane but a closer study into the figures of each district reveals that the first two districts, *i.e.*, Lyallpur and Shahpur, show a consistent decrease while the other two districts, *i.e.*, Montgomery and Multan, show a regular increase. As this increase has been greater than the decrease in the first two districts, the figures for the whole group on the whole show an increase.

(3) *Cost of Production of cane.*—The following figures about the cost of cultivation were supplied previously:—

A.—*Table shwing cost of cultivation per acre of Co. cane seed crop.*

District.	1933-34.	1934-35.	1935-36.
	Rs. a. p.	Rs. a. p.	Rs. a. p.
Jullundur* . .	225 4 11	234 12 5	236 15 5
Lyallpur . .	122 1 2	139 12 8	124 7 6
Gurdaspur . .	101 13 2	156 7 9	126 7 6

* High costs due to high costs for lifting water. Figures for Lyallpur and Gurdaspur during the year 1933-34 are for all types of cane, *i.e.*, Co. seed crop, Co. Ratoon and *Desi* taken together.

B.—*Table showing average yield of gur per acre.*

District.	1933-34.	1934-35.	1935-36.
	Mds	Mds.	Mds.
Jullundur	44·4	39·0	42·7
Lyallpur	25·6	33·1	32·2
Gurdaspur	18·5	19·7	16·3

The figures of cost given in the Table A above include the cost of stripping cane as well as the crushing and making into gur. As the Board was interested in the cost of production of cane only, *i.e.*, before it is crushed and made into gur, the cost of crushing and gur manufacturing and the value of cane tops should be deducted from the above figures. This cost comes to about Re. 1-10-6 per maund of gur. The correct figures for the cost of cultivation of cane per acre would, therefore, be as follows:—

District.	1933-34.	1934-35.	1935-36.
	Rs. a. p.	Rs. a. p.	Rs. a. p.
Jullundur . .	152 6 11	170 2 11	165 11 11
Lyallpur . .	79 0 2	85 2 2	71 7 6
Gurdaspur . .	71 2 11	123 5 9	99 15 6

Assuming that about 10 maunds of cane give one maund of gur, the price per maund of cane works out as below:—

District.	1933-34.	1934-35.	1935-36.
	As. p.	As. p.	As. p.
Jullundur . . .	5 7	7 0*	6 2
Lyallpur	4 10	4 2	3 7
Gurdaspur . . .	6 2	9 10	10 0

* In the Jullundur District in 1934-35 sugarcane was badly affected by pyrilla and frost. Yield per acre decreased and cost per maund of cane increased.

The figures relating to the cost of cultivation given above, were worked out under the following conditions:—

Lyallpur District.—It is all canal irrigated and water charges amount to Rs. 11 per acre.

Jullundur District.—It is all well irrigated and the cost of lifting water comes to about Rs. 70 per acre.

Gurdaspur District.—In this district about a third of the area where cost of cultivation has been worked out was under well irrigation, one-third under canal irrigation and the remaining one-third was *barani*, *i.e.*, dependant on rains. The cost of cultivation in the *barani* area alone is as follows:—

	1933-34.	1934-35.	1935-36.
	Rs. a. p.	Rs. a. p.	Rs. a. p.
Sugarcane *Desi* seed crop . .	103 9 11	115 14 0	118 15 5
Sugarcane Co. seed crop . . .	...	53 15 9	75 8 2

The yields per acre are given below:—

	1933-34.	1934-35.	1935-36.
	Mds. Srs.	Mds. Srs.	Mds. Srs.
Sugarcane *Desi* seed crop	13 17	14 37	15 16
Sugarcane Co. seed crop	...	14 9	6 10

(4) The detailed cost of sugar manufacture by open pan system and Khanchis is given in the attached statements.

(5) Publication No. 33, *i.e.*, "Studies in the Cost of Production of Crops in the Punjab", is enclosed herewith. The average cost of production of sugarcane during the five years, 1927-28 to 1931-32, is shown as Rs. 138-13-11 on page 21 of the publication. This figure, however, does not correspond to the figures already given as the cost of cultivation, because:—

(1) the figures in the publication relate to a Government Farm where yields are usually higher. The average yield was 50 maunds 10 seers which is about double that of the average for the province;

(2) cost of crushing and gur manufacture is also included.

(3) rental value of land and the land revenue paid to the Government are not included in the cost.

Allowing for these differences, *i.e.*, adding rental value and land revenue, the comparable cost of producing cane would be as follows:—

	Rs. as. p.	
Cost per acre as given on page 21 . . .	138 13 11	
Add:—		
Rental value	29 1 2	(*vide* page 6).
Land revenue, etc.	7 0 9	(*vide* page 7).
Total .	174 15 10	
Deduct cost of making 50 maunds of gur at Rs. 1-4 per maund	62 8 0	
Balance .	112 7 10	

Yield of canes: 500 maunds per acre.

∴ Cost per maund of cane: As. 3-7.

(6) A statement giving prices of gur and sugar in the Lyallpur market from January, 1935, to May, 1937, is attached herewith. The sugar quotations are at the mill gate. To these a sum of Rs. 1-6 may be added by way of railway freight and overhead charges, to get corresponding rates at Lyallpur. The figures have been represented diagrammatically also in the attached graph. It will be observed that gur prices have followed those of sugar which are on the decline during the period.

(7) A statement and a graph showing the acreage under sugarcane and wholesale harvest prices per maund of gur in the Punjab for the past 20 years are attached herewith. It will be seen that as the area increases, generally the price falls and the next year area goes down and the prices consequently go up.

(8) *Consumption of gur and sugar in the Punjab.*—This is rather a complicated job because for imports and exports purposes Punjab has been lumped into one block along with North-West Frontier Province, Delhi and the Punjab States. It is, therefore, necessary to find out the production of the block as a whole, and add it to the net imports of the block and then divide by the total population. In some States exact figures were not available and estimates had, therefore, to be made. Working on this basis consumption works out as given below:—

	1934-35.	1935-36.
	Mds.	Mds.
Annual *per capita* consumption of gur	0·32	0·39
Annual *per capita* consumption of sugar	0·18	0·19
Total .	0·50	0·58

It may be noted that these figures include gur and molasses used in distilleries and for making of *huqqa* tobacco and feeding animals.

Statement showing area under sugarcane in the Punjab since 1929-30.

Year.	Area in acres.	Year.	Area in acres.
1929-30 . .	306,696	1934-35 . .	462,442
1930-31 . .	425,729	1935-36 . .	474,200
1931-32 . .	474,655	1936-37 . .	554,348
1932-33 . .	558,152	1937-38 (first forecast)	527,600
1933-34 . .	465,991		

Statement showing areas under sugarcane, their percentage distribution and the percentages of sugarcane areas to total areas cropped in the important cane-growing districts of the different tracts of the Punjab.

Districts. 1		Areas under sugarcane. 2			Percentage distribution of sugarcane areas. 3			Percentages of sugarcane areas to total areas cropped. 4		
		1st period. (1916-17 to 1918-19.)	2nd period. (1926-27 to 1928-29.)	3rd period. (1934-35 to 1936-37.)	1st period. (1916-17 to 1918-19.)	2nd period. (1926-27 to 1928-29.)	3rd period. (1934-35 to 1936-37.)	1st period. (1916-17 to 1918-19.)	2nd period. (1926-27 to 1928-29.)	3rd period. (1934-35 to 1936-37.)
Sub-montaneous Districts.	Gurdaspur	60,990	59,615	57,607	13·2	13·3	11·6	6·5	6·1	5·6
	Sialkot	35,754	38,658	39,004	7·7	8·6	7·8	3·5	4·4	4·1
	Hoshiarpur	28,572	27,950	28,826	6·2	6·2	5·8	3·1	3·0	3·0
	Ambala	21,053	17,607	27,536	4·5	3·9	5·5	2·5	2·0	3·2
	Jullundur	29,741	30,368	36,309	6·4	6·8	7·3	3·8	3·7	4·2
	Total	176,110	174,198	189,282	38·0	38·8	38·0	..	..	..
Central Districts.	Amritsar	34,204	28,518	29,584	7·4	6·3	5·9	3·9	3·0	3·1
	Lahore	16,385	14,824	21,550	3·5	3·3	4·3	1·3	1·2	1·8
	Gujranwala	37,774	24,245	28,319	8·1	5·4	5·7	2·6	2·7	3·0
	Gujrat	11,000	12,045	13,132	2·4	2·7	2·6	1·2	1·2	1·3
	Ludhiana	13,640	13,617	17,704	2·9	3·0	3·6	1·9	1·6	2·1

	Ferozepur	4,610	3,952	10,311	1·0	0·9	2·1	0·2	0·2	0·5
	Sheikhupura	—*	17,476	18,401	—*	3·9	3·7	—*	1·8	1·9
	Total	117,613	114,677	139,001	25·3	25·5	27·9	..	..	..
South Eastern Districts.	Rohtak	38,103	36,692	33,051	8·2	8·2	6·7	2·8	2·7	2·5
	Karnal	32,934	29,407	31,062	7.1	6·5	6·3	2·8	2·6	2·7
	Gurgaon	14,323	7,428	11,815	3·1	1·7	2·4	1·2	0·7	1·0
	Total	85,360	73,527	75,928	18·4	16·4	15·4	..	..	..
Canal Colonies	Lyallpur	48,684	44,560	41,611	10·5	9·9	8·4	3·0	2·4	2·6
	Shahpur	9,174	8,066	7,431	2·0	1·8	1·5	0·8	0·6	0·5
	Montgomery	6,434	11,474	12,930	1·4	2·6	2·6	0·6	0·8	0·7
	Multan	3,494	7,201	12,384	0·7	1·6	2·5	0·3	0·5	0·7
	Total	67,786	71,301	74,356	14·6	15·9	15·0	..	..	..
Total of the important Districts		446,869	433,703	478,567	96·3	96·6	96·3	..	..	..
Total of the Districts of minor importance		6,819	15,461	18,430	3·7	3·4	3·7	0·2	0·2	0·2
GRAND TOTAL		463,688	449,164	496,997	100·0	100·0	100·0	..	..	..

* Sheikhupura District was curved out in 1919-20.

Statement showing the acreage under sugarcane and harvest prices per maund of gur in the Punjab.

Year.	Acreage.	Prices. Rs. A.
1916-17	414,000	5 0
1917-18	503,000	5 1
1918-19	474,000	7 14
1919-20	482,000	7 9
1920-21	457,000	9 1
1921-22	373,000	9 7
1922-23	497,000	5 12
1923-24	483,000	5 8
1924-25	396,000	6 11
1925-26	390,000	7 2
1926-27	448,000	5 15
1927-28	499,000	5 6
1928-29	401,000	6 5
1929-30	306,000	6 5
1930-31	425,000	4 2
1931-32	474,000	3 13
1932-33	558,000	2 12
1933-34	465,000	3 4
1934-35	462,000	4 9
1935-36	474,000	4 0

Statement showing sugar and gur prices per maund in the Lyallpur market.

	Maholi sugar. Rs. A. P.	Gur. Rs. A. P.
1935.		
January	...	4 10 0
February	8 13 6	4 10 6
March	8 15 3	4 8 0
April	9 0 6	4 13 0
May	9 0 9	5 2 0
June	8 15 0	5 2 6
July	8 12 6	5 6 0
August	8 15 0	5 6 0
September	9 7 0	5 13 6
October	9 10 0	5 12 6
November	9 2 6	5 2 0
December	8 10 0	3 14 0
1936.		
January	8 6 6	3 11 6
February	8 3 6	3 9 0
March	8 4 3	3 13 0
April	8 2 9	3 15 0
May	7 14 0	3 11 0

	Maholi sugar.	Gur.
1936.	Rs. A. P.	Rs. A. P.
June	7 12 0	3 12 0
July	7 11 0	3 10 0
August	7 10 9	3 10 0
September	7 11 9	3 8 0
October	7 12 0	3 10 0
November	7 2 6	3 13 0
December	6 10 6	3 6 6
1937.		
January	6 11 0	3 4 0
February	6 6 6	3 0 0
March	6 9 0	2 14 6
April	6 6 6	3 0 0
May	...	2 12 6

Sugar quotations are f.o.r. mill. A sum of Rs. 1-6 may be added to these quotations to get corresponding figures at Lyallpur.

Cost of manufacturing sugar.

(1) *S. Bachint Singh, village Theri Rasulpur, District Hissar—*

	Rs. A. P.
I. Interest and Depreciation—	
Depreciation—	
Building Rs. 2,000 at 2½ per cent.	50 0 0
Engine Rs. 1,200 at 10 per cent.	120 0 0
Crusher Rs. 500 (life 8 years)	62 8 0
1 Centrifugal Rs. 1,500 at 10 per cent.	150 0 0
Interest on (Capital) Rs. 5,200 at 6 per cent.	312 0 0
II. Human Wages—	
Rab making (Rabias and other labour on rab making)	170 10 0
Centrifuging	22 8 0
Wages of mistri	60 0 0
III. Running Expenses of Engine (Kerosene oil, Lubrication)	400 0 0
Light, etc.	40 0 0
IV. Value of 7,000 maunds canes at As. 4 per maund	1,750 0 0
V. Fuel	40 0 0
VI. Miscellaneous	40 0 0
Total	3,217 10 0
Less value of 500 maunds gur at Rs. 1-8 per maund	750 0 0
Net cost	2,467 10 0

Quantity of sugar made from mollasses: 300 maunds.
∴ Cost per maund of sugar: Rs. 8-3-6.

(2) *S. Harbans Singh, Sikandarpur, District Hissar*—

I. Interest and Depreciation—

	Rs.	A.	P.
Depreciation—			
Building Rs. 2,000 at 2½ per cent.	50	0	0
Engine Rs. 1,200 at 10 per cent. one-third share charged to sugar manufacture	40	0	0
Crusher Rs. 800 (for 8 years)	100	0	0
Centrifugals (two) Rs. 2,400 at 10 per cent.	240	0	0
Interest on Rs. 5,600 at 6 per cent.	336	0	0
II. Wages—			
Rabias and other labour on rab making	77	0	0
Centrifuging, etc.	13	8	0
Mistri (wages)	30	0	0
III. Running Expenses—			
Kerosene oil	150	0	0
Lubrication and light	15	0	0
IV. Value of canes 3,500 maunds at As. 4	875	0	0
V. Fuel	20	0	0
VI. Miscellaneous	10	0	0
Total	1,956	8	0
Less value of 250 maunds gur at Rs. 1-8 (from mollasses)	375	0	0
Net cost	1,581	8	0

Sugar produced: 150 maunds.

∴ Cost per maund of sugar: Rs. 10-8-8.

(3) *Ramrichhpal, village Jakhauli, District Rohtak*—

I. Interest and Depreciation—

	Rs.	A.	P.
Depreciation—			
Buildings Rs. 1,000 at 2½ per cent.	25	0	0
Engine Rs. 4,000 (one-fourth share to be charged for cane crushing and grain chakki) ∴ Rs. 1,000 at 10 per cent. = Rs. 100 out of this for sugarcane	60	0	0
Centrifugal Rs. 1,000 at 5 per cent.	50	0	0
Crusher Rs. 800 at 20 per cent.	160	0	0
Interest on Capital about Rs. 3,500 at 6 per cent.	210	0	0

	Rs.	A.	
II. Crushing Expenses—			
Wages	1	8	
Oil and lubrication	5	0	
For 350 maunds cane	6	8	
∴ For 12,500 maunds cane	232	2	3
III. Rab manufacturing wages—			
Labour and Rabia Rs. 2-8 daily—12 maunds rab. Total 1,500 maunds rab. ∴ Total cost	312	8	0

	Rs. a.			
IV. Centrifuging—				
6 men at As. 4	1 8			
2 men on centrifuging at As. 8	1 0			
Lubrication and oil (1/3rd of crushing)	1 8			
	4 0			
28 days required for centrifuging 1,500 maunds rab			112	0 0
V. Drying and Dressing of Rab			37	8 0
VI. Mistri at Rs. 40 for 2 months. Half chargeable to sugar manufacture			40	0 0
VII. Other Expenses—				
Megasse drying—				
3 carts at Re. 1	3 0			
6 men daily	1 12			
	4 12			
For about 30 days			142	8 0
Cutting of Sarkanda for about 15 days at Re. 1			15	0 0
Light at As. 6 per day for 1 month			11	4 0
Repairs and miscellaneous			100	0 0
Wages of a clerk debited for 1 month			25	0 0
VIII. Value of 12,500 maunds cane at As. 3-6 per maund			2,734	6 0
	Total		4,267	4 3
Less value of molasses 1,000 at As. 4			250	0 0
500 maunds sugar			4,017	4 3

∴ Cost per maund: Rs. 8-0-7.

Items of cost.

(4) *Jagan Nath Khushi Ram, Apra*—	Rs. a.
Cost of rab: 180 maunds at Rs. 2-4 per maund	405 0
Rabia expenses	20 0
Suklai	3 0
Sarson oil	1 8
Cartage of rab and empty mattis (manufactured sugar at the spot)	..
Depreciation on mattis 45 at As. 3 dep. rate	8 7
Rent of centrifugal machine	20 0
Labour on centrifugals	11 4
Total	11 4
Less value of 120 maunds mollasses at As. 8 per maund	60 0
Net cost	409 3

Sugar produced: 50 maunds.

∴ Cost of sugar per maund: Rs. 8-3.

(5) *Karam Chand, Bilga*—

	Rs.	A.
Cost of rab: 160 maunds at Rs. 2-2 per maund .	340	0
Rabia expenses	20	0
Suklai	1	4
Sarson oil	3	12
Cartage of rab and empty mattis: 40 mattis at As. 3 per matti	7	8
Depreciation on mattis: 40 mattis at As. 3 per matti	7	8
Rent of centrifugal machine	50	0
Labour on centrifugals	6	12
Total .	436	12
Less 98 maunds molasses at As. 15 per maund .	91	14
Net cost .	344	14

Sugar produced: 49 maunds 24 seers.
∴ Cost of sugar per maund: Rs. 6-15-3.

Tehsil Samrala, village Pant.

(1) *Ali Mohd., of Pant*—

	Daily expenses. Rs.	A.
Cost of crude oil	2	0
Petrol	0	4
Mobil oil	0	2
Greese	0	1
Mistri (wages)	1	0
Labour	0	6
Wear and tear	0	4
	4	1

Sugar made per day: 25 maunds.
∴ Expenses per maund: 2 as. 7 1/5 p.
Charges realised from Zamindars for 1¼ maunds sugar, *i.e.*, one matti of rab: As. 8.
∴ Charges per maund of sugar: 6 as. 4 4/5 p.

(2) *Munshi Ram of Pant*—

	Rs.	A.
Crude oil	2	8
Mistri (wages)	0	10
Labour	0	6
Mobil oil	0	10
Wear and tear repair	0	4
	4	6

Sugar manufactured per day: 25 maunds.
∴ Cost per maund of sugar: 2 as. 9 3/5 p.

Serial No.	Name of the factory owner.	Quantity of sugar manufactured.	Quantity of molasses.	Sugar manufactured from.	Price paid.	Percentage of sugar to cane..	Cost of manufacture per maund.	Price obtained per maund of sugar.	How molasses disposed of and price obtained for molasses, etc.
		Mds.				Per cent.	Rs. a. p.		
1	S. Bachint Singh, village Theri Rasulpur.	300	500 gur from molasses.	Cane .	Grown at own farm.	¼ . .	8 3 6	Not sold yet but lesser by As. 12 to Re. 1 as against factory sugar.	Made into gur which sells at Re. 1-8 per maund.
2	S. Horban Singh, village Sikanderpur.	150	250 gur from (molasses power driven).	,, .	Ditto .	¼ . .	10 8 8	Sold at Rs. 7-8 in Amritsar District with favour.	Ditto.
3	Ramrichhpal Mahajan, village Jakhauli.	500	1,000. .	,, .	Owned and also bought at 0-3-6 per maund.	4 . .	8 0 7	Rs. 6-4 to Rs. 7	Molasses are still lying. Its estimated price is As. 4 per maund.
4	Jagan Nath Khushi Ram, village Apra.	50	120 mds. Hired hand driven centrifugals.	Rab .	Rs. 2-4 per maund.	27·8 sugar from rab.	8 3 0	Sold retail at about Rs. 8 per maund.	Sold at As. 8 per maund local consumption and itinerant glumars for taking to Hoshiarpur and Kangra Hilly tracts.
5	Karam Chand Bilga.	49—24	98 mds. Hired hand driven centrifugals.	,, .	Rs. 2-2- .	31 sugar from rab.	6 15 3	Sold retail at rates varying from Rs. 7-8 to Rs. 8.	Sold at As. 15 per maund for local consumption and to itinerant buyers.

Serial No.	Name of the factory owner.	Quantity of sugar manufactured.	Quantity of molasses.	Sugar manufactured from	Price paid.	Percentage of sugar to cane.	Cost of manufacture per maund.	Price obtained per maund of sugar.	How molasses disposed of and price obtained for molasses, etc.
			Mds.				Rs. a. p.		
6	Bishen Singh, Jabbowal.	100	200	..	..	..	..	..	..
7	L. Ramjidas of Dhagan.	165	320	Rab	..	..	8 3 0	..	..
8	Beli Ram of Mohanwala.	105	175	,,	..	..	8 3 0	..	..
9	Chanda Singh of Basiala.	26	50	,,	..	..	8 8 0	..	..
10	Inder Singh of Basiala.	8½	17	,,	..	..	8 8 0	..	..
11	Bhagat Singh village Jakhrodi.	250	445		Worked on custom at Rs. 6 as. 4⅘ p. per maund of sugar manufactured.				
12	Ali Mohammad, village Pant.	300	533		Do.		do.	do.	
13	Munshi Ram, village Pant.	300	533		Do.		do.	do.	
	Total .	2,304							

Cost of Production by Khanchi in Samrala Tehsil.

	Rs.	A.	P.
Cost of 17½ maunds juice for preparing one matti (3½ maunds) of rab	8	0	0
Wages of rabia for making 3½ maunds rab .	0	11	0
Cartage of one matti of rab (3½ maunds), emptying charges of one matti, drying and rubbing of 1¼ maunds sugar prepared from one matti, cost of suklai, etc.	0	15	6
	9	10	6
Value of 2¼ maunds mollasses at As. 7 per maund	0	15	9
Cost of 1¼ maunds sugar	8	10	9

∴ Cost per maund of sugar: Rs. 6-15.
Sale price per maund: Rs. 7-4.

Cost of Production in Khanchis.

Serial No.	Name of manufacturer.	Quantity of rab.	Cost of rab.	Cost of Suklai.	Labour expenses.	Oil.	Miscellaneous.	Cartage.
		Mds.	Rs. A.	Rs. A.	Rs. A.	Rs. A.	Rs. A.	Rs. A.
1	Lachhmandas, Bilga	240	495 0	3 0	35 10	5 10	..	18 12
2	Moolraj, Apra	140	350 0	1 8	30 0	4 0	..	17 8
3	Ram Rattan, Apra	80	225 0	2 8	20 0	3 12	..	5 0
4	Mohan Lal, Apra	80	225 0	2 8	20 0	3 12	..	5 0
5	Labhuram, Baburam	625	1,367 3	7 13	155 10	23 7	12 13	31 4
6	Baburam Ratan Chand, Nurmahal . . .	625	1,367 3	7 13	155 10	23 7	12 13	31 4
7	Durgadas Nijjar, Nurmahal	500	1,062 8	6 0	100 0	16 0	8 0	25 0
8	Achhrumal Charanji Lal, Nurmahal . . .	400	850 0	5 0	80 0	15 0	6 0	20 0
9	Pearey Lal, Sarhali	300	637 8	3 12	45 0	11 4	4 0	11 4
10	Nathu Ram, s/o Ghanaya Lal, Dosanj Kalan .	180	416 4	1 8	22 8	5 0	..	1 14
11	Baburam, s/o Maya Mal, Dosanj Kalan . .	72	166 8	1 0	11 4	3 0	..	..

Serial No.	Name of manufacturer.	Depreciation on mattis.	Labour on Khanchis.	Cost of Jala.	Miscellaneous.	Terminal tax.	Total gross cost.	Quantity of molasses obtained.
		Rs. A.	Rs. A.	Rs. A.	Rs. A.	Rs. A.	Rs. A.	Rs
1	Lachhmandas, Bilga	9 6	16 8	18 12	2 14	..	605 8	145
2	Moolraj, Apra	6 9	2 8*	12 0	3 0	..	427 1	80
3	Ram Rattan, Apra	3 12	2 8*	6 8	3 0	..	272 0	50
4	Mohan Lal, Apra	3 12	2 8*	6 8	3 0	..	272 0	48
5	Labhuram Baburam	23 7	82 8	24 0	8 4	..	1,736 5	384
6	Baburam Ratan Chand, Nurmahal	23 7	82 8	24 0	8 4	Octroi 85 15	1,822 4	381
7	Durgadas, Nijjar, Nurmahal	18 12	60 0	20 0	7 0	68 12	1,392 0	305
8	Achhrumal Charanji Lal, Nurmahal	15 0	50 0	16 0	6 0	55 at as. 11 per Matti	1,118 0	244
9	Pearey Lal, Sarhali	11 4	30 0	12 0	5 0	..	771 0	180
10	Nathu Ram, s/o Ghanaya Lal, Dosanj Kalan	7 8	3 12*	10 0	1 15	...	470 5	120
11	Baburam, s/o Maya Mal, Dosanj Kalan	3 6	8 6	3 8	1 0	..	198 0	45

Samrala, village Pant 2,800
Sherpur 3,600
Machhiwara 1,440

* Employed unpaid labour, *i.e.*, family.

Serial No.	Name of manufacturer.	Rate per maund of molasses.	Total value of molasses.	Net cost of production.	Quantity of sugar produced.				Cost per maund of sugar.
		A. P.	Rs. A.	Rs. A.	1st	2nd	3rd	Total.	Rs. A. P.
1	Lachhmandas, Bilga	10 0	90 10	514 14	14	58	..	72	7 2 5
2	Moolraj, Apra	1 6	87 8	339 9	3	42	..	45	7 8 9
3	Ram Rattan, Apra	15 0	46 14	225 2	16	4	2	22	10 3 9
4	Mohan Lal, Apra	15 0	45 0	227 0	20	21	2	24	9 7 4
5	Labhuram, Baburam	15 0	360 0	1,376 5	75	87½	15½	178	7 11 10
6	Baburam Ratan Chand, Nurmahal . . .	15 0	357 3	1,465 1	75	90	16	181	8 1 6
7	Durgadas Nijjar, Nurmahal	15 0	285 15	1,106 1	55	80	10	145	7 10 1
8	Achhrumal Charanji Lal, Nurmahal . . .	15 0	228 12	889 4	42	68	8	118	7 8 7
9	Pearey Lal, Sarhali	15 0	168 12	602 4	..	..	..	88	6 13 6
10	Nathu Ram, s/o Ghanaya Lal, Dosanj Kalan .	15 0	112 8	357 13	..	..	..	50	7 2 6
11	Baburam, s/o Maya Mal, Dosanj Kalan . .	15 0	42 3	155 13	..	..	..	21	7 6 9

Samrala, village Pant	1,600
Sherpur	2,000
Machhiwara	800

NOTE.—Nos. 3 and 4 bought rab at Rs. 2-13, whereas others purchased at Rs. 2-2 to Rs. 2-5. These two people fixed the price of rab early in the season when the market rate of gur was rather high.

(4) *Letter dated the 11th September, 1937, from the Marketing Officer, Punjab, Lahore.*

In continuation of this office letter, dated the 23rd August 1937, I have the honour to state that the figures of cost for Barani area given in table on page 9 include also the cost of manufacturing gur.

The comparative cost of producing cane would be as follows:—

	1933-34.	1934-35.	1935-36.
	Rs. A. P.	Rs. A. P.	Rs. A. P.
Sugarcane Desi seed crop . .	81 4 2	91 0 6	93 4 8
Sugarcane Co. seed crop . .	...	30 12 9	65 2 7

(5) *Note on Sugarcane Research Scheme in the Punjab, supplied by the Deputy Director of Agriculture, Punjab, Lyallpur.*

Scheme and its object.—The Sugarcane Research Scheme in this province was started in the year 1934 for a period of five years and the work is carried on at the two Research Stations, Risalewala and Jullundur. The research work is carried on by the Sugarcane Specialist aided by one field assistant at each place, under the direct supervision and guidance of the Deputy Directors of Agriculture, Lyallpur and Jullundur, at the two stations respectively.

The Punjab grows about 550,000 acres of cane and is second only to United Provinces in India in the matter of cane acreage but the acre-yield here is very low, the average yield being about 30 maunds of gur per acre. In view of the large area under this crop and low yield, need for improvement is imperative. Even a small increase in yield would bring a large income to the cane-growers in aggregate.

Problems under investigation at Risalewala.—It is rather impossible to give the mass of recorded data for the different experiments in progress in a short note like this and so only the outlines of different problems are given here:—

I. Finding out most suitable variety or varieties of cane.

II. Economic use of water in cane cultivation.

III. Best methods of cultivation inculding different spacings, planting of cane in trenches and on flat and ridging afterwards, different seed rates and setts having two and three buds.

IV. Profitable manures for sugarcane.

V. Best time for sowing sugarcane.

VI. Saving cane seed from the effect of frost.

VII. Botanical studies of different varieties relating to germination, tillering, growth, root system and other morphological studies which help in the selection of varieties most suitable for local conditions.

VIII. Exploring possibilities of raising seedlings from sugarcane seed from the very beginning under Lyallpur conditions.

IX. Chemical analysis of:—

(*a*) Cane at different stages of growth under different cultural treatments.

(*b*) Plant analysis from the different manurial treatments to study the Nitrogen nutrition of cane crop.

In selecting or evolving new varieties, efforts are being made to combine heavy yield with good quality of produce and also that they should mature at different times so that both the cultivators and the factory people may be benefited alike. Co. 313 (early variety) and Co. 312 (mid season) which have been selected and given out recently for general cultivation are, on the whole, better than Co. 285, which is the standard cane of the province.

Besides these, Co. 371 (mid season), Co. 385, Co. 392 and Co. 396 (early) and Co. 395, Co. 421 and Co. 432 (late varieties) appear to be promising in

the different classes. These have not been finally given out but have been sent out for trial at the different experimental farms. Co. 396 is a very early cane with moderate tonnage, while Co. 421 is a late cane of very heavy tonnage (Statement No. I).

At present there are over 220 varieties growing at this station.

Experiments regarding economic use of water in cane cultivation and profitable manures for this crop have shown that it is more economical to manure and irrigate cane adequately than to grow it as the cultivators do at present. (Statements No. II & III.) The use of ammonium sulphate or toria cake to supplement about half the dose of Nitrogen (70 lbs. per acre) in farmyard manure has given more economical returns than if the full dose of Nitrogen, *viz.*, 140 lbs. per acre is applied in farmyard manure alone. It will be seen from the results that artificial manures during 1934-35 have not materially increased the yield and this is probably due to the fact that the soil in that block was rich as shown by the yield of control which was 116 maunds of gur per acre against 60·75 maunds and 96·5 maunds recorded during 1935-36 and 1936-37 respectively.

Cane planted in rows 2′ apart and ridged afterwards does not lodge so much as the cane sown by the local method. The yields are also in favour of the former method of planting (Statement No. IV). Besides various other advantages, the crop sown 2′ apart can be hoed by bullock drawn implements which reduces the cost of hoeing considerably.

In the end it may be said that by combining good varieties with good cultivation, the maximum yield from experimental plots at this station has gone up to 142, 149 and 159 maunds of gur per acre in the past three years (1934-36) respectively. The average yields from about 7 acres under the main experiments were also high, varying from 89·4 to 106·1 maunds of gur per acre. The importance of these yields would be realised when it is noted that the average yield of gur for the province is less than 30 maunds per acre.

STATEMENT No. I.—*Cane yields of promising varieties grown in the semi-final trial for the year 1936-37.*

Variety.	Area harvested in acres.	Tonnage per acre.	Percentage of gur to cane.	Remarks.
		Mds.		
Early maturing varieties.				
Co. 313 (Standard) . .	1/10	983·6	11·6	
„ 385 „ . .	1/10	868·2	11·2	
„ 292 „ . .	1/10	1047·5	10·4	Cane lodged rather badly.
„ 396 „ . .	1/10	792·1	10·7	
Mid season varieties.				
Co. 285 (Standard) . .	1/10	1172·5	10·2	
„ 312 „ . .	1/10	1387·4	9·3	Lodged badly.
„ 371 „ . .	1/10	1138·2	9·8	
Late varieties.				
Co. 285 (Standard) . .	1/10	1215·4	10·3	
„ 395 „ . .	1/10	1115·0	10·9	
„ 421 „ . .	1/10	1397·0	10·7	

STATEMENT No. II.—*Yields in maunds of different varieties (recommended to the cultivators) under different irrigations.*

Year.	Co. 285.		Percentage increase in favour of L. W. over R. W.	Co. 312.		Percentage increase in favour of L. W. over R. W.	Co. 313.		Percentage increase in favour of L. W. over R. W.
	L. W.	R. W.		L. W.	R. W.		L. W.	R. W.	
A. *Cane yields per acre in Mds.*									
1934-35	910·4	787·0	15·7			..	832·8	705·2	18·0
1935-36	733·6	620·0	18·3	719·2	649·2	10·7	574·0	497·6	15·3
1936-37	1138·9	910·0	25·2	1395·4	1110·6	25·6	1095·2	755·2	45·0
Average of the three years .	927·6	772·3	20·1	1057·3	879·9	20·1	834·0	652·6	27·8
B. *Average percentage of sucrose on cane.*									
1934-35	8·86	8·91	..	..	..	..	10·26	10·16	..
1935-36	9·40	8·60	..	10·40	9·90	..	10·50	10·70	..
1936-37	9·45	8·15	..	9·25	9·10	..	10·60	10·15	..
C. *Calculated total production of sugar per acre in Mds.*									
1934-35	80·66	70·12	..	..	..	..	85·45	71·65	..
1935-36	68·96	53·30	..	74·80	64·27	..	60·27	53·24	..
1936-37	107·63	74·16	..	129·07	101·06	..	116·09	76·65	..

L. W. Liberal irrigation — water is applied after every 10—12 days. Total No. of irrigation applied is 19.

R. W. Restricted irrigation — water is applied after every 15—18 days. Total No. of irrigations applied is 13.

STATEMENT No. III.—*Economics of different manures with Co. 285.*

Treatments.	Year.	Average Yield of gur per acre.	Value of gur.	Increase in value of gur over control.	Cost of Manure.	Profit + Loss— over control.	Average for the three years 1934-35 to 1936-37. Gur yield per acre.	Average for the three years 1934-35 to 1936-37. Profit over control.
		Mds.	Rs. A.	Rs. A.	Rs. A.	Rs. A.	Mds.	Rs. A.
140 lbs. Nitrogen per acre in F. Y. M. (Control).	1934-35	116·0	526 13	..	28 5	..	91·06	..
	1935-36	60·75	246 13	..	31 8	..		
	1936-37	96·5	313 10	..	30 10	..		
70 lbs. Nitrogen per acre in F. Y. M. + 35 lbs. „ „ „ in Ammonium sulphate.	1934-35	110·8	503 4	—23 9	22 10	—17 14	93·47	+12 13
	1935-36	66·38	269 11	+22 14	25 6	+29 0		
	1936-37	103·3	335 9	+21 15	25 3	+27 6		
70 lbs. Nitrogen per acre in F. Y. M. + 70 lbs. „ „ „ in Ammonium sulphate.	1934-35	119·6	543 3	+16 6	31 1	+13 10	103·8	+44 6
	1935-36	79·06	32 3	+74 6	34 14	+71 0		
	1936-37	112·8	366 10	+53 0	35 2	+48 8		
70 lbs. Nitrogen per acre in F. Y. M. + 105 lbs. „ „ „ in Ammonium sulphate.	1934-35	120·4	546 13	+20 0	42 5	+6 0	108·8	+53 3
	1935-36	88·38	359 1	+112 4	44 8	+99 4		
	1936-37	117·7	382 4	+68 10	45 0	+54 4		

70 lbs. Nitrogen per acre in F. Y. M. + 35 lbs. „ „ „ in Toria Cake.	1934-35	112·8	512 5	—14 8	23 4	—9 7	97·75	+28 1
	1935-36	80·0	325 0	+78 3	28 11	+81 0		
	1936-37	100·5	326 10	+13 0	31 0	+12 10		
70 lbs. Nitrogen per acre in F. Y. M. + 70 lbs. „ „ „ in Toria Cake.	1934-35	114·0	517 12	—9 1	32 6	—13 2	108·43	+55 6
	1935-36	97·0	394 1	+147 4	41 9	+137 3		
	1936-37	114·3	371 11	+58 1	46 10	+42 1		
70 lbs. Nitrogen per acre in F. Y. M. + 105 lbs. „ „ „ in Toria Cake	1934-35	122·4	555 14	+29 1	43 1	+14 5	112·8	+61 2
	1935-36	100·81	409 9	+162 12	54 8	+139 12		
	1936-37	115·3	374 9	+60 15	62 5	+ 29 4		

Manures.	Percentage of Nitrogen in different Manures.			Rate per maund.		
	1934-35.	1935-36.	1936-37.	1934-35.	1935-36.	1936-37.
				Rs. A. P.	Rs. A. P.	Rs. A. P.
Farm Yard Manure . .	0·44	0·406	0·29	0 1 0	0 1 1	0 1 1
Toria Cake	5·25	4·76	5·11	1 5 0	1 7 0	1 14 0
Ammonium Sulphate . .	20·50	20·26	20·72	4 11 0	4 9 0	4 11 0

STATEMENT No. IV.—*Cultural Experiment.*

Treatments.	Average yield per acre in maunds.						Average for the three years 1934-37.	
	1934-35.		1935-36.		1936-37.			
	Cane.	Gur.	Cane.	Gur.	Cane.	Gur.	Cane.	Gur.
1. Ordinary sowing, on flat 1′ apart	956·0	104·7	1,009·8	111·2	984·8	108·0	983·5	107·96
2. Sowing on flat 2′ apart and ridging.	905·6	100·56	1,036·4	117·2	1,086·4	121·6	1,009·5	113·12
3. Sowing in Trenches 2′ apart and ridging.	948·6	105·48	1,035·2	113·4	1,132·8	127·2	1,038·86	115·36

(6) *Letter dated the 5th October, 1937, from the Junior Secretary to the Financial Commissioners, Punjab, Lahore.*

Subject:—NAMES OF DISTILLERIES IN THE PUNJAB.

With reference to your letter No. 303, dated the 18th June, 1937, I am directed to inform you that there are in the Punjab four licensed distilleries situated at Rawalpindi, Amritsar, Sujanpur (District Gurdaspur) and Karnal. They are owned by the following firms:—

(*a*) *Rawalpindi Distillery.*—The Murre Brewery Company, Rawalpindi.

(*b*) *Amritsar Distillery.*—The Amritsar Distillery Company.

(*c*) *Sujanpur Distillery.*—The Punjab Sugar Works and Patent Carbonic Acid Gas Company, Limited, Sujanpur (Punjab).

(*d*) *Karnal Distillery.*—Messrs. Kishori Lal & Sons.

There is also a distillery situated at Solon in the Bhagat State territory which is owned by Messrs. Dyer Meakin & Company.

2. I am to forward a statement showing the quantity of molasses consumed, sources of supply and the price paid during the years 1934, 1935 and 1936.

3. I am to add that in the Punjab there are no concerns manufacturing rectified or denatured spirit other than the distilleries mentioned above.

Statement showing the quantity of molasses consumed, sources of supply and the price paid during the years 1934, 1935 and 1936.

Distillery.	Total quantity of molasses consumed.			Sources of supply.	Price paid for molasses.		
	1934.	1935.	1936.		1934.	1935.	1936.
	Mds.	Mds.	Mds		Rs. A. P.	Rs. A. P.	Rs. A. P.
Karnal . .	Not available.	Not available.	25,161	Molasses imported from various Sugar factories at Daurala, Sonepat, Begamabad, Rohanakalan, Jagadhri and other places.	0 10 0 to	0 12 0	per maund.
Simla . . .	1,189·75	1,832·0	3,598·5	1. Modi Mills, Meerut . . . . . 2. Bhagwan Das, Solon	0 11 0 to	0 15 0	„
Amritsar . .	87,171·6	83,871·0	96,938·4	Amritsar Sugar Mills Company, Ltd., and from various agents of the Amrirsar Distillery Company, Ltd., Amritsar.	0 11 0	0 10 9	0 11 2
Gurdaspur . .	12,335	16,361	18,220	*1934*—Dev Raj of Dina Nagar . . *1935*—Maalwa Mal Bansi Lal of Pathankot. *1936*—Hans Raj Walati Ram of Jullundur.	9,707 9 3	16,736 5 9	15,904 1 0
Rawalpindi . .	54.239	64,173	58,173	*1934*—Amritsar, Phularwan and Lyallpur . *1935*—Amritsar and Lyallpur . . . *1936*—Amritsar	0 2 6 to 0 11 9	0 3 9 to 0 4 6	0 6 6

(7) *Letter dated the 23rd October, 1937, from the Director of Land Records, Punjab, Lahore.*

I have the honour to forward herewith statements showing fortnightly wholesale and retail prices of sugar raw (gur) and wholesale prices of sugar refined at important markets of the Punjab from 15th January to 15th October, 1937.

Statement showing wholesale prices of raw sugar (gur) during the year 1937.

Fortnight.	Ambala.	Jullundur.	Amritsar.	Gurdaspur.	Sialkot.	Lyallpur.
	Rs. A.	Rs. A. P.	Rs. A.	Rs. A. P.	Rs. A. P.	Rs. A.
15th January	3 4	5 0 0	4 0	3 7 9	4 11 3	2 14
31st January	3 8	5 0 0	4 0	3 5 0	4 14 9	3 0
15th February	3 8	4 7 0	4 0	3 5 3	4 11 3	3 4
28th February	3 6	4 3 6	4 0	3 4 0	4 7 0	2 12
15th March	3 6	4 0 0	4 0	2 13 6	4 0 0	2 8
31st March	3 6	3 10 3	4 0	2 13 0	4 0 0	2 12
15th April	3 8	3 8 0	3 0	2 13 0	4 0 0	2 12
30th April	3 8	3 6 6	3 0	2 13 0	3 14 6	2 8
15th May	3 8	4 0 0	3 4	2 13 0	3 11 6	2 12
31st May	3 0	4 0 0	3 0	2 13 9	3 14 6	2 12
15th June	2 14	3 14 0	3 0	2 14 6	4 0 0	2 8
30th June	3 8	3 11 0	3 0	2 14 6	4 0 0	2 8
15th July	2 8	3 5 6	3 8	2 8 0	3 10 3	2 12
31st July	2 12	3 5 3	3 4	2 5 6	4 0 0	2 10
15th August	2 12	3 10 3	3 4	2 8 0	4 0 0	2 10
31st August	3 0	3 10 3	3 12	2 13 0	4 0 0	2 10
15th September	3 0	3 10 3	3 12	2 10 6	4 0 0	2 8
30th September	3 0	4 0 0	4 0	2 13 9	4 0 0	2 12
15th October	2 14	4 0 0	3 12	3 5 3	4 0 0	2 3

Statement showing retail prices of raw sugar (gur) in seers per rupee during the year 1937.

Fortnight.	Ambala.	Jullundur.	Amritsar.	Gurdaspur.	Sialkot.	Lyallpur.
	Srs. ch.	Srs. ch.	Srs. ch.	Srs. ch.	Srs. ch.	Srs.
15th January	12 0	7 0	9 8	11 8	8 8	11
31st January	11 4	8 0	9 8	11 8	8 2	11
15th February	11 4	8 0	9 8	11 8	8 8	11
28th February	11 6	9 0	9 8	11 12	9 0	11
15th March	11 8	9 0	9 8	13 12	10 0	11
31st March	11 8	10 0	9 8	14 0	10 0	11
15th April	11 4	10 0	13 0	13 12	10 0	12
30th April	11 4	10 8	13 0	13 12	10 0	13
15th May	11 4	9 8	12 0	13 12	10 0	13
31st May	13 4	9 8	13 0	13 12	10 0	13
15th June	13 8	10 0	13 0	13 8	10 0	13
30th June	11 0	10 0	13 0	13 8	10 0	13
15th July	14 0	10 0	11 0	16 0	10 0	13
31st July	13 0	10 0	12 0	17 0	10 0	13
15th August	13 0	10 0	12 0	16 0	10 0	13
31st August	13 0	10 0	11 0	14 0	10 0	13
15th September	13 0	10 0	11 0	14 8	10 0	13
30th September	13 0	10 0	10 0	13 8	10 0	13
15th October	13 8	10 0	10 0	11 0	10 0	15

Statement showing the wholesale prices of refined sugar during the year 1937.

Fortnight.	Ambala.	Jullundar.	Amritsar.	Gurdaspur.	Sialkot.	Lyallpur.
	Rs. A.	Rs. A.	Rs. A.	Rs. A. P.	Rs. A. P.	Rs. A.
15th January	8 12	8 0	8 8	8 2 0	10 0 0	8 1
31st January	8 8	8 2	8 8	8 4 0	10 0 0	8 2
15th February	7 0	8 10	8 8	8 6 0	8 11 3	...
28th February	8 0	8 8	7 14	8 0 0	8 14 3	...
15th March	7 8	9 0	7 14	8 0 0	8 6 9	...
31st March	8 0	8 12	7 14	8 0 0	8 6 9	...
15th April	7 0	8 4	7 14	8 0 0	8 6 9	...
30th April	7 0	8 2	7 14	8 0 0	8 6 9	...
15th May	9 0	7 8	7 14	7 12 0	8 6 9	...
31st May	...	7 4	7 14	7 12 0	8 6 9	...
15th June	7 8	7 8	7 14	7 10 3	8 14 3	...
30th June	7 8	7 8	7 14	7 10 3	8 14 3	...
15th July	7 0	7 8	7 12	7 1 6	8 14 3	...
31st July	7 8	7 12	8 0	8 0 0	8 14 3	7 10
15th August	7 8	7 12	8 0	8 4 0	8 14 3	7 12
31st August	7 0	7 12	8 8	8 4 0	8 14 3	7 14
15th September	7 8	7 12	8 0	8 4 0	8 14 3	8 0
30th September	7 8	7 12	9 0	8 6 0	8 14 3	...
15th October	7 8	7 12	8 0	8 6 0	8 14 3	8 1

(8) *Statement showing the estimated output of Open pan concerns and Khandsaries working in the Punjab during the year 1936-37, supplied by the Director of Agriculture, Punjab.*

Serial No.	Name of Tehsil.	Name of village.	Name of Manufacturer.	Sugar Manufactured from	Quantity manufactured.		Remarks.
					Sugar.	Molasses.	
					Mds Srs.	Mds.	
	By Centrifuging.						
	Hissar District.						
1	Sirsa	Theri Rasulpur . .	S. Bachint Singh . .	Cane . .	300 0	500	
2	Do.	Sikandarpur . . .	S. Harbans Singh . .	Do. . .	150 0	250	
	Rohtak District.						
3	Sanepat	Jakhauli . . .	Ramrichhpal Mahajan .	Cane . .	500 0	1000	
	Jullundur District.						
4	Phillaur . . .	Apra	Jagan Nath Kushi Ram.	Rab . .	50 0	120	
5	Do. . . .	Bilga	Karam Chand . . .	Do. . .	50 24	98	
6	Nawanshehr . . .	Jabbowal . . .	Bishan Singh . .	Do. . .	100 0	200	

(8) *Statement showing the estimated output of Open pan concerns and Khandsaries working in the Punjab during the year 1936-37, supplied by the Director of Agriculture, Punjab*—contd.

Serial No.	Name of Tehsil.	Name of village.	Name of manufacturer.	Sugar manufactured from	Quantity manufactured.		Remarks.
					Sugar.	Molasses.	
	By Centrifuging—*contd.*				Mds. Srs.	Mds.	
	Hoshiarpur District.						
7	Garh Shankar . .	Dhagan . . .	Ramji Das . . .	Rab	165 0	220	
8	Do. . .	Mahanwala . . .	Beli Ram . . .	Do..	105 0	175	
9	Do. . .	Basiala . . .	Chanda Singh . .	Do. . .	26 0	50	
10	Do. . .	Do. . . .	Indar Singh . . .	Do. . .	8 20	17	
	Ludhiana District.						
11	Samrala . . .	Jhakrodi . . .	Bhagat Singh . .	—	250 0	445	
12	Do. . . .	Paut	Ata Mohammad . .	—	300 0	533	
13	Do. . . .	Do.	Munshi Ram . .	—	300 0	533	
	Ambala District.						
14	Ropar	Jagatpura . . .	Guru Nanak Factory .	—	700 0	1200	

	By Khanchi.						
	Jullundur District.				Rab Maunds.		
1	Phillaur . . .	Bilga	Lachhman Dass . .	240	72 0	145
2	Do. . . .	Apra	Mul Raj . . .	140	45 0	80
3	Do. . . .	Do.	Ram Rattan . .	80	22 0	50
4	Do. . . .	Do.	Mohan Lal . . .	80	24 0	48
5	Do. . . .	Nur Mahal . . .	Labhu Ram Babu Ram	625	178 0	384
6	Do. . . .	Do. . . .	Babu Ram Rattan Chand	625	181 0	381
7	Do. . . .	Do. . . .	Durga Das . . .	500	145 0	305
8	Do. . . .	Do. . . .	Achhru Mal Charanjilal .	400	118 0	244
9	Do. . . .	Sarhali	Pearelal . . .	300	88 0	180
10	Do. . . .	Dosanjh Kalan . .	Nathoo Ram . .	180	50 0	120
11	Do. . . .	Do. . .	Babu Ram . . .	72	21 0	45
	Ludhiana District.					
12	Samrala . . .	Paut	—	—	1,600 0	2,800
13	Do. . . .	Sherpur . . .	—	—	2,000 0	3,600
14	Do. . . .	Machiwara . . .	—	—	800 0	1,440

(9) *Letter dated the 19th August, 1937, from the Director of Industries, Punjab, Lahore.*

With reference to the enquiries made by the Tariff Board this morning I have the honour to give below the figures of production of sugar during 1936-37 season in the Pattoki Sugar Factory, Pattoki, and the Bhalwal Sugar Mills Company, Limited, Bhalwal. Similar information regarding the Sonepat Sugar Factory, Sonepat and the Punjab National Sugar Factory, Lyallpur, is being obtained and will be submitted as soon as received by me.

The Pattoki Sugar Factory, Pattoki—473 maunds.

The Bhalwal Sugar Mills Company, Limited, Bhalwal—6,727 maunds.

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(10) *Letter dated the 21st September, 1937, from the Director of Industries, Punjab, Lahore.*

PROTECTION REQUIRED BY THE INDIAN SUGAR INDUSTRY.

In continuation of my letter dated the 19th August, 1937, on the subject noted above, I have the honour to state that the total production of sugar of the Sonepat Sugar Factory, Sonepat, during the season 1936-37 amounted to 71,186 maunds. The Punjab National Sugar Factory, Lyallpur, is now reported to have produced no sugar during the last season, for it worked just for trial for 15 days.

Replies from the Govt. of Bombay.

(1) *Letter dated the 10th June, 1937, from the Superintending Engineer, Deccan Irrigation Circle, to the Secretary to the Government of Bombay, General Department, Bombay.*

With reference to Government endorsement (G. D.) No. 8230-D., dated the 24th May, 1937, I have the honour to forward herewith replies to such of the questions contained in the questionnaire as concern the Local Government for favour of further disposal.

2. Three copies of the replies are sent direct to the Secretary, Tariff Board. One copy is also sent to the Director of Industries, Bombay Presidency, as requested by him.

3. With regard to paragraph 2 of the Tariff Board's letter No. 147, dated the 30th April, 1937, I have the honour to state that retail prices of gur and sugar are not readily available and hence cannot be supplied. These may probably be available with Revenue or Agricultural Authorities.

4. *Paragraph 3 of the Board's letter.*—Sugar Companies mostly grow the cane required by them. There are no cases of underpayment or any other irregularities seen or brought to notice so far. Irrigators who supplied cane to companies were generally literate persons.

5. The rate of interest on cultivators' borrowings varies between Rs. 9 and 18 per cent. per annum according to circumstances. Rs. 12 is most usual.

Accompaniments:—

Replies.

Statement showing sugarcane areas.

Statement showing cost of cane cultivation.

2 Statements showing gul rates.

REPLIES TO THE TARIFF BOARD QUESTIONNAIRE.

1. A statement showing the total area under sugarcane in respect of Irrigation Works in the Deccan Irrigation Circle is attached hereto.

The following varieties of cane are generally grown on canals in this Circle:—

(1) P.O.J. 2878 and 2883.

(2) E.K. 28 (largely taken for gul).

(3) Co. 290.

(4) H.M. 89.

(5) Red Mauritius.

The first three of these are most common. It is not possible to give the acreage under each variety—but Pundya is 70 per cent. of the total area roughly.

2. Under Deccan Canals almost the whole area is under canal irrigation. As rainfall is restricted to 4 or 5 months of the year, sugarcane cannot be produced without irrigation. There is practically no difference as regards climatic conditions and methods of cultivation vary but little.

3. The irrigation rate for sugarcane is Rs. 45 per acre per year and consists of Rs. 21 for hot weather, 15 for Rabi and Rs. 9 for monsoon season. It has continued without any change during the last seven years. For periods in excess of 12 months proportionate rates based on seasonal rates are charged.

Water rates are based on the quantity of water generally required by each type of crop—light, medium and heavy—and the relative value of storage water in the three irrigation seasons, *viz.*, Hot weather, Monsoon and Rabi. Charges for cane if levied on the principle of the value of water supplied will be Rs. 66 per acre per year but due to trade depression, especially of the gul market, the sugarcane rate is fixed at Rs. 45 only.

4. The cost of cultivation and marketing the produce per acre under cane is roughly Rs. 400 to 450. Details are given in the accompanying statement. This cost has gone down by about Rs. 100 per acre due to fall in the rates of labour and also due to more economic methods of cultivation, etc. The average yield is 30 to 35 tons per acre for Pundya and 40 to 60 for the new varieties if the crop is carefully grown and under normal weather.

Sucrose content 11·5 to 12.

5. Fair price of sugarcane to the growers is—

Pundya—Rs. 13 to Rs. 14 per ton.

Other varieties—Rs. 11 to Rs. 12 per ton.

6. Sugarcane cultivation has increased in nearly all areas in last three years due to five factories being started.

7. There was no overproduction of sugarcane in 1936-37. The Deccan Canals depend on sugarcane alone for the major part of their revenue. With restrictions on production of sugarcane, the canals will have to be run at a tremendous loss as there are no alternative paying crops which can replace cane. In fact, canals are designed with a certain proportion of cane to be annually irrigated.

8. The other crops are cotton and groundnut. Cotton and groundnut are seasonal crops and cannot form alternative crops to sugarcane which requires water throughout the year. The estimated return per acre is Rs. 50 per acre in the case of cotton and Rs. 45 per acre in case of groundnut.

9. Information not available. The Agricultural Department may be referred to in this connection.

10. Not known to this office.

11. The Agricultural Department deal with this.

12. Setts of 16 varieties of sugarcane were received for trial from the Coimbatore Sugarcane Research Station. Sugar Companies deal directly with the Imperial Institute of Sugar Technology for any advice they require.

13. Not known to this office.

14. (*a*) & (*b*) About 25 per cent. is turned into sugar.

(*c*) 75 per cent. into gur.

(*d*) 8 per cent. of the whole area of cane is kept for seed.

15. Distance from factories, want of transport facilities.

Factories grow their own cane in the Deccan because of the uncertainty of quality to be bought from local men. This point was particularly stressed by the Kamat Committee who recommended the introduction of Sugar Factories in the Deccan.

16. Information not available in this office. Individual cultivators grow cane on their own account. They generally borrow money from local sowkars or from local co-operative societies as may suit them. In the majority of cases, the cane-growers are indebted to sowkars or societies.

17-19. No minimum prices are fixed for sugarcane under the Sugarcane Act XV of 1934 in the Bombay Presidency. All sugar factories plant their own cane and purchase only a very small quantity from outside cane-growers.

20-21. Cane is not transported generally to long distances. It is crushed by individual cultivators on their own farm or at a nearby crusher or on the farm of a neighbour. The cost of transport per maund per mile would come to about 2 to 5 pies.

22. The Sugar Factories have their own tram lines. As local cultivators crush their cane in their own fields, no special facilities are necessary for transport of cane.

Feeder Roads.—Ordinary cart tracks exist in each sub-valley in the canal tract and extension of feeder roads is under consideration of Government and may be carried out from petrol tax.

23. Not known to this office.

24. The pioneer factory, *i.e.*, the Belapur Company were given financial assistance some time ago but need no assistance now. All companies are allowed special facilities for planting cane in concentrated areas.

25. No.

26. Yes.

27-28. Information not available in this office.

29. The consumption of sugar in the Province is about 37,000 tons. The consumption of sugar can be increased by encouraging sweetmeat manufacture. The increase is, however, dependent upon the improvement in the purchasing power of the masses.

30. Not known to this office.

31. (i) Zone system can be said to have already been introduced—that is certain distributaries of canals have been allotted to the sugar factories for their cane cultivation.

(ii) Not required.

(iii) Not necessary.

32. Not known but these are very desirable.

33. Approximately 12 per cent. of the cane tonnage.

34. None so far as is known.

35. A statement showing the prices of gul prepared from sugarcane for the last seven years at various important stations in the Deccan Irrigation Circle is enclosed. The variation in prices is due to the general trade depression.

36. Not known.

37. Gul is not imported to any appreciable extent into the Deccan which produces the best gul.

38. Not known.

39. No.

40-49. Not known.

50. The information is given from the data available in this office and is fairly accurate.

51. None.

Estimate of the cost of production per acre for sugarcane.

(NOTE.—This is framed on the bases that every unit is hired or is paid for. Actually home labour or materials are used which reduce cash expenditure.)

Item No.	Operations.	Cost.
		Rs.
1.	2 Ploughings and ridgings	25
2.	Bunding, repairing ridges and planting	17
3.	Cost of setts 8,000 at Rs. 3 per 1,000	24
4.	Top dressing	75
5.	Weeding	20
6.	Watering (labour only)	25
7.	Partial earthing and earthing up	15
		201
8.	Interest on Rs. 200 at 12 per cent for 9 months	18
9.	Irrigation rate for 13½ months	52
10.	Carriage for 35 tons within limit of 3 miles, *i.e.*, to crushing station	17
11.	Lease charge	30
12.	Supervision at 10 per cent.	32
13.	Crushing cane, preparing gul and marketing 35 tons at Rs. 2-8 per ton	87·5
		437·5

Statement showing market rate of gul (average) during the years 1934-37 at different market centres on the Nira Right Bank Canal.

Year.	Average gul rate.	Remarks.
	Rs. A.	
1934	5 11	The gul rates for the years 1929 to 1933 are not available.
1935	5 15	
1936	3 11	
1937	3 6	

Statement giving the average rate of gul per maund each year worked out from the sales at Co-operative shops at the places mentioned (12 months' average).

Year.	Poona.	Baramati.	Kopergaon.	
1929-30	9·45	8·84	9·88	
1930-31	7·04	6·52	7·3	
1931-32	5·18	4·5	5·07	average of 9 months.
1932-33	4·8	4·22	4·8	
1933-34	4·04	3·45	4·01	
1934-35	6·07	5·5	5·9	
1935-36	5·3	4·9	5·9	
1936-37	3·84	3·04	3·69	

Statement showing the total area under sugarcane on Irrigation Works in the Deccan Irrigation Circle.

Year.	Acres (including overlap).	Year.	Acres (including overlap).
1929-30 . .	28,703	1933-34 . .	33,663
1930-31 . .	27,931	1934-35 . .	33,620
1931-32 . .	27,670		
1932-33 . .	31,128	1935-36 . .	42,471

(2) *Memorandum dated the 17th June, 1937, supplied by the Deputy Secretary to the Government of Bombay, Public Works Department, Bombay.*

Subject:—SUGAR INDUSTRY ENQUIRY: QUESTIONNAIRE OF THE TARIFF BOARD IN CONNECTION WITH THE—.

The undersigned presents compliments to the Secretary to the Government of Bombay, General Department, and with reference to Government Memorandum, General Department, No. 8230-D., dated the 24th May, 1937, is directed to state that there is nothing to add to the replies to the Questionnaire for Local Governments, already given by the Superintending Engineer, Deccan Irrigation Circle, in his letter No. 2894, dated the 10th June, 1937, addressed to him in respect of the following:—

(i) *Reply to question No. 6.*—During the last three years six new factories have come into existence in the Deccan.

(ii) *Reply to question No. 24.*—The special facilities provided for in the agreements with the Sugar Companies are as under:—

(1) Where the whole irrigation of a distributary or outlet is in the Company's lands the control of the internal distribution of water only on such distributary or outlet, as the case may be, shall be left to the Company.

(2) Not more than one-third of the total area of the Company's lands and not more than one-half of the area in any drainage catchment shall be under cane cultivation at one time (excluding overlap).

(3) The Company shall be allowed any system of bunds and irrigation units as may be convenient to the Company so as to suit the configuration of the Company's lands provided that—

(*a*) each irrigation unit shall not exceed two acres in area;

(*b*) the outermost bund round any plot of land under sugarcane cultivation shall be of the dimensions given in the Bombay Canal Rules for the time being in force;

(*c*) the Company shall agree to pay the cost of re-demarcation of their leased lands on the expiry of the lease thereof, so as to accord with the revenue records.

(4) the supply of water for cane crops shall be guaranteed for a period of 30 years from the date of the execution of the agreement and the Company shall not be required to take water according to the block system for crops other than cane.

(5) (*a*) The methods which will be followed as regards crop measurement and assessment shall be the same as in the case of the local irrigators; but with a view to simplifying the procedure regarding applications for water the Company will be allowed to submit consolidated applications for the supply of water for the said lands in the requisite form prescribed by the Bombay Canal Rules, 1934, or such other form as Government may,

from time to time prescribe specifying therein the survey numbers or the Company plot numbers, in which, and the dates from which, water for irrigation will be required and subject to the condition that the applications for any survey number or plot shall be submitted at least one month prior to the date on which it is to be irrigated.

(*b*) To allow of equitable distribution of water in accordance with the general requirements the Company shall, not later than the tenth of each calendar month, report for each outlet the area of the standing cane and the cane to be planted and removed during each irrigation month (*i.e.*, from the fifteenth of one calendar month to the fourteenth of the next following calendar month).

(6) The Company shall be exempt from providing sureties as required by the Bombay Canal Rules for the time being in force.

(iii) *Reply to question No. 34.*—Jaggery is produced from cocoanut palm toddy in the coastal districts of this Presidency.

D. A.—*Nil.*

Copy together with two spare copies forwarded, with compliments, to the Secretary, Tariff Board, Ootacamund, for information.

Copy forwarded to the Superintending Engineer, Deccan Irrigation Circle, with reference to his memorandum dated the 10th June, 1937, for information.

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(3) *Letter dated the 21st June, 1937, from the Director of Agriculture, Bombay Presidency, to the Secretary to the Government of Bombay, General Department.*

Subject:—TARIFF BOARD.

I have the honour to refer to your endorsement, No. 8230/D, dated the 24th May, 1937, below letters from the Secretary, Tariff Board, No. 147, dated the 30th April, 1937, and No. 172, dated the 11th May, 1937, with copies of enclosures and letter No. 181, dated the 15th May, 1937, and to submit herewith my replies to the Questionnaire for Local Governments for the consideration of Government.

Six copies of the replies are being forwarded direct to the Secretary, Tariff Board. With regard to the points discussed in paragraphs 2 and 3 of the Board's letter No. 147, dated the 30th April, 1937, the available information is contained in my replies to questions 27 and 35 and 5, 15 and 17 respectively of the Questionnaire sent herewith.

REPLIES OF THE DIRECTOR OF AGRICULTURE, BOMBAY PRESIDENCY, TO THE QUESTIONNAIRE FOR LOCAL GOVERNMENTS.

1. Statement A below shows the total area under sugarcane in each district of the Bombay Presidency during the last seven years, *i.e.*, 1930-31 to 1936-37. Figures regarding the approximate acreage under improved varieties in each district of the Presidency are being collected and will be submitted later.

STATEMENT A.

No.	District.	Acreage under Sugarcane.						
		1930-31.	1931-32.	1932-33.	1933-34.	1934-35.	1935-36.	1936-37. *
1	2	3	4	5	6	7	8	9
		Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
	Bombay Presidency.							
	Gujarat.							
1	Ahmedabad .	248	461	514	332	310	483	3,000
2	Kaira . .	64	141	169	115	278	822	
3	Panch Mahals	89	147	338	560	1,812	3,044	
3A	Broach . .	8	12	12	10			
4	Surat . .	1,933	2,126	2,278	2,173	1,963	2,191	2,470
	Total Gujarat	2,342	2,887	3,311	3,190	4,363	6,540	5,470
	Deccan.							
5	West Khandesh.	1,008	1,420	1,667	1,517	1,241	1,062	2,000
6	East Khandesh.	691	1,010	1,465	1,272	866	767	
7	Nasik . .	3,900	4,697	6,285	6,538	7,283	7,413	7,240
8	Ahmednagar .	13,102	13,880	13,675	11,005	14,657	16,283	17,178
9	Poona . .	11,670	9,894	9,970	10,036	9,561	13,170	11,698
10	Sholapur .	1,114	1,573	2,044	2,337	3,498	3,485	3,400
11	Satara . .	8,753	9,915	10,486	10,713	10,726	12,580	11,507
	Total Deccan	40,238	42,389	45,592	43,418	47,832	54,760	53,023

* Final forecast figures.

STATEMENT A—*contd.*

No.	District.	Acreage under Sugarcane.						
		1930-31.	1931-32.	1932-33.	1933-34.	1934-35.	1935-36.	1936-37.*
1	2	3	4	5	6	7	8	9
		Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
	Karnatak.							
12	Belgaum .	12,674	13,297	13,425	14,708	14,569	14,304	13,280
13	Bijapur .	691	807	690	658	598	743	651
14	Dharwar .	1,624	1,646	3,779	4,063	3,801	2,947	2,386
	Total Karnatak.	14,989	15,750	17,894	19,429	18,968	17,994	16,317
	Konkan.							
15	Thana . .	253	252	263	262	248	183	
16	Bombay Suburban.	..	..	..	..	..	..	1,000
17	Kolaba .	36	29	32	37	38	52	
18	Ratnagiri .	1,044	952	856	751	789	777	
19	Kanara .	2,675	2,937	2,926	2,784	2,778	3,095	3,181
	Total Konkan	4,008	4,170	4,077	3,834	3,853	4,107	4,181
	TOTAL BOMBAY PRESIDENCY.	61,577	65,196	70,874	69,871	75,016	83,401	78,991

* Final forecast figures.

2. (*a*) *Deccan.*—There is no material difference in the areas under sugarcane in the Deccan which can be ascribed to differences in climatic conditions or methods of cultivation. Practically all the crop is grown on canal irrigation.

(*b*) *Karnatak.*—There are two important cane growing tracts in the Southern Division of the Presidency—Chikodi under well irrigation and Malnad under tank irrigation. The Chikodi tract has a dry climate with a rainfall of about 26 to 32″ whereas Malnad is a wet tract with a rainfall of 40 to 120″. Cane in Malnad is only watered twice or thrice during the season while in the Chikodi tract, watering is done once a week.

(*c*) *Gujerat.*—The different tracts are North and South Gujerat. Generally setts are planted but in Surat district (South Gujerat) planting of whole canes by plough is sometimes practised. There is no canal irrigation; all cane is grown on well irrigation only. There is practically no unirrigated cane in the Bombay Presidency. During the past seven years, the average area under unirrigated cane was only slightly over 1,000 acres.

3. (*a*) *Deccan.*—The irrigation charges for sugarcane crop in the Bombay Presidency, vary from Rs. 28 to 45 for 12 months, but a cultivator is required to pay proportionate additional charges for the crop that remains unharvested after 12 months. Generally speaking, a cane grower pays 14 months' water charges for his plant cane and 16 to 18 months' charges for Adeali cane. The water charges are generally determined on the guaranteed supply of water, *e.g.*, the charges of Rs. 45 are fixed on all the major canals, where the supply of water is guaranteed in normal years. On the Krishna canal, the water supply is limited, hence the irrigation charges have been fixed at Rs. 32. On the minor canals, where the supply is insufficient and also the turns of watering are longer, the irrigation charges have been fixed at Rs. 28 per acre. During the past seven years, however, there is much variation in the irrigation charges for the sugarcane crop. Details of such variations are obtainable from the Irrigation Department.

(*b*) *Karnatak.*—The Gorak Canal supplies water for only eight months of the year and cane is cultivated by digging wells in the irrigated area. The cane area is only 350 acres. Water rates for eight months to cane crop is Rs. 20 per acre. No variation in past seven years.

(*c*) *Gujerat.*—No water charge as all cane is well irrigated.

4. (*a*) *Deccan.*—Estimates of cost of cultivation of cane per acre on the four major canal systems in the Deccan area of the Bombay Presidency are given below (Statements B (*a-d*). During the past seven years, the cultivators' cost of cultivation appears to have decreased with reduction in labour charges. The Deputy Director of Agriculture, South Central Division estimates that the average yield of the crop for which the cost of cultivation is given in Statement C would be about 45 tons of cane or 135-140 maunds (Bengal) per acre. The average sucrose content of gul is from 75 to 85 per cent. according to variety.

(*b*) *Karnatak.*—The cost of cultivation of sugarcane is estimated to be about Rs. 350 per acre in the Chikodi tract and Rs. 150 per acre in the Malnad tract. No variations in cost have occurred in the past seven years. The average yield per acre in the Chikodi tract is 7,000 lbs. gul and 4,500 lbs. gul in the Malnad tract.

(*c*) *Gujerat.*—Approximate cost of cultivation is Rs. 250-300 per acre. The yield of cane is 30 tons per acre in South Gujerat and 20-25 tons in North Gujerat. The average sucrose content of cane is 15 to 16 per cent.

Statement C below gives the average yield per acre in lbs. of gul in each district of the Bombay Presidency as given in the "Quinquennial Report of the average yield per acre of Principal Crops in India for period ending 1931-32".

STATEMENT B (*a*).—*Cost of cultivation of sugarcane on the Matha canal during the year 1936-37.*

S. No.	Items.	Rs.	A.
1.	Preparatory tillage	20	0
2.	Ridging and planting	22	0
3.	Cost of sets	25	0
4.	After-care, including earthing up	20	0
5.	Bulky manure	40	0
6.	Top-dressing (sulphate of ammonia Rs. 12 and oil-cake Rs. 90)	102	0
7.	Irrigation charges	53	0
8.	Local cess	3	5
9.	Labour for watering	6	4
10.	Harvesting and garnal charges	50	0
11.	Rent of the land	20	0
12.	Miscellaneous labour charges	5	0
13.	Supervision charges	10	0
14.	Interest	15	0
15.	Marketing charges	16	0
	Total	407	9

STATEMENT B (*b*).—*Cost of cultivation of sugarcane on Nira Left Bank Canal during the year 1936-37.*

S. No.	Items.	Rs.	A.
1.	3 poughings and ridging, etc.	18	0
2.	30 cart-loads of farm-yard manure at Rs. 1-8 per cart-load	45	0
3.	Putting bands, spreading farm-yard manure, making beds, cutting sets, planting, etc.	15	0
4.	Cost of 10,000 sets at Rs. 4 per 1,000 sets	40	0
5.	5 to 6 weedings	10	0
6.	One bag of sulphate of ammonia	12	0
7.	Tagarni	2	0
8.	3 khandies sufflower cake at Rs. 15 per khandy	45	0
9.	5 khandies castor cake at Rs. 12 per khandy	60	0
10.	Application of oil-cakes	4	0
11.	Earthing up	10	0
12.	Irrigation labour charges	15	0
13.	Irrigation dues	53	2
14.	Rent of land	20	0
15.	Supervision	20	0
16.	Harvesting and gul making	80	0
17.	Marketing charges	24	0
18.	Interest	25	0
	Total	498	2

STATEMENT B (*c*).—*Cost of cultivation of sugarcane on the Pravara Canals during the year 1936-37.*

S. No.	Items.	Rs.	A.
1.	3 ploughings at Rs. 6, 5 and 5	16	0
2.	Loading and harrowing	1	0
3.	Opening farrows	2	0
4.	Putting bunds and channels, spreading manure and planting	16	0
5.	Farm-yard manure 20 carts at Rs. 2 per cart	40	0
6.	Sets 10,000 at Rs. 4 per 1,000 sets	40	0
7.	4 weedings	6	0
8.	Sulphate of ammonia 224 lbs.	11	6
9.	Groundnut cake 8 pallas at Rs. 6 per palla	48	0
10.	Castor cake for earthing up 11 pallas at Rs. 5-8 per palla	60	8
11.	Application of above fertillisers, powdering, etc.	3	0
12.	Tagarni	2	4
13.	Earthing up	11	0
14.	Harvesting of cane, Ravi rate Rs. 21	70	0
15.	Land rent	30	0
16.	Irrigation charges including local cess and overlap	53	2
17.	Irrigation charges	15	0
18.	Supervision	20	0
19.	Carting of gul	6	4
20.	Hamali for unloading and weighing of gul, etc., at anna 1 per palla	3	2
21.	Adat on 50 pallas at As. 4 per palla	12	8
22.	Interest at Rs. 12 per cent. per year on half the sum up to harvesting	15	6
	Total	482	8

STATEMENT B (*d*).—*Cost of cultivation of sugarcane on the Godavari Canals during the year 1936-37.*

S. No.	Items.	Rs.	A.
1.	3 ploughings	18	0
2.	Clod crushing and harrowing	1	8
3.	Opening farrows	2	0
4.	Putting bunds and channels, planting, etc.	13	0
5.	Seed sets 10,000	45	0
6.	Manures—		
	Farm-yard manure 20 carts at Rs. 1-8 each	30	0
	Sulphate of ammonia one bag	11	6
	Groundnut-cake 5 pallas at Rs. 7 each	35	0
	Castor-cake 10 pallas at Rs. 5-12 each	57	8
	Powdering cake and application of top-dressings	4	0
7.	Weedings five times	6	8
8.	Earthing up	11	0
9.	Irrigation charges including overlapping and local cess	53	2
10.	Irrigation charges	15	0
11.	Rent of land	24	0
12.	Supervision	20	0
13.	Cane cutting, crushing and gul making	80	0
14.	Carting charges of gul	7	8
15.	Adat	12	8
16.	Unloading charges, etc.	3	2
17.	Interest	14	0
	Total	464	2

STATEMENT C.—*Statement showing average yield per acre in lbs. of gul in each district of the Bombay Presidency for the period ending 1931-32.*

No.	District.	Average yield per acre in lbs. of gul (for the period ending 1931-32) irrigated crop.
	BOMBAY PRESIDENCY.	
	Gujarat.	lbs.
1.	Ahmedabad	6,000
2.	Kaira	6,000
3.	Panch Mahals	5,000
4.	Broach	7,000
5.	Surat	7,000
	Deccan.	
6.	West Khandesh	7,000
7.	East Khandesh	7,000
8.	Nasik	7,000
9.	Ahmednagar	7,000
10.	Poona	8,000
11.	Sholapur	7,000
12.	Satara	7,000
	Karnatak.	
13.	Belgaum	7,000
14.	Bijapur	7,000
15.	Dharwar	7,000
	Konkan.	
16.	Thana	7,000
17.	Kolaba	4,000
18.	Ratnagiri	4,000
19.	Kanara	6,000
	Average for the Bombay Presidency	6,950

5. In the Deccan tract, the average cost of growing cane works out at about Rs. 10 per ton and cultivators should get a price of Rs. 11 to Rs. 12 per ton of cane, delivered at the sugar factory. In this connection, it should be mentioned that almost all the sugar factories, in the Deccan, grow their cane on their own lands, taken on long lease and they are only inclined to purchase outside cane when the prices of gul are very low and when they expect to consume their own cane within the crushing period. During the year 1935-36, the prices of gul went high, consequently very little quantity of cane was purchased by the sugar factories; but during the current year, when the prices of gul came down as low as Rs. 2-8 to Rs. 3 per maund, a fairly large quantity of cane was purchased by the factories, at the rate of Rs. 9 to Rs. 11 per ton of cane. Out of the eight factories in the Deccan, the Kolhapur Sugar Factory is always dependent on the supply of cane from cultivators as they have only got a very small area under their own cane. The Phaltan Sugar Factory is also dependent on outside cane as their cane area is small when the capacity of their mill is taken into consideration. Other sugar factories decide the question of purchasing outside cane or not on the ruling prices of gul. In the Deccan,

the Bombay Government have not fixed any minimum price for the purchase of cane from cultivators nor is the price based on the ruling price of sugar or on any formula as laid down in the United Provinces and Bihar. The price for one ton of cane purchased by factories from cultivators, is generally based on one palla, *i.e.*, 3 Bengal maunds of gul. It is also known that some factories make a contract with private cultivators to supply cane at a fixed rate which generally varies from Rs. 11 to Rs. 12-8 per ton delivered at the factory.

The Deputy Director of Agriculture, Southern Division, estimates a fair price of cane to the cultivator at Rs. 14 per ton in the Chikodi tract and Rs. 12 per ton in the Malnad tract. As, however, there are no factories in either the Karnatak or Gujerat tracts, cane sales in bulk are non-existent.

6. The information called for is given below. In general there have been no *marked* variations in the sugarcane cultivation in any specific area in the Bombay Presidency during the past seven years, except in Gujerat Division where cane cultivation has more than doubled owing to fall in prices of other cash crops, *e.g.*, tobacco, cotton, groundnuts, etc., and to the introduction of hardy and improved cane varieties suited to this tract. Increase in area under cane often takes place to a minor degree, if improvement in prices of gur, etc., occur in the previous season. Alternatively cane areas tend to decline with low gul prices.

1930-31 and 1931-32.—During these years the area under sugarcane in the Presidency remained generally stationary.

1932-33.—This year the area under sugarcane in the Presidency somewhat advanced although there was a slight decline in the acreage in the Konkan as compared with the preceding year. The increase was due, in large measure, to the prospects of increased sugar production in India under the system of protection extended to sugar industry.

1933-34.—Excepting Karnatak where the sugarcane area rose slightly there was a decline in the acreage of the crop in the Presidency during this year. The extent of variations, however, being very small needs no remarks.

1934-35.—During this year, the area under sugarcane increased in the Deccan due to extended cultivation of sugarcane on the Deccan Canals by Sugar Factories, but decreased in the Karnatak on account of inadequate water supply from the irrigation sources. The small area in Gujerat showed a little extension; while in the Konkan it remained almost stationary.

1935-36.—The area under sugarcane during this year showed an appreciable extension in the Presidency except in the Karnatak where it somewhat decreased owing to shortage of water supply in the irrigation sources. The increase in the acreage was chiefly due to the extended cultivation of the crop owing to favourable prices of gul in the preceding year.

1936-37.—This year the area under sugarcane decreased in Gujerat on account of low rates of gul in the preceding season. In the Deccan also the area somewhat receded partly due to the above reason and partly to the deficiency of water supply. In the Karnatak the water supply in wells went down during the hot weather and the water supply in tanks was also limited. This resulted in some reduction in area. In the Konkan the area remained almost the same as last year. It may be stated here that the final area figures for 1936-37 are not yet to hand and the above remarks are based on the information received for the forecast reports on the crop.

7. I do not consider that there is any overproduction of cane in the Bombay Presidency and, accordingly, no necessity is felt for a restriction of the cane area. In this connection, see replies to questions 37 and 38 regarding import and export of gul in the Bombay Presidency during the past seven years.

8. Under conditions of sugarcane cultivation in the Bombay Presidency, it cannot be said that there are any other cash crops which compete with sugarcane or which form an alternative cash crop to the cultivator in the

cane-growing tracts. The only exception might be fruit (citrus) plantations in the Deccan Canal areas which have been extending in recent years. Cash crops grown in the neighbourhood of cane areas are cotton, groundnut and turmeric which give a net return of Rs. 10-25, Rs. 35 and Rs. 25 per acre respectively to the average cultivator.

9. The direct expenditure on the extension and improvement of sugarcane cultivation during the past seven years is estimated in Statement D given below. Under this statement are included (*a*) expenditure on sugarcane farms and (*b*) expenditure on the district propaganda staff engaged in popularising and extending improved types of cane, better methods of cane cultivation, etc. There is also additional indirect expenditure which could properly be debited against sugarcane improvement, *e.g.*, portion of expenditure on Deputy Director of Agriculture, South Central Division, and his staff who largely deal with the improvement of cane cultivation in the Deccan Canal areas. In the Karnatak and Gujerat Divisions, also, the departmental district staff do a considerable amount of similar work among the cane-growers of these tracts. The statement does not include the expenditure on the Padegaon Research Station, Nira.

STATEMENT D.

Years.	Names of the Farms.						
	Manjri.	Baramati.	Analsad.	Kopargaon.	Gokak.	Kampta.	Divisional Superintendent of Agriculture Deccan Canals.
	1	2	3	4	5	6	7
1930-31 . .	16,346	5,161	1,845	7,981	12,855	7,092	21,283
1931-32 . .	17,936	441	closed	6,852	12,882	11,296	21,056
1932-33 . .	closed	closed	closed	6,684	11,000	6,922	21,028
1933-34 . .	..	..	..	6,075	10,986	6,455	20,629
1934-35 . .	..	..	..	7,175	10,887	6,755	18,657
1935-36 . .	..	..	..	10,148	14,622	10,943	21,459
1936-37 . .	..	..	..	15,226	19,348	11,569	25,236
Total .	34,282	5,602	1,845	60,141	*92,580	†61,032	149,348

* ⅔ = Rs. 61,720.

† ⅓ = Rs. 20,344.

NOTES.—1. Farms numbered 1 to 4 were mainly sugarcane farms and the entire cost on these was therefore the advancement of that crop. In the case of numbers 5 and 6, the expenditure ⅔rd for No. 5 and ⅓rd for No. 6 is charged for sugarcane on the basis of the area under sugarcane cultivation.

II. Besides the above Rs. 1,000 approximately were spent per year for distribution of improved varieties of cane and therefore Rs. 7,000 may be taken for seven years or to be safe Rs. 5,000.

III. The expenditure on the Deccan canals is also added.

IV. The total expenditure on the advancement of sugarcane according to the above during the last 7 years was Rs. 3,38,282.

10. The reply to this question will be made by the Registrar, Co-operative Societies, as he is in charge of the scheme for subsidising Co-operative sugarcane growers societies for crop improvement and for the supply of cane to factories. The amount of sugar excise fund allotted to the Presidency is roughly 30,000 and I consider that a portion of this fund should definitely be placed at the disposal of the Agricultural Department annually for district propaganda work in the direction of the introduction and extension of better methods of cane cultivation, improved varieties and for general research on sugarcane cultivation, and gul manufacture problems.

11. The account required is being prepared and will be submitted later.

12. (*a*) *Assistance from the Imperial Council of Agricultural Research—Sugarcane Research Scheme, Bombay Deccan, Padegaon.*—I attach herewith Statements E & F giving (*a*) information regarding the grants sanctioned by the Imperial Council of Agricultural Research and the contributions made by the Government of Bombay for a period of 8 years, *i.e.*, 5 years original scheme period and 3 years extension, amounting in all to:—

	Rs.
Imperial Council of Agricultural Research's grant	5,10,579
Bombay Government contribution . . .	2,53,461
	7,64,040

and (*b*) information regarding expenditure under the scheme from 1932 to 1936-37.

(*b*) The Agricultural Department, Bombay Presidency, receives new varieties of cane for trial from the Sugarcane Research Station, Coimbatore, and training is given at that Station to selected persons from the Presidency. The new improved Coimbatore cane varieties, *viz.*, Co 290 and Co 419 are now very popular in the Deccan.

(*c*) Applications for training in sugar technology are sent from applicants in the Bombay Presidency to the Sugar Technologist, Cawnpore and advice on technical matters connected with sugar manufacture is obtained from him.

STATEMENT E.—*Statement giving information regarding the schemes financed wholly or partly by the Imperial Council of Agricultural Research in the Bombay Presidency.*

Name of Scheme.	Name of the Officer in charge.	Situation.	Period in years.	Date of commencement.	Total sanctioned grant of the Scheme.						
					Research Council's share.		Bombay Agricultural Department's share.		Total.		GRAND TOTAL.
					Non-recurring.	Recurring.	Non-recurring.	Recurring.	Non-recurring.	Recurring.	
1	2	3	4	5	6	7	8	9	10	11	12
					Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
1. Sugarcane Research Scheme for Bombay, Deccan.	Rao Saheb B. P. Vagholkar Principal Agricultural Officer, S. R. S., Padegaon.	Padegaon	5	6th June 1932.	77,020	3,09,382	*7,960	1,21,324	84,980	4,30,706	5,15,686
			Extension 3	6th June 1937.	..	1,24,177	..	1,24,177	..	2,48,354	2,48,354

* *Vide* Page 404.

STATEMENT E.—*Statement giving information regarding the schemes financed wholly or partly by the Imperial Council of Agricultural Research in the Bombay Presidency*—contd.

Name of Scheme.	Name of the Officer in charge.	Situation.	Period in years.	Date of comencement.	Total actual expenditure up to 31st March 1936.									Remarks.
					Research Council's share.		Bombay Agricultural Department's share.		Total.		GRAND TOTAL.	Receipts.		
					Non-recurring.	Recurring.	Non-recurring.	Recurring.	Non-recurring.	Recurring.		Estimated.	Actuals up to 31st March 1936.	
1	2	3	4	5	13	14	15	16	17	18	19	20	21	22
					Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
1. Sugarcane Research Scheme for Bombay, Deccan.	Rao Saheb B. P. Vagholkar, Principal Agricultural Officer, S. R. S., Padegaon.	Padegaon.	5	6th June 1932.	65,450	2,29,597	*7,960	87,899	73,410	3,17,496	3,90,906	35,635	29,162	*Cost of the materials of the Manjri Farm transferred to Padegaon.
			Extension 3	6th June 1937.	..	..	..	..	..	..	..	..	..	

STATEMENT F.—*Statement showing expenditure on Sugarcane Research Scheme financed partly by the Imperial Council of Agricultural Research and partly by the Government of Bombay from 1932-33 to 1936-37.*

Year.	Expenditure.		
	Imperial Council of Agricultural Research.	Bombay Government.	Total.
	Rs.	Rs.	Rs.
1932-33	1,11,132	29,462	1,40,594
1933-34	61,680	21,500	83,180
1934-35	63,533	22,652	86,185
1935-36	58,502	22,245	80,747
1936-37	62,446	22,934	85,350
Total .	3,57,293	1,18,793	4,76,056

13. Practically all the sugar-factories in the Deccan are co-operating fully with the Agricultural Department in the introduction of new and improved cane varieties and in testing such varieties, under departmental guidance, on their own lands and in supplying mill tests of improved canes. Most of the factories are now growing such improved cane varieties as P.O.J. 2878, EK. 25, Co. 390 and Co. 419, etc., very extensively. The old Pundia variety is practically given up entirely except to a very small extent, on cultivators' fields. There are no factories in the Karnatak or Gujerat Divisions.

14. Although the total area in the Bombay Presidency including Indian States, is nearly 125,000 acres of sugarcane, the actual area of only 79,000 acres under sugarcane crop in the British districts are considered in this connection. Out of the 79,000 acres, more than 53,000 acres are situated in the Deccan districts, and out of this area, the area under the Deccan canals is roughly 30,000 acres. As most of the sugar factories, except the Kolhapur Factory, are situated on the Deccan canals, it will be appropriate to give the estimates of different figures of cane crushed in the factories, utilised by the open pan factories, utilised for gul and also for chewing and seed purpose in this area in the first place.

(*a*) The area under sugar factories maintained by factories themselves is approximately 13,000 acres (out of which nearly 1,000 acres of cane is utilised for seed purposes and the remaining 12,000 acres are crushed for sugar-making). In addition, all these factories purchase cultivators' sugarcane from an area of nearly 1,500 acres. Thus the sugarcane of about 45 per cent. of the area under the Deccan canals can be taken as crushed in the sugar factories.

(*b*) During the year 1935-36, the price of gul and sugar was high when compared to the present slump in the price of these commodities. Consequently about 12 open pan factories were working in the Deccan canals area and the total area of sugarcane utilized by them might be about 350 acres. The Khandsari process (Bel process) of manufacturing sugar, which is so very common in the United Provinces and Bihar has not been introduced here, but the rab is generally prepared on the Poona single, double or triple furnace and stored for crystalization and afterwards passed through the centrifugals. The Open Pan factories in the Deccan do not manufacture second sugar but the first molasses are converted into molasses in gul, which is readily sold in the market. In the current year, however, the price of sugar and gul, has gone down abnormally low (Rs. 3 per maund of gul and Rs. 7

per maund of sugar, including the sugar excise duty). Consequently only two Open Pan factories are working in this season and they may have utilized only about 100 acres of cane.

(*c*) The area of cane converted into gul may be roughly taken at 13,500-15,000 acres.

(*d*) The area of cane used for chewing might be about 1,000 acres and the area used for seed purposes must be another 1,000 acres, excluding the area utilized by the factories for seed purposes.

The above statements give a rough estimate of the disposal of the cane area (30,000) acres in the Deccan Canal area as under:—

	Acres.
Crushed in factories	12,000-13,000
Utilized by open pan factories and Khandsaris	450-500
Turned into gur	13,500-15,000
Used for chewing and seed purposes . .	2,000-2,500

In the Gujerat area, cane from 75 per cent. of the total area under cane is turned into gur and the remaining 25 per cent. used for chewing and seed purposes. Corresponding figures for the Karnatak tract are 90 per cent. and 10 per cent.

A very rough estimate for the disposal of the cane area of the whole Presidency would be—

	Per cent.
Factories	17
Gul	65
Open pan, etc.	1
Chewing and seed	17

15. There are no factories except in the Deccan Canal tract. There is no regular system of supply of cane by cultivators to factories but most factories are prepared to weigh and purchase cultivators' cane at the nearest trolley line to the factory concerned. No difficulties are known to be experienced by cultivators in delivery of their cane to the factories when sales are made.

17. No minimum price for sugarcane has been fixed in this Presidency and the basis of fixing the prices of cane is the current prices of gul, prevailing in the market. The factories are prepared to offer a price for one ton of cane delivered at the factory, according to the prevailing prices of one palla of gul equal to three maunds, *e.g.*, the present price of gul varies from Rs. 9 to Rs. 10 per palla, hence the price paid by the factories for one ton of cane also varies from Rs. 9 to Rs. 10. All these prices are fixed by the Managers of the factories in consultation with local cultivators. As the cultivators are not in a position to get more income by manufacturing gul, they are required to accept these prices even at a loss. The cultivators save some amount, required for the crushing and manufacturing of gul, but they are required to undergo the extra expenditure of carting cane from their fields to the factories.

18. In the Bombay Presidency, the purchase of cane from cane-growers by factories is very limited and there is no competition between factories for such business.

19. As the quantity of cane purchased by factories from cane-growers is very small and as there are no minimum rates, no question of bonus payments requires consideration in the Bombay Presidency.

20 & 21. The average cost of transport of cane by bullock carts per mile varies from 2-4 pies per maund in the Deccan areas according to length of the load. In the Presidency, cultivators almost invariably use their own carts for transport of their cane to the factory if sale is made to the factory manager.

22. In the Bombay Deccan, all the factories have got tramways throughout their estates and the systems seem to be quite adequate for the purpose of transport of cane from their own fields to the factory. In some cases, factories have constructed approach and feeder roads to their estates and, by agreement with the railway companies, have obtained sidings to the factory. The area under cane in the Deccan is already well served by the Dhond-Manmad Railway (G. I. P.) and there is no need of the assistance of Government in the development of feeder roads or tramway systems.

24. Except in the case of the Belapur Sugar Company, Belapur, I am not aware of any direct assistance being made to a factory in the Bombay Deccan by means of a loan from Government. Most of the factories have been started on share capital and debentures and independent of Government financial assistance. Similarly no concessions in respect of land or water charges have been given to factories except to the same Company for which Government have acquired 7,500 acres of land and rented the same to the Company on easy terms. Other factories have got an indirect benefit by Government declaring certain areas reserved for factories—on which individual cultivators are not allowed to grow cane—and by the granting of land in such areas on long lease to the factories.

25. There are no Co-operative sugar factories in the Bombay Presidency.

27. Statement G below gives the monthly average *retail* prices of sugar in the important markets of the Bombay Presidency during the past seven years, *i.e.*, 1930-1937. Wholesale prices are not available in this office but Statement H below gives the *wholesale* prices of Indian sugar during the years 1933 to 1937 and those of Java sugar during the period 1931 to 1937 (May) ruling in the Bombay market. These statistics are supplied by the Sugar Merchants' Association, Bombay, at my request.

STATEMENT G.—*Monthly Average Retail Prices of Sugar (Compiled from Monthly Returns of Average Retail Prices-current).*

(Per Indian Maund of 80 lbs.)

Station	Bombay.	Ahmedabad.	Poona.	Ahmednagar.	Satara.	Ratnagiri.	Kolhapur.
1930.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.
January	10 14 2	10 0 0	10 8 5	12 4 11	13 8 0	10 6 3	13 5 4
February	10 14 2	9 8 10	9 7 11	12 4 11	13 3 7	10 6 3	13 5 4
March	10 14 2	9 12 1	10 5 8	12 4 11	12 4 2	10 6 3	13 5 4
April	10 14 2	10 0 0	10 8 5	12 4 11	11 12 11	10 6 3	13 5 4
May	10 14 2	10 0 0	10 8 5	12 4 11	12 0 6	10 6 3	13 5 4
June	10 14 2	10 0 0	10 8 5	12 4 11	13 2 8	10 6 3	13 5 4
July	10 14 2	10 0 0	11 0 7	12 4 11	12 15 3	10 6 3	13 5 4
August	10 14 2	10 0 0	10 8 5	12 4 11	12 0 9	10 14 2	13 5 4
September	10 14 2	10 0 0	18 8 5	12 4 11	11 3 8	11 6 10	13 5 4
October	10 14 2	10 0 0	9 14 6	12 4 11	10 11 3	9 15 0	13 5 4
November	9 15 0	9 11 2	9 5 8	12 4 11	10 8 5	9 8 5	13 5 4
December	9 8 5	9 4 5	9 5 8	12 1 2	11 3 8	6 8 6	13 5 4
1931.							
January	9 8 5	9 6 7	9 14 6	11 6 10	11 10 2	9 8 5	13 5 4
February	9 8 5	9 6 7	10 3 1	11 6 10	11 10 2	9 8 5	10 0 0

March	10	6	3	9	11	2	10	8	5	11	6	10	10	8	5	10	6	3	10	0	0
April	10	6	3	9	11	2	10	8	5	11	13	8	10	13	7	10	6	3	11	6	10
May	10	6	3	9	11	2	8	11	11	11	13	8	12	0	6	10	6	3	11	6	10
June	10	6	3	9	11	2	10	8	5	11	13	8	12	0	6	11	6	10	11	6	10
July	10	6	3	9	13	6	10	8	5	11	10	2	12	0	6	11	6	10	11	6	10
August	10	6	3	9	13	6	10	8	5	12	4	11	12	0	6	11	6	10	13	5	4
September	10	6	3	9	13	6	10	8	5	11	6	10	12	0	6	11	6	10	11	6	10
October	10	14	2	11	2	5	11	9	6	12	4	11	12	0	6	11	6	10	13	5	4
November	11	6	10	11	3	8	12	0	6	12	4	11	12	0	6	11	6	10	13	5	4
December	11	6	10	11	13	8	12	0	6	12	4	11	12	0	6	11	6	10	13	5	4
1932.																					
January	11	6	10	11	13	8	12	0	6	12	1	2	12	0	6	11	6	10	13	5	4
February	11	6	10	11	13	8	12	0	6	12	4	11	12	0	6	11	6	10	13	5	4
March	11	6	10	11	13	8	12	0	6	12	4	11	12	0	6	11	6	10	16	0	0
April	11	6	10	11	13	8	12	0	6	12	4	11	12	0	6	11	6	10	13	5	4
May	11	6	10	11	6	10	12	0	6	12	4	11	12	0	6	11	6	10	13	5	4
June	11	6	10	11	6	10	12	0	0	12	4	11	12	0	6	11	6	10	13	5	4
July	11	6	10	11	6	10	12	0	0	12	4	11	12	0	6	11	6	10	13	5	4
August	11	6	10	11	6	10	12	0	6	12	4	11	12	0	6	11	6	10	13	5	1

STATEMENT G.—*Monthly Average Retail Prices of Sugar (Compiled from Monthly Returns of Average Retail Prices-current)* —contd.

(Per Indian Maund of 80 lbs.)

Station	Bombay.	Ahmedabad.	Poona.	Ahmednagar.	Satara.	Ratnagiri.	Kolhapur.
1932.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.
September	11 6 10	11 6 10	12 0 6	12 4 11	13 11 9	12 0 6	13 5 4
October	11 6 10	11 6 10	12 0 6	12 4 11	13 11 9	12 0 6	13 5 4
November	11 6 10	11 6 10	12 4 2	12 4 11	13 11 9	12 0 6	13 5 4
December	11 6 10	11 6 10	12 0 6	12 4 11	13 11 9	12 0 6	13 5 4
1933.							
January	11 6 10	11 6 10	11 6 10	12 1 2	13 11 9	11 6 10	13 5 4
February	11 6 10	11 6 10	11 9 6	11 13 8	13 11 2	11 6 10	13 5 4
March	10 6 3	11 6 10	11 9 6	11 6 10	13 11 9	11 6 10	13 5 4
April	10 6 3	11 6 10	11 12 11	11 6 10	13 11 9	11 6 10	13 5 4
May	10 6 3	11 6 10	11 9 6	11 6 10	13 11 9	11 6 10	13 5 4
June	10 6 3	11 6 10	12 0 6	11 6 10	13 11 9	11 6 10	13 5 4
July	11 6 3	11 6 10	12 0 6	11 6 10	13 11 9	11 6 10	13 5 4
August	10 6 3	11 6 10	12 0 6	11 6 10	12 15 3	11 6 10	13 5 4
September	10 6 3	11 6 10	11 9 6	11 6 10	12 15 3	11 6 10	13 5 4
October	10 6 3	11 6 10	11 3 8	11 6 10	12 15 3	11 6 10	13 5 4

November	10 6 3	11 6 10	11 3 8	11 6 10	12 15 3	11 6 10	13 5 4
December	10 6 3	11 6 10	11 3 8	11 6 10	12 15 3	11 6 10	13 5 4
1934.							
January	10 6 3	11 6 10	10 11 3	11 8 8	12 15 3	11 6 10	13 5 4
February	10 6 3	11 6 10	11 0 7	10 10 8	12 15 3	11 6 10	13 5 4
March	11 6 10	11 13 8	10 8 5	10 10 8	12 15 3	11 6 10	13 5 4
April	11 6 10	12 4 11	10 8 5	10 10 8	12 15 3	11 6 10	13 5 4
May	11 3 8	12 4 11	10 8 5	12 4 11	12 15 3	11 6 10	13 5 4
June	11 3 8	12 4 11	10 8 5	12 4 11	12 15 3	11 6 10	13 5 4
July	10 14 2	12 4 11	10 8 5	12 4 11	12 15 3	11 6 10	13 5 4
August	10 14 2	11 6 10	10 8 5	12 4 11	12 15 3	11 6 10	13 5 4
September	10 14 2	11 0 7	10 8 5	11 3 8	12 15 3	11 6 10	13 5 4
October	10 14 2	11 0 7	19 8 5	10 10 8	12 15 3	10 14 2	13 5 4
November	10 14 2	11 0 7	10 8 5	10 10 8	12 15 3	10 6 3	13 5 4
December	10 14 2	10 10 8	10 8 5	10 7 10	12 15 3	10 6 3	13 5 4
1935.							
January	10 14 2	10 10 8	10 8 5	10 0 0	12 15 3	10 6 3	13 5 4
February	10 14 2	10 10 8	10 8 5	10 7 10	12 15 3	11 6 10	13 5 4

STATEMENT G.—*Monthly Average Retail Prices of Sugar (Compiled from Monthly Returns of Average Retail Prices-current)* —concld.

(Per Indian Maund of 80 lbs.)

Station	Bombay.	Ahmedabad.	Poona.	Ahmednagar.	Satara.	Ratnagiri.	Kolhapur.
	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.
1935.							
March	10 14 2	10 10 8	10 8 5	10 0 0	12 15 3	10 6 3	13 5 4
April	10 14 2	10 10 8	10 8 5	10 0 0	12 15 3	10 6 3	12 4 11
May	10 14 2	10 10 8	10 8 5	10 7 10	11 3 8	10 6 3	10 0 0
June	10 14 2	10 10 8	10 8 5	10 7 10	11 3 8	10 6 3	11 6 10
July	10 14 2	10 10 8	10 8 5	10 10 8	11 3 8	11 6 10	11 6 10
August	10 14 2	10 10 8	10 8 5	10 10 8	11 3 8	11 6 7	10 13 9
September	10 14 2	10 9 0	10 8 5	10 10 8	11 3 8	11 6 7	10 0 0
October	10 14 2	10 10 8	10 8 5	11 0 7	11 3 8	11 6 7	11 6 10
November	10 14 2	10 10 8	10 8 5	10 13 7	11 3 8	11 6 7	11 6 10
December	10 14 2	10 10 8	10 8 5	10 10 8	11 3 8	11 6 7	11 6 3
1936.							
January	11 2 5	10 10 8	10 0 0	10 10 8	11 3 8	11 6 10	11 6 10
February	11 6 10	10 7 10	10 10 8	10 10 8	11 3 8	11 6 10	11 6 10

March	11 6 10	10 2 6	10 10 8	10 0 0	11 6 10	10 0 0	11 6 10
April	11 3 8	10 4 1	10 10 8	10 0 0	11 6 10	10 0 0	11 6 10
May	11 6 10	9 13 6	10 10 8	10 0 0	11 6 10	10 10 8	10 10 8
June	11 6 10	9 8 10	10 0 0	10 0 0	10 10 8	10 10 8	10 10 8
July	11 6 10	9 6 7	10 0 0	10 0 0	10 10 8	10 10 8	10 10 8
August	11 6 10	9 6 7	10 0 0	10 0 0	10 10 8	10 10 8	10 10 8
September . .	10 10 8	9 6 7	10 0 0	10 0 0	10 10 8	10 10 8	10 10 8
October	10 10 8	9 6 7	10 0 0	10 0 0	10 10 8	10 10 8	10 0 0
November	10 10 8	9 6 7	10 0 0	10 0 0	10 0 0	10 10 8	10 10 0
December	10 10 8	9 6 7	10 0 0	10 0 0	10 0 0	10 10 8	10 0 0
1937.							
January	10 10 8	9 6 7	10 0 0	10 0 0	10 0 0	10 10 8	10 0 0
February	10 10 8	8 6 9	8 10 5	10 0 0	9 6 7	10 10 8	10 0 0
March	10 10 8	8 0 0	8 6 9	8 14 3	9 6 7	10 10 8	10 0 0
April	18 10 8	8 0 0	8 6 9	8 14 3	9 6 7	10 10 8	8 14 3
May	10 10 8	8 0 0	8 6 9	8 14 3	9 6 7	..	8 14 3

STATEMENT H.—*Wholesale Prices. Indian Sugar Prices Quality No. 1 F.O.R. Bombay (Per Bengal Maund).*

Month.	Quality No. 1.	1933.	1934.	1935.	1936.	1937.
		Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.
January	Good	11 5 0	9 12 0	9 12 0	9 9 3	7 12 0
	Ordinary	11 4 0	9 10 0	9 4 0	9 0 0	7 6 0
February	Good	11 5 0	9 15 0	9 12 9	9 6 3	7 9 0
	Ordinary	11 4 6	9 10 0	9 7 0	8 15 3	6 15 6
March	Good	11 4 0	10 1 3	9 5 6	9 5 6	7 9 0
	Ordinary	11 0 6	9 15 6	9 4 0	8 14 6	7 0 0
April	Good	11 4 0	10 0 9	9 15 0	9 4 6	7 11 0
	Ordinary	10 12 0	9 14 0	9 6 3	8 13 0	6 15 6
May	Good	10 13 0	10 0 0	9 14 3	9 3 3	7 2 0
	Ordinary	10 11 0	9 12 6	9 12 3	8 10 0	6 12 0
June	Good	10 15 0	9 14 6	9 13 6	9 1 9	..
	Ordinary	10 10 0	9 14 6	9 11 6	8 8 6	..
July	Good	10 13 0	9 15 0	9 11 6	9 0 6	..
	Ordinary	10 12 0	9 14 6	9 8 3	8 3 0	..
August	Good	10 13 0	9 15 0	9 10 0	9 1 3	..
	Ordinary	10 12 0	9 14 0	9 7 6	8 2 3	..
September	Good	11 6 0	9 15 0	9 13 0	8 14 6	..
	Ordinary	10 8 0	9 14 0	9 10 0	8 8 6	..
October	Good	11 13 3	9 15 0	10 5 9	8 14 6	..
	Ordinary	10 8 0	9 14 0	9 15 6	7 15 9	..
November	Good	11 10 0	9 14 0	10 0 6	8 9 0	..
	Ordinary	9 4 0	9 7 0	9 13 0	7 13 0	..
December	Good	11 4 0	9 7 0	9 13 0	7 13 0	..
	Ordinary	9 0 0	9 1 3	9 10 9	7 9 9	..

Prices for Indian Ready Sugar Ruling in Bombay Market Quality No. 1 (Per Cwt.).

Month.	Quality No. 1.	1933.	1934.	1935.	1936.	1937.
		Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.
January	Good	16 1 0	13 14 0	13 14 0	13 11 0	11 3 0
	Ordinary	16 0 0	13 12 0	13 4 0	12 14 0	10 11 0
February	Good	16 1 0	14 3 0	13 15 0	13 7 0	10 15 0
	Ordinary	16 0 0	13 12 0	13 8 0	12 13 0	10 2 0
March	Good	16 1 0	14 6 0	13 6 0	13 6 0	10 15 0
	Ordinary	15 12 0	14 4 0	13 4 0	12 12 0	10 2 0
April	Good	16 0 0	14 5 0	14 3 0	13 5 0	11 2 0
	Ordinary	15 5 0	14 2 0	13 7 0	12 10 0	10 2 0
May	Good	15 6 0	14 4 0	14 2 0	13 3 0	10 5 0
	Ordinary	15 3 0	14 0 0	13 15 0	12 6 0	9 13 0
June	Good	16 8 0	14 2 6	14 1 0	13 1 0	..
	Ordinary	15 2 0	14 0 0	13 14 0	12 4 0	..
July	Good	15 6 0	14 3 0	13 14 0	13 0 0	..
	Ordinary	15 5 0	14 2 6	13 10 0	11 13 0	..
August	Good	15 6 0	14 3 0	13 12 0	13 1 0	..
	Ordinary	15 5 0	14 2 0	13 9 0	11 12 0	..
September	Good	16 2 0	14 3 0	14 0 0	12 15 0	..
	Ordinary	15 0 0	14 2 0	13 12 0	12 4 0	..
October	Good	16 12 0	14 3 0	14 12 0	12 5 0	..
	Ordinary	15 0 0	14 2 0	14 2 0	11 8 0	..
November	Good	16 8 0	14 2 0	14 4 0	12 5 0	..
	Ordinary	13 0 0	13 8 0	14 0 0	11 5 0	..
December	Good	16 0 0	13 8 0	14 0 0	11 5 0	..
	Ordinary	12 14 0	13 0 0	13 13 3	11 0 0	..

Java Sugar Prices F.O.B. Java Port (Per Bengal Maund).

Month.		1931.	1932.	1933.	1934.	1935.	1936.	1937.
		Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.
January	Highest	3 8 6	3 13 6	3 3 9	2 9 3	2 5 6	2 11 9	2 12 9
	Lowest	3 5 6	3 12 9	3 2 3	2 6 3	2 2 6	2 7 3	2 7 9
February	Highest	3 12 9	3 13 9	3 2 3	2 14 3	2 5 6	2 9 9	2 12 0
	Lowest	3 6 3	3 12 6	3 0 9	2 9 3	2 3 6	2 7 6	2 11 3
March	Highest	3 5 6	3 12 0	3 3 9	2 12 9	2 3 3	2 11 3	2 13 6
	Lowest	3 3 0	3 5 6	3 2 3	2 11 0	2 0 3	2 9 0	2 11 9
April	Highest	3 5 6	3 4 9	3 2 6	2 11 9	2 7 0	2 10 0	3 3 3
	Lowest	3 3 6	3 1 9	3 0 3	2 10 0	2 4 0	2 9 0	3 0 0
May	Highest	3 5 0	3 5 3	3 3 0	2 11 9	2 13 6	2 9 0	3 4 9
	Lowest	3 4 3	3 1 9	3 0 3	2 8 0	2 7 0	2 7 6	3 1 6
June	Highest	3 7 0	3 8 6	3 6 9	2 10 0	2 9 6	2 6 9	..
	Lowest	3 6 3	3 3 2	3 3 6	2 7 6	2 8 0	2 5 3	..
July	Highest	3 7 3	3 5 6	3 4 9	2 9 3	2 8 6	2 6 0	..
	Lowest	3 6 9	3 4 9	3 2 6	2 7 6	2 6 3	2 4 3	..
August	Highest	3 6 9	3 7 6	3 2 3	2 8 3	2 7 9	2 4 6	..
	Lowest	3 5 0	3 4 9	3 1 0	2 7 3	2 6 3	2 3 9	..
September	Highest	3 8 6	3 10 0	3 2 0	2 7 3	2 10 0	2 3 9	..
	Lowest	3 5 0	3 6 3	3 0 9	2 4 9	2 7 6	2 2 6	..
October	Highest	3 13 0	3 8 6	3 1 9	2 6 9	3 4 6	2 3 3	..
	Lowest	3 10 0	3 6 0	3 1 0	2 4 9	2 8 6	2 1 9	..
November	Highest	3 14 9	3 5 6	3 1 9	2 6 0	2 10 0	2 4 3	..
	Lowest	3 11 0	3 4 9	2 14 0	2 1 9	2 7 0	1 15 6	..
December	Highest	3 13 6	3 4 9	2 12 9	2 3 3	2 7 9	2 8 0	..
	Lowest	3 12 6	3 1 9	2 8 6	2 1 0	2 6 3	2 4 3	..

C.I.F. Bombay Prices for Java Sugar (Per Cwt.).

Month.		1931.	1932.	1933.	1934.	1935.	1936.	1937.
		Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.
January	Highest	5 7 0	5 14 0	5 0 6	4 2 0	3 13 6	4 5 6	4 7 0
	Lowest	5 3 0	5 12 9	4 14 6	3 14 0	3 9 0	3 15 9	4 0 6
February	Highest	5 12 9	5 14 3	4 14 6	4 9 0	3 13 6	4 3 0	4 6 0
	Lowest	5 4 0	5 12 6	4 12 6	4 2 0	3 10 6	4 0 0	4 5 0
March	Highest	5 3 0	5 12 0	5 0 6	4 7 0	3 10 0	4 6 0	4 8 0
	Lowest	4 15 6	5 3 0	4 14 6	4 4 6	3 6 0	4 2 6	4 5 0
April	Highest	5 3 0	5 2 0	4 15 0	4 5 0	3 15 0	4 4 0	5 0 0
	Lowest	5 0 0	4 14 0	4 12 0	4 4 0	3 11 0	4 2 6	4 12 0
May	Highest	5 2 6	5 2 6	4 15 9	4 5 6	4 8 0	4 2 6	5 2 0
	Lowest	5 1 0	4 14 0	4 12 3	4 0 6	3 15 0	4 0 0	4 13 6
June	Highest	5 5 3	5 7 0	5 4 6	4 4 0	4 2 6	3 15 0	..
	Lowest	5 4 0	5 0 0	5 0 3	4 0 0	4 0 6	3 13 0	..
July	Highest	5 5 6	5 3 0	5 2 0	4 2 0	4 1 0	3 14 0	..
	Lowest	5 4 6	5 2 0	4 15 0	4 0 0	3 14 0	3 11 6	..
August	Highest	5 4 6	5 6 0	4 14 9	4 1 0	4 0 0	3 13 6	..
	Lowest	5 2 6	5 2 0	4 13 0	3 15 9	3 14 0	3 11 6	..
September	Highest	5 7 0	5 9 0	4 14 6	3 15 9	4 4 0	3 11 6	..
	Lowest.	5 2 6	5 4 0	4 12 6	3 12 0	4 0 0	3 9 0	..
October	Highest	5 13 0	5 7 0	4 14 0	3 15 0	5 2 0	3 11 0	..
	Lowest	5 9 0	5 3 0	4 13 0	3 12 0	4 1 6	3 8 0	..
November	Highest	5 15 6	5 3 0	4 14 0	8 14 0	4 4 0	3 12 0	..
	Lowest	5 10 6	5 2 0	4 8 6	3 8 0	3 15 6	3 5 0	..
December	Highest	5 13 6	5 2 0	4 7 0	3 10 0	4 0 0	4 0 6	..
	Lowest	5 12 6	4 14 0	4 1 0	3 7 0	3 14 0	3 12 0	..

29 & 36. No data regarding the *normal* consumption of sugar and the annual consumption of gur/jaggery in the Bombay Presidency are available with me. The Professor of Agricultural Economics, Agricultural College, Poona, who was addressed in this matter reports that he has no consumption estimates but gives the undernoted extract from the Tariff Board's Report in 1931 which may assist the Board in arriving at a reliable estimate:—

"Interesting information was received also from the Bombay Government, Figures collected from nine villages in the Poona district varying in distance from 9 to 35 miles from Poona show that the amount of gur and sugar consumed stood in the proportion of 1:1·14. The proportion of consumption of sugar to gur was found to be much higher in the case of the richer classes and much lower in the case of the poorer villagers; middle class villagers consumed about equal proportions of each. As regards the towns, the consumption of sugar is reported to exceed by far that of gur. The effect of tea drinking habit on the consumption of sugar is reflected by figures obtained from hostels attached to educational institutions in Poona where accounts are maintained of goods purchased and used. The figures are given below:—

	Gur per head per year.	Sugar per head per year.	Remarks.
Boys' boarding house . .	20·5	41	Tea consumed.
Girls' boarding house . .	11·8	21·1	
Boys' boarding house . .	24·0	8	No tea consummed."
Girls' boarding house . .	14·7	3	

The Deputy Director of Agriculture, South Central Division (Deccan's), estimate of consumption of sugar per head is 6 lbs. per annum but he adds that on account of the increase in tea-drinking, this figure may increase by 2-3 lbs. per head in the near future. He gives the figures of 63,000 tons sugar and 250,000 tons gur as the total annual consumption in the Bombay Presidency.

30. There are a few small manufacturers of sweets, etc., in the vicinity of Bombay and large towns in the Presidency. Most of them, if not all, use Indian factory sugar.

31. The development of the sugar industry has not reached such a state in the Bombay Presidency as to necessitate the introduction of zones for the supply of cane to different factories or for fixation of a quota for sugar manufacture by factories. The cultivation of sugarcane in the Bombay Presidency is more costly than compared with any other province and, before any new factory is established, this fact is always taken into consideration. At the same time, it may also be mentioned that there are certain advantages to sugar factories of the Deccan which are summarized below:—

(i) They can increase the working period to nearly 210 days in the year without any loss in recovery.

(ii) The canes are richer in sucrose and the percentage recovery of sugar is one of the highest in India.

(iii) By suitable arrangement of planting cane, factories can get the richest cane of the required type throughout the whole working period and thereby the highest degree of recovery is maintained. They can also get fresh supplies of cane every day for crushing and not the stale cane, imported from long distances as is the case in the United Provinces and Bihar.

(iv) While competing with the sugar prices of the United Provinces they have a small margin of annas 14 per maund in the form of railway freight from Cawnpore to Bombay.

(v) When the working period is extended and the output is increased, the overhead charges are distributed on the larger output and thereby the incidence of actual costs is somewhat decreased.

It is, therefore, not necessary to license factories in this Presidency. With regard to the starting of new factories, it may be stated that unless a factory has got a large capacity, it will not be possible for the factory to reduce manufacturing charges. It is, therefore, advisable that instead of encouraging new factories, extended scope should be given to existing ones to increase their output by giving them adjoining areas of sugarcane cultivation, if necessary, by declaring those areas as factory areas.

32. There are possibilities in the Bombay Presidency of starting subsidiary industries such as manufacturing of syrups, fruit preserves and canning, but so far such subsidiary industries have not made any substantial progress, largely for want of the technical knowledge required for canning and fruit preserving among the public. This matter is now receiving close attention by the Bombay Department of Agriculture. But the quantity of sugar required for such industries will not materially increase sugar consumption.

33. Statement I below gives the figures of production of gur from sugarcane in each district of the Bombay Presidency for the last seven years. It should be noted, however, that these figures of gur production have been prepared on the assumption that the *whole* of the cane planted during the year has been converted into gur *and for no other purpose*, *e.g.*, manufacture of sugar, chewing or supply of setts for planting. Possibly 65 per cent. of the total figure given would represent a much closer estimate.

STATEMENT I.

No.	District.	Outturn in tons of Gul.						
		1930-31.	1931-32.	1932-33.	1933-34.	1934-35.	1935-36.	1936-37.
1	2	3	4	5	6	7	8	9
		Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
	BOMBAY PRESIDENCY.							
	Gujarat.							
1	Ahmedabad .	543	1,069	1,167	1,081	1,054	1,075	.
2	Kaira . .	237	326	394	223	621	1,527	6,696*
3	Panch Mahals	249	273	629	1,323	4,575	5,164	
4	Broach .	36	31	28	21			
5	Surat . .	4,725	5,202	5,695	6,338	5,112	6,277	6,883
	Total Gujarat.	5,790	6,901	7,913	8,986	11,362	14,043	13,579

* Details not yet available.

STATEMENT I—*contd.*

No.	District.	Outturn in tons of Gul.						
		1930-31.	1931-32.	1932-33.	1933-34.	1934-35.	1935-36.	1936-37.
1	2	3	4	5	6	7	8	9
	Deccan.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
6	West Khandesh	2,616	3,984	4,109	4,041	3,003	3,042	5,208
7	East Khandesh	1,808	2,393	4,047	3,222	2,434	1,721	
8	Nasik	10,869	13,092	16,366	16,686	14,409	19,304	18,854
9	Ahmednagar	37,532	37,228	36,322	32,096	39,698	42,404	43,616
10	Poona	37,858	32,098	31,157	31,067	27,031	39,196	27,852
11	Sholapur	2,812	4,016	5,270	6,147	9,291	9,983	9,740
12	Satara	27,790	28,917	30,858	27,896	25,697	32,753	29,966
	Total Decan	121,285	121,728	128,129	121,155	121,563	148,403	135,236
	Karnatak.							
13	Belgaum	34,326	33,587	35,312	44,433	36,799	33,525	32,854
14	Bijapur	1,454	1,954	1,707	1,542	1,214	1,741	1,187
15	Dharwar	2,961	3,521	10,136	10,157	7,425	5,373	4,971
	Total Karnatak	38,741	39,062	47,155	56,132	45,438	40,639	39,012
	Konkan.							
16	Thana	606	742	767	714	635	472	1,674*
17	Bombay Suburban	..	..	..	..	..	..	
18	Kolaba	64	52	57	61	68	85	
19	Ratnagiri	2,553	1,958	1,574	1,569	1,097	1,307	
20	Kanara	6,788	7,213	6,857	5,469	5,519	6,217	6,390
	Total Konkan	9,311	9,965	9,255	7,813	7,319	8,081	8,064
	Total Bombay Presidency	175,127	177,656	192,452	194,086	185,682	211,166	195,891

(Compiled from the Sugarcane Forecast Reports.)

* Details not yet available.

34. Gur/jaggery is not produced from any other material than cane in the Bombay Presidency.

35. Statements J & K below give the monthly average *retail* prices and the fortnightly *wholesale* prices respectively of gur/jaggery at representative centres in the Bombay Presidency during the last seven years, *i.e.*, 1930-1937. Variations in the price of gur are mostly due to fluctuations in the sugarcane acreage, not only in the Bombay Presidency but also in other sugar-growing Provinces and Indian States which supply gur to markets in the Presidency. Other reasons for variation are (*a*) climatic, *e.g.*, duration of cold weather, etc., in abnormal years, (*b*) competition with Indian factory sugar production.

STATEMENT J.—*Monthly Average Retail Prices of Gur/Jaggery (compiled from Taluka Form No. XVIII).*

(Per Indian Maund of 80 lbs.)

Station	Ahmedabad.	Baramati.	Karad.	Kopergaon.	Poona.	Hubli.	Kolhapur.*
1930.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.
January .	10 0 0	10 7 10	9 4 5	5 3 11	9 6 7	..	8 0 0
February .	10 0 0	10 7 10	9 4 5	5 3 11	7 9 11	..	5 11 5
March .	10 0 0	10 7 10	9 4 5	5 3 11	9 6 7	..	5 11 5
April . .	10 0 0	10 7 10	10 10 8	5 3 11	9 6 7	..	5 11 5
May . .	10 0 0	10 7 10	10 10 8	5 8 3	8 6 9	..	5 11 5
June . .	10 0 0	10 7 10	10 13 7	5 8 3	8 14 3	..	5 11 5
July . .	10 0 0	8 6 9	8 8 6	5 10 7	9 6 7	..	5 11 5
August .	10 0 0	8 6 9	8 8 6	5 10 7	9 6 7	..	5 11 5
September .	10 0 0	8 6 9	6 15 4	5 10 7	8 12 3	..	5 11 5
October .	10 0 0	8 6 9	6 15 4	4 0 10	7 9 11	..	5 11 5
November .	10 0 0	8 6 9	6 15 4	3 8 7	7 9 11	..	5 11 5
December .	10 0 0	8 6 9	6 14 1	4 11 4	7 5 8	..	5 0 0
1931							
January .	6 10 8	8 6 9	4 10 2	6 2 6	6 11 9	..	5 0 0
February .	4 7 1	8 6 9	4 10 2	6 2 6	7 0 6	..	5 11 5
March .	4 7 1	7 0 6	4 10 2	5 11 5	6 7 5	..	5 11 5
April . .	10 0 0	6 0 7	4 10 2	5 11 5	6 0 7	..	5 11 5
May . .	4 7 1	4 10 9	4 10 2	5 11 5	5 3 11	..	5 11 5
June . .	..	4 10 9	4 10 2	5 11 5	5 3 11	..	5 5 4
July . .	4 7 1	4 10 9	4 10 2	5 0 0	5 3 11	..	5 0 0
August .	4 7 1	4 10 9	4 10 2	5 0 0	6 0 7	..	4 13 7
September .	4 7 1	4 10 9	4 10 2	5 0 0	6 3 5	..	5 0 0
October .	4 7 1	5 3 11	5 6 1	6 2 6	6 3 5	..	5 0 0
November .	4 7 1	6 0 7	6 2 6	6 2 6	6 7 5	..	5 0 0
December .	4 7 1	5 3 11	6 2 6	6 2 6	7 0 6	..	5 0 0

* In the case of Kolhapur prices have been taken from the Monthly Average Retail Price-current Returns.

STATEMENT J.—*Monthly Average Retail Prices of Gur/Jaggery (compiled from Taluka Form No. XVIII)*—contd.

(Per Indian Maund of 80 lbs.)

Station	Ahmeda-bad.	Baramati.	Karad.	Kopergaon.	Poona.	Hubli.	Kolha-pur.*
1932.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.
January	6 10 8	5 3 11	6 2 6	6 2 6	6 11 9	..	5 0 0
February	8 0 0	5 3 11	6 2 6	5 11 5	5 6 9	..	5 0 0
March	4 7 1	5 3 11	6 2 6	5 0 0	6 0 7	..	5 0 0
April	4 3 8	5 3 11	6 2 6	5 0 0	5 9 10	..	5 0 0
May	4 7 1	5 3 11	6 2 6	4 6 2	5 9 10	..	5 0 0
June	..	5 3 11	6 2 6	4 7 1	5 6 9	..	5 0 0
July	..	5 3 11	6 2 6	4 7 1	5 12 3	..	5 0 0
August	..	5 3 11	6 2 6	5 0 0	6 0 7	..	5 0 0
September	..	5 3 11	6 2 6	5 5 4	6 7 5	..	5 0 0
October	..	5 3 11	6 2 6	5 0 0	6 7 5	..	5 0 0
November	..	5 3 11	6 2 6	5 0 0	6 3 5	..	5 0 0
December	..	6 2 6	6 2 6	5 0 0	6 0 7	..	5 0 0
1933.							
January	..	5 3 11	6 2 6	5 0 0	5 13 1	..	5 0 0
February	8 0 0	4 10 9	6 2 6	5 0 0	5 1 11	..	5 0 0
March	8 0 0	4 3 4	6 2 6	4 7 1	4 5 2	..	4 7 1
April	7 4 4	3 8 3	4 0 0	3 5 4	3 11 11	..	4 7 1
May	7 4 4	3 13 4	4 0 0	4 0 0	4 7 1	..	4 0 0
June	7 4 4	3 13 4	4 0 0	4 0 0	5 3 11	..	4 0 0
July	7 4 4	3 13 4	4 0 0	5 0 0	5 3 11	..	4 0 0
August	7 4 4	4 3 4	4 0 0	5 0 0	5 6 9	..	4 0 0
September	7 4 4	4 3 4	4 0 0	4 7 1	5 9 10	..	4 0 0
October	8 0 0	4 10 9	4 0 0	4 7 1	5 3 11	..	4 0 0
November	8 0 0	5 3 11	4 3 4	4 7 1	5 3 11	..	4 0 0
December	7 4 4	4 10 9	4 1 8	4 7 1	5 6 9	..	4 0 0

* In the case of Kolhapur prices have been taken from the Monthly Average Retail Price-current Returns.

STATEMENT J.—*Monthly Average Retail Prices of Gur/Jaggery (compiled from Taluka Form No. XVIII)*—contd.

(Per Indian Maund of 80 lbs.)

Station	Ahmedabad.	Baramati.	Karad.	Kopergaon	Poona.	Hubli.	Kolhapur.*
1934.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.
January	7 4 4	4 10 9	5 0 0	4 7 1	4 10 9	..	4 0 0
February	7 4 4	3 8 3	6 10 8	4 7 1	4 15 5	..	4 0 0
March	7 4 4	3 8 3	6 10 8	4 3 4	4 7 1	..	4 0 0
April	7 4 4	4 3 4	5 0 0	4 7 1	5 3 11	..	4 0 0
May	..	6 0 7	4 0 0	5 5 4	6 0 7	..	4 0 0
June	..	6 0 7	4 5 2	5 11 5	7 0 6	..	4 0 0
July	..	6 0 7	6 6 5	5 11 5	6 7 5	..	4 0 0
August	..	8 6 9	6 10 8	7 4 4	7 9 11	..	4 7 1
September	..	8 6 9	6 10 8	8 0 0	9 6 7	..	4 7 1
October	..	8 6 9	6 10 8	8 0 0	9 6 7	..	5 0 0
November	..	7 0 6	6 10 8	8 0 0	8 6 9	..	5 0 0
December	..	6 0 7	6 10 8	6 6 5	6 7 5	..	5 0 0
1935.							
January	..	7 0 6	6 15 4	6 6 5	6 7 5	..	5 0 0
February	8 0 0	7 0 6	6 15 4	5 5 4	6 7 5	..	5 0 0
March	8 0 0	6 0 7	6 15 4	5 11 5	6 7 5	..	5 0 0
April	8 14 3	6 0 7	6 15 4	6 10 8	7 0 6	..	6 10 8
May	8 14 3	6 0 7	6 2 6	6 10 8	7 9 11	..	6 10 8
June	8 14 3	6 0 7	7 4 4	6 10 8	7 9 11	..	6 10 8
July	8 14 3	6 0 7	7 4 4	6 2 6	7 0 6	..	6 10 8
August	8 14 3	6 0 7	7 4 4	6 2 6	6 7 5	..	6 10 8
September	8 14 3	6 0 7	6 2 6	6 2 6	6 11 9	..	6 10 8
October	8 14 3	6 0 7	6 2 6	5 11 5	6 11 9	..	6 10 8
November	8 14 3	6 0 7	5 11 5	5 11 5	6 7 5	..	6 10 8
December	8 14 3	6 0 7	5 0 0	5 2 7	6 3 5	..	5 11 5

* In the case of Kolhapur prices have been taken from the Monthly Average Retail Price-current Returns.

STATEMENT J.—*Monthly Average Retail Prices of Gur/Jaggery (compiled from Taluka Form No. XVIII)*—concld.

(Per Indian Maund of 80 lbs.)

Station	Ahmedabad.	Baramati.	Karad.	Kopergaon.	Poona.	Hubli.	Kolhapur.*
	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.
1936.							
January .	8 14 3	6 0 7	5 0 0	4 11 4	5 0 0	..	6 2 6
February .	8 0 0	6 0 7	4 7 1	3 14 5	4 7 1	..	5 11 5
March .	8 14 3	6 0 7	4 0 0	3 14 5	4 0 0	..	6 10 8
April . .	8 6 9	6 0 7	3 10 2	3 12 11	4 7 1	..	5 0 0
May . .	8 6 9	6 0 7	4 7 1	3 7 8	4 0 0	..	5 0 0
June . .	8 0 0	3 12 11	4 7 1	3 7 8	4 3 4	..	5 0 0
July . .	8 0 0	4 3 4	4 0 0	3 7 8	4 7 1	..	5 0 0
August .	8 0 0	3 5 4	4 0 0	3 10 2	5 0 0	..	5 0 0
September .	8 0 0	3 10 2	4 0 0	3 10 2	5 0 0	5 0 0	5 0 0
October .	8 0 0	3 10 2	4 0 0	3 10 2	5 0 0	5 0 0	4 0 0
November .	8 0 0	3 10 2	4 0 0	3 10 2	4 11 4	5 0 0	4 0 0
December .	8 0 0	3 10 2	4 0 0	3 10 2	4 7 1	4 13 7	4 0 0
1937.							
January .	8 0 0	3 10 2	4 0 0	3 10 2	4 7 1	4 13 7	3 10 2
February .	8 0 0	3 10 2	4 0 0	3 5 4	4 1 8	4 13 7	3 10 2
March . .	8 0 0	3 10 2	3 5 4	3 5 4	4 0 0	4 9 2	3 10 2
April . .	8 0 0	3 10 2	4 0 0	3 5 4	4 0 0	4 7 1	3 11 2
May . .	8 0 0	3 7 8	3 5 4	3 1 1	3 12 11	4 9 2	3 11 2

* In the case of Kolhapur prices have been taken from the Monthly Average Retail Price-current Returns.

STATEMENT K.—*Fortnightly wholesale prices of Gur/Jaggery (compiled from the Fortnightly Return of Wholesale prices-current).*

(Per Indian Maund of 80 lbs.)

—	Bombay.	Ahmeda-bad.	Ahmed-nagar.	Poona.	Sholapur.	Dharwar.
	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.
1930.						
January						
(A) .	10 3 3	..	9 2 8	8 5 4	9 3 1	7 11 2
(B) .	8 13 6	..	8 5 4	7 6 7	9 9 11	7 12 10
February.						
(A) .	8 2 7	..	7 10 8	7 2 5	7 10 1	7 6 5
(B) .	8 4 9	..	7 13 4	8 6 9	8 12 5	7 6 5
March.						
(A) .	8 7 0	..	8 0 0	8 1 10	8 12 5	8 6 5
(B) .	8 9 2	..	8 5 4	8 9 7	8 2 5	8 3 2
April.						
(A) .	8 9 2	..	8 4 0	8 9 7	8 4 11	7 9 7
(B) .	8 15 8	..	..	8 6 9	..	8 0 0
May.						
(A) .	8 15 8	..	8 5 4	8 1 1	..	8 0 0
(B) .	9 1 10	..	8 2 4	8 9 7	..	8 0 0
June.						
(A) .	9 8 5	..	8 2 4	8 6 9	8 15 9	8 0 0
(B) .	10 3 3	..	..	8 5 4	8 15 9	8 0 0
July.						
(A) .	10 3 3	..	8 0 0	8 1 1	8 15 9	8 0 0
(B) .	10 3 3	..	8 0 0	8 3 11	8 5 9	8 3 3
August.						
(A) .	10 3 3	..	7 12 0	7 11 6	7 11 4	8 3 3
(B) .	10 3 3	..	7 12 0	7 11 6	7 8 6	8 0 0
September.						
(A) .	10 3 3	..	7 9 4	7 11 6	7 12 7	7 10 0
(B) .	9 4 0	..	7 8 0	7 0 3	7 11 9	6 12 10
October.						
(A) .	9 4 0	..	7 2 8	6 5 1	7 8 5	6 9 7
(B) .	9 4 0	..	7 0 0	6 10 8	7 1 9	7 0 0
November.						
(A) .	9 4 0	..	6 13 4	6 10 8	6 1 1	7 3 7
(B) .	8 2 7	..	6 14 8	8 0 5	7 5 1	7 3 2
December.						
(A) .	8 2 7	..	6 1 4	6 2 11	6 4 5	7 3 2
(B) .	7 14 3	..	5 1 4	5 13 4	5 11 3	5 9 7

(A)=1*st* Fortnight.
(B)=2nd Fortnight.

STATEMENT K.—*Fortnightly wholesale prices of Gur/Jaggery (compiled from the Fortnightly Return of Wholesale prices-current)*—contd.

(Per Indian Maund of 80 lbs.)

——	Bombay.	Ahmeda-bad.	Ahmed-nagar.	Poona.	Sholapur.	Dharwar.
	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.
1931.						
January.						
(A) .	6 12 10	..	5 8 0	5 14 0	5 7 1	5 9 7
(B) .	7 7 9	..	5 9 4	6 9 3	7 5 1	5 9 7
February.						
(A) .	7 7 9	..	6 0 0	6 13 6	6 11 1	5 9 7
(B) .	6 12 10	..	6 2 8	6 0 2	6 7 9	5 9 7
March.						
(A) .	7 1 2	..	5 5 4	5 13 4	6 2 9	5 9 7
(B) .	7 7 9	..	..	5 5 7	6 1 1	5 9 7
April.						
(A) .	6 12 10	..	5 5 4	5 4 3	5 13 9	4 12 10
(B) .	6 8 6	..	5 0 0	4 11 9	5 7 1	4 13 0
May.						
(A) .	6 12 10	..	4 14 8	5 1 5	5 3 9	..
(B) .	6 12 10	..	4 14 8	4 6 2	5 2 1	4 12 10
June.						
(A) .	6 12 10	..	5 0 0	4 12 10	5 3 9	4 13 0
(B) .	6 8 6	..	5 8 0	4 9 0	5 7 1	4 12 10
July.						
(A) .	6 4 2	..	5 7 4	5 0 0	5 7 1	4 12 10
(B) .	6 8 6	..	5 6 8	5 1 5	5 7 1	5 3 2
August.						
(A) .	7 1 2	..	6 0 0	5 9 10	5 13 9	5 3 2
(B) .	7 7 9	..	5 14 8	5 15 5	6 1 1	5 3 2
September.						
(A) .	7 7 9	..	5 13 4	5 12 8	5 15 5	5 9 7
(B) .	7 7 9	..	5 9 4	5 9 10	5 13 9	5 9 7
October.						
(A) .	7 7 9	..	5 8 0	5 6 4	5 12 1	5 9 7
(B) .	7 14 3	..	5 14 8	5 5 7	5 12 1	5 9 7
November.						
(A) .	7 14 3	..	6 2 8	6 13 6	6 1 1	5 9 7
(B) .	7 7 9	..	6 2 8	5 9 10	6 1 1	6 0 0
December.						
(A) .	7 7 9	..	6 5 4	6 7 10	5 13 9	5 6 5
(B) .	7 7 9	..	5 13 4	6 7 10	6 4 5	5 6 5

(A)=1st Fortnight.
(B)=2nd Fortnight.

STATEMENT K.—*Fortnightly wholesale prices of Gur/Jaggery (compiled from the Fortnightly Return of Wholesale prices-current)*—contd.

(Per Indian Maund of 80 lbs.)

——	Bombay.	Akmeda-bad.	Ahmed-nagar.	Poona.	Sholapur.	Dharwar.
	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.
1932.						
January.						
(A) .	7 7 9	7 4 0	6 0 0	5 9 1	6 4 5	5 6 5
(B) .	7 7 9	7 4 0	5 13 4	5 6 4	5 15 5	5 6 5
February.						
(A) .	6 12 10	7 4 0	5 6 8	4 14 7	5 13 9	4 3 0
(B) .	6 12 10	7 8 0	5 5 4	5 6 8	6 4 5	4 3 0
March .						
(A) .	6 12 10	7 8 0	5 8 0	5 8 9	5 13 9	5 3 2
(B) .	6 12 10	7 8 0	5 1 4	5 4 3	5 10 5	5 3 2
April.						
(A) .	6 12 10	8 0 0	5 0 0	4 13 2	5 7 1	5 3 2
(B) .	6 12 10	8 0 0	4 14 8	5 5 7	5 2 1	5 3 2
May.						
(A) .	..	8 0 0	5 1 4	5 4 3	5 7 1	..
(B) .	6 12 10	7 8 0	5 5 4	5 0 0	5 0 5	5 3 2
June.						
(A) .	6 12 10	7 8 0	5 0 8	5 14 7	5 3 9	5 3 2
(B) .	6 12 10	7 8 0	5 5 4	5 1 5	5 3 2	5 9 7
July.						
(A) .	6 12 10	7 8 0	5 8 0	5 5 7	5 10 5	6 0 0
(B) .	6 12 10	8 0 0	5 8 0	5 5 7	5 13 9	6 0 0
August.						
(A) .	6 12 10	8 0 0	5 14 8	5 12 8	5 13 9	6 0 0
(B) .	6 12 10	8 0 0	5 12 0	5 14 0	5 10 5	6 0 0
September.						
(A) .	6 12 10	8 0 0	5 13 4	5 12 8	5 10 5	6 0 0
(B) .	6 8 6	8 0 0	5 4 8	5 12 8	5 3 9	6 0 0
October.						
(A) .	6 6 4	8 0 0	5 5 4	5 9 10	5 5 5	6 0 0
(B) .	6 4 2	8 0 0	5 5 4	5 12 8	5 10 5	6 0 0
November.						
(A) .	6 8 6	8 0 0	5 8 0	5 4 3	..	6 0 0
(B) .	6 10 8	8 0 0	5 0 0	4 14 7	5 7 1	6 0 0
December.						
(A) .	6 8 6	8 0 0	5 8 0	5 1 9	5 3 9	6 0 0
(B) .	6 8 6	7 8 0	5 5 4	5 5 7	5 3 9	6 0 0

(A)=1st Fortnight.
(B)=2nd Fortnight.

STATEMENT K.—*Fortnightly wholesale prices of Gur/Jaggery (compiled from the Fortnightly Return of Wholesale prices-current)*—contd.

(Per Indian Maund of 80 lbs.)

——	Bombay.	Ahmeda-bad.	Ahmed-nagar.	Poona.	Sholapur.	Dharwar.
	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.
1933.						
January.						
(A) .	6 8 6	7 8 0	5 2 8	4 14 4	5 3 9	6 0 0
(B) .	6 8 6	7 8 0	4 10 8	5 9 0	5 2 1	4 12 9
February.						
(A) .	6 4 2	7 8 0	4 10 8	4 3 4	4 13 1	4 12 9
(B) .	5 15 9	7 8 0	4 1 4	4 2 0	4 9 9	4 12 9
March.						
(A) .	5 11 5	7 8 0	4 1 4	4 3 4	4 9 9	4 6 5
(B) .	5 11 5	7 8 0	3 10 8	3 10 11	3 14 1	4 6 5
April.						
(A) .	5 11 5	7 0 0	3 8 0	3 13 9	3 10 9	4 0 0
(B) .	5 11 5	7 0 0	3 12 0	4 3 4	3 12 5	4 0 0
May.						
(A) .	5 7 1	7 0 0	4 1 4	4 4 1	4 3 1	4 0 0
(B) .	5 7 1	7 0 0	4 8 0	4 5 6	4 4 9	4 0 0
June.						
(A) .	5 7 1	7 0 0	4 9 4	4 13 2	4 9 9	5 9 7
(B) .	5 7 1	7 0 0	4 8 0	4 11 9	4 8 1	5 9 7
July.						
(A) .	5 11 5	7 0 0	4 6 8	5 1 5	4 9 9	5 9 7
(B) .	5 11 5	7 0 0	4 8 8	5 4 3	4 9 9	5 9 7
August.						
(A) .	5 11 5	7 0 0	4 8 0	5 1 5	4 9 9	5 9 7
(B) .	5 11 5	7 0 0	4 8 0	5 4 3	4 13 1	5 9 7
September.						
(A) .	5 7 1	7 0 0	4 5 4	5 4 3	4 4 4	5 9 7
(B) .	5 7 1	7 0 0	4 6 8	5 1 5	4 9 9	5 9 7
October.						
(A) .	5 11 5	7 0 0	..	4 14 7	4 6 5	5 9 7
(B) .	5 11 5	7 0 0	4 2 8	4 15 4	4 6 5	5 9 7
November.						
(A) .	5 7 1	7 0 0	3 10 8	5 2 1	4 9 4	5 9 7
(B) .	5 7 1	7 8 0	4 2 8	5 5 3	5 0 5	5 9 7
December.						
(A .	5 7 1	7 8 0	4 5 4	5 2 1	4 10 2	5 9 7
(B .	5 7 1	7 8 0	4 12 0	5 1 5	5 0 5	4 12 9

(A)=1st Fortnight.
(B)=2nd Fortnight.

STATEMENT K.—*Fortnightly wholesale prices of Gur/Jaggery (compiled from the Fortnightly Return of Wholesale prices-current)*—contd.

(Per Indian Maund of 80 lbs.)

——	Bombay.	Ahmeda-bad.	Ahmed-nagar.	Poona.	Sholapur.	Dharwar.
	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.
1934.						
January .						
(A) .	5 7 1	7 8 0	4 10 0	4 6 2	4 6 0	4 12 9
(B) .	5 7 1	7 4 0	4 5 4	4 6 2	4 6 5	4 6 5
February.						
(A) .	5 2 9	7 4 0	..	4 11 9	4 6 5	4 0 0
(B) .	4 14 4	7 4 0	4 6 8	4 7 7	3 12 0	4 0 0
March.						
(A) .	4 12 2	7 4 0	4 2 8	4 6 2	4 3 1	4 0 0
(B) .	4 12 2	7 4 0	4 2 8	3 15 10	4 4 9	4 0 0
April.						
(A) .	4 12 2	7 4 0	4 4 0	4 11 1	4 6 5	4 0 0
(B) .	5 2 9	7 4 0	5 0 0	5 0 0	5 0 5	4 12 10
May.						
(A) .	5 2 9	7 4 0	6 12 0	6 2 3	6 14 5	5 9 7
(B) .	5 2 9	7 8 0	6 4 0	6 0 10	6 7 9	6 0 0
June.						
(A) .	5 2 9	7 8 0	6 4 0	5 15 5	6 7 9	6 0 0
(B) .	5 2 9	7 8 0	6 3 4	5 14 0	6 7 9	6 0 0
July.						
(A) .	4 14 4	8 0 0	5 14 8	5 11 3	6 11 1	6 0 0
(B) .	5 2 9	8 8 0	6 2 8	6 4 4	6 14 5	6 0 0
August.						
(A) .	5 7 1	8 8 0	7 4 0	7 4 6	7 6 0	6 0 0
(B) .	5 7 1	9 0 0	7 14 8	9 2 0	8 5 4	..
September.						
(A) .	5 11 5	9 0 0	7 12 0	8 6 9	8 2 0	8 0 0
(B) .	5 11 5	9 0 0	7 12 0	7 15 9	7 9 3	8 0 0
October.						
(A) .	5 15 9	9 0 0	7 9 4	7 12 11	7 9 8	8 0 0
(B) .	5 15 9	9 0 0	7 5 4	7 5 11	7 8 5	8 0 0
November.						
(A) .	6 4 2	9 8 0	6 12 0	7 14 4	7 4 3	8 0 0
(B) .	6 4 2	9 8 0	6 1 4	6 6 5	6 11 1	6 0 0
December.						
(A) .	6 8 6	9 0 0	5 6 8	5 11 11	6 4 5	4 12 9
(B) .	6 8 6	8 0 0	5 6 8	5 11 3	5 14 7	6 0 0

(A)=1st Fortnight.
(B)=2nd Fortnight.

STATEMENT K.—*Fortnightly wholesale prices of Gur/Jaggery (compiled from the Fortnightly Return of Wholesale prices-current)*—contd.

(Per Indian Maund of 80 lbs.)

——	Bombay.	Ahmeda-bad.	Ahmed-nagar.	Poona.	Sholapur.	Dharwar.
	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.
1935.						
January.						
(A) .	6 8 6	8 0 0	6 0 0	5 14 9	6 4 5	6 0 0
(B) .	6 8 6	9 8 0	7 10 8	6 5 9	6 1 1	7 3 2
February.						
(A) .	6 8 6	9 0 0	5 13 4	6 7 2	6 3 7	6 6 5
(B) .	6 8 6	9 0 0	5 12 0	6 4 4	6 0 8	6 6 5
March.						
(A) .	6 4 2	8 12 0	5 12 0	6 5 1	6 4 0	6 0 0
(B) .	6 2 0	8 12 0	5 9 8	6 5 1	6 4 0	6 0 0
April.						
(A) .	5 11 5	8 8 0	5 14 8	6 6 5	6 2 4	6 0 0
(B) .	5 7 1	8 12 0	6 10 8	6 14 2	6 14 5	6 12 9
May.						
(A) .	5 7 1	9 0 0	6 6 0	7 1 8	7 0 1	6 12 9
(B) .	5 7 1	9 0 0	6 6 0	6 14 2	6 11 1	6 12 9
June .						
(A) .	5 11 5	9 0 0	6 6 0	6 13 6	6 10 8	6 12 9
(B) .	5 15 9	9 0 0	..	6 14 11	6 9 0	6 12 9
July.						
(A) .	6 2 0	9 0 0	..	6 10 8	6 11 1	6 12 9
(B) .	6 2 0	9 0 0	6 6 8	6 2 3	6 14 0	6 12 9
August.						
(A) .	6 2 0	8 12 0	6 6 8	5 15 5	6 11 1	6 12 9
(B) .	6 4 2	8 8 0	..	6 6 5	6 12 9	6 12 9
September.						
(A) .	6 4 2	8 12 0	..	6 2 11	6 1 1	6 12 9
(B) .	6 4 2	8 10 0	5 6 8	6 0 2	6 1 1	..
October.						
(A) .	6 8 6	8 8 0	5 12 0	5 15 5	5 10 5	6 12 9
(B) .	6 8 6	8 4 0	5 12 0	6 2 3	5 13 9	6 6 5
November.						
(A) .	6 8 6	8 4 0	5 12 0	5 7 0	6 4 5	6 6 5
(B) .	6 8 6	8 8 0	5 13 4	4 14 7	5 0 5	6 6 5
December.						
(A) .	7 7 9	8 8 0	5 2 0	4 12 0	5 13 9	5 9 8
(B) .	7 1 2	8 12 0	5 2 0	4 8 0	5 7 1	5 9 8

(A)=1st Fortnight.
(B)=2nd Fortnight.

STATEMENT K.—*Fortnightly wholesale prices of Gur/Jaggery (compiled from the Fortnightly Return of Wholesale prices-current)*—contd.

(Per Indian Maund of 80 lbs.)

——	Bombay.	Ahmeda-bad.	Ahmed-nagar.	Poona.	Sholapur.	Dharwar.
	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.
1936.						
January .						
(A) .	6 12 10	9 0 0	4 9 4	4 2 0	4 13 1	5 9 8
(B) .	6 12 10	8 8 0	4 2 8	4 0 0	5 0 5	5 6 4
February.						
(A) .	7 1 2	8 4 0	4 0 0	3 12 0	4 9 9	5 0 0
(B) .	6 12 10	8 4 0	3 14 8	4 2 0	4 4 9	4 9 7
March.						
(A) .	6 12 10	8 4 0	3 15 4	3 15 3	3 14 1	4 12 10
(B) .	6 12 10	8 4 0	3 14 8	3 11 4	4 4 9	4 12 10
April.						
(A) .	6 8 6	8 0 0	3 13 3	4 0 0	4 3 1	4 12 10
(B) .	6 4 2	8 0 0	3 8 0	4 0 0	4 3 1	4 6 5
May.						
(A) .	6 4 2	7 8 0	3 8 0	3 12 8	3 13 3	4 0 0
(B) .	5 7 1	7 8 0	3 8 0	3 13 4	4 5 1	4 0 0
June.						
(A) .	5 15 9	7 8 0	3 5 4	4 2 0	4 4 0	4 6 5
(B) .	5 15 9	7 8 0	3 10 8	3 14 8	4 0 0	4 6 5
July.						
(A) .	5 15 9	7 4 0	3 9 4	4 4 0	4 2 0	4 6 5
(B) .	6 4 2	7 4 0	3 14 0	4 5 4	4 2 0	4 6 5
August.						
(A) .	5 7 1	7 4 0	3 13 4	4 6 8	4 4 0	4 6 5
(B) .	5 7 1	7 4 0	3 12 0	4 5 4	4 2 0	4 6 5
September.						
(A) .	5 15 9	7 2 0	3 8 0	4 2 8	3 14 0	4 6 5
(B) .	5 11 5	7 0 0	3 10 8	4 1 4	4 4 0	4 6 5
October.						
(A) .	5 11 5	7 0 0	3 8 8	3 14 8	4 4 0	4 6 5
(B) .	5 7 1	7 2 0	3 8 0	3 10 8	4 14 0	4 6 5
November.						
(A) .	5 7 1	7 2 0	3 7 4	3 10 0	4 8 0	4 6 5
(B) .	5 7 1	7 4 0	3 7 4	3 5 4	4 2 6	4 0 0
December.						
(A) .	5 7 1	7 0 0	3 6 8	3 12 0	4 0 6	4 0 0
(B) .	5 7 1	7 0 0	3 6 8	4 0 0	4 0 6	4 0 0

(A)=1st Fortnight.
(B)=2nd Fortnight.

STATEMENT K.—*Fortnightly wholesale prices of Gur/Jaggery (compiled from the Fortnightly Return of Wholesale prices-current)*—concld.

(Per Indian Maund of 80 lbs.)

——	Bombay.	Ahmeda-bad.	Ahmed-nagar.	Poona.	Sholapur.	Dharwar.
	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.
1937.						
January.						
(A) .	5 7 1	7 0 0	3 6 8	4 1 4	4 1 6	4 0 0
(B) .	5 2 9	7 0 0	3 6 8	3 12 0	3 12 6	4 0 0
February.						
(A) .	5 2 9	7 0 0	3 0 0	3 8 8	3 4 0	4 0 0
(B) .	4 14 4	6 12 0	3 1 4	3 5 4	3 10 6	4 0 0
March.						
(A) .	5 2 9	6 12 0	3 6 0	3 6 8	3 13 0	4 0 0
(B) .	5 2 9	6 8 0	3 5 0	3 4 0	3 6 6	4 0 0
April.						
(A) .	5 2 9	6 6 0	3 1 4	3 4 0	3 10 6	4 0 0
(B) .	5 2 9	6 6 0	3 2 0	3 2 8	3 8 0	4 0 0
May.						
(A) .	5 2 9	6 8 0	2 12 8	3 5 4	3 8 0	4 0 0

(A)=1st Fortnight.
(B)=2nd Fortnight.

37. Statement L below gives figures of *imports* of gur/jaggery, rab, molasses, etc., into the Bombay Presidency during the past seven years, as far as such statistics are available. It also shows the areas from which such imports were made.

STATEMENT L.

* *Imports of Gur, Rab, Molasses, Jaggery, etc., into Bombay Presidency (excluding Bombay Port) by Rail and River.*

Whence imported.	1930-31 to 1932-33.	1933-34.	1934-35.	1935-36.	1936-37.†	Remarks.
		(Standard Maunds of 82⅔lbs.)				
Bengal	Information for these years is not available as the registration of these Statistics commenced from April 1933.	..	..	..	2	
Bihar and Orissa		40,364	78,488	47,697	23,427	
United Provinces of Agra and Oudh.		903,458	942,201	1,046,197	633,642	
Punjab		3,515	360	56,094	304	
Sind and British Baluchistan		45	..	..	..	
Central Provinces and Berar		5,102	2,204	406	2,057	
Madras		166,252	226,832	124,236	70,680	
Rajputana		259	8,194	402	159	
Central India		608	2,746	17,983	12,011	
Nizam's Territory		1,434	9,520	3,639	19,484	
Mysore		31,164	80,637	119,068	69,265	
Bombay Port		1,389	3,409	3,516	1,171	
Madras Ports		..	1	2,927	1	
	Total	1,153,590	1,354,642	1,422,165	832,203	

* Compiled from the Monthly issue of the Accounts relating to the Inland (Rail and River-borne) Trade of India.

† For ten months only.

STATEMENT L—*contd.*

* *Imports of Gur, Rab, Molasses, Jaggery, etc., into Bombay Port by Rail and River.*

Whence imported.	1930-31 to 1932-33.	1933-34.	1934-35.	1935-36.	1936-37.†	Remarks.
		(Standard Maunds of 82⅔lbs.)				
Bengal	Information for these years is not available as the registration of these Statistics commenced from April 1933.	1	..	..	..	
Bihar and Orissa		518	146	21	..	
United Provinces of Agra and Oudh.		11,590	29,997	24,127	4,475	
Punjab		382	176	4	2	
Central Provinces and Berar		1,246	55	187	318	
Bombay		162,816	130,116	142,600	108,223	
Madras		10	..	6	15	
Rajputana		78	38	2	1	
Central India		1	1	1	1	
Nizam's Territory		60	429	2,013	1,597	
Mysore		..	..	1	1	
Calcutta		..	3	2	..	
Total		176,702	160,961	168,964	114,633	

* Compiled from the Monthly issue of the Accounts relating to the Inland (Rail and River-Borne) Trade of India.

† For ten months only.

‡ *Imports of Molasses into Bombay Presidency by Sea.*

Countries of consignment.	1930-31.	1931-32.	1932-33.	1933-34.	1934-35.	1935-36.	1936-37.	Remarks.
	(Standard Maunds of 82⅔ lbs.)							
British Empire and Foreign Countries.	31,932	7,813	..	..	..	..	..	Not yet available.

Compiled from the Annual Statement of the Sea-Borne Trade of British India with the British Empire and Foreign Countries for the year ending 31st March 1936, Volume I.

38. Statement M below gives figures of *exports* of gur/jaggery, rab, molasses, etc., from the Bombay Presidency during the past seven years, as far as such statistics are available. It also shows the areas to which such exports were made.

STATEMENT M.

* *Exports of Gur, Rab, Molasses, Jaggery, etc., from Bombay Presidency (excluding Bombay Port) by Rail and River.*

Whither exported.	1930-31 to 1932-33.	1933-34.	1934-35.	1935-36.	1936-37.†	Remarks.
		(Standard Maunds of 82⅔lbs.)				
Bengal	Information for these years is not available as the registration of these statistics commenced from April 1933.	7	1	1	..	
Bihar and Orissa		2	2	1	..	
United Provinces of Agra and Oudh.		168	7	33	37	
Punjab		1,375	32	2	4	
Sind and British Baluchistan		31	4	15	2,172	
Central Provinces and Berar		333,619	177,814	244,458	278,241	
Madras		1,146	271	1,024	176	
Rajputana		29,445	16,218	18,138	8,046	
Central India		28,123	10,752	12,669	23,445	
Nizam's Territory		126,098	61,990	61,980	25,467	
Mysore		12,808	6,040	1,806	3,730	
Calcutta		88	325	379	139	
Bombay Port		162,816	130,116	142,600	108,223	
Karachi		4	3	2	4	
Madras Port		49	472	12	95	
	Total	695,779	404,047	483,120	449,779	

* Compiled from the Monthly issue of the Accounts relating to the Inland (Rail and River-borne) Trade of India.
† For ten months only.

STATEMENT M—*contd.*

* *Exports of Gur, Rab, Molasses, Jaggery, etc., from Bombay Port by Rail and River.*

Whither exported.	1930-31 to 1932-33.	1933-34.	1934-35.	1935-36.	1936-37.†	Remarks.
	(Standard Maunds of 82⅔lbs.)					
Bengal	Information for these years is not available as the registration of these statistics commenced from April 1933.	..	..	..	1	
United Provinces of Agra and Oudh.		27	552	303	32	
Punjab		115	1	..	..	
Sind and British Baluchistan		..	..	1	..	
Central Provinces and Berar		18	12	11	23	
Bombay		1,389	3,409	3,516	1,171	
Madras		9	13	1	..	
Rajputana		63	161	184	48	
Central India		25	11	136	4	
Nizam's Territory		138	17	3	1	
Calcutta		83	15	28	..	
Madras Ports		..	..	13	..	
	Total	1,867	4,191	4,196	1,280	

* Compiled from the Monthly issue of the Accounts relating to the Inland (Rail and River-borne) Trade of India.

† For ten months only.

Exports of Molasses (including Palmyra and Cane Jaggery) from Bombay Presidency by Sea.

Countries of final destination.	1930-31.	1931-32.	1932-33.	1933-34.	1934-35.	1935-36.	1936-37.	Remarks.
	(Standard Maunds of 82⅔ lbs.)							
British Empire and Foreign Countries.	1,878	1,851	2,014	2,423	2,123	2,287	..	Not yet available.

‡ Compiled from the Annual Statement of the Sea-borne Trade of British India with the British Empire and Foreign Countries for the year ending 31st March 1936, Volume I.

39. The Deputy Directors of Agriculture, South Central Division (Deccan), and Gujerat report that there is a correlation between the price of gur/jaggery and Indian factory sugar in these tracts. The Deputy Director of Agriculture, Gujerat, further adds that the price of gur in his Division depends on the price of imported gur which, in turn, is related to the price of Indian factory sugar.

The Deputy Director of Agriculture, Southern Division (Karnatak), states that there appears to be little, if any, relation between the price of gur in his Division and the price of Indian factory sugar.

40. It cannot be said that Indian factory sugar is *replacing* gur to any appreciable extent in the Bombay Presidency but, owing to changes in the habits of the rural population, *e.g.*, increase in tea drinking, more sugar is being consumed. In Gujerat, the Deputy Director of Agriculture reports a tendency in the districts to utilize sugar *in place* of gur. In other Divisions, the increase of sugar consumption appears to be in addition to normal gur consumption.

41. During the last seven years, the Department of Agriculture, Bombay, has done considerable direct and indirect research in the improvement of gul by introducing and extending the following improvements in methods of cane cultivation, furnaces for juice boiling, etc., and in the introduction of improved cane varieties. These are given as under:—

(i) Sann green manuring.
(ii) Deep tillage.
(iii) Early planting.
(iv) Opening wide ridges and using 10,000 sets per acre for planting.
(v) Application of top-dressing manures in the form of sulphate of ammonia and oil cakes in three doses at three weeks, six weeks and at the time of earthing up, supplying in all 150 to 200 lbs. of nitrogen per acre.
(vi) Interculturing with bullock implements.
(vii) Crushing of cane on power crushers, for better extraction of juice.
(viii) Improved furnaces of the Poona single, double and multiple types.
(ix) Using certain clarifying agents such as washing soda, bhendi muscilage, sajjikhar, etc., for preparing better quality of gul.
(x) Introduction and extension of the improved sugarcane varieties such as E.K. 28, P.O.J. 2378, Co. 419 and Co. 290.

In the Karnatak, research work has been carried out with the object of determining the causes of the poor-keeping qualities of gur from the Malnad tract and further work in this connection is in progress.

42. In the Bombay Deccan the maximum number of open pan factories at work at any time is twelve. There are no khandsars at work in the Presidency. The outturn was from 600-700 tons of sugar and about 900 to 1,000 tons of molassein gul. During the past year, *i.e.*, 1936-1937, only two open pan factories were at work and their outturn was about 100 tons of sugar and about 150 tons of molassein gul. The reduction in numbers is due to the low rates for sugar and gul.

The Deputy Director of Agriculture, Southern Division (Karnatak), reports that open pan sugar manufacturing factory with three centrifugals worked at Bedkihal up to 1934-35 and was reported to turn out 20,000 maunds (28 lbs.) of sugar per annum. It has now been closed down.

43. The cost of manufacturing sugar by the open pan process is Rs. 5-12 per maund, including excise duty and this sugar, prior to 1st March, 1937, was sold at Rs. 6-4 per maund. (*Vide* Bulletin No. 175 of Department of Agriculture, Bombay Presidency, copy attached.)

44. The Deputy Director of Agriculture, South Central Division (Deccan), states as under:—

"There is no comparison between the factory sugar and the open pan sugar, but cultivators always compare the value of produce by the manufacture of gul per acre and the manufacture of sugar and molassein gul per acre. If the price of sugar and molassein gul be higher than the manufactrue of gul alone, they prefer to manufacture sugar and molassein gul. If the price of gul be higher, *viz.*, Rs. 6 and above per maund, they will not undertake the manufacture of sugar and molassein gul, but if the price of sugar is higher and the price of gul is lower, they would certainly prefer to manufacture sugar and molassein gul. In the past season the prices of both sugar and gul have gone abnormally low, the cane growers prefer to sell their cane to the sugar factories, instead of manufacturing sugar and molassein gul."

The Deputy Director of Agriculture, Southern Division (Karnatak), reports that the closing down of the open pan factory at Bedkihal (reference reply to question No. 42) was directly due to competition with sugar produced at the Kolhapur Factory.

45 & 46. "The introduction of the open pan process of manufacturing sugar and molassein gul was made in this Presidency from the year 1933. It was easy for well-to-do cultivators, who had power crushers, to take advantage of this open pan process by attaching a few contrifugals to their factories and this system of manufacturing sugar and molassein gul is certainly advantageous when the prices of sugarcane high and the prices of gul low. The future of the industry will depend on the fluctuations of prices of both these commodities, but it may be stated that special research in improving the quality of sugar and molassein gul, especially by the use of clarifying agents and filteration, is necessary. Last year, an experiment to utilize active carbon for filtering the juice was made at Borgaon and it proved successful both in improving the quality of sugar and in increasing the percentage of recovery. But this is a laborious process and people will not be prepared to undertake this method especially when the prices of sugar and gul are very low. But, if a central factory for manufacturing sugar from rab be organized and if the surrounding cultivators are advised to prepare their rab on their own furnaces with the help of active carbon, under the instructions of officers of the Argicultural Department, this system will surely bring more money to the cultivators. More research on the work of utilising clarifying agents is necessary".

(Extract from report by the Deputy Director of Agriculture, South Central Division, Deccan.)

47. The Excise Duty imposed in 1934, and the additional duty imposed in 1937, has, in my opinion, not affected the cane grower to any appreciable extent except in so far as he may have dealings in selling cane to the factories. The manufacturers of sugar complain bitterly against the additional duty imposed in 1937. As a result of the duty imposed in 1934, their profits were reduced by approximately Rs. 1-5 per cwt. and it is represented that the additional import causes a further reduction of As. 11 and tells heavily especially in the case of new factories. Sugar is now being sold at Rs. 9-12 to 10 per cwt. ex-factory from which an excise duty of Rs. 2 per cwt. has to be deducted, leaving a net realisation of Rs. 7-12 to Rs. 8 per cwt. to the manufacturer. This is stated to approximate very closely to the actual manufacturing cost in new factories, leaving practically no margin of profit. I have no remarks to offer on the effect on the dealer and consumer.

The Deputy Director of Agriculture, Southern Division (Karnatak), is of the opinion that the excise duty imposed in 1934, and increased in 1937, has checked the establishment of open pan factories by big cane growers and middlemen who would have undertaken such projects especially when

the price of gul is more than 16 lbs. per rupee. Indirectly the consumer is affected as he could have got sugar cheaper if prepared locally from the open pan method than factory sugar.

48. See reply to Question 47 above. I am of the opinion that the reduction of price in sugar in recent years Rs. 11 to Rs. 7-8 per maund retail price in the Bombay Presidency due to cut-throat competition among Indian sugar-factories as a result of the import duty on sugar entering India, has enabled the consumer to get his sugar cheaper.

49. In this connection, I can only draw attention to the exceedingly low price now obtained by factories for molasses, about 2-3 annas per maund, when despatched to the Government Central Distillery, Nasik, for manufacture into country liquor. This low rate is attributed to the great increase in the supply of molasses owing to the establishment of numerous new factories as a result of the protective duties.

50. A brief note on the preparation of sugarcane statistics in the Bombay Presidency is given below: —

There are three factors necessary for framing an estimate of the outturn of a crop, *viz.*: —

(1) Area under the crop,

(2) Anna-valuation (or the condition figure) of the crop,

(3) Standard yield per acre of a normal, *i.e.*, 12-anna crop.

(1) As regards area, the procedure in the Bombay Presidency is that the acreage under different crops is ascertained, in the first instance, by the Village Officers (called Patels) of the Revenue Department, and recorded in the village returns. These returns are subsequently checked by the Circle Inspectors and other Revenue Officers and compiled for the taluka. The taluka figures are then reported by the Mamlatdars (Taluka Revenue Officers) to the Collectors (District Revenue Officers) by whom they are scrutinised and consolidated into District Returns and forwarded to the Director of Agriculture. The information collected is for the surveyed villages only, *i.e.*, for which regular statistics are available. In the case of unsurveyed villages, rough estimates are framed by the Revenue Officers, as far as possible, although such area is but a fraction (only about 6 per cent.) of the total area.

(2) The second factor, *viz.*, the anna valuation or the condition figure of the crop. In the Bombay Presidency twelve annas are adopted to represent a *normal* crop. It is necessary to define here what the term "normal" means. Various definitions have been put forward at different times for the term "normal" crop, but the most generally accepted definition is "that crop which past experience has shown to be the most generally recurring crop in a series of years; the typical crop of the local area; the crop which the cultivator has a right (as it were) to expect and with which he is (or should be) content, while if he gets more he has reason to rejoice and if less he has ground to complain". Briefly, it is stated to be the average yield on average soil in a year of average character. This normal yield will not necessarily correspond with the average of a series of years' figures, which is indeed an arithmetical abstraction and may possibly never occur.

As in the case of area, the anna valuation of the crop is also made, in the first place, by the Village Officers of the Revenue Department and after being checked and worked out for the taluka, it is reported by the Mamlatdar to the Collector by whom the average anna valuation for the district is reported to the Director of Agriculture along with the acreage under the crop. The Land Revenue Department thus plays a considerable part in collecting, consolidating and furnishing data to the Department of Agriculture.

(3) As regards the remaining factor, *viz.*, the standard yield per acre of the normal crop, the Agricultural Department maintains a statement showing

figures of average yields in lbs. per acre of a 12-anna crop on a soil of 12 anna classification and during a normal season. These figures are for the principal crops in each district of the Bombay Presidency and are based on a series of carefully planned crop cutting experiments in the representative tracts. They are generally revised every five years.

After the data regarding (*a*) area and (*b*) anna valuation of a crop are received from the Revenue Department, the Agricultural Department translates these in a quantitative estimate of the crops in tons, cwts., bales, etc., with the help of the standard yield figures for the crop. The formulæ of converting the area, anna valuation and the standard yield into outturn is as follows:—

$$\text{Acreage} \times \frac{\text{Anna valuation}}{12} \times \frac{\text{Standard yield (in lbs. per acre)}}{2240} = \text{Outturn (in tons).}$$

(As 12 annas represent a normal crop and 2,240 lbs. make one ton the significance of these two figures in the above formulæ will be readily understood.)

To take a concrete example, if from a district, say Poona District, the area under the sugarcane crop is reported as 10,000 acres and the anna valuation as 8 annas, then with the aid of the standard normal value which is 8,000 lbs. of gur per acre of irrigated crop in the Poona district, the outturn of sugarcane in terms of gur for the district works out 23,810 tons as shown below:—

$$10{,}000 \times \frac{8}{12} \times \frac{8000}{2240} = 23{,}810 \text{ tons of gur.}$$

With regard to the degree of accuracy of these statistics, it may be stated that the area figures may be regarded to be fairly accurate as they are reported after actual inspection of the crop by the Revenue Officers. The anna valuation figures are in most cases mere "eye estimates" or "personal guesses" and as such highly unscientific. Then again, there is considerable difference in the conception of a "normal" crop by the officer and by the cultivator. As regards the standard yield figures, the Bombay Agricultural Department has not been able to conduct sufficiently numerous and representative crop cutting tests to justify alterations with the result that these figures have become ante-dated and unreliable in many cases. To remedy this unsatisfactory state of affairs the Department did submit to the Government of Bombay two schemes for conducting crop cutting experiments on a systematic basis—one in 1924 and another in 1927—but neither of these was sanctioned on account of financial stringency with the result that in 1929 the Agricultural Department decided with the approval of Government to discontinue the work of crop tests altogether rather than doing it in a haphazard way.

Price Statistics.—It may be stated that prices published by the Director of Agriculture are, in the first place, collected by the Revenue Department, and, are for articles of fair average quality. The prices in respect of (1) sugar and (2) gul of fair average quality, available, are as under:—

1. SUGAR: (*a*) *Wholesale.*—In the 30 articles prescribed in the fortnightly return of wholesale prices—a return introduced at the instance of the Government of India—this article, *viz.*, sugar, does not stand included; hence the wholesale prices of this article are not collected and published.

(*b*) *Retail.*—This being an article prescribed in the monthly return of average retail prices, the retail prices (per Indian maund) of this article are given in the monthly return of average retail prices. The prices quoted in this return are the averages of the retail prices (quantity in seers and chhataks per rupee) collected four times during a month, *viz.*, 23rd last day of the month, 7th and 15th (and subsequently worked into price per maund);

and, are those at which the individuals purchase this article in the bazaar from the retail dealers for domestic use.

2. GUL/JAGGERY: (*a*) *Wholesale.*—This being an article prescribed in the fortnightly return of wholesale prices, the wholesale prices of this article, *viz.*, gul are published in this return, for every fortnight, for only nine stations, *viz.*, (1) Bombay, (2) Ahmedabad, (3) Surat, (4) Dhulia, (5) Ahmednagar, (6) Poona, (7) Sholapur, (8) Bijapur and (9) Dharwar (Hubli). The prices quoted in this return are those ruling on 15th and the last day of the month, in the case of which transactions have actually taken place.

(*b*) *Retail.*—Same remarks as are given against 1 (*b*) *Sugar-retail*, above.

Besides the above, averages of retail prices per rupee, of gul only, of fair average quality, collected on the 1st and 15th day of each month for Taluka and Peta headquarter stations (where this article is prescribed) are recorded in Taluka Form No. XVIII received in the office of the Director of Agriculture from the Mamlatdars and Mahalkaries. These retail prices (in standard seers and chhataks, per rupee) are recorded in the permanent register maintained in the Director of Agriculture's office.

With regard to the degree of accuracy in the above prices, it may be stated that both the prices, *viz.*, (*a*) wholesale and (*b*) retail are accurate; but the wholesale prices are more accurate, the same having been taken from the actual records of the merchants.

51. I have no comments to offer in this written reply to the Questionnaire for Local Governments.

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(4) *Letter dated the 3rd July, 1937, from the Director of Industries, Bombay.*

I have the honour to refer to your letters Nos. 147 and 172, dated the 30th April and 11th May, 1937, respectively, addressed to the Secretary to the Government of Bombay, General Department, and to forward herewith 7 sets of answers to those questions in the Questionnaire for Local Government which come within the purview of the Department of Industries, Bombay.

ANSWERS GIVEN BY THE DIRECTOR OF INDUSTRIES, BOMBAY.

23. This Department has not rendered any special assistance to the sugar factories. Problems relating to Sugar Industry are generally dealt with in this Presidency by the Department of Agriculture. The Government of India have appointed technical experts for the Sugar Industry to help the establishment of the industry in this country, and so, all technical enquiries pertaining to Sugar Industry that come to this Department are forwarded to the Sugar Technologist at Cawnpore for disposal.

24. For the Belapur Sugar Factory Government of Bombay in 1920 acquired the necessary land for growing sugarcane. In the year 1926 Government granted a loan of Rs. 6 lakhs to the same company. This loan was repaid in due time.

27. Enclosure A shows the monthly averages of wholesale prices of sugar imported into Bombay during 1930 to 1936. Enclosure B shows the wholesale prices of Indian ready sugar called quality No. 1 for the years 1933 to June, 1937. The retail prices of sugar in the important markets of this Presidency is generally 2 to 3 annas per maund higher than the wholesale price.

28. There has not been any considerable variation between the wholesale and retail prices. As mentioned in the answer to question No. 27,

the difference in wholesale and retail prices amounts to about 2 to 3 annas per maund.

29. Enclosure C shows the figures of sugar production in the Bombay Presidency and imports and re-exports from Bombay. The normal consumption of sugar of the Presidency, therefore, can be put down at say about 142,000 tons per year.

30. Enclosure D gives a list of confectionery factories in this Presidency. All the factories use sugar and glucose as the main raw materials. Only one factory uses gur to some extent.

31. The general practice in the Bombay Presidency is for the various sugar factories to have their own estates in which they grow their own cane. In view of this the proposals in sub-questions (i) and (ii) above are not of much importance to this Presidency. As regards sub-question (iii), under question No. 29, I have given figures of total production of sugar in the Presidency and total consumption of sugar. It will be noted that there is big disparity between these two. Very good type of cane is grown in the Presidency and other factors are favourable for the starting of sugar factories. Consequently, there does not seem any reason why there should be put any artificial restriction in the matter of establishment of new factories or extensions of existing factories if the interests of this Presidency are to be taken into account.

32. Subsidiary industries depending upon sugar as a raw material exist in the Presidency, but most of the factories in question are more or less struggling for existence. As long as these factories are not put on sound footing there does not seem to be much likelihood of new factories being started for the manufacture of sweets, syrups, fruit preservation and canning, etc.

37. Bombay imports gur/jaggery chiefly from the United Provinces, Bihar, Madras and Mysore. The figure of imports of this material in the year 1934-35 was 1,354,642 maunds and in 1935-36 was 1,422,165 maunds.

38. Bombay exports gur/jaggery chiefly to Central Provinces, Rajputana, Central India, Nizam's territory and Bombay port.

1934-35—404,047 maunds. 1935-36—483,120 maunds.

39. The price of gur is more or less dependant upon the price of sugar imported or otherwise. The Department of Industries is not in touch with gur makers. The Department chiefly concerned is that of Agriculture.

40. This Department is not in a position to supply any information in this connection.

41. This Department has not done any research work in this direction. The Department of Agriculture is concerned in this matter.

42. Enclosure E gives a list showing the names of khandsari factories in this Presidency. This Department has no information with regard to other parts of this question.

46. The Department of Agriculture is concerned in this matter.

47. Almost all the cane crushed in this Presidency in the various sugar factories is grown on the estates owned by the factories. Hence, sub-question (a) does not arise so far as this province is concerned. It would appear that the Excise duty has had to be borne by the sugar manufacturers themselves and not passed on to the dealers and consumers. Actually the prices of Indian sugar have been continuously declining.

48. From 1931 to 1935 the consumer had to pay more for his sugar than he used to pay before the protective duties were imposed. Since 1935-36 the consumer is paying less for his sugar than he did when there were no protective duties. This is due to the internal competition among the sugar manufacturers in this country.

49. No.

Enclosure A.

C.i.f. Bombay prices for Java sugar.

Landing, clearing and duty should *be added.*

(Per cwt.)

Month.		H.=Highest.			L.=Lowest.			
		1931.	1932.	1933.	1934.	1935.	1936.	1937.
		Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.
January	H.	5 7 0	5 14 0	5 0 6	4 2 0	3 13 6	4 5 6	4 7 0
	L.	5 3 0	5 12 9	4 14 6	3 14 0	3 9 0	3 15 9	4 0 6
February	H.	5 12 9	5 14 3	4 14 6	4 9 0	3 13 6	4 3 0	4 6 0
	L.	5 4 0	5 12 6	4 12 6	4 2 0	3 10 6	4 0 0	4 5 0
March	H.	5 3 0	5 12 0	5 0 6	4 7 0	3 10 0	4 6 0	4 8 0
	L.	4 15 6	5 3 0	4 14 6	4 4 6	3 6 0	4 2 6	4 5 0
April	H.	5 3 0	5 2 0	4 15 0	4 5 6	3 15 0	4 4 0	5 0 0
	L.	5 0 0	4 14 0	4 12 0	4 4 0	3 11 0	4 2 6	4 12 0
May	H.	5 2 6	5 2 6	4 15 9	4 5 6	4 8 0	4 2 6	5 2 0
	L.	5 1 0	4 14 0	4 12 3	4 0 6	3 15 0	4 0 0	4 13 6
June	H.	5 5 3	5 7 0	5 4 6	4 4 0	4 2 6	3 15 0	6 0 0
	L.	5 4 0	5 0 0	5 0 3	4 0 0	4 0 6	3 13 0	..

Enclosure A—*contd.*

Month.		H.=Highest.			L.=Lowest.			
		1931.	1932.	1933.	1934.	1935.	1936.	1937.
		Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.
July	H.	5 5 6	5 3 0	5 2 0	4 2 0	4 1 0	3 14 0	..
	L.	5 4 6	5 2 0	4 15 0	4 0 0	3 14 0	3 11 6	..
August	H.	5 4 6	5 6 0	4 14 9	4 1 0	4 0 0	3 13 6	..
	L.	5 2 6	5 2 0	4 13 0	3 15 9	3 14 0	3 11 6	..
September	H.	5 7 0	5 9 0	4 14 6	3 15 9	4 4 0	3 11 6	..
	L.	5 2 6	5 4 0	4 12 6	3 12 0	4 0 0	3 9 0	..
October	H.	5 13 0	5 7 0	4 14 0	3 15 0	5 2 0	3 11 0	..
	L.	5 9 0	5 3 0	4 13 0	3 12 0	4 1 6	3 8 0	..
November	H.	5 15 6	5 3 0	4 14 0	3 14 0	4 4 0	3 12 0	..
	L.	5 10 6	5 2 0	4 8 6	3 8 0	3 15 6	3 5 0	..
December	H.	5 13 6	5 2 0	4 7 0	3 10 0	4 0 0	4 0 6	..
	L.	5 12 6	4 14 0	4 1 6	3 7 0	3 14 0	3 12 0	..

Yearly average wholesale price ruling in Bombay for Java white sugar.

Year.	Rs. A. P.	Year.	Rs. A. P.	Year.	Rs. A. P.
1930	12 8 6	1933	14 12 3	1935	13 11 6
1931	13 9 9	1934	13 4 3	1936	13 7 9
1932	15 3 6				

Enclosure B.

Prices for Indian ready sugar ruling in Bombay market (Quality No. 1).

(Per cwt.)

Month.	Quality No. 1.	1933.	1934.	1935.	1936.	1937.
		Rs. A.	Rs. A. P.	Rs. A. P.	Rs. A.	Rs. A.
January	Good	16 1	13 14 0	13 14 0	13 11	11 3
	Ordinary	16 0	13 12 0	13 4 0	12 14	10 11
February	Good	16 1	14 3 0	13 15 0	13 7	10 15
	Ordinary	16 0	13 12 0	13 8 0	12 13	10 2
March	Good	16 1	14 6 0	13 6 0	13 6	10 15
	Ordinary	15 12	14 4 0	13 4 0	12 12	10 2
April	Good	16 0	14 5 0	14 3 0	13 5	11 2
	Ordinary	15 5	14 2 0	13 7 0	12 10	10 2
May	Good	15 6	14 4 0	14 2 0	13 3	10 5
	Ordinary	15 3	14 0 0	13 15 0	12 6	9 13
June	Good	15 8	14 2 6	14 1 0	13 1	10 5
	Ordinary	15 2	14 0 0	13 14 0	12 4	9 13

Enclosure B—*contd.*

Month.	Quality No. 1.	1933.	1934.	1935.	1936.	1937.
		Rs. A.	Rs. A. P.	Rs. A. P.	Rs. A.	Rs. A.
July	Good	15 6	14 3 0	13 14 0	13 0	..
	Ordinary	15 5	14 2 6	13 10 0	11 13	..
August	Good	15 6	14 3 0	13 12 0	13 1	..
	Ordinary	15 5	14 2 0	13 9 0	11 12	..
September	Good	16 2	14 3 0	14 0 0	12 15	..
	Ordinary	15 0	14 2 0	13 12 0	12 4	..
October	Good	16 12	14 3 0	14 12 0	12 5	..
	Ordinary	15 0	14 2 0	14 2 0	11 8	..
November	Good	16 8	14 2 0	14 4 0	12 5	..
	Ordinary	13 0	13 8 0	14 0 0	11 5	..
December	Good	16 0	13 8 0	14 0 0	11 5	..
	Ordinary	12 14	13 0 0	13 13 0	11 0	..

Enclosure C.

	1934-35. Tons.	1935-36 Tons.	1936-37 Tons.
Sugar production . .	19,169	24,746	34,149
	...	90 Khandsari.	184 Khandsari.
Imports by Sea . .	80,897	82,615	5,312
Imports by Rail from other provinces . .	52,701	57,718	Not available.
Re-exports . . .	824	1,877	Do.
Export in Coasting Trade (Foreign) . . .	7,625	6,322	Do.
Exports by Rail to other Provinces . . .	6,879	8,779	Do.
Production and Imports .	152,767	165,169	...
Less Exports . . .	15,327	16,978	...
Probable Consumption .	137,440	148,191	...

Enclosure D.

List of Confectionery Factories.

(1) Messrs. Mongini, Limited, Churchgate Street, Bombay.
(2) Dr. D. Writer & Co., Arab Lane, Grant Road, Bombay.
(3) Renown Biscuit Company, Connought Road, Byculla, Bombay.
(4) Britania Biscuit Manufacturing Company, Limited, Kasara Pier Road, Bombay.
(5) British Confectionery Company, Corner of Grant Road, Bombay.
(6) Great Indian Confectionery Company, Love Lane, near Hathi Bag, Mazagaon, Bombay.
(7) Messrs. Parle Products Company, Vile Parle, Bombay, Baroda and Central India Railway.
(8) Messrs. Sathe Brothers, Biscuit Factory, Bhavani Peth, Poona.
(9) Messrs. A. A. Kalawadwalla and Company, 123, Upper Duncan Road, Bombay.

Enclosure E.

Khandsari factories in the Bombay Presidency.

	Production. 1936-37. Cwts.	Lbs.
1. Brihan Maharashtra Sugar Syndicate, Borgaon, District Sholapur, Near Aklunj	35	80
2. Shirasgaon Sugar Factory, Near Belapur, District Ahmednagar	759	49
3. Ainatpur Khandsari Sugar Factory, No. 1, Near Belapur, District Ahmednagar	964	50
4. Ainatpur Khandsari Sugar Factory, No. 2, Near Belapur, District Ahmednagar	267	94

Enclosure E—*contd.*

	Production. 1936-37.	
	Cwts.	Lbs.
5. The Deccan Sugar Factory, Narsary, District Ahmednagar	...	...
6. Kesapur Sugar Factory, Taluka Rahuri, District Ahmednagar	171	23
7. Satral Sugar Factory, Taluka Rahuri, District Ahmednagar	433	61
8. Umbergaon Sugar Factory, District Ahmednagar, Umbergaon . . .	1,015	58
9. Bhokar Sugar Factory, District Ahmednagar	45	103

(5) *Letter dated the 16th July, 1937, from the Registrar, Co-operative Societies, Poona.*

I have the honour to send herewith a copy of my No. AGC/274, dated the 14th June, 1937, containing my answers to the questionnaire accompanying your No. 172, dated the 11th May, 1937, together with six spare copies. It is regretted that, through inadvertence, copies of the answers were not sent to you.

Letter No. AGC/274 of 1937, dated Poona, the 14th June, 1937, from the Registrar, Co-operative Societies, Poona, to the Government of Bombay, General Department, Bombay.

I have the honour to request a reference to Government Memorandum, No. 8230-D, dated the 31st May, 1937, General Department, forwarding copies of letters from the Secretary, Tariff Board, No. 147, dated the 30th April, 1937, and No. 172, dated the 11th May, 1937, together with their enclosures.

2. My reply is restricted to the following questions, and I have not the information nor any useful remarks to offer on the other questions:—

Question 10.—A total contribution of Rs. 33,700 has been received during the last two years out of the Sugar Excise Fund. Rs. 10,407 were utilised for the maintenance of a special staff for organisation of cane-growers and a further amount of Rs. 5,700 for giving subsidies to sale societies towards cost of seed. The contribution placed at my disposal was not adequate. The rate of scale of the subsidy to the seed-growers of the improved variety was originally fixed at Rs. 25 per acre. It had, however, to be restricted to Rs. 15 per acre, subject to a maximum of 15 acres to an individual in a single year to meet the increased demand.

Question 16.—Four Agricultural Organisers have been appointed to look after the co-operative societies formed for the benefit of the cane-growers. The duties of these officers are to organise the cane-growers into sale societies with a view to enable them to market their sugarcane to the best advantage, to supervise generally the working of these societies and to propagate the improved variety of seed. There are at present 19 sale societies which cater to the needs of the cane-growers.

Question 25.—There are no co-operative sugar factories in this Presidency. As regards paragraph 3 of letter No. 147, dated the 30th April, 1937, from the Secretary of the Tariff Board, it may be stated that there have been complaints from the agriculturists who supplied sugarcane to the Phaltan and Maharashtra Factories. These complaints mainly refer to short weights, lopping off pieces of cane at both ends and payment of prices lower than those fixed.

(6) *Letter dated the 6th August, 1937, from the Government of Bombay, Public Works Department, Bombay.*

Subject:—NOTE ON THE IMPORTANCE OF THE ESTABLISHMENT OF SUGAR FACTORIES IN THE DECCAN CANALS AREA.

I am directed by the Governor of Bombay to forward herewith a "Note on the importance of the establishment of sugar factories in the Deccan Canals area" in connection with the article under the heading "Deccan as sugar producing area has normally no future" which appeared in the issue of the *Times of India*, dated the 18th June, 1937, for the information of the Tariff Board.

D. A.—

(1) Note referred to.

(2) Statement showing the details of the sugar factories in operation in the Deccan Canals area.

(3) Statement showing the costs of the major canals in the Deccan.

(4) Statement showing imports of jagree into the Bombay Presidency *viâ* the Great Indian Peninsula Railway.

(5) Statement showing imports of gur, rab, molasses, jagree, etc., into the Bombay Presidency *viâ* the Madras and Southern Mahratta Railway.

NOTE ON THE IMPORTANCE OF THE ESTABLISHMENT OF SUGAR FACTORIES IN THE DECCAN CANALS AREA.

The Deccan Canals derive their supplies from storage* works constructed at enormous expense in the upper valleys of the Western ghats. The canals* themselves also involve very costly construction on account of the numerous cross drainage works specially designed to pass sudden high floods and the frequent cuttings and long lengths of high banks which the undulating nature of the country necessitates and without which the canals would be extremely tortuous and of very much greater length.

These conditions are in marked contrast to those obtaining in most of the provinces of Upper India in which the source of supply is generally a perennial river and the canals traverse flat and featureless country.

It will be evident that if the costly canal systems of the Deccan are to operate on anything approaching on economic basis there must be, as far as possible, a relatively constant demand for the water not only from year to year but *throughout the year* and the crops grown must be able to stand a relatively high incidence of assessment. Though, therefore, the Deccan canals were designed primarily to protect famine tracts from recurring distress, *perennial crops* occupied, from the first, an important place in the irrigation programme.

Were the canals to be designed entirely for seasonal cultivation they would have to be twice their size and four times their length in order to utilise the whole of the available storage. This in view of the constructional difficulties explained above and the enormous transit losses would clearly be prohibitive. But quite apart from considerations of expense the fact is that the rainfall though precarious is not altogether negligible and except in years of actual famine most of the storage, as experience has proved even under existing conditions would have remained unutilised.

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* Statement of costs attached.

It must not, however, be supposed that perennial irrigation was an innovation to which the rayts were first introduced on the major Deccan canals. It has been practised for generations on bandharas and minor tanks throughout the Presidency either independently or more often in conjunction with seasonal irrigation according to pre-arranged rotational systems, one of the most perfect of such systems being the phad system of Nasik and Khandesh. The major canals merely attempted to reproduce similar conditions on a large scale and in fact the Block System of Irrigation invented in 1903 by Sir M. Visveswaraya (then Mr. Visveswaraya) to secure the proper correlation between perennial and seasonal cultivation is based on the phad system.

Far and away the most important perennial crop of the Deccan is Sugarcane. It is a hardy crop, that is to say it is not very sensitive either to over-waterings or to delayed waterings, needs a large and constant supply of water throughout the year and possesses considerable flexibility as regards date of plantation. It is also a comparatively valuable crop and pays a high water rate.

Furthermore it has been noticed that the cultivation of cane has helped, in a marked degree, the general development of the canals; so much so that cane may be regarded as the main stay of the Deccan canals and an index of their financial condition.

The following table gives the provisions made for the various classes of crops on the major canals:—

——	Opened in.	Perennial.	8 months.	Rabi.	Kharif.	Hot-weather.
Krishna	1875			Not known		
Mutho	1880	7,600	..	1,600	20,000	700
Nira Left Bank . .	1885	12,500	18,750	18,750	18,750	..
Godavari . . .	1911-12	6,400	16,640	28,800	7,600	2,560
Pravara. . . .	1923	12,360	12,360	12,360	12,360	..
Nira Right Bank . .	1929	20,000	30,000	73,500	25,000	..
Girna	1909-10	3,967 (cane)	..	3,967	3,967	..
Girna Extension . .	1920-21	3,400 (Additional Distribution not given.)	..	..	..	..

The cane areas, actually irrigated, were as follows:—

Krishna—Cane limited by water available, a maximum of 2,151 acres in 1917-18—

1932-33	1,917 acres.
1933-34	1,748 ,,
1934-35	1,320 ,,

Mutha—a maximum of 5,696 acres in 1911-12—

1932-33	4,372 acres.
1933-34	3,901 ,,
1934-35	3,551 ,,

Nira Left Bank—a maximum of 13,855 in 1927-28—

1932-33	10,132 acres.
1933-34	10,982 ,,
1934-35	10,445 ,,

Godavari—a maximum of 9,726 in 1923-24—since then falling almost without break—

1932-33	3,933 acres.
1933-34	3,118 ,,
1934-35	3,455 ,,

Pravara—a maximum in 1927-28 of 13,952 fall up to 1931-32 when area 6,040—since then—

1932-33	7,038 acres.
1933-34	10,071 ,,
1934-35	8,330 ,,

Nira Right Bank—

1932-33	3,361 acres.
1933-34	5,824 ,,
1934-35	2,961 ,,

Girna—a maximum of 1,494 in 1934-35—

1932-33	894 acres.
1933-34	1,004 ,,
1934-35	1,494 ,,

The position over the whole of the Deccan may very roughly be summarised as follows:—

The area of cane irrigated on the larger Deccan canals increased from about 3,200 acres in 1883 to 20,750 in 1919 and 29,500 in 1927. During that period the rise was more or less continuous except for a slight set back between 1919 to 1922. Up to 1922 the cane area grown was limited by the storage available. After that the supply was in excess of the demand and the cane area depended almost entirely on the gul rate. In 1919 the gul rate rose to Rs. 35 per palla and to Rs. 60 per palla in 1920 due to the world markets for sugar being restricted and the rate did not fall permanently below Rs. 30 per palla till 1926. Throughout the boom period the area of cane steadily increased up to 1927. Soon afterwards owing partly to overproduction and partly to the flooding of the market with cheap sugar the gul rates slumped to low levels and have remained there ever since.

More recently a third factor has operated in depressing the gul rates still further and that is the production of gul in United Provinces, the Nizam's State and Mysore and increased production in Kolhapur.

Statements giving imports of Jagree into Bombay Presidency *viâ* the Great Indian Peninsula Railway and the Madras and Southern Mahratta Railway are attached. The present rate is Rs. 10-10-10 per palla.

The steady decline of cane cultivation since 1927 has received the most anxious consideration of Government. In 1927 Mr. C. H. Bristow, I.C.S., was appointed on special duty to enquire into the matter. His main recommendations were that the establishment of sugar factories should be encouraged and an irrigation cess levied to tap the "unearned increment" accruing to landholders in the canal tracts owing to the irrigation facilities made available by the construction of the canals. Again in 1931, as a result of a resolution moved by a non-official member of the Legislative Council, Government appointed a Committee consisting of official and non-official members presided over by Mr. B. S. Kamat to consider and report as to how the financial aspect of irrigation works in the Deccan could be improved. The principal recommendation of this Committee was also the establishment of sugar factories in the Deccan specially on the Nira Right Bank canal. Government accepted the recommendation and as a result of the orders issued in Government Resolution No. 6054/27, dated the 5th September, 1932, as modified by Government Resolution No. 6054/27, dated the 7th June, 1933, seven sugar factories are at present in operation and one more is in the process of being established.

The accompanying statement gives details of the factories. It will be seen from column 5 of the statement that the statement made by Mr. Mulji in regard to the Visapur tank is incorrect. Only three-fourths of the available storage have been reserved for the Company's sugarcane cultivation, nor is a special reduced rate being charged for the water.

It is undoubtedly true that the Deccan produces the finest jaggery in the country but under present conditions it is hopeless to expect any substantially recovery in gul prices though everything is being done to encourage the ordinary irrigator who grows cane for making gul. It is, therefore, only in the continuance and the consolidation of the Deccan Sugar Industry that the future of the canals lies.

It only remains to add that though Sugar Companies are afforded certain facilities on the Deccan canals it is *not* at the expense of the ordinary irrigator and that despite the guarantees made to the Companies in regard to supply ample provision exists for seasonal cultivation on each canal, a provision in fact which greatly exceeds the normal demand.

Statement showing the costs of the major canals in the Deccan.

Name of canal system.	Cost of Head Works.	Cost of canals, branches and distributaries.	Total cost (Cols. 2 and 3).	Storage capacity of Head Works in Million cubic feet.
1	2	3	4	5
	Rs. in lakhs.	Rs. in lakhs.	Rs. in lakhs.	
Pravara . . .	84	66	150	10,086
Godavari . . .	34	71	105	7,763
Mutha	39	30	69	5,703
Nira—				
Lloyd Dam . .	172	391	586	24,198
Old Bhatgar Dam .	23			
Girna	13	7	20	1,464
Krishna . . .	...	9	9	...

Statement showing Imports of jagree into Bombay Presidency viâ Great Indian Peninsula Railway.

Month.	Total Imports.				Imports from United Provinces.			
	1933-34.	1934-35.	1935-36.	1936-37.	1933-34.	1934-35.	1935-36.	1936-37.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
April	92	10	789	591	39	9	723	586
May	34	350	478	85	*Nil*	153	432	75
June	8	6	333	63	*Nil*	*Nil*	319	53
July	42	55	135	18	30	*Nil*	88	18
August	24	321	115	18	19	121	100	18
September	4	132	75	*Nil*	4	42	42	*Nil*
October	11	167	99	120	*Nil*	27	9	25
November	253	712	372	103	*Nil*	12	32	14
December	1,036	1,175	927	268	533	520	393	51
January	1,259	2,032	858	1,175	1,221	1,693	801	847
February	537	544	819	847	510	476	796	607
March	38	777	1,035	601	37	718	1,031	481
Total	3,338	6,281	8,035	3,889	2,393	3,771	4,766	2,775

Statement showing imports of Gur, Rab, Molasses, Jaggery, etc., into the Bombay Presidency via the Madras and Southern Mahratta Railway.

From	1933-34.	1934-35.	1935-36.	1936-37.
	Maunds.	Maunds.	Maunds.	Maunds.
Assam	...	...	...	...
Bengal (excluding Calcutta)	...	...	...	...
Calcutta	...	...	...	...
Bihar and Orissa	...	...	...	...
United Provinces	...	1,939	96	...
Punjab	...	...	...	...
Sind and British Baluchistan (excluding Karachi)	...	...	...	...
Karachi	...	...	...	...
Central Provinces and Berar	...	...	...	...
Madras (excluding Madras ports)	163,578	209,750	119,497	107,640
Madras ports	...	...	2,927	4
Rajputana	...	...	...	...
Central India	...	...	...	...
Nizam's territory	9	1,230	40	1,372
Mysore	31,162	80,659	119,055	82,622
Kashmir	...	...	...	...
Total	194,749	293,578	241,615	191,638
Total in tons (one ton=28 maunds)	6,955	10,485	8,629	6,848

Statement showing the details of the Sugar Factories in operation in the Deccan Canals area.

Name of the Company.	Name of the canal.	Date of the Company's first application for the supply of water.	Guarantee for the supply of water for cane asked for.	Area of cane for which the supply of water has been guaranteed.	Capacity of the Company's plant in tons per day.
1. The Belapur Company, Ld.	Pravara Left Bank Canal.	The Company's old estate is governed by the lease, dated 8th June, 1920. For the 'First or 1935 Extension Scheme' the first application was dated 2nd June, 1932.	Old estate : ⅓rd of the area declared by the Collector of Ahmednagar as suitable for cane cultivation. First or 1935 Extension Scheme—750 acres.	Old Estate—2,000 acres at present. First or 1935—Extension Scheme—750 acres.	600 tons.
2. The Maharashtra Sugar Mills, Ltd.	Do. . .	2nd September, 1933 .	750 acres in the initial stage and 1,250 acres at the maximum development. The Company now requests for guarantee for 2,000 acres now and 3,000 acres ultimately.	1,250 acres . .	600 tons.
3. The Saswad Mali Sugar Factory, Limited.	Nira Right Bank Canal.	17th October, 1932 .	700 acres in the initial stage and 1,200 acres at the maximum development.	1,200 acres . .	300 tons.
4. The Phaltan Sugar Works, Ltd.	Nira Right Bank Canal.	19th January 1933 .	Guarantee for an area of cane for a factory of daily 400 tons to be eventually increased to 550 tons.	2,500 acres . .	500 tons.

Statement showing the details of the Sugar Factories in operation in the Deccan Canals area—contd.

Name of the Company.	Name of the canal.	Date of the Company's first application for the supply of water.	Guarantee for the supply of water for cane asked for.	Area of cane for which the supply of water has been guaranteed.	Capacity of the Company's plant in tons per day.
5. Messrs. Marsland Price & Co., Limited.	Nira Left Bank Canal.	30th May, 1933 . .	400 acres in the initial stage and 1,400 acres at the maximum development.	1,400 acres . .	300 tons.
6. The Ravalgaon Sugar Farm, Ltd.	Girna Canal.	21st June, 1933 . .	1,000 acres in the initial stage and 1,400 acres at the maximum development.	1,400 acres . .	200 tons.
7. The Belvandi Sugar Farm Limited.	Visapur Canal	20th July, 1932 . .	500 acres in the initial stage and 1,000 acres at the maximum development.	The guarantee is that a supply not exceeding three-fourths of the quantity of water available in storage in the Visapur tank will be reserved every year for sugar cane cultivation.	200 tons.
8. The Brihan Maharashtra Sugar Syndicate, Limited.	Nira Right Bank Canal.	20th June, 1934 . .	1,250 acres	It is proposed to guarantee a supply of water for 1,250 acres.	The Company has not started its factory yet. The proposed capacity is 250 tons to be raised to 600 tons.

NOTE.—In no case an assurance has been given that Government will increase the guranteed sugar cane area. Government may consider each such case on its merits but are not committed in any way to grant the increase in the guaranteed area.

(7) Letter dated the 28th October, 1937, from the Government of Bombay, General Department, Bombay.

Subject:—PROTECTION—SUGAR INDUSTRIES, BOMBAY PRESIDENCY.

I am to refer you to Mr. Sorley's letter No. 8230-D., dated the 17th July, 1937, in reply to your enquiry whether the Local Government intends to supplement with an expression of their views the replies sent by the Director of Agriculture, the Director of Industries, and the Superintending Engineer, Deccan Irrigation Circle, to the questionnaire issued by the Tariff Board.

The Government of Bombay have now considered the matter officially and I am directed to state that their views are as follows.

2. Government are in general agreement with the replies given by their officers mentioned above to the Tariff Board's questionnaire, subject to the following remarks:—

(a) *Question 24* which calls for information regarding the particular assistance rendered by Government to individual sugar factories in this province has been briefly answered by the Superintending Engineer, Deccan Irrigation Circle, the Director of Agriculture, and the Director of Industries. Government would like to supplement the replies given by these officers by pointing out that the following special facilities are also provided for by the Bombay Irrigation Department in the agreements with the Sugar Companies:—

(1) Where the whole irrigation of a distributary or outlet is in the Company's lands the control of the internal distribution of water on such distributary or outlet, as the case may be, is left to the Company.

(2) One-third of the total area of the Company's lands and one-half of the area in any drainage catchment can be under cane cultivation at one time (excluding overlap).

(3) The Company is allowed any system of bunds and irrigation units as may be convenient to it so as to suit the configuration of the Company's lands provided that—

(*a*) each irrigation unit shall not exceed two acres in area;

(*b*) the outermost bund round any plot of land under sugarcane cultivation shall be of the dimensions given in the Bombay Canal Rules for the time being in force;

(*c*) the Company shall agree to pay the cost of re-demarcation of their leased lands on the expiry of the lease thereof, so as to accord with the revenue records.

(4) The supply of water for cane crops is guaranteed for a period of 30 years from the date of the execution of the agreement and the Company is not required to take water according to the block system for crops other than cane.

(5) (*a*) The methods followed as regards crop measurement and assessment are the same as in the case of the local irrigators; but with a view to simplifying the procedure regarding applications for water the Company is allowed to submit *consolidated applications* for the supply of water in the requisite form prescribed by the Bombay Canal Rules, 1934, or such other form as Government may, from time to time, prescribe specifying therein the survey numbers or the Company plot numbers, in which, and the dates from which, water for irrigation will be required and subject to the condition that the applications for any survey number or plot is submitted at least one month prior to the date on which it is to be irrigated.

(*b*) To allow of equitable distribution of water in accordance with the general requirements the Company has to report not later than

the tenth of each calendar month, for each outlet the area of the standing cane and the cane to be planted and removed during each irrigation month (*i.e.*, from the fifteenth of one calendar month to the fourteenth of the next following calendar month).

(6) The Company is *exempt* from providing sureties as required by the Bombay Canal Rules for the time being in force.

(b) *Question 29* asks, *inter alia*, for an estimate of the normal consumption of sugar in the province. As the estimates given by the Superintending Engineer, Deccan Irrigation Circle, and the Director of Industries, respectively, in their replies to this question differ considerably, Government had to decide which estimate should be considered more reliable. On inquiry they find that the estimate of Rs. 142,000 tons per annum given by the Director of Industries is nearer the mark than the estimate of 37,000 tons given by the Superintending Engineer. The Director of Agriculture has since reported that according to the information at his disposal, the total annual consumption of sugar in the whole of the Bombay Presidency (including the Indian States within its geographical boundaries) is about 100,000 tons and Government think that this may safely be taken to represent the potential demand for the province which would have to be met by the local sugar industry if conditions were fully favourable.

(c) *Question 34* which asks if there is any material *other than cane* from which gur/jaggery is produced in this province has been answered in the negative by the Superintending Engineer, Deccan Irrigation Circle, and the Director of Agriculture. This is substantially correct. The production of gur from toddy is restricted to a few coastal villages of Kanara District and is insignificant in quantity. It is not an economic product and is used purely for domestic consumption. In view of its prohibition policy, Government are interested in developing this use of toddy.

(d) *Question 42* asks for the number of (i) open-pan factories *and* (ii) "khandsaris" in the province. The Director of Agriculture has stated in his reply that there are *no* "khandsaris" at work in this Presidency at present; whereas the Director of Industries has furnished a list of nine "khandsari" factories. Government have since ascertained that the nine factories referred to by the Director of Industries are not actually "khandsaris" of the type recognised in the United Provinces but only small "open-pan" factories as distinguished from "vacuum-pan" factories.

3. Coming to the main question referred to the Tariff Board for inquiry, *viz.*, whether the protection to be given to the Sugar Industry during the period 31st March, 1938, to 31st March, 1946, should be the same as at present or should be greater or smaller, I am to say that the Government of Bombay hold the view that the economic interests of this Presidency demand that the protection for sugar during the period in question should, under no circumstances, be less than Rs. 7-4 per cwt. *plus* an equivalent of the sugar excise duty which may be levied from time to time.

The chief reasons which have led the Local Government to reach this conclusion are as follows:—

(1) The conditions in the Bombay Deccan—particularly in the irrigation zone—are still very favourable to the cultivation of sugarcane as an ideal crop round which to build up a sound system of agricultural development. The combination of favourable climate, good water supply, and suitable soil still enables the Deccan, in spite of competition from other provinces like the United Provinces and Bihar, to grow the finest crops of high class sugarcane in India. For instance, the average outturn of cane (P.O.J. 2878, E.K. 28, Co. 290, 419, etc.) of the Belapur Company or Maharashtra Sugar Mills is about 45 tons per acre and the average percentage of sugar recovery is 11·5 for the whole of the season. The average outturn and

recovery are based on the sugarcane crop of over 3,000 and 2,000 acres and this kind of tonnage or sugar recovery is, as far as Government are aware, not seen in any other part of India. Government understand that the sugar recovery percentage of Upper India has been recently increased up to 9·5 but as almost all the cane is purchased from the cultivators, the accuracy of cane weight cannot be guaranteed. In the Bombay Deccan, however, most of the cane is grown by the sugar factories and hence both the weight of sugarcane and percentage of recovery are recorded very accurately. This high standard of the sugarcane crop in the Deccan can be maintained only as long as the existing rate of protective tariff prevents the dumping of high class Java sugar on the Bombay market. Though the high grade sugar produced by the Deccan factories can successfully compete in the Bombay market with the products of the United Provinces and Bihar factories, it cannot survive competition from the same grade of Java sugar.

(2) The probable average consumption of sugar in this Presidency (including the Indian States within its geographical boundaries) is at least 100,000 tons per annum while the total quantity of sugar produced by all the factories operating in the province during 1936-37 amounted at the most to about 50,000 tons only. The province's demand is thus at least twice the existing supply and there is consequently ample scope for a steady expansion of the Industry without any immediate danger of over-production as in other provinces. So far as water facilities, and an intensive cultivation of high class varieties of sugarcane at moderate cost are necessary for a profitable extension of the operations of sugar factories in this Presidency, the Irrigation and Agricultural Departments of the Bombay Government are ready to help. The Director of Agriculture reports that there is much land at present not cultivated by cane which research work at the Sugar Cane Research Station, Padegaon, has shown to be quite suitable for cane cultivation under improved methods of manuring, irrigation, etc. Similarly, if the new Khadakwasla Dam project of the Bombay Irrigation Department goes through in the near future, sugar production in this province is likely to increase by about 20,000 tons per annum. But no such help from the Agricultural and Irrigation Departments is likely to be of much avail if a lowering of the protective tariff at this stage of the Industry deprives the sugar manufacturers of a reasonable margin of profit on account of the dumping of Java sugar on the Bombay market.

(3) It is often argued that the continued levy of a high protective duty on the import of an article of daily use like sugar is unfair to the consumer. It is true that when protection was first given to the industry in 1931 the consumer did have to pay for his sugar a higher price than before protection. At present however, owing to internal competition, he is paying actually less for Indian sugar than he had to pay for Java sugar in 1930 (*i.e.*, *before* the protective duty was levied). The index figures of retail prices of refined sugar in Bombay during the year 1930 and the first six months of 1937 show that whereas the average retail price of *imported* sugar during 1930 was Rs. 10-11-5 per Indian maund, the retail price of *Indian* sugar during the months of April, May and June, 1937, was Rs. 9-13-3 per maund. Government do not, however, wish to argue from this fact alone that the consumer has not suffered at all on account of protection. Even if it were proved that

the interests of the average consumer of sugar are adversely affected by the protective tariff, the question is whether these interests should be allowed to override the interests of the indigenous sugar industry.

The development of sugar factories on the right lines means employment for a large number of agricultural labourers on fairly good wages, and an improvement in the standard of life in the rural area in which the factory is situated. The closing down or even a curtailment of the activities of such factories is, therefore, bound to result in unemployment and a general impoverishment of the surrounding villages. The Director of Agriculture estimates that the existing eight sugar factories in this province which cultivate cane on about 15,000 acres employ at present about 5,000 men and 3,500 women on the cultivation side and about 4,000 men on the factory side. These numbers would be doubled if the whole requirements of the province in respect of sugar were to be supplied from its own area.

Another very important factor to be considered in this Presidency is that the Bombay Government have incurred capital expenditure amounting to something over nine crores of rupees on the construction of a network of perennial irrigation canals in the Deccan and the best way in which this enormous capital outlay can be employed with a lighter burden on the general tax-payer is by the consolidation of the sugar industry on the Deccan canals. Any lowering in the existing demand for canal water on account of the closing down or curtailment of the activities of one or other of the sugar factories operating in this area would mean a recurring loss to the provincial tax-payer.

It is clear from this that, so far as this province is concerned, whenever the interests of the consumer of sugar are in conflict with the general economic advantage of the rural population as a whole, they should, at any rate for the present, and until the stabilisation of the indigenous sugar industry is assured by protection or otherwise, be subordinated to the interests of the indigenous sugar industry which occupies an important place in the rural economy.

(4) The Government of Bombay are satisfied that a continuance of protection for the sugar industry to the same extent as at present will not have the effect of killing any other equally important rural industry in the Presidency. The only industry which may be considered in this connection is the manufacture of gur on a commercial scale. So far as the gur-producing areas of the Karnatak and Gujarat are concerned, they cater chiefly for the local demand and an increased production of sugar by the factories in the Deccan Canal area is not likely to affect them seriously. The position of the gur industry in the Deccan also is not likely to be adversely affected by the increased production of manufactured sugar, because the purposes for which gur is ordinarily used by the villagers cannot generally be served by sugar, either of inferior or superior quality, nor is change of taste in this matter likely to be important in the near future, even assuming that increased production of sugar brings the price nearer to the price of gur. It follows from this that any *reduction* in the output of sugar in this Presidency is not likely to improve the prospects of the gur industry and there is therefore no case for a lowering of the protective tariff on sugar with a view to giving an impetus to the gur industry of the Deccan which is not in need of such artificial help.

The Government of Bombay consider that in the circumstances stated above there is a very strong case, so far as this province is concerned, for continuing protection to sugar at the existing rate for the whole of the remaining period of eight years commencing 31st March, 1938.

4. It has come to the notice of Government that there was recently some ill-conceived criticism about the possibilities of sugar manufacture in the Deccan by the President of the All-India Sugar Merchants' Conference and that this criticism was effectively met by Professor V. G. Kale, Working President of the Mahratta Chamber of Commerce and Industries, Poona. Though this criticism has no direct bearing on the question of protection for the Indian Sugar Industry, the Government of Bombay would like to emphasise its view that this province must be allowed to develop its sugar and gur manufactures in its own way, according to its special circumstances, and that steps to *centralise* sugar manufacture in any one part of India will not meet with its acceptance.

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(8) *Letter dated the 17th July, 1937, from the Director of Agriculture, Bombay.*

At my meeting with the Tariff Board on the 15th instant, I was asked to supply certain information regarding the average rainfall in the main sugarcane growing tracts of the Bombay Presidency. I enclosed herewith, in triplicate, a statement giving the desired data. I also enclose five statements regarding the cost of cultivation of sugarcane as it would be for a grower who grew cane to supply to the factories, *i.e.*, all items regarding manufacture of gul, etc., are omitted. These five statements are:—

(*a*) Cost of cultivation of sugarcane in the year 1930.
(*b*) Cost of cultivation of sugarcane on the Godavari canals, 1936-37.
(*c*) Cost of cultivation of sugarcane on the Pravara canals, 1936-37.
(*d*) Cost of cultivation of sugarcane on the Nira Left Bank canals, 1936-37.
(*e*) Cost of cultivation of sugarcane on the Mutha canals, 1936-37.

I trust that this information is what is desired by the Board.

With regard to the information supplied by me subsequent to the forwarding of my written evidence, I might mention that the approximate acreage under improved and *deshi* varieties of sugarcane in each district of the Bombay Presidency, during the last seven years, was sent to you under my endorsement No. 140-B., dated the 28th June, 1937, and in reply to question No. 11 of the questionnaire for Local Governments. I forwarded copy of the last Annual Report of the Padegaon Sugarcane Research Station and a statement giving reference to sugarcane work done by the Department in the Annual Reports of the Department from 1929 to 1935 with my letter No. 140-B., dated the 9th July, 1937. At our meeting the other day you stated that these had not been received by you. Would you please let me know if they have come to hand now as, if not, I am prepared to send copies.

Average rainfall of different tracts.

	Inches.	
(1) Gujarat—		
1. Surat	40·97	This is the only tract where sugarcane is grown on a large scale.
2. Ahmedabad . . .	28·83	
3. Kaira	32·85	
4. Broach	30·69	
5. Godhra	38·78	
6. Thana	97·50	

Average rainfall of different tracts—contd.

	Inches.	
(2) Deccan—		
1. West Khandesh	22·54	
2. East Khandesh	29·06	
3. Nasik	29·98	These are the only tracts where sugarcane is grown on a large scale.
4. Ahmednagar	22·33	
5. Poona	27·11	
6. Sholapur	28·45	
7. Satara	39·75	
(3) Karnatak—		
1. Belgaum	50·13	These are the tracts of sugarcane.
2. Dharwar	32·88	
3. Bijapur	20·96	
4. Kolaba	85·29	
5. Ratnagiri	100·00	
6. Kanara	126·12	

Cost of cultivation of sugarcane in the year 1930.

	Rs.	A.
1. Preparatory tillage	40	0
2. Bunding, making channels, etc.	12	8
3. Cost of sets	60	0
4. Cutting, supplying, arranging and planting sets	11	0
5. Weeding	20	0
6. Earthing up	14	0
7. Bulky manure	60	0
8. Top-dressing manures (Sulphate of Ammonia Rs. 18 and Oil-cake Rs. 175)	193	0
9. Application of manures	4	0
10. Water rates	50	0
11. Labour of irrigation	20	0
12. Cutting of cane	20	0
13. Interest	20	0
14. Supervision	20	0
15. Rent of the land	30	0
Total	574	8

Cost of cultivation of sugarcane on the Godavari canals during the year 1936-37.

Serial No.	Items.	Rs.	A.
1.	3 Ploughing	18	0
2.	Clod crushing and Harrowing	1	8
3.	Opening furrows	2	0
4.	Putting Bunds and Channels, planting, etc.	13	0
5.	Seed sets 10,000	45	0
6.	Manures—		
	Farmyard manure 20 carts at Rs. 1-8	30	0
	Sulphate of Ammonia one bag	11	6
	Groundnut-cake 5 pallas at Rs. 7	35	0
	Castor-cake 10 pallas at Rs. 5-12	57	8
	Powdering cake and application of top-dressings	4	0
7.	Weedings 5 times	6	8
8.	Earthing up	11	0
9.	Irrigation charges including overlapping and local cess	53	2
10.	Irrigating charges	15	0
11.	Rent of land	24	0
12.	Supervision	20	0
13.	Cutting of cane	20	0
14.	Interest	14	0
	Total	381	0

Cost of cultivation of sugarcane on the Pravara canals during the year 1936-37.

Serial No.	Items.	Rs.	A.
1.	Ploughings 3 at 6, 5 and 5	16	0
2.	Loading and harrowing	1	0
3.	Opening furrows	2	0
4.	Putting bunds and channels, spreading manure and planting	16	0
5.	Farmyard manure 20 carts at Rs. 2 per cart	40	0
6.	Sets 10,000 at Rs. 4 per 1,000 sets	40	0
7.	Weedings 4	6	0
8.	Sulphate of Ammonia 224 lbs.	11	6
9.	Groundnut-cake 8 pallas at Rs. 6 per palla	48	0
10.	Castor-cake for earthing up 11 pallas at Rs. 5-8 per palla	60	8
11.	Application of above fertilisers, powdering, etc.	3	0
12.	Tagarni	2	4
13.	Earthing up	11	0
14.	Cutting of cane	20	0
15.	Land rent	30	0
16.	Irrigation charges including local cess and overlap	53	2
17.	Irrigation charges	15	0
18.	Supervision	20	0
19.	Interest at 12 per cent. per year on half the sum up to harvesting	15	6
	Total	410	10

Cost of cultivation of sugarcane on Nira Left Bank canal during the year 1936-37.

Serial No.	Items.	Rs.	A.
1.	3 Ploughings and ridging, etc.	18	0
2.	30 carts of farmyard manure at Rs. 1-8 per cart	45	0
3.	Putting bunds, spreading farmyard manure, making beds, cutting sets and planting, etc.	15	0
4.	Cost of 10,000 sets at Rs. 4 per 1,000 sets	40	0
5.	5 to 6 weedings	10	0
6.	One bag of Sulphate of Ammonia	12	0
7.	Tagarni	2	0
8.	3 Khandis safflower-cake at Rs. 15 per khandi	45	0
9.	5 Khandis castor-cake at Rs. 12 per khandi	60	0
10.	Application of oil-cakes	4	0
11.	Earthing up	10	0
12.	Irrigation labour charges	15	0
13.	Irrigation dues	53	2
14.	Rent of land	20	0
15.	Supervision	20	0
16.	Cutting of cane	20	0
17.	Interest	25	0
	Total	414	2

Cost of cultivation of sugarcane on the Mutha canals during the year 1936-37.

Serial No.	Items.	Rs.	A.
1.	Preparatory tillage	20	0
2.	Ridging and planting	22	0
3.	Cost of sets	25	0
4.	After care, including earthing up	20	0
5.	Bulky manure	40	0
6.	Top-dressing (Sulphate of Ammonia Rs. 12 and oil-cake Rs. 90)	102	0
7.	Irrigation charges	53	0
8.	Local cess	3	5
9.	Labour for watering	6	4
10.	Cutting of cane	18	0
11.	Rent of the land	20	0
12.	Miscellaneous labour charges	5	0
13.	Supervision charges	10	0
14.	Interest	15	0
	Total	359	9

(9) *Letter dated the 24th July, 1937, from the Commissioner of Excise, Bombay.*

CONSUMPTION OF MOLASSES IN THE BOMBAY PRESIDENCY.

With reference to your letter No. 303, dated the 18th June, 1937, addressed to the Government of Bombay in the General Department on the subject noted above, I have the honour to state that in this Presidency there is only one Distillery where molasses are used in the manufacture of country, rectified and denatured spirits. A statement showing the total quantity of molasses consumed at this Distillery for the last three years and the price paid for it is enclosed.

2. There are no other concerns in this Presidency, manufacturing rectified and denatured spirit.

Statement showing the quantity of liquid molasses consumed at the Distilleries in the Bombay Presidency during each of the last three financial years 1934-35 to 1936-37.

No. of Distilleries.	Sources of supply.	1934-35.		1935-36.		1936-37.		Remarks.
		Quantity of molasses consumed.	Price paid for molasses consumed.	Quantity of molasses consumed.	Price paid for molasses consumed.	Quantity of molasses consumed.	Price paid for molasses consumed.	
		Mds. Srs.	Rs. A. P.	Mds. Srs.	Rs. A. P.	Mds. Srs.	Rs. A. P.	
1 (Government Central Distillery, Nasik Road.)	The Belapur Co., Ld., Harigaon, Ahmednagar District.	86,309 32	50,870 10 5	87,399 15	47,592 12 0	91,027 31	52,859 6 2	
	The Maharashtra Sugar Mills, Ltd., Belapur Road, Ahmednagar District.	5,366 38	3,548 14 10	8,847 9	5,050 13 1	46,924 2	22,525 0 1	
	The Belwandi Sugar Farm, Belwandi, Ahmednagar District.	..	..	..	..	13,312 15	7,927 1 10	
	Total .	91,676 30	54,419 9 3	96,246 24	52,643 9 1	151,264 8	83,311 8 1	

Replies from the Government of Madras.

(1) *Letter dated the 3rd June, 1937, from the Government of Madras Development Department, Madras.*

SUGAR TARIFF BOARD ENQUIRY.

With reference to paragraph 2 of your letter No. 147, dated the 30th April, 1937, on the above subject, I am to enclose two statements showing the retail prices of jaggery and sugar from the 15th September, 1932, up-to-date supplied by the Triplicane Urban Co-operative Society Stores and also two other statements showing the prices of sugar and jaggery from 1933 extracted from the daily price list of Messrs. Parry & Co., Ltd. The Director of Industries has also figures of retail prices of sugar and jaggery from the 24th January, 1912, to the 29th December, 1929, in the case of jaggery and from the 24th January, 1912, to the 3rd September, 1926, in the case of sugar. He is endeavouring to obtain figures from 1926 and 1929 to 1932. In case he succeeds another set of statements will be forwarded showing alteration in prices from 1912 to 1937 inclusive.

2. With reference to paragraph 3 of your letter, I am to say that the Government of Madras had had no complaints that the canegrowers were being imposed upon by factory owners by under-weighment or in any other manner suggested in your letter. But in reply to a reference recently made on the subject, they have received reports from some of the subordinate officers to the effect that there have been malpractices of the kind here and there but that it is impossible to obtain confirmation. The Madras Government presume that the Tariff Board is not anxious to be placed in possession of such unconfirmed statements the truth of which no one has investigated or can vouch for.

Statement showing the price per viss of sugar.

(Prices have been collected from the Triplicane Urban Co-operative Society.)

N.B.—The dates noted against the prices are those on which the prices have altered.

Date of alteration.	Price.	Date of alteration.	Price.
	As. P.		As. P.
1932.		*1933*—contd.	
15th September .	7 0	30th March . .	6 8
27th October . .	7 3	5th April . .	6 6
10th November . .	7 0	18th May . .	6 6
1st December . .	7 3	4th June . .	6 9
15th December . .	7 6	5th June . .	7 0
22nd December . .	8 0	22nd June . .	6 9
1933.		29th June . .	6 8
4th January . .	7 9	6th October . .	6 9
12th January . .	7 3	16th October . .	6 10
21st January . .	7 0	19th October . .	7 0
1st February . .	6 9	26th October . .	6 10
9th February . .	6 6	1st November . .	6 9
23rd February . .	6 8	16th November . .	6 8
23rd March . .	6 6	23rd November . .	6 6

Statement showing the price per viss of sugar—contd.

Date of alteration.	Price. As. P.
1934.	
1st March	6 4
2nd March	6 6
27th March	6 3
23rd April	6 4
21st June	6 3
27th July	6 4
20th September	6 6
18th October	6 3
29th November	6 4
13th December	6 3
1935.	
7th January	6 0
31st January	6 3
7th March	6 0
11th April	5 11
18th April	6 0
30th May	6 2
20th June	6 3
5th October	6 6
7th October	7 0
31st October	6 9
7th November	6 6
14th November	6 3
5th December	6 2
12th December	6 0
1936.	
5th March	5 10
19th April	6 0
4th June	5 10
18th June	5 9
11th July	5 10
20th August	5 9
27th August	5 6
22nd October	5 4
29th October	5 6
1937.	
21st January	5 4
28th January	5 3
15th February	5 0
22nd February	4 10
4th March	5 3
11th March	5 0
15th March	4 9
25th April	5 0
6th May	4 9

Statement showing the price per viss of jaggery.

(Prices have been collected from the Triplicane Urban Co-operative Society.)

N.B.—The dates noted against the prices are those on which the prices have altered.

Date of alteration.	Price. As. P.
1932.	
15th September	4 3
5th October	4 0
1933.	
21st January	3 6
16th March	3 3
23rd March	3 0
30th March	2 9
13th April	2 6
16th April	2 9
22nd June	3 0
29th June	3 3
5th July	3 0
27th July	3 3
28th December	3 6
1934.	
24th January	3 3
1st March	3 0
22nd March	2 9
19th April	3 0
17th May	2 9
24th May	3 0
5th June	3 3
28th June	3 6
5th July	3 9
23rd July	4 0
23rd August	4 3
27th August	4 6
31st August	5 3

Statement showing the price per viss of jaggery—contd.

Date of alteration.	Price. As. P.
1934—contd.	
3rd September	5 6
6th September	5 9
13th September	6 0
20th September	5 9
24th September	5 6
27th September	5 3
11th October	5 6
25th October	5 3
1st November	5 0
6th December	4 6
13th December	4 3
27th December	4 0
1935.	
24th January	3 9
11th February	4 0
16th May	4 3
23rd May	4 6
23rd August	4 3
3rd October	4 0
24th October	4 3
7th November	4 0

Date of alteration.	Price. As. P.
1936.	
30th January	4 3
13th February	4 0
20th February	3 9
25th February	3 6
5th March	3 3
16th April	3 0
26th April	3 3
28th May	3 0
30th July	3 3
6th August	3 4
13th August	3 3
24th September	3 6
8th October	3 3
3rd December	3 6
5th December	3 3
1937.	
1st January	3 0
15th January	3 3
28th January	3 0
4th March	2 9

Prices of Sugar (Per Cwt.) extracted from the Daily Statement of Messrs. Parry & Co., Ltd.

Date.	Java. Rs. A. P.	Nellikuppam. Rs. A. P.	Northern India (Factory's name given). Rs. A. P.
1933.			
25th February	14 5 0	14 1 4	...
1st March	14 7 0	14 4 0	...
6th March	14 6 0	14 4 0	...
13th March	14 7 0	14 5 4	...
20th March	14 7 0	14 2 8	...
28th March	14 5 0	14 2 8	...
3rd April	14 5 0	14 2 8	...
10th April	14 4 0	14 2 8	...
18th April	14 3 0	14 2 0	...
24th April	14 4 0	14 2 0	...
1st May	14 3 6	14 2 0	...
8th May	14 4 0	14 3 4	...
15th May	14 6 0	14 8 0	...
22nd May	14 6 0	14 6 8	...

Prices of Sugar (Per Cwt.) extracted from the Daily Statement of Messrs. Parry & Co., Ltd.—contd.

Date.	Java.			Nellikuppam.			Northern India (Factory's name given).			
	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	
1933—contd.										
29th May	14	8	0	14	9	4	...			
5th June	14	15	6	15	5	4	...			
12th June	14	9	0	15	5	4	...			
19th June	14	7	0	14	8	0	...			
26th June	14	7	0	14	5	4	...			
3rd July	14	6	6	14	5	4	...			
10th July	14	6	6	14	5	4	...			
17th July	14	6	6	14	5	6	...			
24th Juy	14	6	0	14	5	4	...			
31st July	14	6	0	14	5	4	...			
7th August	14	6	0	14	5	4	...			
14th August	14	6	6	14	6	8	...			
22nd August	14	4	6	14	4	0	...			
28th August	14	4	0	14	4	0	...			
4th September	14	3	6	14	4	0	...			
11th September	14	2	6	14	4	0	...			
18th September	14	4	0	14	5	4	...			
25th September	14	4	0	14	5	4	...			
2nd October	14	8	0	14	9	4	...			
9th October	14	9	0	14	10	8	...			
16th October	14	12	0	14	14	8	...			
23rd October	14	7	0	14	6	8	...			
30th October	14	7	0	14	8	0	...			
6th November	14	5	0	14	6	8	...			
13th November	14	1	0	14	5	4	...			
20th November	13	15	0	14	1	4	...			
27th November	13	15	0	14	1	4	...			
4th December	13	14	0	14	1	4	...			
11th December	13	14	0	14	1	4	...			
18th December	13	13	0	13	14	8	...			
28th December	13	12	0	13	12	8	...			
1934.										
2nd January	13	12	6	13	12	8	...			
8th January	13	12	0	13	12	8	...			
15th January	13	9	0	13	8	0	...			
22nd January	13	10	0	13	6	8	...			
29th January	13	10	0	13	6	8	...			
5th February	13	10	6	13	6	8	13	9	0	Motipur.
13th February	13	12	0	13	8	0	13	7	0	,,
19th February	13	10	6	13	6	8	13	6	0	,,
26th February	13	11	0	13	6	8	13	8	0	,,
5th March	13	10	0	13	8	0	13	8	0	,,
12th March	13	10	0	13	8	0	13	8	0	,,

Prices of Sugar (Per Cwt.) extracted from the Daily Statement of Messrs. Parry & Co., Ltd.—contd.

Date.	Java.	Nellikuppam.	Northern India (Factory's name given).	
	Rs. A. P.	Rs. A. P.	Rs. A. P.	
1934—contd.				
19th March	13 11 0	13 8 0	13 8 0	Motipur.
27th March	13 13 0	13 6 8	13 10 0	,,
3rd April	13 12 0	13 6 8	13 8 0	,,
9th April	13 12 0	13 9 4	13 8 0	,,
16th April	13 13 0	13 9 4	13 8 0	,,
23rd April	14 0 0	13 9 4	13 10 0	,,
30th April	14 0 0	13 9 4	13 10 0	,,
7th May	Not quoted	13 10 0	13 9 0	,,
14th May	13 9 0	13 5 4	13 7 0	,,
21st May	13 10 0	13 5 4	13 6 0	,,
28th May	13 7 6	13 5 4	13 5 0	,,
5th June	13 5 6	13 5 4	13 5 0	,,
11th June	13 6 0	13 4 8	13 5 0	,,
18th June	13 6 0	13 4 8 to 13 5 4	13 4 0	,,
26th June	13 6 0	13 4 8 to 13 5 4	13 4 0	,,
3rd July	13 5 0	...	13 3 6	Sardarnagar.
9th July	13 5 6	13 6 0	13 3 6	,,
16th July	13 12 0	13 9 4	13 7 0	,,
23rd July	13 12 0	13 9 4	13 7 0	,,
30th July	13 11 0	13 8 8	13 6 0	,,
6th August	13 10 0	...	13 5 0	,,
13th August	13 7 0	...	13 4 0	,,
20th August	13 6 6	...	13 4 0	Champatia.
27th August	13 6 0	...	13 4 0	
3rd September	13 8 0	...	13 5 0	
10th September	13 10 0	...	13 7 0	Champatia.
17th September	13 11 0	...	13 8 0	
24th September	13 8 0	...	13 6 0	
1st October	13 8 0	...	...	
9th October	13 7 0	...	...	
15th October	13 5 6	...	...	
22nd October	13 4 0	...	...	
29th October	13 3 0	...	...	
5th November	13 3 0	...	...	
12th November	13 1 6	...	...	
19th November	13 0 6	...	...	
26th November	13 4 0	...	...	
3rd December	13 7 0	...	...	
10th December	13 7 0	...	...	
17th December	13 3 0	...	12 12 0	
24th December	13 5 0	...	12 10 0	

Prices of Sugar (Per Cwt.) extracted from the Daily Statement of Messrs. Parry & Co., Ltd.—contd.

Date.	Java.	Nellikuppam.	Northern India (Factory's name given).	
	Rs. A. P.	Rs. A. P.	Rs. A. P.	
1935.				
2nd January .	13 6 0	...	12 10 0	
8th January .	13 8 0	...	12 10 0	
15th January .	13 8 0	12 10 8	12 10 0	
21st January .	13 12 0	12 10 8	12 10 0	
28th January .	14 0 0	13 8 0	13 4 0	
4th February .	13 10 0	13 2 8	13 0 0	
11th February .	13 10 0	13 1 4	12 13 0	
18th February .	13 10 0	13 1 4	12 12 0	
25th February .	13 10 0	13 1 4	12 10 0	
4th March .	13 10 0	13 0 0	12 10 0	
11th March .	...	12 13 4	12 10 0	
18th March .	...	12 12 8	12 9 0	
25th March .	...	12 12 8	12 10 0	
9th April .	...	12 14 0	12 11 0	
15th April .	...	12 15 4	12 14 0	
23rd April .	...	12 15 4	12 14 0	
29th April .	...	12 15 4	12 14 0	
8th May .	...	12 14 8	12 13 0	
20th May .	...	12 14 8	12 13 0	
27th May .	...	13 1 4	13 0 0	
4th June .	...	13 4 0	13 2 0	
10th June .	...	13 4 0	13 2 0	
17th June .	...	13 4 0	13 2 0	
24th June .	...	13 5 4	13 3 0	
2nd July .	...	13 4 8	13 1 0	
8th July .	...	13 3 4	13 1 0	
15th July .	...	13 2 8	13 1 0	
22nd July .	...	13 2 0	13 1 0	
29th July .	...	13 0 8	13 0 0	
5th August .	...	13 0 8	13 0 0	
12th August .	...	13 0 8	13 0 0	
19th August .	...	13 0 8	13 0 0	
26th August .	...	13 1 4	13 0 0	
3rd September .	...	13 2 8	13 1 0	
9th September .	...	13 2 8	13 1 0	
16th September .	...	13 3 4	13 3 0	
23rd September .	...	13 4 8	13 5 0	
30th September .	...	13 10 8	13 9 0	Champatia.
7th October .	14 14 0	14 10 8	14 10 0	
14th October .	14 14 0	14 8 0	14 10 0	
21st October .	14 10 0	14 8 0	14 8 0	
28th October .	14 2 0	14 3 4	14 0 0	
4th November .	13 11 0	...	13 10 0	

Prices of Sugar (Per Cwt.) extracted from the Daily Statement of Messrs. Parry & Co., Ltd.—contd.

Date.	Java.	Nellikuppam	Northern India (Factory's name given).	
	Rs. A. P.	Rs. A. P.	Rs. A. P.	
1935—contd.				
11th November .	13 8 0	13 5 4	13 4 0	
18th November .	13 7 0	13 4 0	13 4 0	
25th November .	13 5 6	13 2 0	13 2 0	
2nd December .	13 5 0	13 0 8	13 0 0	
9th December .	13 4 0	13 0 8	12 15 0	
16th December .	13 4 0	...	12 14 0	
23rd December .	13 4 0	...	12 14 0	
1936.				
2nd January .	13 4 0	...	12 14 0	
6th January .	13 5 0	...	12 14 0	
15th January .	13 6 0	...	13 0 0	Motipur.
20th January .	13 6 0	...	13 0 0	
27th January .	13 5 0	...	13 1 0	
10th February .	13 4 0	12 14 8	13 0 0	
17th February .	13 4 0	12 13 4	12 9 0	Champatia.
24th February .	13 3 0	12 10 8	12 6 0	
2nd March .	13 3 0	12 10 8	12 4 0	
9th March .	13 3 0	...	12 4 0	
16th March .	13 4 0	12 12 0	12 9 0	
23rd March .	13 4 0	12 12 0	12 8 0	
30th March .	13 4 0	12 12 0	12 6 0	
6th April .	13 4 0	12 12 0	12 5 0	Champatia.
14th April .	13 4 0	12 12 0	12 5 0	
20th April .	13 4 0	12 12 0	12 5 0	
27th April .	13 4 0	...	12 5 0	
4th May .	13 4 0	...	12 4 0	
11th May .	13 4 0	...	12 4 0	
18th May .	13 4 0	...	12 3 0	
25th May .	13 4 0	...	12 3 0	
1st June .	13 4 0	...	12 3 0	
8th June .	13 4 0	...	12 1 0	
15th June .	13 4 0	...	12 1 0	
22nd June .	13 4 0	...	12 1 0	
29th June .	13 4 0	...	12 2 0	
6th July .	13 4 0	...	12 2 0	
13th July .	13 4 0	...	12 0 0	
20th July .	13 4 0	...	12 0 0	
27th July .	13 4 0	...	12 0 0	
3rd August .	13 4 0	...	11 14 0	
10th August .	13 4 0	...	11 10 0	
17th August .	13 4 0	11 8 0	11 10 0	

Prices of Sugar (Per Cwt.) extracted from the Daily Statement of Messrs. Parry & Co., Ltd.—concld.

Date.	Java.	Nellikuppam.	Northern India (Factory's name given).	
	Rs. A. P.	Rs. A. P.	Rs. A. P.	
1936—contd.				
24th August .	13 4 0	11 10 0	11 12 0	
31st August .	13 4 0	11 10 0	11 12 0	
7th September .	13 4 0	11 10 0	11 12 0	
14th September .	13 4 0	11 9 0 (normal).	11 10 0	
21st September .	13 4 0	11 9 0	11 10 0	
28th September .	13 4 0	11 9 0	11 9 0	
5th October .	13 2 0	11 7 0	11 8 0	Champatia.
12th October .	13 2 0	...	11 8 0	
19th October .	13 2 0	...	11 8 0	
27th October .	13 2 0	...	11 8 0	
2nd November .	13 2 0	11 10 0	11 6 0	
9th November .	13 2 0	11 10 0	11 6 0	
16th November .	13 2 0	11 10 0	11 6 0	
23rd November .	13 2 0	...	11 4 0	
30th November .	13 2 0	...	11 4 0	
7th December .	13 0 0	...	11 4 0	
14th December .	13 0 0	...	11 4 0	
21st December .	13 0 0	...	11 2 0	
29th December .	13 0 0	...	11 1 0	
1937.				
11th January .	13 0 0	11 1 0	11 6 0	Champaran.
19th January .	...	10 14 0	11 4 0	
26th January .	13 0 0	10 14 0	11 4 0	
2nd February .	13 0 0	10 13 0	10 14 0	
9th February .	12 14 0	10 13 0	10 12 0	
16th February .	12 14 0	10 1 0	10 8 0	
24th February .	12 14 0	10 1 0	10 8 0	
2nd March .	13 0 0	10 13 0	10 14 0	
9th March .	13 0 0	10 8 0	10 4 0	
16th March .	13 0 0	10 8 0	10 5 0	
23rd March .	13 0 0	10 8 0	10 8 0	
31st March .	13 0 0	10 8 0	10 8 0	
6th April .	13 0 0	10 6 0	10 8 0	
15th April .	13 0 0	10 6 0	10 8 0	
22nd April .	12 14 0	10 6 0	10 8 0	
29th April .	12 14 0	10 6 0	10 8 0	
1st May .	12 14 0	10 0 0	10 6 0	

Prices of Jaggery extracted from the Daily Statement of Messrs. Parry & Co., Ltd.

Date.	Good-eating cane jaggery *ex*-godown Madras, per candy.				Palm jaggery for refining f.o.r. Nellikuppam, per candy.		Palm jaggery (Madras) *ex*-godown Madras, per candy (500 lb.).			
	Rs.	A.		Rs.	A.	R. A.	Rs.	A.	Rs.	A.
1933.										
6th March	32	0	to	35	0	23 0			...	
13th March	32	0	,,	35	0	22 0			...	
20th March	32	0	,,	35	0	22 0			...	
28th March	32	0	,,	35	0	22 0			...	
3rd April	32	0	,,	35	0	22 0			...	
10th April	32	0	,,	35	0	22 0			...	
18th April	32	0	,,	35	0	22 0			...	
24th April	32	0	,,	35	0	22 0			...	
1st May	30	0	,,	32	0	22 0			...	
8th May	25	0	,,	28	0	22 0			...	
15th May	25	0	,,	28	0	22 0			...	
22nd May	25	0	,,	28	0	22 0			...	
29th May	25	0	,,	28	0	22 0			...	
5th June	25	0	,,	28	0	19 0			...	
12th June	25	0	,,	28	0	19 0			...	
19th June	25	0	,,	28	0	19 0			...	
26th June	25	0	,,	28	0	19 0			...	
3rd July	25	0	,,	28	0	19 0			...	
10th July	25	0	,,	28	0	19 0			...	
17th July	25	0	,,	28	0	19 0			...	
24th July	25	0	,,	28	0	19 0			...	
31st July	25	0	,,	28	0	19 0			...	
7th August	25	0	,,	28	0	19 0			...	
14th August	25	0	,,	28	0	19 0			...	
22nd August	25	0	,,	28	0	19 0			...	
28th August	25	0	,,	28	0	19 0			...	
4th September	20	0	,,	28	0	19 0			...	
11th September	20	0	,,	28	0	19 0			...	
18th September	20	0	,,	28	0	19 0			...	
25th September	20	0	,,	28	0	19 0			...	
2nd October	20	0	,,	28	0	19 0			...	
9th October	20	0	,,	28	0	19 0			...	
16th October	20	0	,,	28	0	19 0			...	
23rd October	20	0	,,	28	0	19 0			...	
30th October	20	0	,,	28	0	19 0			...	
6th November	20	0	,,	28	0	19 0			...	
13th November	20	0	,,	28	0	19 0			...	
20th November	20	0	,,	28	0	19 0			...	
27th November	20	0	,,	28	0	19 0			...	

Prices of Jaggery extracted from the Daily Statement of Messrs. Parry & Co., Ltd.—contd.

Date.	Good-eating cane jaggery *ex*-godown Madras, per candy.	Palm jaggery for refining f.o.r. Nellikuppam, per candy.	Palm jaggery (Madras) *ex*-godown Madras, per candy (500 lb.).
	Rs. a.	Rs. a. Rs. a.	Rs. a. Rs. a.
1933—contd.			
4th December	20 0 to 28 0	19 0	...
18th December	20 0 ,, 28 0	19 0	19 0 to 27 0
28th December	20 0 ,, 28 0	19 0	18 0 ,, 27 0
1934.			
2nd January	20 0 to 28 0	19 0	18 0 to 27 0
8th January	20 0 ,, 28 0	19 0	18 0 ,, 27 0
15th January	20 0 ,, 28 0	19 0	19 0 ,, 27 0
22nd January	20 0 ,, 28 0	19 0	19 0 ,, 27 0
29th January	22 0 ,, 28 0	22 12	36 0
5th February	22 0 ,, 28 0	22 12	36 0
13th February	22 0 ,, 28 0	22 12	36 0
19th February	22 0 ,, 28 0	22 12	36 0
26th February	22 0 ,, 28 0	22 12	36 0
5th March	22 0 ,, 28 0	22 12	36 0
12th March	22 0 ,, 28 0	22 12	36 0
19th March	22 0 ,, 28 0	22 12	36 0
27th March	22 0 ,, 28 0	22 12	36 0
3rd April	22 0 ,, 28 0	22 12	36 0
9th April	22 0 ,, 28 0	22 12	36 0
16th April	22 0 ,, 28 0	22 12	36 0
23rd April	22 0 ,, 28 0	22 12	36 0
30th April	22 0 ,, 28 0	22 12	36 0
7th May	22 0 ,, 28 0	22 12	36 0
14th May	22 0 ,, 28 0	22 12	36 0
21st May	22 0 ,, 28 0	22 12	36 0
28th May	22 0 ,, 28 0	22 12	36 0
5th June	22 0 ,, 28 0	22 12	36 0
11th June	22 0 ,, 28 0	22 12	36 0
18th June	22 0 ,, 28 0	22 12	36 0
26th June	24 0 ,, 28 0	22 0	30 0
3rd July	24 0 ,, 28 0	22 0	30 0
9th July	24 0 ,, 28 0	22 0	30 0
16th July	30 0 ,, 35 0	22 0	35 0 to 45 0
23rd July	30 0 ,, 35 0	22 0	35 0 ,, 45 0
30th July	30 0 ,, 35 0	22 0	35 0 ,, 45 0
6th August	30 0 ,, 35 0	22 0	35 0 ,, 45 0
13th August	30 0 ,, 35 0	22 0	35 0 ,, 45 0
20th August	30 0 ,, 35 0	22 0	35 0 ,, 45 0
27th August	30 0 ,, 35 0	22 0	35 0 ,, 45 0
	40 0 ,, 50 0	22 0	36 0 ,, 46 0

Prices of Jaggery extracted from the Daily Statement of Messrs. Parry & Co., Ltd.—contd.

Date.	Good-eating cane jaggery ex-godown Madras, per candy.						Palm jaggery for refining f.o.r. Nellikuppam, per candy.						Palm jaggery (Madras) (ex-godown Madras, per candy (500 lb.).					
	Rs.	A.		Rs.	A.		Rs.	A.		Rs.	A.		Rs.	A.		Rs.	A.	
1934—contd.																		
10th September	40	0	to	50	0		22	0					36	0	to	46	0	
17th September	40	0	,,	50	0		22	0					36	0	,,	46	0	
24th September	40	0	,,	50	0		22	0					36	0	,,	46	0	
1st October	40	0	,,	50	0		22	0					36	0	,,	46	0	
9th October	40	0	,,	50	0		22	0					36	0	,,	46	0	
15th October	40	0	,,	50	0		22	0					36	0	,,	46	0	
22nd October	40	0	,,	50	0		22	0					36	0	,,	46	0	
29th October	40	0	,,	50	0		22	0					36	0	,,	46	0	
5th November	40	0	,,	50	0		22	0					36	0	,,	46	0	
12th November	40	0	,,	50	0		22	0					36	0	,,	46	0	
19th November	40	0	,,	50	0		22	0					36	0	,,	46	0	
26th November	40	0	,,	50	0		22	0					36	0	,,	46	0	
3rd December	40	0	,,	50	0		22	0					36	0	,,	46	0	
10th December	40	0	,,	50	0		22	0					36	0	,,	46	0	
17th December	40	0	,,	50	0		22	0					36	0	,,	46	0	
24th December	40	0	,,	50	0		22	0					36	0	,,	46	0	
1935.																		
2nd January	40	0	to	50	0		22	0					36	0	to	46	0	
8th January	40	0	,,	50	0		22	0					36	0	,,	46	0	
15th January	40	0	,,	50	0		22	0					36	0	,,	46	0	
21st January	40	0	,,	50	0		22	0					36	0	,,	46	0	
28th January	40	0	,,	50	0		22	0					36	0	,,	46	0	
4th February	35	0	,,	38	0		21	0					45	0				
11th February	35	0	,,	38	0		21	0					45	0				
18th February	35	0	,,	38	0		21	0					45	0				
25th February	35	0	,,	38	0		21	0					45	0				
4th March	35	0	,,	38	0		21	0					45	0				
11th March	35	0	,,	38	0		21	0					45	0				
18th March	35	0	,,	38	0		24	0	to	30	0		41	0	to	43	0	
25th March	35	0	,,	38	0		24	0	,,	30	0		41	0	,,	43	0	
9th April	30	0	,,	32	0		25	0	,,	28	0		35	0	,,	38	0	
15th April	30	0	,,	32	0		25	0	,,	28	0		35	0	,,	38	0	
23rd April	32	0	,,	34	0		25	0	,,	28	0		38	0	,,	40	0	
29th April	32	0	,,	34	0		25	0	,,	28	0		38	0	,,	40	0	
8th May	32	0	,,	34	0		25	0	,,	28	0		38	0	,,	40	0	
20th May	32	0	,,	34	0		25	0	,,	28	0		38	0	,,	40	0	
27th May	32	0	,,	34	0		25	0	,,	28	0		38	0	,,	40	0	
4th June	32	0	,,	34	0		25	0	,,	28	0		38	0	,,	40	0	
10th June	32	0	,,	34	0		23	0	,,	26	0		35	0	,,	40	0	
17th June	32	0	,,	34	0		23	0	,,	26	0		35	0	,,	40	0	

Prices of Jaggery extracted from the Daily Statement of Messrs. Parry & Co., Ltd.—contd.

Date.	Good-eating cane jaggery *ex*-godown Madras, per candy.	Palm jaggery for refining f.o.r. Nellikuppam, per candy.	Palm jaggery (Madras) *ex*-godown Madras, per candy (500 lb.).
	Rs. A.	Rs. A.	Rs. A.
1935—contd.			
24th June	32 0 to 34 0	23 0 to 26 0	35 0 to 40 0
2nd July	32 0 ,, 34 0	23 0 ,, 26 0	35 0 ,, 40 0
8th July	30 0 ,, 35 0	23 0 ,, 26 0	35 0 ,, 40 0
15th July	30 0 ,, 35 0	23 0 ,, 26 0	35 0 ,, 40 0
22nd July	28 0 ,, 36 0	26 0	36 0 ,, 40 0
29th July	30 0 ,, 38 0	26 0	38 0
5th August	31 8 ,, 35 8	...	40 0
12th August	31 8 ,, 35 8	...	40 0
19th August	31 8 ,, 35 8	...	40 0
26th August	31 8 ,, 35 8	...	40 0
3rd September	30 0 ,, 37 0	...	38 0
9th September	30 0 ,, 37 0	...	38 0
16th September	30 0 ,, 37 0	...	38 0
23rd September	30 0 ,, 37 0 (nominal).	...	38 0 (nominal).
30th September	35 0 ,, 40 0	...	42 0
7th October	35 0 ,, 40 0	...	42 0
14th October	35 0 ,, 38 0	...	40 0
21st October	35 0 ,, 38 0	...	40 0
28th October	30 0 ,, 37 0	...	38 0
4th November	30 0 ,, 37 0	...	38 0
11th November	25 0 ,, 32 0	...	32 0
18th November	25 0 ,, 32 0	...	32 0
26th November	25 0 ,, 32 0	...	32 0
2nd December	25 0 ,, 32 0	...	32 0
9th December	25 0 ,, 32 0	...	32 0
16th December	25 0 ,, 32 0	...	32 0
23rd December	25 0 ,, 32 0	...	32 0
1936.			
2nd January	25 0 ,, 32 0	...	32 0
6th January	25 0 ,, 32 0	...	32 0
15th January	25 0 ,, 32 0	...	32 0
20th January	25 0 ,, 38 0	...	32 0
27th January	25 0 ,, 38 0	...	32 0
10th February	25 0 ,, 38 0	...	32 0
17th February	22 12 ,, 28 0	...	31 4
24th February	22 12 ,, 28 0	...	31 4
2nd March	22 12 ,, 28 0	...	31 4
9th March	22 12 ,, 28 0	...	31 4
16th March	22 12 ,, 28 0	...	31 4
23rd March	22 12 ,, 28 0	...	31 4

Prices of Jaggery extracted from the Daily Statement of Messrs. Parry & Co., Ltd.—contd.

Date.	Good-eating cane jaggery *ex*-godown Madras, per candy.				Palm jaggery for refining f.o.r. Nellikuppam, per candy.		Palm jaggery (Madras) *ex*-godown Madras, per candy (500 lb.).	
	Rs.	A.		Rs. A.	Rs. A.	Rs. A.	Rs. A.	Rs. A.
1936—contd.								
30th March	20	0	to	26 0	...		31 4	
6th April	20	0	,,	26 0	...		31 4	
14th April	20	0	,,	26 0	...		31 4	
20th April	20	0	,,	26 0	...		31 4	
27th April	20	0	,,	26 0	...		31 4	
4th May	20	0	,,	26 0	...		31 4	
11th May	20	0	,,	26 0	...		31 4	
18th May	20	0	,,	23 0	...		30 0	
25th May	21	0	,,	24 8	...		30 0	
1st June	21	0	,,	24 8	...		30 0	
8th June	21	0	,,	24 8	...		30 0	
15th June	21	0	,,	26 4	...		32 0	
22nd June	21	0	,,	26 4	...		32 0	
29th June	21	0	,,	26 4	...		32 0	
6th July	21	0	,,	26 4	...		32 0	
15th July	21	0	,,	26 4	...		32 0	
20th Juy	20	0	,,	25 0	...		30 0	
27th July	20	0	,,	25 0	...		30 0	
3rd August	21	0	,,	26 4	...		31 4	
10th August	21	0	,,	26 4	...		31 4	
17th August	21	0	,,	26 4	...		31 4	
24th August	21	0	,,	26 4	...		31 4	
31st August	21	0	,,	26 4	...		31 4	
7th September	21	0	,,	26 4	...		31 4	
14th September	21	0	,,	26 4	...		31 4	
21st September	21	0	,,	26 4	...		31 4	
28th September	17	8	,,	26 4	...		28 0	
5th October	17	8	,,	26 4	...		28 0	
12th October	17	8	,,	26 4	...		28 0	
19th October	17	8	,,	26 4	...		28 0	
27th October	17	8	,,	26 4	...		28 0	
2nd November	17	8	,,	26 4	...		28 0	
9th November	17	8	,,	26 4	...		28 0	
16th November	17	8	,,	26 4	...		28 0	

Prices of Jaggery extracted from the Daily Statement of Messrs. Parry & Co., Ltd.—concld.

Date.	Good-eating cane jaggery *ex*-godown Madras, per candy.	Palm jaggery for refining f.o.r. Nellikuppam, per candy.	Palm jaggery (Madras) *ex*.godown Madras, per candy (500 lb.).
	Rs. a.	Rs. a.	Rs. a.
1936—concld.			
23rd November .	17 8 to 26 4	...	28 0
30th November .	17 8 ,, 26 4	...	28 0
7th December .	17 8 ,, 26 4	...	28 0
14th December .	15 0 ,, 25 0	22 0 to 26 0	25 0
21st December .	15 0 ,, 25 0	22 0 ,, 26 0	25 0
29th December .	15 0 ,, 25 0	22 0 ,, 26 0	25 0
1937.			
11th January .	15 0 ,, 25 0	22 0	25 0
9th February .	15 0 ,, 25 0	22 0	25 0
16th February .	15 0 ,, 25 0	22 0	25 0

(2) *Letter dated the 25th June 1937, from the Government of Madras, Development Department, Madras.*

I am directed to enclose a note prepared by the Director of Industries, Madras, on the present position of the Palmyra Sugar Industry in the Madras Presidency. The Director reports that the Ar. Rm. N. Lakshmi Sugar Mills, Alwartirunagari, and the Al. Vr. St. Sugar Mills, Tachanallur, in Tinnevelly District did not respond to his request for information in regard to the production, etc., of their factories during the 1936 season.

NOTE ON THE PALMYRA SUGAR INDUSTRY OF THE MADRAS PRESIDENCY.

The chief centres of the palmyra jaggery industry in the Madras Presidency are Tinnevelly, Coimbatore, Malabar and West Godavari Districts. The industry of preparing jaggery is carried on by the Madras in Tinnevelly, by Sanars in Coimbatore, by Thiyyas in Malabar and Kalais in West Godavari Districts. It is estimated that the annual production of palmyra jaggery in Tinnevelly, Coimbatore and Malabar is normally about 20,000 tons and in the West Godavari area about 10,500 tons. The manufacture of palmyra jaggery may be termed a cottage industry in these areas as the industry is carried on by families of tappers scattered over large areas where the palmyra tree grows. These people live in the neighbourhood of the trees they have to tap and the entire family is interested in the production of jaggery which is sold to dealers, or direct to the sugar manufacturers. It has been estimated that some 250,000 tappers and their dependents are engaged in the industry, and if 25 per cent. is deducted from this total to provide for that proportion of the production which goes into direct consumption, it may be taken that some 187,500 persons in this Presidency depend on the manufacture of sugar from palmyra for their subsistence. Apart from the tappers and their families, there are a number of other people who are engaged in connected occupations, *e.g.*, the shell burners who supply the lime for juice pots, the pan makers who supply the pans for collecting the juice and the potters who supply the pots to be attached to the trees for juice collection. In addition to these, there are the factory hands and their

dependents so that the number of people supported directly or indirectly by the manufacture of sugar from palmyra jaggery cannot be far short of 200,000 and it may well be more. The tapping of the palmyra tree, collection of juice and conversion into jaggery by people living among the topes necessitating transport to the factories over long distances, renders the jaggery produced comparatively expensive, so that by the time it reaches the sugar factory, goes through a three months drainage period and is ultimately melted, the cost is definitely greater per unit of sucrose than cane grown within a short distance of a factory and converted into sugar without any intermediate jaggery process. Sugar from palmyra cannot therefore be produced at a price comparable with canesugar.

2. The position of the palmyra sugar industry in relation to the excise duty has formed the subject of several representations by the Madras Government to the Government of India during the last three years. In March, 1934, the local Government forwarded to the Government of India a representation in regard to the position of the palmyra sugar industry and stated that it was working to a very narrow margin and that the imposition of the proposed excise would convert this margin into a loss. It was explained that three factors in the main accounted for this. The price of the raw material is greater than that of cane, the cost of extracting sugar from it is greater and little or no income is now derived from the sale of molasses which had practically cease to command any value at all. The Madras Government pointed out that unless sugar manufactured from palmyra was excluded from the proposed excise, the industry would be seriously affected, if indeed it managed to survive at all, and that if it was entirely suspended some 200,000 people would be deprived of their means of subsistence. In a further communication addressed to the Government of India in September of the same year, the Madras Government forwarded copies of letters which had been addressed to them by Messrs. Parry & Co., Ltd., and the Tachanallur Sugar Factory in the Tinnevelly District, and pointed out, *inter alia*, that it was apparent from the details given in these letters that during the two years 1932 and 1933, Messrs. Parry & Co., Ltd., would have found it profitable to refine palmyra jaggery at Samalkot after paying excise duty had it been in force then, but that in 1931 and 1934 they would have carried on manufacture at a loss. In the case of their Nellikuppam factory which has to depend for its supplies of jaggery on distant areas, it had not been a paying proposition to refine jaggery except in 1933, whilst, if an excise duty had been levied that year, the factory would have worked at a loss. In fact the palmyra jaggery refinery section of the Nellikuppam factory is now regarded as useful merely for the purpose of keeping together labour and staff, and in retaining their sugar markets during the off cane season. The Tachanallur factory worked at a profit in 1931-32 and in 1933-34, but in view of the subsequent fall in sugar prices, its prospects were not regarded hopefully. The Madras Government pointed out that it was unlikely that any of the factories would be in a position to pay excise duty, at any rate, at the rate prescribed, and at the same time to earn a profit after meeting all charges, and that the imposition of an excise duty on sugar manufactured from palmyra jaggery would, in all probability, result in the extinction of an industry on which many thousands of people are dependent. This view was reiterated in a further letter which the local Government addressed to the Government of India in January 1935 in which it was pointed out that there was no tendency for palmyra sugar to displace cane-sugar and that it is not possible to increase the production of palmyra sugar to any great extent since it is difficult to increase the number of tappers as tapping is not considered a respectable occupation even by the members of the tapping communities. In another communication addressed to the Government of India on the subject in August 1936, the Madras Government supplied further information in regard to the position of the palmyra sugar manufacturing industry in the Madras Presidency and concluded that in the interests of the palmyra tapping industry, the exemption from excise duty of palmyra sugar should be continued.

3. The total production of palmyra sugar during the last four years is given below:—

Name of factory.	1933-34.	1934-35.	1935-36.	1936-37.
	Tons.	Tons.	Tons.	Tons.
(i) Coimbatore Lakshmi Sugar Mills, Ltd., Podanur . . .	...	220	524	571
(ii) Al. Vr. Sugar Mills and Distillery, Tachanallur	1,162	1,127	1,062	Not available.
(iii) Lakshmi Sugar Mills, Alwartirunagari . .	452	502	423	Not available.
(iv) Messrs. Parry & Co., Ltd.—				
Nellikuppam factory .	4,260	1,986	2,012	2,819
Samalkot factory .	6,245	6,526	6,313	5,983
Total .	12,119	10,361	10,334	...

It will be seen that the total production progressively decreased from 1933-34 to 1935-36 in spite of the exemption from excise duty during the two latter years. As information is not yet available in respect of the Tachanallur and Alwartirunagari factories, it is not possible to institute a direct comparison between the production in the years 1935-36 and 1936-37, but production in the latter year is not likely to have increased by more than 500 tons as compared with the previous years, and there is no doubt that it will be substantially less than in the year 1933-34.

4. Messrs. Parry & Co., Ltd., state that palmyra and cane-sugars of equal grain and colour would normally realise the same price in the same market, but that palmyra sugar is seldom up to the standard, either in grain or in colour, of first grade cane-sugars. In the case of their Nelli-Kuppam factory, they say that they do not sell palmyra sugar during the cane season and usually dispose of all their stocks during September to December, when Indian cane-sugar is not usually available in South India. The palmyra sugar produced by their Samalkot factory is sold throughout the year and their experience is that they obtain approximately the same rate for their palmyra sugar as for the average quality of cane-sugar imported from North India. In the Madura market, the price of palmyra sugar is usually below that of Indian cane-sugar and has always been below the selling price of Java sugar. The Coimbatore Lakshmi Sugar Mills Limited, Podanur, state that there is practically no difference in price between cane and palmyra sugar in the retail market, but that the wholesale merchants endeavour to obtain annas eight more for cane-sugar. The Lakshmi Sugar Mills, Alwartirunagari, state that palmyra sugar commands a price of from four to six annas less per bag of one and a half cwts. than cane-sugar.

5. The Government of India were informed in August last year that the margin of profit in the years 1934 and 1935 in the Samalkot factory of Messrs. Parry and Company, Limited, without allowing for income-tax and supertax, was Rs. 4-9-10 and Rs. 5-3-3 per candy, and that if the factory had been called upon to pay excise duty at Rs. 5-13-9 per candy of 500 lb., it would have incurred a loss on working in both those years. The same conclusion also applies to the Nellikuppam factory of Messrs. Parry & Co., Ltd. This year Messrs. Parry & Co., Ltd., fixed the price of palmyra jaggery at Rs. 17-8 per candy of 500 lb., delivered at godown Nidadavole,

and this is actually the lowest price they have ever paid. There was, this year, a strike of tappers with the result that purchases for the Samalkot factory have been negligible. The strike commenced owing to causes beyond the control of Messrs. Parry & Co., Ltd., but the reduction in the price they paid for jaggery as a result of the disastrous fall in sugar prices was probably a contributing factor in the continuance of the strike. They state that so far as they can see, the rate mentioned is the maximum price they are likely to be able to pay for jaggery in competition with cane. After making due allowance for transit, wastage and cost of transport to Samalkot, Rs. 17-8 per candy is equal to Rs. 87·7 per ton delivered in godown Samalkot. The jaggery is then stored until the "runnings" have been drained and the loss of weight in the shape of "runnings" is calculated at 18 per cent. After crediting the value at the rate of Rs. 44 per ton of runnings so collected, the cost of drained jaggery at Samalkot works out to Rs. 98·35 per ton. With good drained jaggery, the manufacturers expect an outturn of 65 per cent. white sugar and the cost of the raw material is therefore about Rs. 151 per ton of sugar produced. Their average manufacturing costs of sugar produced from jaggery is put at Rs. 46 per ton. On the basis of these figures it is possible to institute a comparison of the cost of manufacturing sugar from palmyra and from cane.

	Rs.
Palmyra sugar (material)	151
Manufacturing cost	46
Per ton *ex*-factory .	197

North Indian sugar is now quoted at about Rs. 6 per maund *ex*-factory, *i.e.*, Rs. 187 to Rs. 194 per ton at Samalkot after having paid excise Rs. 6 per maund *ex*-factory comes to Rs. 163 per ton or Rs. 123 per ton without excise at Rs. 40. As North Indian Sugar Mills are selling at these rates, costs must approximate to these figures. The difference in cost of production between palmyra and cane-sugar, ignoring excise, is therefore Rs. 197 —123 or Rs. 74 per ton. The excise on cane reduced this difference by Rs. 40 per ton leaving Rs. 34 per ton in favour of sugar from cane. Cane costs are no doubt very low at present, but even allowing for this and taking a cost in North India of Rs. 140 a ton, *i.e.*, Rs. 180 a ton with excise, it seems evident that the palmyra industry would be extinguished if an excise duty was imposed on sugar manufactured from palmyra. The costs of palmyra sugar quoted in this paragraph do not allow for silent period changes, selling expenses, charges such as income-tax, etc.

6. It will be evident from the foregoing that the palmyra sugar industry cannot bear the burden of an excise duty. In fact, the indications are, that owing to the marked fall in the price realised for sugar, the position of the palmyra sugar industry, even if no excise duty is applied, will become precarious; for, as already, mentioned, it does not see possible to provide for a corresponding decrease in the cost per unit of the raw material since the manufacturing costs of at least the larger factories appear to have been reduced to a minimum whilst the prices paid to tappers cannot be further reduced. Working costs for a palmyra refinery are higher than in a modern cane factory as in a refinery the scale of production is smaller and clarification is more difficult. There has certainly been no tendency for palmyra sugar to displace cane-sugar, and there cannot be any such tendency in view of the higher cost of production of the former.

7. It will be seen from the answer of the Director of Industries to question No. 29 of the questionnaire for Local Governments, that the total estimated production of the cane and palmyra factories in the Presidency for the year 1936-37 season was only about one-third of the estimated consumption. The fact that the production of the palmyra jaggery refining

industry has not increased in spite of the exemption from excise duty shown clearly that the cane sugar interests are not placed at a disadvantage by such exemption. Nor have there been any protests from the cane sugar interests. The only effect of imposing an excise duty on the struggling palmyra sugar industry would be to handicap it to such an extent as to imperil its very existence. The revenue which would be derived from the palmyra sugar industry by the imposition of an excise duty at the enhanced rate would, on the basis of last year's production of about 10,768 tons, amount to about Rs. 4·3 lakhs; but it must be recognised that once an excise duty was imposed, the production would inevitably decline to a very marked extent.

8. The preparation of palmyra jaggery for refining is, as already stated, essentially a cottage industry affording a means of subsistence, directly or indirectly, to some 200,000 people, the great majority of whom could not in all probability obtain other employment. In the interests of the rural employment which the palmyra tapping industry provides it is in the highest degree necessary that the palmyra sugar industry should continue to be exempted from excise duty if widespread distress amongst the tapper communities is to be avoided, especially in view of the marked fall in sugar prices which in itself is rendering increasingly difficult the position of this struggling industry.

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(3) *Letter dated the 30th June, 1937, from the Secretary, Development Department, Madras.*

With reference to your letter No. 172, dated the 11th May, 1937, on the above subject, I am directed to forward six copies of the replies to the questionnaire for Local Governments (*vide* Enclosure No. I). The Madras Government have generally no comments to offer on the other questionnaires referred to in paragraph 2 of your letter, except in respect of certain questions raised in the General Questionnaire. Their comments on these excepted questions are furnished herewith (*vide* Enclosure No. II).

Enclosure No. I.

1. (*a*) The area under sugarcane in the Presidency during the last 7 years has been as follows:—

Year.	Acres.	Year.	Acres.
1930-31 . . .	114,877	1934-35 . . .	125,310
1931-32 . . .	116,105		
1932-33 . . .	120,921	1935-36 . . .	123,361
1933-34 . . .	121,650	1936-37 . . .	121,530*

(*b*) The following improved varieties have been grown in different parts of the Presidency:—

B. 208, 247 B, Purple Mauritius, Red Mauritius, Striped Mauritius, P. O. J. 2878, Fiji B, Co. 213, 218, 281, 313, 243, 419, 290, 413, 421.

(*c*) The approximate area under each variety is not available, but the total area under all improved varieties for the last 3 years was as below:—

Year.	Acres.	Year.	Acres.
1934-35 . . .	40,262	1936-37 . . .	42,650
1935-36 . . .	39,597		

* (Latest final forecast issued by the Director of Industries on 29th January, 1937.)

2. A broad classification might be made as follows:—

(1) *The Northern Circars*—a coastal tract receiving the benefit of rain from the south-west and north-east monsoons. It is fairly well supplied with major and minor irrigation works and with wells. The climate is humid and therefore well suited for sugarcane cultivation.

(2) *The southern districts*, receiving most of their rainfall from the north-east monsoon. In this area, sugarcane cultivation is mainly dependent not on large irrigation works but on tanks and wells. Irrigation in these parts is more costly than in the Northern Circars. Except along the coast, the yield generally is lower than in the Northern Circars.

(3) *The Ceded districts and Chittoor*—a comparatively high plateau country with a dry climate and light rainfall. The irregularity in the distribution of rainfall tends to shorten the effective growing period. Tanks, spring channels and canals supply water for irrigation, canals playing the most important part. The soil is sedentary generally. It is not enriched by silt. Intensive cultivation impoverishes it and reduces its cropping power. Low yield is due to frequent failures of rain, the short effective growing period, the poverty of the soil, the low standard of manuring and to a small extent poor cultivation especially in the matter of drainage.

(4) *The West Coast.*—This tract receives abundant rainfall and the soil being laterite is capable of being very well drained. The cultivation of sugarcane is confined practically to South Kanara District. It is also cultivated to the extent of availability of water, in areas adjoining the rivers and islands in the rivers; a small area is cultivated in well-drained terraced lands. The crop is irrigated from December to May.

Sugarcane is irrigated throughout the Presidency.

3. (1) In this province lands are generally classed as wet and dry. In classifying the lands as wet, the irrigation facilities are taken into account and the wet assessment includes the charge for water. Wet lands are classed as single crop or as double crop. Lands registered as double crop wet need not pay anything more than the double crop assessment. Lands classed as single crop wet are liable to pay an extra charge if sugarcane is raised. The extra charge is generally half the single crop assessment. The rates for single crop assessment vary with reference to the classification of the soil and of the irrigation source with the result that there are numerous rates. The minimum and the maximum rates of single crop wet assessment are given in Statement A. One and a half times the single crop rates represent the charge for sugarcane.

For the irrigation of sugarcane with Cauvery water on ryotwari single crop wet lands in Trichinopoly and Tanjore Districts, the rate is the single crop wet rate in the locality *plus* Rs. 7-8 per acre. This rate was in force in *fasli* 1344. From *fasli* 1345 the rate is single crop wet assessment *plus* Rs. 5 or half the wet assessment whichever is higher.

(2) When sugarcane is raised on dry lands the irrigation rate is Rs. 4-8 or Rs. 6 per acre according as the irrigation source is placed in class II or class I except where special rates have been fixed. The special rates in force are mentioned in Statement B.

Where the rates have varied in the last seven years the rates in force prior to the charge are also indicated in the two statements.

(3) Sugarcane is treated as a *dufasal* or a garden crop (*i.e.*, a crop standing on ground for the time of two ordinary wet crops and requiring water during that period, *i.e.*, for more than six months). The rate for two wet crops is generally one and a half times the rate for a single wet crop, on single crop wet lands or on dry lands. The same rate is charged for sugarcane.

STATEMENT A.

District.	Tract.	Single wet rate per acre ranging From	To	Remarks.
1	2	3	4	5
		Rs. A.	Rs. A.	
1. Ganjam	Ganjam	1 4	6 8	
2. Vizagapatam	Vizagapatam	2 0	0 8	
3. Godavari	Godavari Delta	2 8	12 0	Till 1930.
		3 0	14 4	From 1931.
	Godavari Upland	1 10	12 0	Till 1930.
		1 15	13 8	From 1931.
4. Kistna	Kistna Delta	2 8	10 0	Till 1930.
		3 0	11 14	From 1931.
	Kistna Upland	3 0	7 8	Till 1930.
		3 0	7 7	From 1931.
5. Guntur	Guntur Delta	2 0	12 8	
	Guntur Upland	2 0	9 6	
	Vinukonda	2 0	8 0	
	Ongole	2 0	8 14	
6. Nellore	Nellore	2 0	8 14	
7. Kurnool	Kurnool	2 0	10 0	
8. Bellary	Bellary	1 2	13 0	
9. Anantapur	Black soil taluks	1 2	10 2	
	Red soil taluks	1 2	10 2	
	Kadiri	2 0	9 0	
10. Cuddapah	Except Rayachoti	2 0	10 0	
	Rayachoti	2 0	9 0	
11. Chingleput	Chingleput	1 8	10 0	
12. Chittoor	Chittoor and Chandragiri	2 8	10 0	
	Palmaner	2 6	8 6	
	Madanapalle and Vyalpad	2 0	9 0	
13. N. Arcot	Except Tirupattur and Tiruvannamalai	2 8	10 0	
	Tirupattur	1 6	10 12	
	Tiruvannamalai	3 0	10 11	
14. S. Arcot	Coleroon	3 14	11 11	
	Non-Coleroon	3 0	10 11	
15. Salem	Northern Taluks	1 6	10 12	
	Southern Taluks	1 6	11 12	Till 1933.
		1 9	13 15	From 1934.
	Kollimalai Hill Vges.	1 0	3 6	
16. Coimbatore	Coimbatore	2 14	13 12	
17. Trichinopoly	Kadarambam	1 0	9 12	
	Nirarambam	3 8	14 4	
	Karur	2 14	13 12	
	Musiri	1 6	11 12	Till 1934.
		1 9	10 11	From 1935.
	Kochmalai Hill Vge.	1 0	3 6	

STATEMENT A—*contd.*

District.	Tract.	Single wet rate per acre ranging From	To	Remarks.
1	2	3	4	5
		Rs. A.	Rs. A.	
18. Tanjore . .	Tanjore Delta . .	3 8	16 10	
	Tanjore Non-Delta . .	1 12	8 4	
19. Madura . .	Except Kodaikanal . .	2 6	11 14	
	Kodaikanal . . .	2 0	5 8	
20. Ramnad . .	Ramnad	2 4	15 0	
21. Tinnevelly .	Except Anjengo and Tangasseri . . .	2 4	15 0	
	Anjengo and Tangasseri .	0 2	8 5	Till 1934.
		0 14	9 14	From 1935.
22. Malabar . .	Old holdings . . .	0 12	6 0	Till 1930.
		0 14	7 2	From 1931.
	New holdings . . .	1 4	10 0	Till 1930.
		1 8	11 14	From 1931.
	Cochin—			
	Old holdings . .	0 2	5 0	Till 1933.
		0 14	5 15	From 1934.
	New holdings . .	1 4	8 5	Till 1933.
		1 8	9 14	From 1934.
23. S. Kanara .	South Kanara . .	0 12	7 0	Till 1933.
		0 14	7 14	From 1934.

NOTE.—1½ times the rates given above represent the charge for irrigating sugarcane.

STATEMENT B.

District.	Source.	Ryotwari.	Zamindary and whole Inam villages.	REMARKS.
1	2	3	4	5
Ganjam . . .	Rushikulya system and other tracts	1½ (W—D)+½ D	Rs. 6-0-0	W= Rs. 1-4-0 to 6-8-0 D= As. 0-4-0 to Rs. 2-13-0
	Dhimiri Nalo Bandho and Chenchara Ghat* . .	Rs. 6-12-0	Rs. 6-12-0	*Transferred to Orissa from 1st April 1936.
Vizagapatam . .	Nagavalli river system . .	1½ (W—D)+½ D.	Rs. 6-0-0	W= Rs. 2-0 to 2-8-0 D= As. 0-7 to Rs. 3-9-0
	Bajji distributary (inam wet under T. Patapuram Agraharem)	..	Rs. 3-0-0	From 1933—New work.
E. Godavari . .				
W. Godavari . .	Delta tracts † (*a*) . . .	Rs. 7-8-0 to 9-6-0	Rs. 10-0-0 to 12-8-0	† Rate also for Government uplands dry.
Kistna				
Guntur				
E. Godavari . .				
W. Godavari . . Kistna	Uplands (*a*)	Rs. 4-8-0 to 7-8-0‡	Rs. 4-8-0 to 7-8-0	From 1932.
E. Godavari . .	Polavaram Island project .	Rs. 15-12-0	Rs. 15-12-0	

Kistna . . .	Divi pumping system (*a*) . .	Rs. 9-0-0	Rs. 12-0-0	Rs. 9-6-0 to 12-8-0 from f. 1346.
	Muniyeru (*a*)	Rs. 9-6-0	Rs. 9-6-0	From 1932.
W. Godavari . .	Yenamadurru drain . .	Rs. 6-0-0 to 7-8-0	Rs. 6-0-0 to 7-8-0 ‡	‡ From 1934-35 Delta rates from 1932 (applied before.)
	Kollair and Uppeteru (*a*) . .	Rs. 6-0-0	Rs. 6-0-0	
Guntur . . .	Bhavanasi project . . .	Rs. 14-1-0	Rs. 14-1-0	
Nellore . . .	Mopad Reservoir . . .	Rs. 11-12-0	Rs. 11-12-0	
	Vavveru channel . . .	Rs. 9-6-0	9-6-0	From 1934—New work.
	Chinna and podda cheruvus, Chamadala Village . .	Rs. 14-1-0	14-1-0	W=Rs. 2-0-0 to 8-14-0
	Other sources . . .	$1\frac{1}{2}$ (W—D)+$\frac{1}{2}$ D.	6-0-0	D=As. 0-4 to Rs. 4-8-0
Kurnool . . .	Siddhapuram project . .	Rs. 14-1-0	14-1-0	
	Venkatapuram project . .	Rs. 6-4-0	6-4-0	
Kurnool and Cuddapah . . .	Kurnool-Cuddapah Canal .	$1\frac{1}{2}$ (W—D)+$\frac{1}{2}$ D.	6-0-0	W=Rs. 2-0-0 to 10-0-0 D=As. 0-4-0 to Rs. 4-0-0
Kurnool . .	Other sources . . .	Do.	6-0-0	New work completion not reported.
	Thippayapalem project . .	Rs. 18-0-0	..	

(*a*) From 1932. Differential water rate system was in force before this year, the charge being $1\frac{1}{2}$ (W—D)+$\frac{1}{2}$ D. Re 1 were W=*vide* Statement (A) and D=

Godavari	Delta . .	As. 4 to Rs. 7-0-0
	Upland . .	As. 5 to Rs. 5-8-0
Kistna	Delta . .	As. 4 to Rs. 5-0-0
	Upland . .	As. 5 to Rs. 3-12-0
Guntur	Delta .	As. 4 to Rs. 6-0-0
	Upland . .	As. 5 to Rs. 5-10-0

STATEMENT B—*contd.*

District.	Source.	Ryotwari.	Zamindary and whole inam villages.	REMARKS.
1	2	3	4	5
Cuddapah . .	Aswarthar ayanikunta . .	Rs. 9-6-0	Rs. 9-6-0	New work completion not reported.
	Nagavaram tank . . .	Rs. 10-0-0	Rs. 10-0-0	
	Peddasettipalli spring channel .	Rs. 6-14-0	Rs. 6-14-0	New work completion with reported.
Cuddapah . .	Other sources except Cheped channel . . .	1½ (W—D)+½ D.	Rs. 6-0-0	W= Rs. 2-0-0 to 10-0-0
	Chepad channel . . .	Do.	Rs. 8-0-0	D= As. 4-0 to Rs. 4-0-0
Bellary . . .	Basavannah channel . .	Rs. 4-8-0 to 6-0-0 Rs. 15-0-0*	Rs. 4-8-0 to 6-0-0 Rs. 5-0-0 (Inam wet lands)	Till 1936. *From 1936 for new irrigation.
Anantapur . .	Kadiri taluk	1½ (W—D)+½ D.	Rs. 6-0-0	W= Rs. 2-0-0 to 9-0-0 D= As.4-0 to Rs. 2-0-0
Chingleput . .	..	Do.	Rs. 6-0-0	W= Rs. 1-8-0 to 10-0-0 D= As. 4-0 to Rs. 3-6-0
South Arcot . .	Toludur project . . .	Rs. 9-6-0	Rs. 9-6-0	
Tanjore . . .	G. A. C. and Vadavar extension canal	⅓ Rs. 21-0-0 to 22-8-0	⅓ Rs. 17-8-0 to 21-0-0	From 1933-34—New work.
	Old delta irrigated by Cauvery .	Rs. 4-8-0 to 6-0-0 Rs. 7-8-0 to 7-0-0	Rs. 4-8-0 to 6-0-0 Rs. 5-13-4 to 7-8-0	Till 1934-35. From 1935-36. In 1934-35 the rates were Rs. 16—17½ and Rs. 15—17½.
	Other sources	Rs. 4-8-0 to 6-0-0	Rs. 4-8-0 to 6-0-0	

Trichinopoly . .	Karur taluk	1½ (W—D)+½ D.	Rs. 6-0-0	W=Rs. 2-14-0 to 13-12-0 D=As. 4 to Rs. 2-4-0
	Cauvery	Rs. 16-0-0 to 17-8-0	Rs. 15-0-0 to 17-8-0	In 1934-35.
		Rs. 7-8-0 to 9-0-0	Rs. 5-13-4 to 7-8-0	From 1935-36.
	Sriramasamudram . . .	Rs. 4-8-0 to 6-0-0		Till 1934-35.
		Rs. 21-0-0 to 22-8-0	Rs. 15-0-0 to 22-8-0	In 1934-35.
		As. 7 to Rs. 7-8-0	Rs. 5-13-0 to 7-8-0	From 1935-36.
	South Bank canal and Kattalai High level channel (new work).	As. 5 to Rs. 7-8-0	Rs. 5-0-0 to 7-8-0	From 1935-36.
	Musiri (3 tanks) . . .	Rs. 9-6-0	Rs. 9-6-0	From the date of completion of works.
Madura . . .	Perigar	Rs. 8-0-0	Rs. 8-0-0	
	Cumbum Valley . . .	Rs. 16-0-0	Rs. 7-0-0 (prop. wet lands).	W=Rs. 2-0-0 to 9-0-0
Chittur . . .	Madanapalle and Vayepad .	1½ (W—D)+½ D.	Rs. 16-0-0 Rs. 6-0-0	D=As. 4-0 to Rs. 2-0-0
Salem . . .	..	Rs. 4-8-0 to 6-0-0		
		Rs. 15-0-0 to 17-8-0	Rs. 15-8-0 to 17-8-0	Till 1934-35.
		Rs. 7-8-0	Rs. 5-13-4 to 7-8-0	In 1934-35. From 1935-36.
	Other than Cauvery . .	Rs. 4-8-0 to 6-0-0	Rs. 4-8-0 to 6-0-0	
Goimbatore . .	...	1½ (W—D)+½ D.	Rs. 6-0-0	W=Rs. 2-14-0 to 13-12-0 D=As. 4-0 to Rs. 2-4-0
Kurnool . .	Criminal settlement under the Siddihapuram project .	Rs. 1-8-0	..	1928-29.
		Rs. 3-0-0	..	1929-30.
		Rs. 6-0-0	..	1930-31.
		Rs. 7-2-0	..	From 1931-32 till 1937-38.

NOTE.—Under the Godavari and Kistna deltas the rate of water cess for a single wet crop was reduced from Rs. 6-4-0 to Rs. 5-12-0 for fasli 1346. The same reduced rate was applied to Polavarm Island Project. The rate for sugarcane would have been one and a half times the reduced rate.

Under the Polavarm Island project, concessional rate of Rs. 7-8-0 per acre was in force in faslis 1344 and 1345. The rates for sugarcane in those faslis would have been one and a half times Rs. 7-8-0 per acre.

4. (*a*) A statement is appended. It shows the estimated cost of cultiva tion of cane to the cultivator in different districts of the Madras Presidency. All are irrigated.

Estimate of the cost of cultivation of sugarcane to the cultivator in the different District of the Madras Presidency.

NOTE.—All Irrigated.

District.	Locality.	TOTAL COST OF CULTIVATION.																					
		Preparatory cultivation.			Manures and Manuring.			Seeds and Sowing.			After cultivation.			Irrigation.			Harvesting, Marketing, etc.			Amount of rent (or lease amount).			Land Revenue and other cesses.			Total cost of cultivation.		
1	2	3			4			5			6			7			8			9			10			11		
		Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.
East Godavari .	Peddapur . .	11	0	8	4	5	4	29	5	4	139	10	8	10	0	0	94	5	4	40 19	0 9	0 8	19	10	0	388	15	0
	Veeravaram . .	12	0	0	28	5	4	25	0	0	32	0	0	10	0	0	51	0	0	40 11	0 14	0 4	11	14	0	210	3	8
West Godavari .	Panja Vemavaram (Bhimavaram Taluk)	11	5	6	48	0	0	12	1	4	125	0	0	4	0	0	145	15	2	68 20	5 10	4 8	20	11	0	435	6	0
Vizagapatam .	Kota Uratla . .	30	11	4	52	9	6	33	10	0	90	10	8	27	3	0	139	0	10	40	0	0	3	0	0	415	13	4
Do. .	Kossapeta . .	13	5	4	21	5	4	24	0	0	30	5	4	10	10	8	36	10	8	35	0	0	12	0	0	177	5	4
Guntur . .	Bapatla and Tenali Taluks . . .	15	0	0	70	0	9	68	0	0	90	0	0	25	0	0	140	0	0	90	0	0	0	0	0	426	0	0
Kistna . .	Gudivada and Gannavaram Taluks . .	10	0	0	20	0	0	20	0	0	7	0	0	5	0	0	55	0	0	60	0	0	0	0	0	134	0	0
Cuddapah. .	Chennur, Cuddapah Taluk . . .	19	2	0	26	1	5	22	4	0	25	5	0	28	8	2	125	4	0	75	0	0	16	9	0	338	1	7
Kurnool . .	Kalva, Kurnool Taluk	9	0	0	75	0	0	34	0	0	15	0	0	5	0	0	100	0	0	100	0	0	15	0	0	353	0	0
	Cumbum, Cumbum Taluk . . .	12	0	0	68	4	0	34	8	0	14	10	0	5	0	0	85	0	0	40	0	0	16	0	0	275	6	0
Bellary . .	Hospet, Hospet Taluk.	26	0	0	62	0	0	37	0	0	29	0	0	22	0	0	89	0	0	85	0	0	22	8	0	372	8	0

Anantapur	Kampli	20	0	0	55	0	0	34	8	0	27	8	0	16	0	0	92	0	0	115	0	0	22	8	0	382	8	0
	Hindupur, Hindupur Taluk	11	4	0	32	2	0	79	8	0	14	8	0	88	0	0	71	0	0	45	0	0	18	0	0	359	6	0
	Mohamadabad, Kadiri Taluk	12	8	0	27	8	0	32	0	0	10	0	0	75	0	0	22	8	0	110	0	0	8	0	0	287	8	0
South Arcot	..	14	0	0	98	0	0	36	8	0	17	0	0	15	0	0	55	0	0	82	8	0	8	0	0	326	0	0
		8	2	0	13	14	4	14	3	4	8	13	4	21	0	0	52	5	4	46	5	4	8	0	0	172	12	4
Chingleput	..	20	0	0	53	0	0	33	0	0	19	0	0	37	8	0	28	8	0	50	0	0	9	0	0	250	0	0
North Arcot	..	15	6	0	30	12	6	13	14	0	8	2	0	56	0	0	29	11	0	50	0	0	8	8	0	267	1	6
																	54	12	0									
Chittoor	..	18	2	0	26	14	0	21	6	0	56	0	0	62	8	0	31	4	0	82	8	0	7	0	0	362	12	0
																	57	2	0									
Trichinopoly	Lalgudi Taluk	16	0	0	41	8	0	20	4	0	12	6	0	12	0	0	150	0	0	0	0	0	15	15	0	268	1	0
	Trichinopoly Taluk	12	0	0	25	0	0	20	8	0	10	8	0	14	0	0	85	0	0	0	0	0	12	12	0	179	12	0
Madura	Periyar Area	9	6	0	34	0	0	36	14	0	8	8	0	18	0	0	100	0	0	0	0	0	14	8	0	221	4	0
	Non-Periyar Area	12	7	0	24	5	0	31	4	0	15	0	0	75	0	0	100	0	0	0	0	0	5	0	0	263	0	0
Ramnad	..	10	8	0	24	0	0	22	4	0	4	0	0	60	0	0	131	4	0	0	0	0	8	0	0	260	0	0
South Kanara	Mangalore	15	0	0	54	0	0	36	0	0	10	0	0	30	0	0	100	0	0	50	0	0	0	0	0	295	0	0
	Udipi	17	0	0	70	0	0	42	0	0	10	0	0	40	0	0	120	0	0	45	0	0	0	0	0	344	0	0
	Coondapur	15	0	0	30	0	0	35	0	0	10	0	0	25	0	0	100	0	0	40	0	0	0	0	0	255	0	0
Coimbatore	Coimbatore Taluk	17	2	11	24	2	10	36	7	6	16	1	6	96	6	1	59	12	11	53	1	7	2	0	0	305	3	4
	Udumalpet Taluk	12	14	8	52	8	0	33	0	0	9	2	8	45	0	0	105	0	0	75	0	0	6	0	0	338	9	4
Salem	Wet land	24	0	0	60	0	0	55	0	0	5	0	0	10	0	0	100	0	0	100	0	0	150	0	0	369	0	0
	Garden land	22	0	0	0	0	0	20	0	0	8	0	0	65	0	0	47	0	0	60	0	0	7	8	0	230	0	0

(b) No much variation in the cost of cultivation during the last 7 years except in the case of manuring and irrigation. The tendency has been to reduce the manure bill. Irrigation charges are high in seasons of draught.

The use of Coimbatore canes has tended to reduce the cost of cultivation and yields being higher the cost of production is cheaper.

(c) The average yield of cane per acre as estimated by the Director of Agriculture is as given below:—

	In tons.	In mds. 82 2/7 lb.
Vizagapatam	30 & 20	816 & 544
East Godavari	43 & 28	1,171 & 762
West Godavari	39	1,062
Kistna	20	544
Guntur	35	953
Cuddapah	30	816
Kurnool	24 & 28	653 & 762
Bellary	20 to 25	544 to 681
South Arcot—		
Fiji B	25	681
Co. and other varieties	30 to 35	816 to 953
North Arcot	23 & 28	625 & 762
Chittoor	28	762
Trichinopoly and Tanjore	25 to 30 & 12 to 15	681 to 816 & 327 to 408
Madura and Ramnad	25 to 30	681 to 816
South Kanara	25 to 30	681 to 816
Coimbatore	25 to 30	681 to 816
Salem	30 & 15	816 & 408

Sucrose content of different varieties of cane varies from tract to tract and according to soil variations and treatment. Sucrose content of some of the important varieties as furnished by the Director of Agriculture is given below:—

Variety.	Anakapalli.	Palur.	Central farm. Coimbotore	Samalkota.
Co. 213	9·62 to 12·83	15·37	16·05	16·73
Co. 243	12·48 to 15·31	14·96	...	17·75
Co. 281	13·91 to 14·45	18·04	...	19·61
Co. 290	...	16·15	15·97	17·32
Co. 313	12·17 to 15·11	...	...	18·08
Co. 356	12·00 to 13·39	...	...	17·32
Co. 407	12·46 to 15·78	19·13	...	...
Co. 413	...	...	16·57	...
Co. 412	13·32 to 15·19	...	...	18·02
Co. 366	16·12	...	...	...
Co. 368	11·60	...	...	...
Co. 361	...	17·52	...	18·77
Co. 373	14·00 to 15·09	...	...	...
Co. 365	...	17·93	...	20·28
Co. 349	15·61 to 16·06	...	...	...

Variety.	Anakapalli.	Pulur.	Central farm. Coimbatore.	Samalkota.
Co. 402 . .	...	12·90	14·99	16·02
Co. 411 . .	13·76 to 14·63	...	...	...
Co. 400 . .	...	16·07	...	17·74
Co. 414 . .	14·37	...	...	...
Co. 401 . .	...	18·96	...	20·32
Co. 419 . .	11·17 to 13·20	16·92	17·41	...
Co. 403 . .	...	18·15	...	16·04
Co. 421 . .	13·70 to 17·98	18·54	...	...
Co. 404 . .	...	13·26	...	...
Co. 508 . .	17·41 to 18·52	...	...	...
Co. 417 . .	...	...	14·81	...
247 B . .	11·88 to 13·24	14·91 to 16·37	15·58	18·11
Fiji B . .	...	17·02 to 20·01	...	20·28
P. O. J. 2878 .	14·27 to 16·72	18·89	17·87	20·28
P. O. J. 2714 .	...	19·43	...	...
M. 55 . .	...	17·55	...	...

5. The price of sugarcane for growers varies according to localities depending on the cost of cultivation, distance from the factories, facilities of communication, and varieties which again differ in yield and sucrose content. No attempt has been made to determine finally what could be considered a fair price for sugarcane in the different districts of the Presidency and there has been no demand for it either.

6. (i) There has been no very marked variation in any particular area. Climatic conditions have an effect on the increase or decrease in area as is evident from the slight fluctuations in area recorded in answer to question No. 1. In districts where rainfall has been poor, it has had the effect of reducing the area.

(ii) &(iii) Price of sugar has had no influence on the variations in the area, though often the price of jaggery has on the succeeding crop of sugarcane.

(iv) Cambodia cotton especially in the Coimbatore District which stands on the field for a shorter time and consumes less water and gives very fair profits competes with sugarcane in some important areas. On the other hand, the low prices obtained by paddy which is the chief alternative crop to cane have helped to increase the area under cane. Again certain varieties like Co. 213 which need much less irrigation and which can withstand drought in summer have been responsible for increasing the area in places where such varieties have been cultivated. In one year in a certain district in the hope that a large factory was being erected, a large area was put under cane; owing to the delay in its erection, no cane was purchased. This had the effect of reducing the area, during the next year.

7. There has been no over-production of sugarcane in the Presidency in 1936-37. It does not follow that all that was produced was converted into sugar. By far the larger portion was utilised for the manufacture of gur as the following statement for 1935-36 will show:—

	Tons.
Estimated quantity of cane produced . . .	3,789,600
Estimated quantity used for chewing and seed .	611,611
Quantity of cane crushed in sugar factories .	191,380
Quantity of cane turned into gur	2,986,609

The production of cane sugar in 1936-37 is estimated at about 22,500 tons as against an estimated consumption of approximately 90,000 tons and if new factories are to come into existence, or the capacity of the existing factories increased, it will be necessary to extend the area under sugarcane.

8. The other cash crops vary according to districts as shown below:—

(1) *Vizagapatam and Godavari Gingelly, groundnut, tobacco, chilly and plantains.*—Only plantain alternates with cane, and gives better return than cane. Though it is popular in some areas it cannot effectively replace cane because of the difficulty of keeping the fruit for more than a few days. In 1936-37 it is estimated that while cane hardly paid itself plantain brought in a net return of Rs. 100 per acre. The average net return from the other cash crops in the Vizagapatam District are:—

	Per acre. Rs.
Gingelly	10—15
Tobacco	50—100
Chillies	25—50
Plantain	100—200

(2) *Guntur, Kisna and Nellore-Turmeric (wet lands), cotton, tobacco, chilly, groundnut (dry lands).*—Turmeric in wet lands alternates with cane. The average net return per acre from these crops are:—

	Rs.
Turmeric	100
Cotton	40
Tobacco	40
Groundnut	40
Chilly	40

(3) *Bellary, Cuddapah and Kurnool.*—No cash crops alternate with cane.

(4) *Central Districts.*—The average net return per acre from other cash crop is as follows:—

	Rs.
Groundnut	70—100
Cambodia cotton	100
Betel vine	200
Chilly	150
Tobacco	120
Plantain	100

Of these, groundnut and cambodia alternate with and bring a similar profit as cane. Though betel-vine and plantain are as profitable as, if not more than cane, the area under them is small.

(5) *Trichinopoly and Tanjore.*—The crops which alternate with cane are:—

	Profit per acre. Rs.
Plaintain	120
Turmeric	130

(6) *Madura, Ramnad and Tinnevelly*—

	Rs.
Cambodia cotton	50
Groundnut	40
Chilly	10
Tobacco	70

No. cash crops alternate with cane.

(7) *West Coast.*—Chilly ordinarily alternates with cane bringing a return of Rs. 100 per acre.

(8) *Coimbatore.*—Cambodia alternates with cane. The gross income per acre is about Rs. 100. As elsewhere betel-vine and plantains are alternative crops but their scope is limited.

NOTE.—The returns quoted above are only approximate and no attempt has been made to check the accuracy of these figures as they relate to ryots' conditions and vary widely according to local practices.

9. No separate accounts are maintained for extension and improvement of sugarcane cultivation in the Province. Improvement work is done first on the Agricultural Research Stations and whatever is found profitable on them is later transferred to "trial plots" in districts. The most successful or suitable items are demonstrated to ryots in demonstration plots.

The four research stations where sugarcane occupies an important place are Anakapalli, Samalkot, Palur and Guidyatham. Even here it is not possible to get accurate figures as items under cost of cultivation of various crops are grouped together.

10. The Government of India have so far allotted Rs. 89,000 but the allotment has not been utilised yet. The scheme put up for the purpose did not meet with their approval. A revised scheme is under the consideration of the Local Government. The contribution is not adequate, seeing the magnitude of the work the Local Government have in view.

11. (i) Research work on sugarcane is being carried on at the several agricultural stations and may be broadly divided into:—

(*a*) *Varietal trials.*—The canes are obtained from the Imperial Cane Breeding Station, Coimbatore, and are first laid out in plots and grown for some years and only promising varieties are selected on their yield, sucrose content and percentage of recovery of jaggery.

(*b*) *Manurial trials.*—These include experiments on their effect on yield, and juice; use of molasses; the effect of different doses of manure on different varieties, and on different spacings; time of application of manures; different doses of nitrogenous manures to arrive at the optimum dose required for particular varieties.

(*c*) *Cultural trials.*—These include experiments such as ratooning, optimum seed rate per acre, time of planting, trench planting *versus* bed, and spacing trials.

(*d*) *Rotational trials* to decide which is the most suitable from the point of yield and profits.

(*e*) *Irrigation trials* which include restricted manure and irrigation as opposed to normal applications of manure and irrigation; varieties under swamp conditions.

(*f*) *Trials to study the possibility of raising cane* in (1) dry lands under rainfed conditions by planting in April, June and October, (2) wet land under rainfed conditions by planting in June.

(*g*) Study of deterioration of cane, study of colour and consistency of jaggery prepared from different varieties.

(*h*) Chemical trials which include variation in chemical composition in (1) the crop after 9th month and onwards till harvest, (2) arrowed and unarrowed, and (3) wrapped and unwrapped canes.

(*i*) Insect pests and diseases—

(i) Investigations in red rot, mosaic and smut diseases.

(ii) Investigations on moth borers, their different species, distribution, seasonal occurrence, nature and extent of damage, natural enemies and control measures. Mealy bugs—life-history studies —natural enemies.

(ii) As already stated under (i) research work is carried on the Agricultural Stations, and the most promising of these whether in varieties, manures or cultural practices, etc., are put in "trial plots" in different centres of a district for at least 3 years, and those that suit the local conditions best are put under demonstration plots in ryots' own lands. This gives an opportunity for the ryots to judge for themselves what suits their conditions when attempts are made by each demonstrator to do propaganda work and to supply the demands of the ryots. Such demonstrations also include suitable ploughs and intercultivating implements. Such propaganda and demonstration are being carried on in all sugarcane growing areas and also in places where sugarcane is likely to do well, *e.g.*, Cauvery-Mettur Project area.

12. (i) The Imperial Council of Agricultural Research has granted a lump sum of Rs. 1½ lakhs to meet the entire expenditure of the research work on the Agricultural Research Station, Gudiyattam (Rs. 1,19,300), and a part of expenditure on research at Agricultural Research Station, Anakapalli (Rs. 30,800). The scheme was started at Anakapalli in 1933, and in Gudiyattam in 1935 and is intended to last for 5 years in the first instance.

(ii) Practically all the varieties under trial owe their origin to the Imperial Cane Breeding Station.

(iii) Some technical advice to Anakapalli.

A lot more could be done if more funds were forthcoming.

13. Those connected with the factory at Nellikuppam have constantly visited the Palur farm for help in regard to suitable varieties; other factories started recently have tried and multiplied improved varieties with the assistance of Agricultural Demonstrators.

Improved methods of planting and intercultivation are also practised by them. The Vuyyur factory has recently taken one of our experienced officers in sugarcane cultivation as their technical adviser.

14. The following are the estimates for 1935-36 in tons:—

	(*a*)	191,380.
	(*b*)	Negligible.
	(*c*)	2,986,609.
	(*d*)	611,611.
Total	.	3,789,600.

15. Some of the difficulties of cane-growers in the cultivation of cane and its delivery to factory are the following:—

(*a*) Uncertain seasons.

(*b*) Want of transport facilities; often canes have to be carried in head loads over long distances across fields; want of good feeder roads. Lack of sufficient number of carts for transport as at Hospet.

(*c*) Financial difficulties—want of initial capital; sufficient advances for preliminary cultivation and purchase of manures, etc.

(*d*) Irrigation difficulties, *i.e.*, water is not available at the time of planting or immediately after for the young crop as in the Kistna. Inadequate water supply in tanks.

There ought to be a better organisation between cane-growers and factory-owners regarding the varieties of canes to be planted, time of planting and harvest and delivery to the factory. The factories in their turn should be able to use up all cane when it is in the best condition for manufacturing sugar. There seems to be a feeling among some ryots that assurances given by factories to purchase cane are not always fulfilled.

16. The Co-operative Department is giving all possible assistance to cane-growers to form themselves into co-operative societies. The main objects of these societies are:—

(1) to advance loans to members for cultivation of sugarcane,

(2) to purchase seed, manure and implements for sale or distribution to members,

(3) to disseminate among the members a knowledge of the latest improvements in sugarcane,

(4) to find a sale for the sugarcane, and

(5) to take up such work as may be conducive to the achievements of appreciable results in the yield of sugarcane.

All the cane-growers have not joined co-operative societies; only a few organized themselves into co-operative societies as may be seen from the following statement:—

Name of Society.	No. of cane growers in the area of operations of the Society.	Of the No. in Co. 2, No. who have joined the Society.
Mailpatti	697	130
Hospet	1,500	525
Vuyyur	125	96
Gudivada	87	47
Bobbili	2,000 to 3,000	749
Kirlampudi	620	49
Tiruvarur Cane-growers	70	9
Coimbatore	correct information not available.	75
Uppur	500	38
Bhadragiri	50	11

Of the remaining three societies, the society at Lakshminarasupettah is not doing any work, while those at Nellikuppam and Shiyali have not yet started work.

The societies encourage the members to grow good varieties of cane and find a sale for them. There are 13 cane-growers' societies working at present in the following places:—

1. Lakshminarasupettah (Vizagapatam District).
2. Bobbili (Vizagapatam District).
3. Kirlampudi (East Godavary District).
4. Vuyyur (Kistna District).
5. Gudivada (Kistna District).
6. Hospet (Bellary District).
7. Mailpatti (North Arcot).
8. Coimbatore (Coimbatore District).
9. Nellikuppam (South Arcot District).
10. Tiruvarur (Tanjore District).
11. Shiyali (Tanjore District).
12. Uppur (South Kanara District).
13. Bhadragiri (South Kanara District).

Of the above, Nellikuppam and Shiyali Societies have not yet started work. The societies at Lakshminarasupettah, Tiruvarur and Shiyali are situated

in non-factory areas. The two societies in the Kistna District do not undertake to supply cane to the factory, because the growers have undertaken to supply direct to the Vuyyur Co-operative Industrial and Credit Society. The following societies supplied cane to the neighbouring factories: —

Society.	*Quantity of cane supplied.*
Mailpatti . .	3,600 tons during 1936-37 valued at Rs. 34,300.
Hospet . .	6,410 tons during 1936-37 valued at Rs. 69,889.

The Mailpatty Sugarcane Growers' Co-operative Union is in direct touch with cane-growers and renders assistance by way of checking the weighment of canes at the factory and eliminating middlemen. The societies are all in their infancy and it will take sometime before they establish themselves.

17. Minimum prices for cane were proposed to be fixed on the basis of cost of cultivation, varieties and yield allowing a fair margin of profit to the cultivator. Criticisms and suggestions were invited on the proposed prices which were considered by Government and after discussions with growers and factory owners at three Conferences, Government came to the conclusion that it was not possible to come to a common agreement on a workable formula based on the cost of cultivation as it varies widely from one place to another and also with different varieties. It was also pointed out that conditions in this Presidency and in North India are so dissimilar that the necessity for fixing any minimum price had not yet arrived and therefore the matter might be left as it was till it was clearly demonstrated that the intervention of Government was called for. At the instance of the Government of India, the question was again examined in 1936. It was found that the price realised by the grower was higher than the price arrived at according to the ratio suggested by the Indian Sugar Committee or by the Sugar Technologist. There were also no great complaints from the factory owner or from the grower that he was unfairly treated under the present conditions and it was considered that the fixation of minimum price as suggested by the Government of India would not result in enhancing the present return to the grower. On the other hand the prices fixed as minimum would tend to operate as maximum and complaints were likely to arise that sugarcane growers were being exploited by factory owners. The Local Government, therefore, again decided that there was no immediate need for fixing minimum prices in this Presidency.

18. There are only a few factories in the Presidency and they are so scattered at present that the question of competition has not yet arisen and therefore each factory can afford to fix its own price. But as price for cane is influenced by that of sugar and jaggery, high price say in jaggery puts up the price of cane which may work out to be beyond the means of the factory. On the other hand, competition of sugar from North India in the local market has a tendency to reduce the price of cane.

19. One of the main needs of the sugar industry to-day is the introduction of types of cane that will mature at various periods of the crushing season in order to avoid the present uneconomic crushing of immature cane by many of the factories. The introduction of early and late ripening varieties will be of great assistance to the industry in extending the crushing season and also in enabling a better recovery of sugar on cane to be obtained at the beginning and end of the season, thus assisting materially to reduce the cost of production of sugar. At present many of the factories commence the season with the crushing of immature canes and finish the season by crushing overripe ones, with the result that at the beginning and at the end of the season, the recovery of sugar is too low to permit of profitable working. The question of whether it would be feasible to introduce a system of bonus payments over and above the minimum rate for superior early and late varieties of cane is, therefore, a very important one, but its practicability is a matter for close study by experts as it would perhaps result in a tendency for growers to concentrate on the cultivation of early and late varieties of cane at the

expense of cane maturing during the rest of the season, and this would be of considerable embarassment to the factories.

20. The average cost of transport of cane by carts per maund per mile is as follows in the Presidency:—

Locality.	Price per maund per mile.
	Pies.
I Circle—	
Vizagapatam	1
Godavari	2
II Circle	1—2
III Circle	4—6
IV Circle	1½
V Circle	2·5
VII Circle	Nearly 1 pie by boat.
VIII Circle	1·25—2

21. The ryots employ their own carts as far as possible but as cane is cut and carted in bulk, other carts are employed and in this there is the practice of ryots helping each other. Where carts are hired the rates are as follows:—

Coimbatore District—

5-10 miles—Rs. 1-4 to Rs. 1-8 per trip.

10-15 miles—Rs. 1-12 to Rs. 2 per trip.

20-25 miles—Rs. 3 per trip.

Each cart will carry ¾ to 1 ton depending on the condition of the road.

Guntur—Rs. 2-8 per day.

Vizagapatam—12 annas to rupee 1 per ton per mile.

Bellary—Cost of hiring is 4 annas per mile from field to factory.

The hire is not much higher than the prices mentioned in the previous answer.

22. Rail transport facilities are adequate at present. Attention is invited to the answer to question No. 23 which gives the various concessions secured by the Industries Department in railway freight rates for various sugar factories. Road facilities require improvement. Very little has been done in regard to feeder roads from cane-growing villages to factories; at the same time, factories with the exception of one or two, are not large enough to draw upon areas situated far away from factories. But the question of improvement of road transport will have to be considered sooner or later, especially in wet land tracts. There are no tramway facilities for transport of canes.

23. The Department of Industries has given a good deal of attention to the development of the sugar industry in the Presidency and some of the factories have been established under the guidance of the department. The department was largely responsible for the establishment of the Vuyyuru Co-operative Industrial and Credit Society, Ltd., which was formed for the purpose of setting up a 850-ton sugar factory at Vuyyuru in the Kistna District, in which district an area, at present insufficient in extent, has been brought under cultivation with certain of the deep-rooted varieties of Coimbatore sugarcane. The Society was granted a loan by the Madras Provincial Co-operative Bank, Ltd. The department advised in regard to the specification for the machinery and plant and negotiated the contract with the suppliers—Messrs. A. W. Smith & Co., Ltd.—at a very favourable

price which left little margin of profit to the manufacturers. The department also assisted in the starting of two of the smaller factories. Prior to the disastrous fall in sugar prices, the department considered the possibility of developing the cultivation of sugarcane in one or two areas of the Presidency with a view eventually to the starting of new factories, and the Sub-Committee of the Provincial Economic Council for Agricultural Development has recommended that an investigation of the possibility of developing sugarcane cultivation in a tract of land between the Cauvery and the Coleroon should be investigated. The department was closely associated with the investigation of the possibility of establishing a sugar factory in the Lalgudi area of the Trichinopoly district, as a result of which the Srimati Sugar Mills, Ltd., Lalgudi has been formed for the purpose of setting up a factory capable of crushing 250 tons of sugarcane per day. The whole of the Lalgudi taluk is admirably suited for sugarcane cultivation and as water is available for irrigation during the greater part of the year, sugarcane may be available for six months in the year in the initial stages of working, whilst it is anticipated that by introducing suitable varieties, it will be possible later on to extend the crushing season beyond this period. Sugarcane has been grown in the Lalgudi taluk for a very long time and the cultivators are accustomed to sugarcane cultivation and to the use of manures. Owing to the great delay in forming the company, however, it is doubtful whether the project will now mature, since owing to the fall in sugar prices, difficulty has been experienced in raising the requisite capital. The Department of Industries has been instrumental in securing concessions in freight rates for various sugar factories. At the instance of the department, specially reduced rates for the transport of sugarcane seed from Anakapalle, Poona, Repalle, Tenali and Coimbatore to Hospet, and for sugarcane from the Nizam's Dominions to Hospet, were introduced by the Madras and Southern Mahratta Railway Co., Ltd., during the year 1934-35. The department was also instrumental in securing reduced rates for the transport of sugarcane from Kunnattukidavu and Kovilpalaiyam and Pollachi to Podanur junction. Special freight rates for the transport from Madras of structural materials required for the Vuyyuru Co-operative Industrial and Credit Society, Ltd., were also secured. A reduction of rates on the transport of sugarcane to Bezwada, as also a reduction in the railway freight on sugar from Bezwada to Madras were also obtained for the same factory. The question of the minimum weight charged per railway wagons engaged on the transport of sugarcane was also taken up. In view of the fact that it is necessary to crush sugarcane as soon as possible after it is cut, as otherwise crushing becomes uneconomic, the Madras and Southern Mahratta Railway Co., Ltd., were requested to issue special instructions for trucks loaded with sugarcane to be attached to the next available goods train and they agreed to arrange for special quick transit to Bezwada. The attention of the Railway was also drawn to the fact that it was very necessary for loading facilities to be provided throughout the day and night at Bezwada during the months of January, February and part of March, and the railway authorities undertook to look into this and to arrange matters if possible. Although the Vuyyuru factory has not, owing to various reasons been able to take full advantage of some of the concessions obtained for them, several of the concessions obtained were of real benefit to the factories concerned and the efforts of the department on their behalf have been greatly appreciated.

24. (1) The Indian Sugars and Refineries, Ltd., Hospet, is allowed to take water from the Raya channel at a concession rate for the use of the factory.

(2) A loan of Rs. 50,000 was granted by Government under the State Aid to Industries Act to Sri Ramakrishna Sugar Mills, Ltd., Kirlampudi in March, 1936, for the purpose of (i) discharging a debt due to a bank, and (ii) for the purchase and installation of additional machinery to enable the factory to increase its capacity from 80 to 120 tons a day. The extensions to the Kirlampudi factory, carried out with the aid of the loan, comprised an increase in the number of rollers from 8 to 11 and the installation of an additional evaporator, vacuum pan, two centrifugals, boiler and filter-press.

25. There are three co-operative sugar factories working in the Madras Presidency in the following places:—

(1) Vuyyur (Vuyyur Co-operative Industrial and Credit Society).

(2) Ettikoppaka (Ettikoppaka Co-operative Industrial and Credit Society).

(3) Tummapala (Sri Ramakrishna Co-operative Industrial and Credit Society) (under the management of Vizagapatam Sugars and Refineries, Ltd.).

A brief account of their working is given below:—

Vuyyur Co-operative Industrial and Credit Society (Kistna District).—The society was started on work in February, 1934, and the installation of the plant and machinery was completed towards the close of 1935. It is financed by the Madras Provincial Co-operative Bank. The society commenced to crush sugarcane on 15th January, 1936. The crushing capacity of the factory is about 850 tons per day. Assuming the normal working season to be 120 days, the factory requires at least 1 lakh of tons of cane. With a view to secure the required quantity of cane, the by-laws of the society provide that every member should grow one acre of sugarcane for every share taken by him and deliver it to the factory. But the members did not grow cane as prescribed in the by-laws with the result that the factory crushed about 34,000 tons during the first season and it incurred a net loss of Rs. 1,46,488. The society was unable to keep up its obligations to the Provincial Bank.

The results of the second season (1936-37) also have not been satisfactory; cane supply was inadequate during this season also. The society crushed 30,923 tons only and the duration of the crushing season was only 79 days. Of this there was crushing for only 56 days and the factory stopped work for 23 days. The stoppages on 16 out 23 days were due to want of sugarcane. The average crushing per day was 391·5 tons as against the capacity of 850 tons. It is expected that the net loss during the second season will amount to about Rs. 1,85,063 and the total loss for the two years will be approximately Rs. 3,31,551. The society is not in a position to pay the instalment due to the Madras Provincial Co-operative Bank. The chief contributing causes for the heavy loss are as follows:—

(1) Inadequate supply of cane.

(2) The society paid Rs. 10 per ton of cane, this was very high when compared with the prevailing selling price of sugar Rs. 7 to Rs. 8 would have been reasonable.

(3) Proper control was not exercised over the issue and consumption of store materials.

(4) Want of loyalty among members who failed to grow sugarcane.

(5) The expenditure during the off-season was not properly regulated.

(6) The society had to pay interest at 5 per cent. right from the beginning (long before the society commenced crushing) on the loans borrowed from the Provincial Bank.

(7) Fall in price of sugar and the heavy excise duty.

With a view to place the factory on a sound footing the following steps have been taken:—

(1) The society has employed an Assistant Director of Agriculture having experience of sugarcane; it is expected that he will bring about 5,000 acres around the factory under cane cultivation during the next two years. On an average of 20 tons per acre, the society will then have 1 lakh of tons.

(2) The society has requested the Provincial Bank to extend the period of the loans and also to reduce the rate of interest.

(3) In future, the price of cane will be fixed by the General Manager with reference to the prevailing price of sugar.

(4) All possible steps will be taken to cut down the expenditure to the minimum so as to reduce the cost of manufacture of sugar.

The present position of the society is unsatisfactory and this is mainly due to the inadequate supply of cane. The price of sugar has also fallen considerably to about Rs. 15 per bag. The excise duty has been increased from Rs. 2 to Rs. 3 per bag and unless the price of sugar rises to about Rs. 19 or Rs. 20 per bag, the society cannot make any profit. It remains to be seen whether the society will crush 1 lakh of tons of cane in a year or two and whether it will be able to earn a profit. For the coming 1937-38 season, the cane available may not exceed 40,000 tons.

2. *Ettikoppaka Co-operative Industrial and Credit Society.*—The society started work in April, 1933, and it commenced crushing in January, 1934. The results at the end of the season were not satisfactory for the following reasons:—

(1) Want of experience in working sugar factories.

(2) Late arrival of machinery.

(3) Faulty installations and consequent stoppages from time to time.

Though the factory was expected to crush 50 tons per day, the average crushing did not exceed 35 tons per day. The recovery of sugar was only 5 per cent. and the society sustained a net loss of Rs. 15,518 by the end of 1933-34.

Additional machinery was installed in the year 1934-35 and the factory worked for 74 days only during the year and did not crush the expected number of tons. Stoppages in the working of the factory were common and at every stage technical advice had to be sought for. At the end of the year the net loss increased to Rs. 31,431.

During 1935-36, the factory worked for 127 days and crushed 5,132 tons. The recovery was 7·1 per cent. The average crushing capacity was far below the maximum. The price of sugar which was Rs. 20 or Rs. 19 in the previous years fell to Rs. 15-8 or Rs. 16 in 1935-36. The manufacturing costs and the cost of establishment remained as they were; the fall in price of sugar together with the heavy excise duty did not give any scope to the society to earn any profit and the net loss at the end of the year 1935-36 rose up to Rs. 56,644.

During the current year, the society commenced crushing only on 27th January, 1937 while it should have begun work in December, 1936; this was due to the delay in the arrival of the additional machinery from England. Up to 17th May, 1937 it has worked for 107 days. The average crushing capacity was 45¼ tons while towards the close of the season, the crushing capacity reached 60 tons. The recovery was 8·3 per cent. As the price of sugar is very low, the society will be unable to earn any profit. Now that the capacity has been increased to 60 tons, it remains to be seen whether the society will be able to wipe off the losses in future years.

3. *Thummapala Co-operative Industrial and Credit Society.*—The society was registered in April, 1933 and it took a long time before the installation of the plant could be completed. Early in 1935, it was found that the society required further capital to pay off the debt due to Messrs. Massey & Co., on account of the additional plant purchased from them and other sundry debts and that the members were unwilling or unable to put further money into the society. A transitory by-law was enacted and registered on 5th May, 1935, under which the management of the society was handed over to a private company called the "Vizagapatam Sugars and Refineries, Ltd.". The society has now ceased to function as a Co-operative concern.

During the 1936-37 season, the factory worked for 94 days and crushed 4,918 tons of sugarcane. The average crushing capacity was 52 tons only while the maximum capacity is 120 tons per day. The average recovery was 8 per cent. Delay in the arrival of additional machinery till February, 1937, the fall in the price of sugar and heavy excise duty have resulted in a net loss to the concern.

26. Government have not heard to the contrary.

27. (i) A statement of wholesale prices of sugar imported and Indian prevailing in the Madras, Cochin, Calicut, Madura, Tuticorin and Cocanada markets is enclosed. The prices have been supplied by Messrs. Parry & Co., Ltd.

(ii) A statement of retail prices of sugar supplied by the Triplicane Urban Co-operative Society, Madras, is attached.

A statement of prices of sugar extracted from the daily sheets of Messrs. Parry & Co., Ltd., is enclosed. These prices represent those charged by dealers for supplies of under five bags at a time to petty dealers, coffee hotels, etc.

A statement of prices of jaggery extracted from the daily sheets of Messrs. Parry & Co., Ltd., and another collected from the Triplicane Urban Co-operative Society are enclosed.

MADRAS MARKET.

Wholesale prices per maund of imported and Indian sugars.

Month and year.	Imported.	Indian.	
	Rs. A. P.	Rs. A. P.	Rs. A. P.
1931.			
March	9 0 0	...	...
April	9 0 9	...	...
May	9 7 4	...	...
June	9 5 2	...	...
July	9 4 5	...	...
August	9 4 0	...	...
September	11 0 4	...	...
October	11 1 1	...	...
November	11 0 0	...	...
December	11 5 6	...	...
1932.			
January	11 3 0	...	...
February	10 15 7	...	...
March	10 4 7	...	...
April	10 6 5	...	...
May	10 5 8	...	...
June	10 9 9	...	...
July	10 12 8	...	...
August	10 10 10	...	...
September	10 12 8	...	...
October	11 5 6	...	...
November	11 2 2	...	...
December	11 3 3	...	...

MADRAS MARKET—*contd.*

Wholesale prices per maund of imported and Indian sugars—contd.

Month and year.	Imported.	Indian.	
	Rs. A. P.	Rs. A. P.	Rs. A. P.
1933.			
January	10 7 6	...	...
February	10 8 3	...	...
March	10 8 3	...	...
April	10 7 2	...	...
May	10 13 4	...	...
June	10 9 0	...	...
July	10 9 0	...	...
August	10 7 6	...	...
September	10 9 4	...	...
October	10 10 6	...	...
November	10 3 6	...	...
December	10 1 8	...	...
1934.			
January	9 14 8	9 11 0 to	9 14 0
February	10 1 8	9 11 9 to	9 14 8
March	10 1 8	9 11 9 to	9 14 8
April	10 4 7	9 13 3 to	10 0 2
May	9 13 7	9 10 3 to	9 12 6
June	10 0 11	9 11 5 to	...
July	10 0 11	9 13 3 to	9 14 0
August	9 13 7	9 12 1 to	9 12 10
September	9 15 1	9 13 3 to	9 14 0
October	9 10 3	... to	...
November	9 15 5	... to	...
December	9 12 6	9 4 5 to	9 8 10
1935.			
January	10 1 8	9 10 3 to	9 14 8
February	10 0 2	9 4 5 to	9 5 11
March	...	9 3 8 to	9 5 2
April	...	9 5 11 to	9 8 10
May	...	9 7 4 to	9 11 0
June	...	9 8 1 to	9 12 6
July	...	9 7 4 to	9 10 3
August	9 14 8	9 7 4 to	9 11 0
September	10 3 1	9 15 5 to	10 0 11
October	10 6 1	10 4 7 to	...
November	9 12 6	9 8 10 to	...
December	9 11 9	9 7 4 to	9 8 10
1936.			
January	9 11 0	9 5 2 to	9 11 0
February	9 11 0	8 14 7 to	9 5 11
March	9 11 9	9 0 0 to	9 7 4
April	9 11 9	8 14 2 to	9 8 1

MADRAS MARKET—*concld.*

Wholesale prices per maund of imported and Indian sugars—concld.

Month and year.	Imported. Rs. A. P.	Indian. Rs. A. P.	Rs. A. P.	
1936—contd.				
May	9 11 9	8 12 4 to	9 4 5	
June	9 11 9	8 12 4 to	9 6 7	
July	9 11 9	8 10 1 to	9 5 2	
August	9 11 9	8 7 2 to	9 4 5	
September	9 11 9	8 5 9 to	9 4 5	
October	9 10 3	8 1 4 to	9 0 0	
November	9 10 3	7 14 4 to	8 8 8	
December	9 8 10	7 5 7 to	8 4 4	Old Crop.
		8 1 4 to	8 4 4	New Crop.
1937.				
January	9 8 10	7 7 0 to	8 4 4	
February	9 7 4	7 1 2 to	7 11 5	
March	9 8 10	7 3 5 to	7 11 5	
April	9 7 4	7 0 5 to	7 11 5	
May	...	6 14 2 to	7 8 6	
June	...	6 13 6 to	7 8 6	

COCHIN MARKET.

Wholesale selling prices per maund of imported and Indian sugars.

Month and year.	Imported. Rs. A. P.	Indian. Rs. A. P.	Rs. A. P.
1932.			
January	...	11 14 0	...
February	...	11 13 6	...
March	...	11 13 0	...
April	...	10 10 8	...
May	...	10 6 9	...
June	...	10 6 9	...
July	11 0 5	9 15 0 to	11 0 3
August	10 14 0	9 13 1 to	10 8 8
September	10 14 6	...	9 15 0
October	10 8 8	9 15 0 to	10 15 1
November	10 13 7	11 8 3	...
December	10 9 9	10 0 11 to	11 8 3
1933.			
January	10 9 8	10 2 11 to	11 4 4
February	10 8 8	9 13 1 to	10 14 6
March	10 11 1	9 15 0 to	10 8 8
April	10 13 7	9 13 1 to	10 6 9
May	10 8 9	10 0 11 to	10 6 9
June	10 7 3	9 15 0 to	10 8 9
July	10 10 6	9 15 0 to	10 8 8

COCHIN MARKET—*contd.*

Wholesale selling prices per maund of imported and Indian sugars—contd.

Month and year.	Imported.	Indian.
	Rs. A. P.	Rs. A. P.
1933—contd.		
August	10 3 10	9 15 0 to 10 2 10
September	10 5 9	9 6 4 to 9 15 0
October	10 4 10	9 3 5 to 9 9 3
November	...	...
December	...	...
1934.		
January	...	...
February	...	...
March	9 15 8	9 15 6 to 10 4 7
April	9 15 1	...
May	9 12 1	...
June	9 12 1	...
July	10 1 5	...
August	9 12 1	...
September	9 11 6	...
October	9 10 4	...
November	9 15 1	...
December	9 5 6	...
1935.		
January	9 7 11	...
February	9 5 5	...
March	9 3 8	...
April	9 10 4	...
May	9 13 9	...
June	9 15 0	...
July	9 15 0	...
August	10 1 4	...
September	9 14 5	...
October	9 15 1	...
November	9 9 0	...
December	9 9 0	...
1936.		
January	9 9 0	...
February	9 9 0	...
March	9 9 0	...
April	9 12 0	9 1 0 ...
May	9 13 0	9 1 3 ...
June	...	8 10 2 ...
July	...	8 4 5 ...
August	...	8 3 8 to 8 15 3
September	...	8 8 0 to 8 12 9
October	...	8 5 5 to 8 10 9
November	...	8 4 4 to 8 9 8
December	...	8 6 4 to 8 9 9

COCHIN MARKET—*concld.*

Wholesale selling prices per maund of imported and Indian sugars—concld.

Month and year.	Imported.	Indian.
	Rs. A. P.	Rs. A. P. to Rs. A. P.
1937.		
January	...	7 6 3 to 8 0 3
February	...	7 4 9 to 7 8 5
March	...	7 2 0 to 7 4 10
April	...	7 4 0 to 7 6 9
May	...	6 14 9 to 6 15 11

CALICUT MARKET.

Wholesale selling prices per maund of imported and Indian sugars for the last seven years.

Month and year.	Imported.	Indian.
	Rs. A. P.	Rs. A. P.
1930.		
March	9 8 9	10 4 7
April	9 8 9	10 5 1
May	9 8 9	10 1 8
June	9 5 11	9 12 9
July	9 4 5	9 6 10
August	9 2 11	9 7 4
September	8 13 1	8 15 0
October	8 9 5	8 13 0
November	8 5 0	8 14 0
December	8 7 11	8 14 0
1931.		
January	8 14 6	8 15 0
February	9 2 2	9 12 9
March	9 3 8	9 11 3
April	9 7 4	9 11 3
May	9 8 9	10 0 8
June	10 3 1	10 4 7
July	9 14 9	10 1 8
August	9 11 9	9 15 8
September	10 7 6	11 10 1
October	11 3 4	11 10 6
November	11 12 1	12 5 3
December	11 5 6	12 1 11
1932.		
January	11 3 4	11 11 2
February	11 6 2	11 8 2
March	10 14 10	11 6 2
April	10 8 3	10 12 3
May	10 8 11	10 8 6
June	11 4 9	11 8 2
July	11 3 4	11 7 1

CALICUT MARKET—*contd.*

Wholesale selling prices per maund of imported and Indian sugars for the last seven years—contd.

Month and year.	Imported. Rs. A. P.	Indian. Rs. A. P.
1932—contd.		
August	11 0 4	11 5 3
September	11 0 4	11 7 1
October	10 15 7	12 1 11
November	10 15 7	12 5 10
December	10 13 5	12 13 8
1933.		
January	10 7 6	11 0 4
February	10 9 8	10 12 5
March	10 14 3	10 13 4
April	10 9 8	10 11 5
May	10 12 8	10 12 5
June	10 10 6	10 12 5
July	10 10 6	10 11 5
August	10 6 1	11 1 5
September	10 11 11	11 1 8
October	10 11 3	11 1 5
November	10 6 1	10 15 4
December	10 6 9	10 15 4
1934.		
January	10 0 10	10 1 8
February	10 3 2	10 1 8
March	10 2 5	10 1 8
April	9 13 2	9 14 9
May	9 14 9	9 14 9
June	9 14 9	9 14 9
July	10 3 1	10 6 7
August	9 14 10	...
September	9 11 4	...
October	9 12 6	...
November	10 0 2	...
December	9 9 6	...
1935.		
January	9 14 1	9 10 9
February	9 9 6	9 10 9
March	9 8 9	9 8 9
April	9 11 9	9 10 9
May	10 0 10	9 15 8
June	10 4 7	10 6 1
July	9 14 9	...
August	9 13 11	...
September	9 14 4	...
October	9 14 9	...
November	9 10 4	...
December	9 9 6	...

CALICUT MARKET—*concld.*

Wholesale selling prices per maund of imported and Indian sugars for the last seven years—concld.

Month and year.	Imported. Rs. A. P.	Indian. Rs. A. P.
1936.		
January	9 11 9	...
February	9 10 8	...
March	9 10 8	9 11 9
April	...	9 6 11
May	...	9 7 4
June	...	8 11 7
July	...	8 9 5
August	...	8 5 0
September	...	8 1 4
October	...	8 7 2
November	...	8 8 7
December	...	8 4 3
1937.		
January	...	8 1 4
February	...	7 8 6
March	...	7 4 10
April	...	7 4 10
May	...	7 1 2

MADURA MARKET.

Wholesale and retail selling prices per maund of imported and Indian sugars.

Month and year.	Wholesale prices.		Retail prices.	
	Imported Rs. A. P.	Indian. Rs. A. P.	Imported Rs. A. P.	Indian. Rs. A. P.
1930.				
April	9 14 8	9 14 2	10 4 7	10 4 7
May	10 9 0	...	11 1 9	...
June	9 6 7	...	9 14 0	...
July	9 8 1	...	9 14 0	...
August	9 8 10	...	9 14 0	...
September	9 8 10	...	9 14 0	...
October	9 0 9	...	9 7 5	...
November	9 0 9	9 0 11	9 7 5	9 7 5
December	9 1 6	...	9 7 5	...
1931.				
January	9 11 9	...	10 4 7	...
February	9 8 5	9 7 10	10 4 7	10 4 7
March	9 14 8	...	10 4 7	...
April	9 12 6	...	10 4 7	...
May	10 2 8	...	10 11 2	...
June	9 15 5	9 8 9	10 11 2	10 11 2
July	9 11 9	...	10 4 7	...
August	10 0 2	...	10 4 7	...

MADURA MARKET—*contd.*

Wholesale and retail selling prices per maund of imported and Indian sugars—contd.

Month and year.	Wholesale prices.						Retail prices.					
	Imported.			Indian.			Imported.			Indian.		
	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.
1931—contd.												
September	11	10	0	11	11	7	12	5	6	12	5	6
October	11	7	10	11	9	8	12	5	6	12	5	6
November	11	13	7	11	5	3	12	5	6	12	5	6
December	11	11	10	11	3	4	12	5	6	12	5	6
1932.												
January	11	7	4		...		12	5	6		...	
February	11	7	0	11	8	2	11	14	11	11	14	11
March	10	6	1		...		11	14	11		...	
April	10	12	0		...		11	1	9		...	
May	10	14	11	10	11	11	11	1	9	11	1	9
June	11	0	4	10	11	5	11	8	4	11	8	4
July	11	1	10	10	11	0	11	8	4	11	8	4
August	11	6	4	10	11	5	11	14	11	11	14	11
September	11	1	10	10	12	11	11	14	11	11	14	11
October	11	5	10	10	13	5	11	14	11	11	14	11
November	11	6	2	10	15	10	11	14	11	11	14	11
December	11	0	0		...		11	8	4		...	
1933.												
January	10	10	10	10	7	0	11	8	4	11	8	4
February	10	11	11	10	8	0	11	1	9	11	1	9
March	10	8	7	10	8	6	11	1	9	11	1	9
April	10	13	0	10	12	5	11	1	9	11	1	9
May	11	3	3	11	1	9	11	8	4	11	8	4
June	10	14	6		...		11	8	4		...	
July	11	0	4	10	13	11	11	8	4	11	8	4
August	10	13	5		...		11	8	4	11	8	4
September	10	14	6	10	11	11	11	8	4	11	8	4
October	10	14	6		...		11	8	4	11	8	4
November	10	10	1	10	9	6	11	8	4	11	8	4
December	10	8	3		...		11	1	9	11	1	9
1934.												
January	10	5	8	10	0	8	11	1	9	11	1	9
February	10	6	5	10	0	2	11	1	9	11	1	9
March	10	7	11	9	15	8	11	1	9	11	1	9
April	10	6	5	10	4	7	11	1	9	11	1	9
May	10	4	11	10	2	8	11	1	9	11	1	9
June	10	6	1	10	1	2	11	1	9	11	1	9
July	10	7	2	10	4	1	11	1	9	11	1	9
August	10	5	4	10	4	1	10	11	2	10	11	2
September	10	2	9	10	4	1	10	11	2	10	11	2
October	10	2	9	10	3	1	10	11	2	10	11	2
November	10	3	2	10	0	2	10	11	2	10	11	2
December	9	15	9				10	11	2		...	

MADURA MARKET—*concld.*

Wholesale and retail selling prices per maund of imported and Indian sugars—concld.

Month and year.	Wholesale prices.		Retail prices.	
	Imported.	Indian.	Imported.	Indian.
	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.
1935.				
January	10 2 4	9 14 2	10 4 7	10 4 7
February	10 0 2	9 11 9	10 4 7	10 4 7
March	9 15 9	9 11 3	10 4 7	10 4 7
April	10 2 9	10 2 2	10 4 7	10 4 7
May	...	10 6 7	10 11 2	10 11 2
June	10 6 5	10 5 1	10 11 2	10 11 2
July	10 5 4	...	10 11 2	10 11 2
August	10 4 11	10 2 2	10 11 2	10 11 2
September	10 12 0	10 8 6	10 11 2	10 11 2
October	10 10 6	10 8 6	11 1 9	11 1 9
November	10 4 11	10 2 2	10 11 2	10 11 2
December	10 4 7	9 15 8	10 11 2	10 11 2
1936.				
January	10 7 2	10 1 2	10 11 2	10 11 2
February	10 6 9	10 2 2	10 11 2	10 11 2
March	...	9 11 9	10 11 2	10 11 2
April	...	9 8 9	...	10 4 7
May	...	9 9 3	...	10 4 7
June	...	9 1 11	...	9 14 0
July	...	9 10 3	...	9 14 0
August	...	9 9 10	...	9 14 0
September	...	8 15 8	...	9 0 10
October	...	9 0 9	...	9 0 10
November	...	9 0 0 to 8 13 1	...	9 0 10
December	...	9 0 0 to 8 4 8	...	9 0 10
1937.				
January	...	8 1 0	...	9 0 10
February	...	7 4 9	...	9 0 10
March	...	8 1 4	...	9 0 10
April	...	...	...	...
May	...	...	...	...

TUTICORIN MARKET.

Wholesale selling prices per maund of imported and Indian sugars.

Month and year.	Imported.	Indian.
	Rs. A.	Rs. A.
1930.		
January	9 0	...
February	8 11	...
March	9 7	...

TUTICORIN MARKET—*contd.*

Wholesale selling prices per maund of imported and Indian sugars—contd.

Month and year.	Imported. Rs. A.	Indian. Rs. A.
1930—contd.		
April	9 12	...
May	10 4	...
June	10 3	...
July	9 1	...
August	9 6	...
September	9 0	...
October	8 14	...
November	8 14	...
December	8 13	...
1931.		
January	8 12	...
February	9 6	...
March	9 8	...
April	9 9	...
May	9 9	...
June	9 13	...
July	9 7	...
August	9 5	...
September	10 7 to 10 10	...
October	11 5	...
November	11 3	...
December	11 6	...
1932.		
January	11 3 to 11 4	...
February	11 4 to 11 6	...
March	10 4 to 10 9	...
April	10 4	...
May	10 4 to 10 5	...
June	10 7 to 10 9	...
July	10 13 to 11 0	...
August	10 13	...
September	11 3 to 11 4	...
October	10 13	11 2
November	11 0	10 13
December	10 15	...
1933.		
January	10 9	...
February	10 4 to 10 6	...
March	10 4 to 10 6	...
April	10 5 to 10 6	...
May	10 9 to 10 10	...
June	10 10	10
July	10 9	10 6

TUTICORIN MARKET—*concld.*

Wholesale selling prices per maund of imported and Indian sugars—concld.

Month and year.	Imported.	Indian.
	Rs. A. Rs. A.	Rs. A. Rs. A.
1933—contd.		
August	10 7 to 10 9	...
September	10 7 to 10 8	...
October	10 7 to 10 9	...
November	10 6 to 10 7	...
December	10 4 to 10 5	...
1934.		
January	9 14 to 9 15	...
February	10 0	...
March	10 1	...
April	10 1	...
May	9 9 to 10 0	...
June	9 9 to 10 0	...
July	9 9 to 10 1	...
August	10 0 to 10 2	...
September	9 15 to 10 2	...
October	9 9 to 9 11	...
November	9 10	...
December	9 11	9 15
1935.		
January	9 9	9 15
February	9 5 to 9 9	...
March	9 6 to 9 10	...
April	9 9	...
May	9 13	...
June	10 0	...
July	10 0	...
August	9 14	...
September	9 15	...
October	10 6	...
November	10 1	...
December	9 15 to 10 1	...
1936.		
January	9 14	...
February	9 15	...
March	9 15	9 15
April	9 15	9 15
May	9 15	9 10
June	...	9 4 to 9 5
July	...	9 0 to 9 6
August	...	9 0 to 9 6
September	...	8 13 to 9 0
October	...	8 10 to 8 14
November	9 0	8 10 to 8 14
December	...	8 7 to 8 10

COCANADA MARKET.

Wholesale and retail selling prices per maund of imported and Indian sugars.

Month and year.	Wholesale prices.		Retail prices.	
	Imported.	Indian.	Imported.	Indian.
	Rs. A.	Rs. A.	Rs. A. P.	Rs. A. P.
1930.				
January . .	9 14	9 14	10 4 7	10 4 7
February . .	9 13	9 13	10 4 7	10 4 7
March . .	10 3	10 4	10 4 7	10 4 7
April . .	10 3	10 8	10 4 7	10 11 2
May . .	10 3	10 8	10 4 7	10 11 2
June . .	10 3	10 4	10 4 7	10 11 2
July . .	9 15	9 15	10 4 7	10 4 7
August . .	9 15	10 0	10 4 7	10 4 7
September .	9 15	9 8	10 4 7	9 14 0
October . .	9 15	9 4	10 4 7	9 7 5
November . .	9 15	9 0	10 4 7	9 7 5
December .	9 15	9 1	10 4 7	9 7 5
1931.				
January . .	9 0	9 0	9 7 5	9 7 5
February . .	9 10	9 12	9 14 0	9 14 0
March . .	9 10	9 12	9 14 0	9 14 0
April . .	9 10	9 8	9 14 0	9 14 0
May . .	9 10	9 12	9 14 0	9 14 0
June . .	9 10	10 2	9 14 0	10 4 7
July . .	10 0	10 2	10 4 7	10 4 7
August . .	9 10	9 6	9 14 0	9 14 0
September .	10 0	10 0	10 4 7	10 4 7
October . .	11 5	11 5	11 14 11	11 14 11
November .	11 5	11 9	11 14 11	12 5 6
December .	11 5	12 0	11 14 11	12 5 6
1932.				
January . .	11 14	11 7	11 8 4	11 8 4
February . .	11 0	10 15	11 1 9	11 1 9
March . .	11 6	11 7	11 8 4	11 8 4
April . .	10 10	10 9	11 1 9	11 1 9
May . .	10 10	10 11	11 1 9	11 1 9
June . .	10 10	10 12	11 1 9	11 1 9
July . .	10 12	10 14	11 1 9	11 1 9
August . .	10 15	10 15	11 1 9	11 1 9
September .	10 12	10 11	11 1 9	11 1 9
October . .	10 10	10 12	11 1 9	11 1 9
November .	10 14	10 14	11 1 9	11 1 9
December .	10 15	11 0	11 1 9	11 1 9

COCANADA MARKET—*contd.*

Wholesale and retail selling prices per maund of imported and Indian sugars—contd.

Month and year.	Wholesale prices.		Retail prices.	
	Imported.	Indian	Imported.	Indian.
	Rs. A.	Rs. A.	Rs. A. P.	Rs. A. P.
1933.				
January	10 12	10 14	11 1 9	11 1 9
February	10 12	10 13	11 1 9	11 1 9
March	10 12	10 13	11 1 9	11 1 9
April	10 12	10 13	11 1 9	11 1 9
May	10 12	10 13	11 1 9	11 1 9
June	10 10	10 10	11 1 9	11 1 9
July	10 10	10 10	11 1 9	11 1 9
August	10 10	10 11	11 1 9	11 1 9
September	10 0	10 0	11 1 9	11 1 9
October	9 8	9 8	9 14 0	9 14 0
November	10 4	10 4	11 1 9	11 1 9
December	10 4	10 4	11 1 9	11 1 9
1934.				
January	9 11	9 0 to 9 11	9 14 0	9 0 10 to 9 14 0
February	9 11	9 0 to 9 12	9 14 0	9 0 10 to 9 14 0
March	9 12	9 2 to 9 14	9 14 0	9 0 10 to 9 14 0
April	9 12	9 2 to 9 13	9 14 0	9 0 10 to 9 14 0
May	9 13	9 2 to 9 13	9 14 0	9 0 10 to 9 14 0
June	9 14	9 2 to 9 14	10 4 7	9 0 10 to 10 4 7
July	9 14	9 3 to 9 14	10 4 7	9 7 5 to 10 4 7
August	9 14	9 2 to 9 13	10 4 7	9 7 5 to 10 4 7
September	10 0	9 7 to 10 0	10 4 7	9 14 0 to 10 4 7

COCANADA MARKET—*contd.*

Wholesale and retail selling prices per maund of imported and Indian sugars—contd.

Month and year.	Wholesale prices.		Retail prices.	
	Imported.	Indian.	Imported.	Indian.
	Rs. A.	Rs. A.	Rs. A. P.	Rs. A. P.
1934—contd.				
October	10 0	9 7 to 10 0	10 4 7	9 14 0 to 10 4 7
November	9 15	9 7 to 9 13	10 4 7	9 14 0
December	9 12	9 3 to 9 9	9 14 0	9 14 0 to 9 7 5
1935.				
January	...	9 0 to 9 9	...	9 0 10 to 9 14 0
February	...	9 0 to 9 13	...	9 0 10 to 9 14 0
March	...	9 4 to 9 13	...	9 0 10 to 9 14 0
April	...	9 1 to 9 15	...	9 0 10 to 9 14 0
May	...	9 2 to 9 11	...	9 0 10 to 9 14 0
June	...	9 2 to 9 11	...	9 0 10 to 9 14 0
July	...	9 0 to 9 8	...	9 0 10 to 9 14 10
August	...	9 0 to 9 9	...	9 0 10 to 9 14 0
September	...	9 0 to 9 7	...	9 0 10 to 9 14 0
October	...	9 5 to 10 6	...	9 7 5 to 10 4 7
November	...	9 0 to 9 8	...	9 0 10 to 9 14 0
December	...	9 0 to 9 1	...	9 0 10 to 9 7 5

COCANADA MARKET—*concld.*

Wholesale and retail selling prices per maund of imported and Indian sugars—concld.

Month and year.	Wholesale prices.		Retail prices.	
	Imported.	Indian.	Imported.	Indian.
	Rs. A.	Rs. A.	Rs. A. P.	Rs. A. P
1936.				
January . .	...	9 0 to 9 8	...	9 0 10 to 9 14 0
February . .	...	9 0 to 9 4	...	9 0 10 to 9 14 0
March . .	...	9 1 to 9 6	...	9 0 10 to 9 14 0
April . .	...	9 0 to 9 4	...	9 0 10 to 9 14 0
May . .	...	8 14 to 9 1	...	9 0 10 to 9 7 5
June . .	...	8 8 to 8 12	...	8 10 3 to 9 0 10
July . .	...	8 8 to 8 12	...	8 10 3 to 9 0 10
August . .	...	8 4 to 8 6	...	8 3 8 to 8 10 3
September .	...	8 0 to 8 3	...	8 3 8 to 8 10 3
October . .	...	8 0 to 8 3	...	8 3 8 to 8 10 3
November . .	...	8 0 to 8 3	...	8 3 8 to 8 10 3
December .	...	7 10 to 7 12	...	7 13 1 to 8 3 8

Statement showing the price per viss of sugar.

(Prices have been collected from the Triplicane Urban Co-operative Society.)

N.B.—The dates noted against the prices are those on which the prices have altered.

Date of alteration.	Price. Rs.	A.	P.
1912.			
24th January	0	6	3
29th January	0	6	6
12th February	0	6	9
9th March	0	6	6
24th June	0	6	3
5th July	0	6	0
8th July	0	5	9
13th July	0	5	6
14th July	0	5	3
22nd July	0	5	0
24th September	0	4	9
1913.			
24th May	0	5	0
8th August	0	4	9
11th November	0	4	6
1914.			
7th June	0	4	9
4th August	0	5	6
5th August	0	6	0
8th August	0	6	6
16th August	0	6	3
26th August	0	7	0
29th August	0	6	9
4th September	0	6	6
15th October	0	6	3
10th November	0	6	6
17th November	0	7	0
29th November	0	7	6
12th December	0	7	0
1915.			
29th January	0	7	6
1916.			
11th April	0	8	3
19th April	0	8	6
29th April	0	8	9
23rd May	0	8	6
6th June	0	8	3
28th July	0	8	6

Date of alteration.	Price. Rs.	A.	P.
1916—contd.			
30th August	0	8	9
4th September	0	9	0
3rd October	0	8	9
31st October	0	9	0
2nd November	0	9	3
14th November	0	10	0
25th November	0	10	6
1st December	0	10	3
3rd December	0	10	0
20th December	0	9	9
30th December	0	9	6
1917.			
10th January	0	9	3
21st January	0	9	0
18th February	0	9	3
27th April	0	9	0
18th May	0	8	9
29th May	0	8	6
1st June	0	8	3
12th June	0	8	0
25th June	0	7	9
29th June	0	7	3
2nd July	0	7	0
9th July	0	7	6
20th July	0	8	0
25th July	0	8	6
20th August	0	8	3
7th October	0	8	0
19th October	0	8	3
30th October	0	8	6
24th October	0	8	0
12th December	0	7	9
22nd December	0	7	6
1918.			
6th February	0	7	3
22nd March	0	7	6
23rd March	0	8	0
7th April	0	8	3
15th April	0	8	6
16th April	0	9	0

Statement showing the price per viss of sugar—contd.

Date of alteration.	Price. Rs.	A.	P.
1918—contd.			
20th April	0	9	3
26th April	0	8	9
29th April	0	8	0
10th May	0	8	6
17th May	0	8	3
19th May	0	8	0
24th May	0	7	9
26th May	0	8	0
31st May	0	7	9
12th June	0	7	6
1919.			
22nd March	0	10	3
11th April	0	11	0
20th April	0	11	3
23rd April	0	11	6
26th April	0	11	9
28th April	0	11	6
7th May	0	13	0
13th May	0	12	6
31st May	0	13	0
1st July	0	13	6
4th July	0	14	0
6th July	0	14	6
8th July	0	15	0
13th July	1	0	0
19th July	0	15	6
29th July	0	15	0
14th August	0	15	6
18th August	0	15	0
23rd August	0	14	6
26th August	0	14	0
6th September	0	13	6
13th September	0	13	0
20th September	0	13	6
11th October	0	14	0
28th October	0	14	6
8th November	0	15	0
11th November	0	15	6
20th December	1	0	0
23rd December	1	0	6
1920.			
6th January	1	1	0
20th January	1	1	6
24th January	1	1	3
29th January	1	2	0
3rd February	1	1	6
14th February	1	1	0
24th February	1	0	6
26th March	1	0	3
13th April	1	1	6
4th May	1	2	0
8th May	1	3	0
1921.			
14th February	1	3	0
22nd February	1	0	9
4th March	1	2	0
11th March	1	2	6
16th March	1	3	0
29th March	1	2	6
2nd April	1	2	0
6th April	1	1	6
19th April	1	1	6
26th April	1	1	0
6th May	1	2	0
15th May	1	1	3
21st May	1	0	0
24th May	0	15	6
27th May	0	15	3
31st May	0	15	0
4th June	0	14	3
8th June	0	14	0
11th June	0	14	6
17th June	1	0	0
20th June	0	15	6
2nd July	1	0	0
6th July	0	15	0
8th July	0	13	0
9th July	0	14	0
11th July	0	13	6
26th July	0	12	6
8th August	0	12	3
13th August	0	12	0
14th August	0	11	6
26th August	0	11	9
29th August	0	11	6
11th September	0	11	3
16th September	0	10	9
20th September	0	10	6
23rd September	0	10	0

Statement showing the price per viss of sugar—contd.

Date of alteration.	Price. Rs. A. P.
1921—contd.	
14th October	0 9 6
23rd October	0 9 0
6th November	0 8 9
8th November	0 8 6
20th November	0 8 9
21st November	0 9 0
29th November	0 9 3
16th December	0 9 0
1922.	
21st January	0 9 3
24th January	0 9 6
26th January	0 10 0
27th January	0 10 6
28th January	0 10 6
30th January	0 10 0
11th February	0 9 9
15th February	0 10 0
27th February	0 11 0
6th March	0 10 6
17th March	0 11 0
28th March	0 10 9
3rd April	0 10 6
4th April	0 10 3
8th April	0 10 0
16th April	0 10 3
23rd May	0 10 0
6th June	0 10 3
7th September	0 10 0
6th October	0 9 9
7th October	0 10 6
19th November	0 10 3
8th December	0 10 6
15th December	0 11 0
28th December	0 10 9
29th December	0 10 6
1923.	
3rd January	0 10 0
5th January	0 9 9
6th January	0 9 6
12th January	0 9 9
18th January	0 9 6
19th January	0 9 9
25th January	0 9 6

Date of alteration.	Price. Rs. A. P.
1923—contd.	
3rd February	0 9 3
8th February	0 9 6
10th February	0 10 0
17th February	0 10 6
19th February	0 10 3
25th February	0 10 6
8th March	0 10 9
11th March	0 11 0
15th March	0 11 6
16th March	0 12 6
22nd March	0 13 0
7th April	0 12 6
27th April	0 12 9
20th May	0 13 3
22nd May	0 13 6
27th May	0 13 9
31st May	0 13 6
9th June	0 13 0
1st July	0 13 3
8th July	0 14 0
9th July	0 13 3
13th July	0 13 0
15th July	0 12 9
21st July	0 12 6
24th July	0 12 3
28th July	0 12 0
11th August	0 10 9
6th August	0 10 6
7th August	0 10 3
15th August	0 10 0
22nd September	0 10 3
16th October	0 10 6
12th November	0 10 9
17th November	0 11 0
24th November	0 11 6
26th November	0 12 6
29th November	0 12 3
30th November	0 12 0
4th December	0 12 6
14th December	0 12 3
16th December	0 12 9
1924.	
10th January	0 12 6
9th February	0 12 9
18th February	0 13 3

Statement showing the price per viss of sugar—contd.

Date of alteration.	Price. Rs. A. P.
1924—contd.	
8th March	0 13 0
29th March	0 12 3
3rd April	0 12 6
9th April	0 12 0
16th April	0 11 9
21st April	0 11 6
25th April	0 11 3
29th April	0 11 0
2nd May	0 10 9
5th May	0 10 6
18th May	0 10 9
26th May	0 11 0
27th May	0 11 3
2nd June	0 11 0
14th June	0 10 9
16th June	0 10 6
21st June	0 10 0
27th June	0 10 3
4th July	0 10 0
2nd August	0 9 9
4th August	0 9 6
16th August	0 9 9
22nd August	0 10 0
25th August	0 10 3
30th August	0 10 0
1st September	0 9 6
27th September	0 9 3
1st October	0 9 0
5th November	0 8 9
15th November	0 8 6
15th December	0 8 3
17th December	0 8 0
1925.	
5th January	0 7 9
7th January	0 8 3
10th February	0 8 0
6th April	0 8 6
19th May	0 8 3
22nd May	0 8 6
27th May	0 8 3
10th June	0 8 0
17th June	0 7 9
3rd July	0 7 6
6th July	0 7 3
17th July	0 7 6

Date of alteration.	Price. Rs. A. P.
1925—contd.	
7th August	0 7 3
15th August	0 7 0
21st August	0 7 3
29th August	0 7 6
9th September	0 7 9
14th September	0 8 0
21st September	0 8 3
23rd September	0 7 6
25th September	0 7 3
5th October	0 7 0
6th November	0 6 9
25th November	0 6 6
27th November	0 6 9
30th November	0 7 0
11th December	0 7 0
16th December	0 7 3
1926.	
16th January	0 7 6
5th February	0 7 9
15th February	0 8 0
5th March	0 7 9
25th March	0 7 6
19th April	0 7 3
24th April	0 7 6
7th May	0 7 9
12th May	0 8 0
7th August	0 7 3
3rd September	0 7 6
6th September	0 7 9
10th September	0 7 6
24th September	0 7 9
23rd October	0 7 6
12th November	0 7 9
22nd November	0 8 0
29th November	0 8 3
10th December	0 8 6
15th December	0 8 9
1927.	
29th January	0 8 6
5th February	0 8 3
12th February	0 8 6
5th March	0 8 3
2nd May	0 7 6
16th June	0 7 3
17th July	0 7 0

Statement showing the price per viss of sugar—contd.

Date of alteration.	Price. Rs.	A.	P.
1927—contd.			
31st July	0	7	3
27th September	0	7	0
31st October	0	6	9
1928.			
3rd January	0	7	0
7th January	0	6	9
7th April	0	7	6
10th May	0	7	3
23rd June	0	7	0
26th June	0	6	9
17th July	0	6	6
1929.			
11th January	0	6	6
18th April	0	6	3
19th July	0	6	0
1930.			
1st January	0	5	9
6th February	0	5	10
20th February	0	6	0
3rd March	0	6	3
20th March	0	6	0
27th March	0	6	3
26th June	0	6	0
Prices not available from 1st July 1930 to 30th June 1931.			
1931.			
1st July	0	6	3
5th August	0	6	0
1st October	0	6	9
2nd October	0	7	0
4th October	0	7	3
1932.			
14th January	0	7	6
21st January	0	7	3
2nd March	0	7	0
21st March	0	6	9
14th May	0	6	6
18th June	0	6	9
5th September	0	7	0
27th October	0	7	3

Date of alteration.	Price. Rs.	A.	P.
1932—contd.			
10th November	0	7	0
1st December	0	7	3
15th December	0	7	6
22nd December	0	8	0
1933.			
4th January	0	7	9
12th January	0	7	3
21st January	0	7	0
1st February	0	6	9
9th February	0	6	6
23rd February	0	6	8
23rd March	0	6	6
30th March	0	6	8
5th April	0	6	6
18th May	0	6	8
4th June	0	6	9
5th June	0	7	0
22nd June	0	6	9
29th June	0	6	8
6th October	0	6	9
16th October	0	6	10
19th October	0	7	0
26th October	0	6	10
1st November	0	6	9
16th November	0	6	8
23rd November	0	6	6
1934.			
1st March	0	6	4
2nd March	0	6	6
27th March	0	6	3
23rd April	0	6	4
21st June	0	6	3
27th July	0	6	4
20th September	0	6	6
18th October	0	6	3
29th November	0	6	4
13th December	0	6	3
1935.			
7th January	0	6	0
31st January	0	6	3
7th March	0	6	0
11th April	0	5	11
18th April	0	6	0
30th May	0	6	2

Statement showing the price per viss of sugar—concld.

Date of alteration.	Price. Rs. A. P.	Date of alteration.	Price. Rs. A. P.
1935—contd.		*1936*—contd.	
20th June .	0 6 3	20th August .	0 5 9
5th October .	0 6 6	27th August .	0 5 6
7th October .	0 7 0	22nd October .	0 5 4
31st October .	0 6 9	29th October .	0 5 6
7th November .	0 6 6		
14th November .	0 6 3	*1937.*	
5th December .	0 6 2	21st January .	0 5 4
12th December .	0 6 0	28th January .	0 5 3
		15th February .	0 5 0
1936.		22nd February .	0 4 10
5th March .	0 5 10	4th March .	0 5 3
19th April .	0 6 0	11th March .	0 5 0
4th June .	0 5 10	15th March .	0 4 9
18th June .	0 5 9	25th April .	0 5 0
11th July .	0 5 10	6th May .	0 4 9

Prices of sugar (Per Cwt.) extracted from the Daily Statement of Messrs. Parry & Co., Ltd.

Dates.	Java. Rs. A. P.	Nellikuppam. Rs. A. P.	Northern India (Factorys' (names given). Rs. A. P.
1933.			
25th February .	14 5 0	14 1 4	...
1st March .	14 7 0	14 4 0	...
6th March .	14 6 0	14 4 0	...
13th March .	14 7 0	14 5 4	...
20th March .	14 7 6	14 2 8	...
28th March .	14 5 0	14 2 8	...
3rd April .	14 5 0	14 2 8	...
10th April .	14 4 0	14 2 8	...
18th April .	14 3 6	14 2 0	...
24th April .	14 4 0	14 2 0	...
1st May .	14 3 6	14 2 0	...
8th May .	14 4 0	14 3 4	...
15th May .	14 6 0	14 8 0	...
22nd May .	14 6 0	14 6 8	...
29th May .	14 8 0	14 9 4	...
5th June .	14 15 0	15 5 4	...
12th June .	14 9 0	15 5 4	...
19th June .	14 7 0	14 8 0	...
26th June .	14 7 0	14 5 4	...
3rd July .	14 6 6	14 5 4	...
10th July .	14 6 6	14 5 4	...
17th July .	14 6 6	14 5 4	...

Prices of Sugar (Per Cwt.) extracted from the Daily Statement of Messrs. Parry & Co., Ltd.—contd.

Dates.	Java.	Nellikuppam	Northern India. (Factorys' names given).	
	Rs. A. P.	Rs. A. P.	Rs. A. P.	
1933—contd.				
24th July .	14 6 0	14 5 4	...	
31st July .	14 6 0	14 5 4	...	
7th August .	14 6 0	14 5 4	...	
14th August .	14 6 6	14 6 8	...	
22nd August .	14 4 6	14 4 0	...	
18th August .	14 4 0	14 4 0	...	
4th September .	14 3 6	14 4 0	...	
11th September .	14 2 6	14 4 0	...	
18th September .	14 4 0	14 5 4	...	
25th September .	14 4 0	14 5 4	...	
2nd October .	14 8 0	14 9 4	...	
9th October .	14 9 0	14 10 8	...	
16th October .	14 12 0	14 14 8	...	
23rd October .	14 7 0	14 6 8	...	
30th October .	14 7 0	14 8 0	...	
6th November .	14 5 0	14 6 8	...	
13th November .	14 1 0	14 5 4	...	
20th November .	13 15 0	14 1 4	...	
27th November .	13 15 0	14 1 4	...	
4th December .	13 14 0	14 1 4	...	
11th December .	13 14 0	14 1 4	...	
18th December .	13 13 0	13 4 8	...	
28th December .	13 12 0	13 12 8	...	
1934.				
2nd January .	13 12 6	13 12 8	...	
8th January .	13 12 0	13 12 8	...	
15th January .	13 9 0	13 8 0	...	
22nd January .	13 10 0	13 6 8	...	
29th January .	13 10 0	13 6 8	...	
5th February .	13 10 6	13 6 8	13 9 0	Motipur.
13th February .	13 12 0	13 8 0	13 7 0	,,
19th February .	13 10 6	13 6 8	13 6 0	,,
26th February .	13 11 0	13 6 8	13 8 0	,,
5th March .	13 10 0	13 8 0	13 8 0	,,
12th March .	13 10 0	13 8 0	13 8 0	,,
19th March .	13 11 0	13 8 0	13 8 0	,,
27th March .	13 13 0	13 6 8	13 10 0	,,
3rd April .	13 12 0	13 6 8	13 8 0	,,
9th April .	13 12 0	13 9 4	13 8 0	,,
16th April .	13 13 0	13 9 4	13 8 0	,,
23rd April .	14 0 0	13 9 4	13 10 0	,,
30th April .	14 0 0	13 9 4	13 10 0	,,

Prices of sugar (Per Cwt.) extracted from the Daily Statement of Messrs. Parry & Co., Ltd.—contd.

Dates.	Java.	Nellikuppam.	Northern India (Factorys' names given).	
	Rs. A. P.	Rs. A. P.	Rs. A. P.	
1934—contd.				
7th May .	Not quoted	13 10 0	13 9 0	Matipur.
14th May .	13 9 0	13 5 4	13 7 0	,,
21st May .	13 10 0	13 5 4	13 6 0	,,
28th May .	13 7 6	13 5 4	13 5 0	,,
5th June .	13 5 6	13 5 4	13 5 0	,,
11th June .	13 6 0	13 4 8	13 5 0	,,
18th June .	13 6 0	13 4 8 to 13 5 4	13 4 0	,,
26th June .	13 6 0	13 4 8 to 13 5 4	13 4 0	,,
3rd July .	13 5 0	...	13 3 6	Sardarnagar.
9th July .	13 5 6	13 6 0	13 3 6	,,
16th July .	13 12 0	13 9 4	13 7 0	,,
23rd July .	13 12 0	13 9 4	13 7 0	,,
30th July .	13 11 0	13 8 8	13 6 0	,,
6th August .	13 10 0	...	13 5 0	,,
13th August .	13 7 0	...	13 4 0	,,
20th August .	13 6 6	...	13 4 0	Champatia.
27th August .	13 6 0	...	13 4 0	
3rd September .	13 8 0	...	13 5 0	
10th September .	13 10 0	...	13 7 0	Champatia.
17th September .	13 11 0	...	13 8 0	
24th September .	13 8 0	...	13 6 0	
1st October .	13 8 0	...	...	
9th October .	13 7 0	...	...	
15th October .	13 5 6	...	...	
22nd October .	13 4 0	...	...	
29th October .	13 3 0	...	...	
5th November .	13 3 0	...	...	
12th November .	13 1 6	...	...	
19th November .	13 0 6	...	...	
26th November .	13 4 0	...	...	
3rd December .	13 7 0	...	...	
10th December .	13 7 0	...	...	
17th December .	13 3 0	...	12 12 0	
24th December .	13 5 0	...	12 10 0	
1935.				
2nd January .	13 6 0	...	12 10 0	
8th January .	13 8 0	...	12 10 0	
15th January .	13 8 0	12 10 8	12 10 0	
21st January .	13 12 0	12 10 8	12 10 0	
28th January .	14 0 0	13 8 0	13 4 0	
4th February ,	13 10 0	13 2 8	13 0 0	

Prices of sugar (Per Cwt.) extracted from the Daily Statement of Messrs. Parry & Co., Ltd.—contd.

Dates.	Java.	Nellikuppam.	Northern India (Factorys' names given).	
	Rs. A. P.	Rs. A. P.	Rs. A. P.	
1935—contd.				
11th February .	13 10 0	13 1 4	12 13 0	
18th February .	13 10 0	13 1 4	12 12 0	
25th February .	13 10 0	13 1 4	12 10 0	
4th March .	13 10 0	13 0 0	12 10 0	
11th March .	...	12 13 4	12 10 0	
18th March .	...	12 12 8	12 9 0	
25th March .	...	12 12 8	12 10 0	
9th April .	...	12 14 0	12 11 0	
15th April .	...	12 15 4	12 14 0	
23rd April .	...	12 15 4	12 14 0	
29th April .	...	12 15 4	12 14 0	
8th May .	...	12 14 8	12 13 0	
20th May .	...	12 14 8	12 13 0	
27th May .	...	13 1 4	13 0 0	
4th June .	...	13 4 0	13 2 0	
10th June .	...	13 4 0	13 2 0	
17th June .	...	13 4 0	13 2 0	
24th June .	...	13 5 4	13 3 0	
2nd July .	...	13 4 8	13 1 0	
8th July .	...	13 3 4	13 1 0	
15th July .	...	13 2 8	13 1 0	
22nd July .	...	13 2 0	13 1 0	
29th July .	...	13 0 8	13 0 0	
5th August .	...	13 0 8	13 0 0	
12th August .	...	13 0 8	13 0 0	
19th August .	...	13 0 8	13 0 0	
26th August .	...	13 1 4	13 0 0	
3rd September .	...	13 2 8	13 1 0	
9th September .	...	13 2 8	13 1 0	
16th September .	...	13 3 4	13 3 0	
23rd September .	...	13 4 8	13 5 0	
30th September .	...	13 10 8	13 9 0	Champatia.
7th October .	14 14 0	14 10 8	14 10 0	
14th October .	14 14 0	14 8 0	14 10 0	
21st October .	14 10 0	14 8 0	14 8 0	
28th October .	14 2 0	14 3 4	14 0 0	
4th November .	13 11 0	...	13 10 0	
11th November .	13 8 0	13 5 4	13 4 0	
18th November .	13 7 0	13 4 0	13 4 0	
25th November .	13 5 6	13 2 0	13 2 0	
2nd December .	13 5 0	13 0 8	13 0 0	
9th December .	13 4 0	13 0 8	12 15 0	
16th December .	13 4 0	...	12 14 0	
23rd December .	13 4 0	...	12 14 0	

Prices of sugar (Per Cwt.) extracted from the Daily Statement of Messrs. Parry & Co., Ltd.—contd.

Dates.	Java.	Nellikuppam.	Northern India (Factorys' names given).	
	Rs. A. P.	Rs. A. P.	Rs. A. P.	
1936.				
2nd January .	13 4 0	...	12 14 0	
6th January .	13 5 0	...	12 14 0	
15th January .	13 6 0	...	13 0 0	Motipur.
20th January .	13 6 0	...	13 0 0	
27th January .	13 5 0	...	13 1 0	
10th February .	13 4 0	12 14 8	13 0 0	
17th February .	13 4 0	12 13 4	12 9 0	Champatia.
24th February .	13 3 0	12 10 8	12 6 0	
2nd March .	13 3 0	12 10 8	12 4 0	
9th March .	13 3 0	...	12 4 0	
16th March .	13 4 0	12 12 0	12 9 0	
23rd March .	13 4 0	12 12 0	12 8 0	
30th March .	13 4 0	12 12 0	12 6 0	
6th April .	13 4 0	12 12 0	12 5 0	Champatia.
14th April .	13 4 0	12 12 0	12 5 0	
20th April .	13 4 0	12 12 0	12 5 0	
27th April .	13 4 0	...	12 5 0	
4th May .	13 4 0	...	12 4 0	
11th May .	13 4 0	...	12 4 0	
18th May .	13 4 0	...	12 3 0	
25th May .	13 4 0	...	12 3 0	
1st June .	13 4 0	...	12 3 0	
8th June .	13 4 0	...	12 1 0	
15th June .	13 4 0	...	12 1 0	
22nd June .	13 4 0	...	12 1 0	
29th June .	13 4 0	...	12 2 0	
6th July .	13 4 0	...	12 2 0	
13th July .	13 4 0	...	12 0 0	
20th July .	13 4 0	...	12 0 0	
27th July .	13 4 0	...	12 0 0	
3rd August .	13 4 0	...	11 14 0	
10th August .	13 4 0	...	11 10 0	
17th August .	13 4 0	11 8 0	11 10 0	
24th August .	13 4 0	11 10 0	11 12 0	
31st August .	13 4 0	11 10 0	11 12 0	
7th September .	13 4 0	11 10 0	11 12 0	
14th September .	13 4 0	11 9 0 (normal)	11 10 0	
21st September .	13 4 0	11 9 0	11 10 0	
28th September .	13 4 0	11 9 0	11 9 0	Champatia.
5th October .	13 2 0	11 7 0	11 8 0	
12th October .	13 2 0	...	11 8 0	

Prices of sugar (Per Cwt.) extracted from the Daily Statement of Messrs. Parry & Co., Ltd.—concld.

Dates.	Java.	Nellikuppam.	Northern India (Factorys' names given).	
	Rs. A. P.	Rs. A. P.	Rs. A. P.	
1936—contd.				
19th October .	13 2 0	...	11 8 0	
27th October .	13 2 0	...	11 8 0	
2nd November .	13 2 0	11 10 0	11 6 0	
9th November .	13 2 0	11 10 0	11 6 0	
16th November .	13 2 0	11 10 0	11 6 0	
23rd November .	13 2 0	...	11 4 0	
30th November .	13 2 0	...	11 4 0	
7th December .	13 0 0	...	11 4 0	
14th December .	13 0 0	...	11 4 0	
21st December .	13 0 0	...	11 2 0	
29th December .	13 0 0	...	11 1 0	
1937.				
11th January .	13 0 0	11 1 0	11 6 0	Champaran.
19th January .	...	10 14 0	11 4 0	
26th January .	13 0 0	10 14 0	11 4 0	
2nd February .	13 0 0	10 13 0	10 14 0	
9th February .	12 14 0	10 13 0	10 12 0	
16th February .	12 14 0	10 1 0	10 8 0	
24th February .	12 14 0	10 1 0	10 8 0	
2nd March .	13 0 0	10 13 0	10 14 0	
9th March .	13 0 0	10 8 0	10 4 0	
16th March .	13 0 0	10 8 0	10 5 0	
23rd March .	13 0 0	10 8 0	10 8 0	
31st March .	13 0 0	10 8 0	10 8 0	
6th April .	13 0 0	10 6 0	10 8 0	
15th April .	13 0 0	10 6 0	10 8 0	
22nd April .	12 14 0	10 6 0	10 8 0	
29th April .	12 14 0	10 6 0	10 8 0	
1st May .	12 14 0	10 0 0	10 6 0	
8th May .	12 14 0	10 0 0	10 4 0	
15th May .	No stock.	10 0 0	10 2 0	
22nd May .	Do.	9 12 0	10 2 0	
1st June .	Do.	9 12 0	10 2 0	
8th June .	Do.	9 9 0	10 2 0	

Prices of Jaggery extracted from the Daily Statement of Messrs. Parry & Co., Ltd.

Date.	Good-eating cane jaggery *ex*-godown Madras, per candy.			Palm jaggery for refining f.o.r. Nellikuppam, per candy.	Palm jaggery (Madras) *ex*-godown Madras, per candy (500 lbs.).	
	Rs. A.		Rs. A.	Rs. A.	Rs. A.	Rs. A.
1933.						
6th March .	32 0	to	35 0	23 0	...	
13th March .	32 0	,,	35 0	22 0	...	
20th March .	32 0	,,	35 0	22 0	...	
28th March .	32 0	,,	35 0	22 0	...	
3rd April .	32 0	,,	35 0	22 0	...	
10th April .	32 0	,,	35 0	22 0	...	
18th April .	32 0	,,	35 0	22 0	...	
24th April .	32 0	,,	35 0	22 0	...	
1st May .	30 0	,,	32 0	22 0	...	
8th May .	25 0	,,	28 0	22 0	...	
15th May .	25 0	,,	28 0	22 0	...	
22nd May .	25 0	,,	28 0	22 0	...	
29th May .	25 0	,,	28 0	22 0	...	
5th June .	25 0	,,	28 0	19 0	...	
12th June .	25 0	,,	28 0	19 0	...	
19th June .	25 0	,,	28 0	19 0	...	
26th June .	25 0	,,	28 0	19 0	...	
3rd July .	25 0	,,	28 0	19 0	...	
10th July .	25 0	,,	28 0	19 0	...	
17th July .	25 0	,,	28 0	19 0	...	
24th July .	25 0	,,	28 0	19 0	...	
31st July .	25 0	,,	28 0	19 0	...	
7th August .	25 0	,,	28 0	19 0	...	
14th August .	25 0	,,	28 0	19 0	...	
22nd August .	25 0	,,	28 0	19 0	...	
28th August .	25 0	,,	28 0	19 0	...	
4th September .	20 0	,,	28 0	19 0	...	
11th September .	20 0	,,	28 0	19 0	...	
18th September .	20 0	,,	28 0	19 0	...	
25th September .	20 0	,,	28 0	19 0	...	
2nd October .	20 0	,,	28 0	19 0	...	
9th October .	20 0	,,	28 0	19 0	...	
16th October .	20 0	,,	28 0	19 0	...	
23rd October .	20 0	,,	28 0	19 0	...	
30th October .	20 0	,,	28 0	19 0	...	
6th November .	20 0	,,	28 0	19 0	...	
13th November .	20 0	,,	28 0	19 0	...	
20th November .	20 0	,,	28 0	19 0	...	
27th November .	20 0	,,	28 0	19 0	...	
4th December .	20 0	,,	28 0	19 0	...	
18th December .	20 0	,,	28 0	19 0	19 0 to 27 0	
28th December .	20 0	,,	28 0	19 0	18 0 ,, 27 0	

Prices of Jaggery extracted from the Daily Statement of Messrs. Parry & Co., Ltd.—contd.

Date.	Good-eating cane jaggery *ex*-godown Madras, per candy.				Palm jaggery for refining f.o.r. Nellikuppam, per candy.	Palm jaggery (Madras) *ex*-godown Madras, per candy (500 lbs.).			
	Rs.	A.		Rs.	A.	Rs. A.	Rs.	A.		Rs.	A.
1934.											
2nd January	20	0	to	28	0	19 0	18	0	to	27	0
8th January	20	0	,,	28	0	19 0	18	0	,,	27	0
15th January	20	0	,,	28	0	19 0	19	0	,,	27	0
22nd January	20	0	,,	28	0	19 0	19	0	,,	27	0
29th January	22	0	,,	28	0	22 12	36	0			
5th February	22	0	,,	28	0	22 12	36	0			
13th February	22	0	,,	28	0	22 12	36	0			
19th February	22	0	,,	28	0	22 12	36	0			
26th February	22	0	,,	28	0	22 12	36	0			
5th March	22	0	,,	28	0	22 12	36	0			
12th March	22	0	,,	28	0	22 12	36	0			
19th March	22	0	,,	28	0	22 12	36	0			
27th March	22	0	,,	28	0	22 12	36	0			
3rd April	22	0	,,	28	0	22 12	36	0			
9th April	22	0	,,	28	0	22 12	36	0			
16th April	22	0	,,	28	0	22 12	36	0			
23rd April	22	0	,,	28	0	22 12	36	0			
30th April	22	0	,,	28	0	22 12	36	0			
7th May	22	0	,,	28	0	22 12	36	0			
14th May	22	0	,,	28	0	22 12	36	0			
21st May	22	0	,,	28	0	22 12	36	0			
28th May	22	0	,,	28	0	22 12	36	0			
5th June	22	0	,,	28	0	22 12	36	0			
11th June	22	0	,,	28	0	22 12	36	0			
18th June	22	0	,,	28	0	22 12	36	0			
26th June	24	0	,,	28	0	22 0	30	0			
3rd July	24	0	,,	28	0	22 0	30	0			
9th July	24	0	,,	28	0	22 0	30	0			
16th July	30	0	,,	35	0	22 0	35	0	to	45	0
23rd July	30	0	,,	35	0	22 0	35	0	,,	45	0
30th July	30	0	,,	35	0	22 0	35	0	,,	45	0
6th August	30	0	,,	35	0	22 0	35	0	,,	45	0
13th August	30	0	,,	35	0	22 0	35	0	,,	45	0
20th August	30	0	,,	35	0	22 0	35	0	,,	45	0
27th August	30	0	,,	35	0	22 0	35	0	,,	45	0
	40	0	,,	50	0	22 0	36	0	,,	46	0
10th September	40	0	,,	50	0	22 0	36	0	,,	46	0
17th September	40	0	,,	50	0	22 0	36	0	,,	46	0
24th September	40	0	,,	50	0	22 0	36	0	,,	46	0
1st October	40	0	,,	50	0	22 0	36	0	,,	46	0
9th October	40	0	,,	50	0	22 0	36	0	,,	46	0

Prices of Jaggery extracted from the Daily Statement of Messrs. Parry & Co., Ltd.—contd.

Date.	Good-eating cane jaggery *ex*-godown Madras, per candy.	Palm jaggery for refining f.o.r. Nellikuppam, per candy.	Palm jaggery (Madras) *ex*-godown Madras, per candy (500 lbs.).
	Rs. A.	Rs. A.	Rs. A.
1934—contd.			
15th October	40 0 to 50 0	22 0	36 0 to 46 0
22nd October	40 0 ,, 50 0	22 0	36 0 ,, 46 0
29th October	40 0 ,, 50 0	22 0	36 0 ,, 46 0
5th November	40 0 ,, 50 0	22 0	36 0 ,, 46 0
12th November	40 0 ,, 50 0	22 0	36 0 ,, 46 0
19th November	40 0 ,, 50 0	22 0	36 0 ,, 46 0
26th November	40 0 ,, 50 0	22 0	36 0 ,, 46 0
3rd December	40 0 ,, 50 0	22 0	36 0 ,, 46 0
10th December	40 0 ,, 50 0	22 0	36 0 ,, 46 0
17th December	40 0 ,, 50 0	22 0	36 0 ,, 46 0
24th December	40 0 ,, 50 0	22 0	36 0 ,, 46 0
1935.			
2nd January	40 0 ,, 50 0	22 0	36 0 ,, 46 0
8th January	40 0 ,, 50 0	22 0	36 0 ,, 46 0
15th January	40 0 ,, 50 0	22 0	36 0 ,, 46 0
21st January	40 0 ,, 50 0	22 0	36 0 ,, 46 0
28th January	40 0 ,, 50 0	22 0	36 0 ,, 46 0
4th February	35 0 ,, 38 0	21 0	45 0
11th February	35 0 ,, 38 0	21 0	45 0
18th February	35 0 ,, 38 0	21 0	45 0
25th February	35 0 ,, 38 0	21 0	45 0
4th March	35 0 ,, 38 0	21 0	45 0
11th March	35 0 ,, 38 0	21 0	45 0
18th March	35 0 ,, 38 0	24 0 to 30 0	41 0 to 43 0
25th March	35 0 ,, 38 0	24 0 ,, 30 0	41 0 ,, 43 0
9th April	30 0 ,, 32 0	25 0 ,, 28 0	35 0 ,, 38 0
15th April	30 0 ,, 32 0	25 0 ,, 28 0	35 0 ,, 38 0
23rd April	32 0 ,, 34 0	25 0 ,, 28 0	38 0 ,, 40 0
29th April	32 0 ,, 34 0	25 0 ,, 28 0	38 0 ,, 40 0
8th May	32 0 ,, 34 0	25 0 ,, 28 0	38 0 ,, 40 0
20th May	32 0 ,, 34 0	25 0 ,, 28 0	38 0 ,, 40 0
27th May	32 0 ,, 34 0	25 0 ,, 28 0	38 0 ,, 40 0
4th June	32 0 ,, 34 0	25 0 ,, 28 0	38 0 ,, 40 0
10th June	32 0 ,, 34 0	23 0 ,, 26 0	35 0 ,, 40 0
17th June	32 0 ,, 34 0	23 0 ,, 26 0	35 0 ,, 40 0
24th June	32 0 ,, 34 0	23 0 ,, 26 0	35 0 ,, 40 0
2nd July	32 0 ,, 34 0	23 0 ,, 26 0	35 0 ,, 40 0
8th July	30 0 ,, 35 0	23 0 ,, 26 0	35 0 ,, 40 0
15th July	30 0 ,, 35 0	23 0 ,, 26 0	35 0 ,, 40 0
22nd July	28 0 ,, 36 0	26 0	36 0 ,, 40 0
29th July	30 0 ,, 38 0	26 0	38 0

Prices of Jaggery extracted from the Daily Statement of Messrs. Parry & Co., Ltd.—contd.

Date.	Good-eating cane jaggery *ex*-godown Madras, per candy.			Palm jaggery for refining f.o.r. Nellikuppam, per candy.	Palm jaggery (Madras) *ex*-godown Madras per candy (500 lbs.).	
	Rs. A.		Rs. A.	Rs. A.	Rs. A.	Rs. A.
1935—contd.						
5th August	31 8	to	35 8	...	40 0	
12th August	31 8	,,	35 8	...	40 0	
19th August	31 8	,,	35 8	...	40 0	
26th August	31 8	,,	35 8	...	40 0	
3rd September	30 0	,,	37 0	...	38 0	
9th September	30 0	,,	37 0	...	38 0	
16th September	30 0 (nominal).	,,	37 0	...	38 0 (nominal).	
23rd September	30 0	,,	37 0	...	38 0	
30th September	35 0	,,	40 0	...	42 0	
7th October	35 0	,,	40 0	...	42 0	
14th October	35 0	,,	38 0	...	40 0	
21st October	35 0	,,	38 0	...	40 0	
28th October	30 0	,,	37 0	...	38 0	
4th November	30 0	,,	37 0	...	38 0	
11th November	25 0	,,	32 0	...	32 0	
18th November	25 0	,,	32 0	...	32 0	
25th November	25 0	,,	32 0	...	32 0	
2nd December	25 0	,,	32 0	...	32 0	
9th December	25 0	,,	32 0	...	32 0	
16th December	25 0	,,	32 0	...	32 0	
23rd December	25 0	,,	32 0	...	32 0	
1936.						
2nd January	25 0	,,	32 0	...	32 0	
6th January	25 0	,,	32 0	...	32 0	
15th January	25 0	,,	32 0	...	32 0	
20th January	25 0	,,	38 0	...	32 0	
27th January	25 0	,,	38 0	...	32 0	
10th February	25 0	,,	38 0	...	32 0	
17th February	22 12	,,	28 0	...	31 4	
24th February	22 12	,,	28 0	...	31 4	
2nd March	22 12	,,	28 0	...	31 4	
9th March	22 12	,,	28 0	...	31 4	
16th March	22 12	,,	28 0	...	31 4	
23rd March	22 12	,,	28 0	...	31 4	
30th March	20 0	,,	26 0	...	31 4	
6th April	20 0	,,	26 0	...	31 4	
14th April	20 0	,,	26 0	...	31 4	
20th April	20 0	,,	26 0	...	31 4	
27th April	20 0	,,	26 0	...	31 4	

Prices of Jaggery extracted from the Daily Statement of Messrs. Parry & Co., Ltd.—concld.

Date.	Good-eating cane jaggery *ex*-godown Madras, per canday.	Palm jaggery for refining f.o.a. Nellikuppam, per cadday.	Palm jaggery (Madras) *ex*-godown Madras, per candy (500 lb.).
	Rs. a.	Rs. a.	Rs. a. Rs. a.
1936—contd.			
4th May .	20 0 to 26 0	...	31 4
11th May .	20 0 ,, 26 0	...	31 4
18th May .	20 0 ,, 23 0	...	30 0
25th May .	21 0 ,, 24 8	...	30 0
1st June .	21 0 ,, 24 8	...	30 0
8th June .	21 0 ,, 24 8	...	30 0
15th June .	21 0 ,, 28 4	...	32 0
22nd June .	21 0 ,, 28 4	...	32 0
29th June .	21 0 ,, 28 4	...	32 0
6th July .	21 0 ,, 28 4	...	32 0
15th July .	21 0 ,, 28 4	...	32 0
20th July .	20 0 ,, 25 0	...	30 0
27th July .	20 0 ,, 25 0	...	30 0
3rd August .	21 0 ,, 26 4	...	31 4
10th August .	21 0 ,, 26 4	...	31 4
17th August .	21 0 ,, 26 4	...	31 4
24th August .	21 0 ,, 26 4	...	31 4
31st August .	21 0 ,, 26 4	...	31 4
7th September .	21 0 ,, 26 4	...	31 4
14th September .	21 0 ,, 26 4	...	31 4
21st September .	21 0 ,, 26 4	...	31 4
28th September .	17 8 ,, 26 4	...	28 0
5th October .	17 8 ,, 26 4	...	28 0
12th October .	17 8 ,, 26 4	...	28 0
19th October .	17 8 ,, 26 4	...	28 0
27th October .	17 8 ,, 26 4	...	28 0
2nd November .	17 8 ,, 26 4	...	28 0
9th November .	17 8 ,, 26 4	...	28 0
16th November .	17 8 ,, 26 4	...	28 0
23rd November .	17 8 ,, 26 4	...	28 0
30th November .	17 8 ,, 26 4	...	28 0
7th December .	17 8 ,, 26 4	...	28 0
14th December .	15 0 ,, 25 0	22 0 to 26 0	25 0
21st December .	15 0 ,, 25 0	22 0 ,, 26 0	25 0
29th December .	15 0 ,, 25 0	22 0 ,, 26 0	25 0
1937.			
11th January .	15 0 ,, 25 0	22 0	25 0
9th February .	15 0 ,, 25 0	22 0	25 0
16th February .	15 0 ,, 25 0	22 0	25 0

Statement showing the price per viss of Jaggery.

(Prices have been collected from the Triplicane Urban Co-operative Society.)

N.B.—The dates noted against the prices are those on which the prices have altered.

Date of alteration.	Price. As. P.
1912.	
24th January	4 3
9th March	4 0
6th April	3 9
27th April	4 0
1st July	4 6
14th July	4 3
18th October	4 9
30th October	4 6
1913.	
24th February	4 3
8th March	4 0
1914.	
14th March	3 9
17th June	4 0
20th June	4 3
14th July	4 6
20th July	5 0
1st September	5 6
15th October	5 3
8th December	5 6
29th December	6 0
1915.	
13th January	5 0
1916.	
11th April	6 0
23rd May	6 6
3rd September	6 0
26th September	5 6
22nd November	5 3
1917.	
20th January	5 0
6th February	4 9
5th May	4 6
26th May	4 9
12th June	5 0

Date of alteration.	Price. As. P.
1919.	
7th January	5 0
4th June	5 6
22nd June	6 0
13th July	6 6
15th July	7 0
14th August	8 0
18th August	7 6
2nd December	8 0
23rd December	9 0
27th December	9 6
1920.	
20th January	10 0
21st February	9 6
24th February	9 0
7th March	8 6
9th March	8 0
15th May	9 0
22nd May	10 0
22nd June	10 6
29th June	10 0
6th July	10 6
17th July	11 0
6th August	11 6
3rd September	13 0
11th September	14 0
23rd December	13 0
1921.	
10th January	10 0
13th January	9 0
21st January	8 0
2nd February	8 6
5th February	10 0
26th February	9 0
6th April	8 6
30th April	9 0
31st May	10 0
27th August	9 6
6th November	9 6
15th November	9 0

Statement showing the price per viss of Jaggery—contd.

Date of alteration.	Price. As. P.
1922.	
16th January	8 6
17th February	8 0
29th April	7 9
5th May	8 0
2nd July	7 9
8th September	7 0
16th December	6 6
21st December	7 0
1923.	
9th February	7 6
25th February	7 0
1st March	6 9
2nd March	6 0
5th April	6 0
23rd May	5 3
27th May	5 6
27th July	5 6
10th August	6 0
5th September	6 6
26th September	6 3
23rd October	6 0
17th November	6 6
10th December	7 0
16th December	7 6
23rd December	7 0
1924.	
16th March	6 6
30th May	7 0
1st July	7 6
11th July	8 0
12th August	8 6
23rd August	8 0
13th September	8 6
28th November	8 3
29th November	8 0
1925.	
28th January	7 6
9th February	7 0
3rd March	6 6
3rd April	6 0
10th April	6 3
1st June	7 0
21st September	7 6
24th October	7 0
7th December	7 6

Date of alteration.	Price. As. P.
1926.	
5th January	8 0
11th January	7 6
19th January	7 0
24th March	6 0
16th April	5 6
21st April	6 0
24th May	6 3
7th June	6 6
28th June	7 0
1927.	
27th January	6 6
18th February	6 0
21st March	5 9
28th May	6 0
5th November	5 9
29th November	5 6
1928.	
11th January	6 0
26th January	5 6
23rd February	5 0
15th March	4 6
7th April	4 9
24th May	4 6
8th June	5 0
3rd July	5 3
1929.	
11th January	8 0
7th February	7 6
14th February	7 0
7th March	6 6
21st March	7 0
28th March	6 6
18th April	6 0
28th May	6 6
4th June	7 6
10th July	8 0
21st August	6 2
22nd August	8 3
5th September	8 6
10th October	8 3
7th November	8 6
5th December	8 0
29th December	7 6

Statement showing the price per viss of Jaggery—contd.

Date of alteration.	Price. As. P.
1930.	
1st January	7 6
16th January	7 0
23rd January	7 6
30th January	7 0
20th February	6 6
21st February.	6 0
27th March	5 6
1st May	6 0
Price not available from May, 1930 to July, 1931.	
1931.	
5th August	3 6
7th August	3 9
13th August	4 0
1st October	3 9
4th November	3 6
24th December	4 6
1932.	
5th January	5 0
28th January	4 6
3rd February	4 3
2nd March	4 0
21st April	3 9
15th September	4 3
5th October	4 0
1933.	
21st January	3 6
16th March	3 3
23rd March	3 0
30th March	2 9
13th April	2 6
16th April	2 9
22nd June	3 0
29th June	3 3
5th July	3 0
27th July	3 3
28th December	3 6
1934.	
24th January	3 3
1st March	3 0
22nd March	2 9

Date of alteration.	Price. As. P.
1934—contd.	
19th April	3 0
17th May	2 9
24th May	3 0
5th June	3 3
28th June	3 6
5th July	3 9
23rd July	4 0
23rd August	4 3
27th August	4 6
31st August	5 3
3rd September	5 6
6th September	5 9
13th September	6 0
20th September	5 9
24th September	5 6
27th September	5 3
11th October	5 6
25th October	5 3
1st November	5 0
6th December	4 6
13th December	4 3
27th December	4 0
1935.	
24th January	3 9
11th February	4 0
16th May	4 3
23rd May	4 6
23rd August	4 3
3rd October	4 0
24th October	4 3
7th November	4 0
1936.	
31st January	4 3
13th February	4 0
20th February	3 9
25th February	3 6
5th March	3 3
16th April	3 0
26th April	3 3
28th May	3 0
30th July	3 3
6th August	3 4
13th August	3 3

Statement showing the price per viss of Jaggery—concld.

Date of alteration.	Price.	Date of alteration.	Price.
	As. P.		As. P.
1936—contd.		*1937.*	
24th September . .	3 6	1st January . .	3 0
8th October . .	3 3	15th January . .	3 3
3rd December . .	3 6	28th January . .	3 0
5th December . .	3 3	4th March . .	2 9

28. A statement showing the average retail and wholesale prices of sugar each month in Madras from January, 1924, to April, 1937, is enclosed. The retail prices are those supplied by the Triplicane Urban Co-operative Society, Madras, from whom it has been ascertained that their supplies of sugar are obtained from Messrs. Parry & Co., Ltd. The wholesale prices shown in the statement are the average of the maximum and minimum prices of sugars Indian supplied by Messrs. Parry & Co., Ltd., which has been given in the statement supplied in answer to Question No. 27.

The percentage difference between wholesale and retail prices is shown in a separate column in the statement enclosed. The percentage difference ranges from 3·7 to 14·9. The absence of uniformity in the variation between retail and wholesale prices of sugar may be explained in the following way. The retail dealers in Madras generally buy their requirements wholesale from Messrs. Parry & Co., Ltd., or other supplier and until the consignments bought are exhausted, the retail prices charged on the sales will, in general, be fixed, and will approximate to the wholesale prices at which the consignments have been bought *plus* the merchants' profit and the cost of transport. Though the wholesale prices may have varied in the meantime, their effect will not generally be felt on the retail prices until the old stocks are exhausted, and fresh stocks are laid in. The correspondence between retail and wholesale prices will therefore depend on the frequency of purchase of their consignments by the retail dealers from the wholesale dealers or direct from the factories. The more frequently they buy their requirements or in other words the smaller the consignments bought each time, the more uniform will be the variation between the retail and wholesale prices. On the other hand, when consignments are bought at long intervals, the correlation between retail and wholesale prices will generally be characterised by the existence of a time lag. This will be clear from an examination of the prices shown in the statement. Thus, barring the two months October and November, 1934, for which figures of wholesale prices are not available, and considering the variation month by month, the wholesale prices appear to have risen on 15 occasions as compared with the previous month's prices, but retail prices have risen concurrently only thrice during those 15 months. There was also a fall in wholesale prices on 19 occasions, followed by a fall in retail prices on only 8 of those occasions. During the two months on which the wholesale prices were stationary, the retail prices either rose or fell. Thus concurrent rise or fall in retail and wholesale prices was in evidence in only eleven out of thirty-six months.

Comparative statement showing the average wholesale and retail prices of sugar each month in Madras. The prices are in rupees per imperial maund of 82⅔ lbs.

Month.	1934.			1935.			1936.			1937.		
	Wholesale price of Sugar Indian supplied by Messrs. Parry & Co., Ltd.	Retail price of Sugar supplied by the Urban Triplicane Co-operative Society.	Per centage difference between retail and wholesale price.	Wholesale price of Sugar Indian supplied by Messrs. Parry & Co., Ltd.	Retail price of Sugar supplied by the Urban Triplicane Co-operative Society.	Percentage difference between retail and wholesale price.	Wholesale price of Sugar Indian supplied by Messrs. Parry & Co., Ltd.	Retail price of Sugar supplied by the Triplicane Co-operative Society.	Per centage difference between retail and wholesale price.	Wholesale price of Sugar Indian supplied by Messrs. Parry & Co., Ltd.	Retail price of Sugar supplied by the Triplicane Urban Co-operative Society.	Percentage difference between retail and wholesale price.
1	2	3	4	5	6	7	8	9	10	11	12	13
	Rs.	Rs.		Rs.	Rs.		Rs.	Rs.		Rs.	Rs.	
January .	9·781	10·834	10·8	9·779	10·138	3·7	9·505	9·999	5·2	7·854	9·026	14·9
February .	9·826	10·834	10·3	9·323	10·415	11·7	9·141	9·999	9·4	7·393	8·471	14·6
March . .	9·826	10·693	8·8	9·276	10·138	9·3	9·229	9·719	5·3	7·464	8·191	9·7
April . .	9·919	10·415	5·0	9·461	9·999	5·7	9·195	9·858	7·2	7·370	8·053	9·3
May . .	9·711	10·554	8·7	9·573	9·999	4·5	9·023	6·999	10·8	..	..	..
June . .	9·714	10·554	8·6	9·643	10·277	6·6	9·091	9·719	6·9	..	..	..
July . .	9·852	10·415	5·7	9·549	10·415	9·1	8·977	9·719	8·3	..	..	..
August .	9·779	10·554	7·9	9·573	10·415	8·8	8·862	9·581	8·1	..	..	..
September .	9·852	10·693	8·5	10·010	10·415	4·0	8·818	9·167	4·0	..	..	..
October .	—	10·693	—	10·287	11·386	10·7	8·542	9·167	7·3	..	..	..
November .	—	10·415	—	9·552	10·693	11·9	8·219	9·167	11·5	..	..	..
December .	9·414	10·415	10·6	9·505	10·138	6·7	8·177	9·167	12·1	..	..	..

29. Sugar and its allied products received two headings in the accounts relating to the Inland Trade of India, namely, "Sugar, refined and unrefined," and "Gur, rab, molasses, jaggery, etc.", and it was not possible under this arrangement to distinguish between white sugar and gur or, as a corollary, to arrive at an estimate of the consumption of sugar in the Madras Presidency. The matter was taken up with the Director-General of Commercial Intelligence, and it was decided in consultation with the Sugar Technologist of the Imperial Council of Agricultural Research to substitute the existing head "Sugar—Refined and unrefined" by "Sugar—All kinds". The revised head includes all sugar which is treated as such in ordinary commerce and comprises (i) all imported sugar, (ii) sugar manufactured by central sugar factories in India, (iii) sugar manufactured by gur refineries in India, and (iv) sugar produced by khandsari factories. Figures for gur, rab, molasses, jaggery, etc., continue to be shown under the existing omnibus heading. From 1936-37, therefore, it should be possible to estimate with more precision the consumption of sugar in the Madras Presidency. Unfortunately, however, statistics of railborne trade are available at present only for the first ten months of the year 1936-37, but assuming that the arrivals by rail in each of the months February and March were about equal to those in January and making somewhat arbitrary allowances for the distribution to, and consumption, in Travancore and Cochin, I estimate that the net amount of sugar received into the Presidency by sea and rail *plus* the production amounted to a little over 100,000 tons during 1936-37 and this may be taken as the approximate consumption. This, it may be mentioned, compares with an estimated production of the cane and palmyra factories in the Madras Presidency in the 1936-37 season of about 33,000 tons. The estimated consumption of sugar by South India, including Mysore, Travancore and Cochin and a little of the southern part of Hyderabad, is 120,000 tons against a total production of the Madras Presidency, Mysore and Travancore of about 56,000 tons in 1936-37. It will be seen, therefore, that there is still considerable scope for the development of the sugar industry in the Madras Presidency provided that a reasonable level of prices can be maintained. There should be a gradual, albeit slow, increase in the consumption of sugar consequent on the drift to the towns from the countryside, whilst it seems to be the case that white sugar in being used to an increasing extent in the ordinary Indian household; although there are certain purposes for which jaggery must always be used.

The details of consumption of sugar are as follows:—

	Tons.
Net railborne imports	54,674
Net imports by sea—foreign and coastwise . .	15,640
Production in Madras Presidency . . .	33,120
Allowance for sugar brought over the borders of French India	2,000
	105,434
Less Cochin consumption estimated at . . .	1,500
	103,934

It has been taken that the imports by sea into Travancore *plus* the production in that State are about equivalent to the consumption within it. On the above basis the consumption of sugar has been estimated at a little over 100,000 tons. The estimate of 120,000 tons for the consumption in South India including Madras, Mysore, Travancore and Cochin and a little of the southern part of Hyderabad, is an arbitrary estimate which has been put forward by Messrs. Parry & Co., Ltd., and is, I consider, fairly accurate.

The details of production in the different factories in the Madras Presidency during the last season are as follows:—

	Tons.
Nellikuppam	13,343
Samalkot	7,780
Thummapala (estimated)	326
Ettikoppaka (estimated)	365
Thachanallur and Alwartirunagari (estimated)	1,400
Bobbili	2,062
Hospet	3,519
Kirlampudi	794
Podanur	866
Vuyyuru	2,401
Mailpatti	210
Kallianpur	54
	33,120

If to this fugure of 33,120 tons is added the production of the Mysore factory which was about 22,000 tons and of the Thuckalay factory in Travancore which was about 1,290 tons we get a figure of about 56,000 tons as representing the total production of the Madras Presidency, Mysore and Travancore.

30. In addition to the confectionery manufacturies attached to the sugar factories of the East India Distilleries and Sugar Factories, Ltd., and the Deccan Sugar and Abkari Co., Ltd., at Nellikuppam and Samalkot respectively, there are nine confectionery manufacturies in this Presidency. These are located at Madras (2), Rajahmundry (2), Kumbakonam, Shiyali, Calicut, Madura and Thoraiyur. In addition, there are manufacturies at Bangalore Cantonment, Cochin, Krishnarajapuram in Mysore, Pondicherry, and two at Secunderabad. The products of these factories comprise, for the most part, boiled sweets and lozenges. One variety of boiled sweets is made of two-thirds ordinary crystalline sugar and one-third glucose with colours and flavouring essences. The glucose it is understood is ordinarily imported from Belgium and the colours and flavouring essences from Engalnd, France, Germany and Italy. One hard variety of sweets turned out by the factories appears to be made of sugar only with successive layers of caramel covering round a nucleus of vegetable seed. Lozenges are made mostly in small establishments, information as to the number of which is not available. Lozenges are made of sugar well powered and mixed with gelatine. The equipment required is very simple as no process of heating is involved and no mechanical appliances are employed except the small hand operated dies.

31. (i) Sugar Industry has not developed to such an extent in the province as to necessitate the introduction of zone system by alloting special areas to different factories for their supply of cane. The factories are few and are located far from each other.

(ii) & (iii) There is no case as far as South India is concerned to fix a quota for sugar manufacture by factories. For the sugar industry here is in a nascent state and every encouragement is necessary to put it on a sound financial basis. Climatically South India is extremely suitable for growing good quality of cane. But it is desirable to fix a quota for sugar manufacture in parts of North India where there is already overproduction. In such places, licensing of new factories should be done guardedly. In this presidency, several factories are small and are uneconomic to run. It is perhaps desirable to extend such of them with a view to run them

more efficiently and economically. Undue development in North India is bound to have repercussions here and would tend to stifle an industry which needs to be fostered.

32. There is no statistical information available in regard to the total production or consumption of sweets in this Presidency, but the general opinion among the manufacturers seems to be that the demand is more or less met by the existing manufacture *plus* the small imports of high class sweets. In regard to syrups, the demand is so limited that the confectionery manufacturers do not think it would be remunerative to take up the preparation of these products. The question of the development of the fruit preservation and canning industry has been considered recently by a Sub-committee of the Sub-committee of the Provincial Economic Council for Agricultural Development which considered that a large expansion of fruit growth in this Presidency is a dietetic desideratum, whilst the general economic value of fruit cultivation should be considerable if the industry is developed on sound lines. The Sub-committee considered, however, that fruit cultivation on any extensive scale is impracticable, unless a fruit preservation and canning industry is developed contemporaneously with it, or in other words that experimental work on fruit preservation and canning must be considered as complementary to the conduct of research on fruit cultivation. The Sub-committee considered that the Department of Agriculture should extend its activities to research on fruit preservation and that the following lines of work, amongst others should be taken up and developed:—

(i) The utilization of the various mango varieties of the Presidency for canning mango pulp and mango slices and the preparation of mango jams, pickles, chutneys, candies, crystallized and dried fruits, etc.

(ii) The putting up of fruit mostly in a sem-dry condition, in cakes, bars, blocks, rings, slices, etc., with and without nutritious addenda, such as nuts, groundnut or pulse meal, cereal flours, spices, etc., for consumption by the masses.

(iii) The drying, desiccation, and crystallization of fruits in general.

(iv) The storage of fruit, mainly as pulp.

(v) The utilization of cheap fruits and vegetables as bases of preserves and jams.

(vi) The preparation of jelly, marmalade, etc., from inferior qualities of citrous fruits.

(vii) The extraction and use of fruit juices for the preparation of syrups, cordials, squashes, crushes, and carbonated beverages from limes, oranges and other citrous fruits and the preparation of juices for unfermented beverages after the fashion of grape juice.

(viii) The preparation of dried bananas or banana fig, banana meal and preserves.

The Sub-committee recommended also that the Superintendent of the Fruit Research Station at Anantarajupeta should be asked to undertake research on two or three important kinds of fruit with a view to standardizing the manufacture of fruit juices and fruit syrups with a view to enabling the preparation of such products to be carried on as a cottage industry. The Sub-committee further recommended that a station for experimental work on fruit preservation and canning should be attached to the Fruit Research Station at Anantarajupeta and that a similar fruit research station would be required at Coonoor for hill fruits. The Sub-committee also recommended that short courses of training in fruit preservation and the preparation of juices, syrups, jellies, etc., should be provided in the fruit research stations at Cuddapah and Coonoor. On the other hand the expert attached to the Imperial Council of Agricultural Research thinks that Madras would be unwise to launch any elaborate scheme of fruit preservation

and canning mainly owing to the difficulty of marketing the goods but should rather concentrate on fruit cultivation as there is yet unlimited scope for fresh fruits as such. The whole question is now under consideration.

33. The total production of cane in this Presidency may be taken at 3,511,000 tons in 1934-35 and 3,789,600 tons in 1935-36. Making an allowance of 16·1392 per cent. for chewing and seed, and deducting the quantity of cane crushed in factories, the quantity of cane used for the manufacture of jaggery in 1934-35 and 1935-36 will be approximately as follows:—

	Estimated quantity of cane produced.	Estimated quantity used for chewing and seed.	Quantity of cane crushed in sugar factories.	Quantity of cane turned into gur.
	Tons.	Tons.	Tons.	Tons.
1934-35 .	3,511,000	566,647	159,881	2,784,472
1935-36 .	3,789,600	611,611	191,380	2,986,609

In the absence of information as to the quantity of sugarcane crushed in sugar factories during the earlier years, it will not be possible to estimate with confidence the quantity of cane used for the manufacture of gur in the years previous to 1934-35. If the extraction of gur from cane is taken at 10 per cent., the quantity of gur produced in 1934-35 comes to 278,477 tons and in 1935-36 to 298,661 tons.

34. Jaggery is produced in the Madras Presidency not only from cane but also from palmyra and to a small extent from the date and coconut palms. The chief centres of the palmyra jaggery industry are Tinnevelly, Coimbatore, Malabar and West Godavari Districts. The industry of preparing jaggery is carried on by the Nadars in Tinnevelly, by Sanars in Coimbatore, by Thiyas in Malabar and by Kalais in West Godavari District. It is estimated that the production of palmyra jaggery in Tinnevelly, Coimbatore and Malabar is normally about 20,000 tons and in the West Godavari area about 10,500 tons. Coconut palm jaggery is manufactured on a small scale on the West Coast, but it is not possible to give any estimate of the quantity produced. Sub-committee No. III of the Sub-committee of the Provincial Economic Council for Agricultural Development pointed out in a report issued last year that coconut jaggery is prepared in much the same way as palmyra jaggery, and as it has been found possible to prepare good marketable sugar from palmyra juice by the open pan system, it is not unlikely that sugar could also be produced from the juice of the coconut by the same process. In order to determine the economics of producing white sugar and whether sugar manufacture is likely to be more profitable than the preparation of jaggery, or the collection and sale of nuts, however, it would be necessary to carry out experiments on the manufacturing scale, but in view of the available sources of sugar in the Presidency, the Sub-committee did not consider it necessary to recommend the initiation of experiments in regard to the manufacture of sugar from the juice of the coconut palm, and with this view the Agricultural Development Sub-committee of the Provincial Economic Council concurred. In the Madras Presidency, jaggery is also prepared from date palm juice, but so far no attempts appear to have been made to prepare sugar direct from the juice, except at Peddapavani in the Nellore District where the Department of Industries carried out some experiments in the preparation of sugar in the year 1933. These experiments showed that it is possible to prepare good white sugar from date palm juice by the open pan system using centrifugal machines, but the data forthcoming from the experiments was insufficient to enable any very definite opinion to be formed as to the economics of such manufacture. The two important factors in the manufacture of date palm sugar are that a large number of trees should be situated in a compact block and that an abundance of cheap fuel should be available. In their report the Sub-committee referred to previously stated that there are several areas in the Madras Presidency, mostly in the Ceded Districts

and the Northern Circars, having some 2,000 tappable date trees within a radius of from 2 to 2½ miles from a central place and they considered that if possible another demonstration of the manufacture of white sugar from date palm juice should be carired out. It is not possible to give any estimate of the quantity of jaggery prepared from date palm juice.

35. A statement showing the monthly average wholesale prices of gur at important market centres in this Presidency for the years 1933-34 to 1936-37 is enclosed. The wholesale prices of gur are not available for the earlier years. The statement below gives the annual average prices at each station calculated from the figures of monthly prices:—

Station.	Average price per Imperial Maund.			
	1933-34.	1934-35.	1935-36.	1936-37.
Vizagapatam	3·37	4·96	4·62	2·91
Rajahmundry	3·93	5·14	5·16	4·13
Bellary	4·08	5·50	5·52	3·76
Vellore	3·39	5·07	4·83	3·60
Erode	5·12	7·36	5·20	4·29
Trichinopoly	3·92	5·36	4·11	3·09

From the above figures it will be observed that there was a marked increase in the price of gur in 1934-35 as compared with the price in 1933-34. The increase ranged from about 31 per cent. in Rajahmundry to about 50 per cent. in Vellore. The prices showed a downward trend in the following year and save for a very slight increase in Rajahmundry and Bellary to the extent of about 0·4 per cent., the prices were definitely lower at the other stations, especially at Erode and Trichinopoly where the prices fell by about 29 per cent. and 23 per cent. respectively. The downward trend of prices continued in 1936-37 and it was in evidence at all the reporting stations, prices having fallen from about 18 per cent. in Erode to about 37 per cent. in Vizagapatam as compared with the prices in the previous year.

Figures of acreage under sugarcane from 1932-33 do not show much variation in this province, nor do the figures of production of gur which have been estimated, reveal much variation. The estimated production from 1932-33 is shown in the following statement:—

Year.	Production of Gur in tons to the nearest thousand.
1932-33	279,000
1933-34	283,000
1934-35	278,000
1935-36	298,000

Taking the above figures in conjunction with the figures of net imports of gur by rail and sea, and estimating the total available supply of gur in the Presidency on the same lines as in answer to Question No. 36, the quantity of gur available for consumption in the different years is as follows:—

Year.	Total quantity of gur available for consumption in tons (to the nearest thousand).
1933-34	252,000
1934-35	261,000
1935-36	262,000
1936-37	284,000

It is very difficult to account for the large increase in the price of gur which was noticeable in 1934-35. The total available supply of gur in 1934-35 was actually in excess of that in 1933-34. An attempt has been made by the Director of Industries to find an explanation for the great increase in price in 1934-35. The prices of sugar for the two years, were examined but they did not seem to afford any clue. But when the prices of jaggery were examined over a period of four or five years previous to 1933-34 he noticed that from about the beginning of 1929 up to about the middle of 1930, the price of jaggery ruled very high and in fact on the average higher than the price of sugar. This will be clear on an examination of the retail prices supplied by the Triplicane Urban Co-operative Society, Madras.

The Director of Industries, Madras, thinks that this great increase in the price of gur in 1929-30 was presumably due to a decrease in the acreage under sugarcane in the previous year, which, when compared with the average acreage in the three years previous to it, *i.e.*, in the period 1925-26 to 1927-28 shows a decrease of nearly 20 per cent. This is clear from the following statement which shows the figures of acreage under sugarcane and the seasonal factor for cane over a period of 11 years:—

Year.	Area under Sugarcane in acres.	Seasonal factor.
1925-26	112,821	98
1926-27	114,495	93
1927-28	105,950	93
1928-29	89,075	90
1929-30	98,107	98
1930-31	114,877	98
1931-32	116,105	98
1932-33	120,921	99
1933-34	121,650	101
1934-35	125,310	98
1935-36	123,361	101

The production of cane in 1928-29 should thus have been roughly 20 per cent. short of the normal production, the seasonal factor in 1928-29 having been more or less of the same magnitude as the average seasonal factor in the triennial period 1925-26 to 1927-28. The deficit production of cane in 1928-29 should have led to an increase in the price of gur in the following year, and in fact so high was the price of gur in 1929 and in the first few months of 1930, that it actually became more economical to buy sugar during that period. In his opinion this state of affairs may have led to an increasing substitution of sugar for jaggery by the poorer classes, and it is quite conceivable that ultimately this process of substitution of sugar for gur resulted in creating a fairly big "carry over" of gur in 1930-31. The price of gur in 1930-31 was on the average much lower than in 1929-30, though the production of cane in 1929-30 was somewhat low. It was of course not so low as in 1928-29 in which year, as already stated, the production of cane was nearly 20 per cent. less than the normal. The production in 1929-30 was in fact about 12 per cent. short of the normal. But the high price of 1929-30 was not maintained in 1930-31, due largely, he presumes, to the effect of the "carry over" with which the year 1930-31 started. In subsequent years, there was an increase in the acreage under sugarcane, and the price of gur fell, touching a very low level in 1933-34. But in 1934-35, there was a sharp increase in the price. This was due probably to a depletion of the large "carry over" which started in 1930-31 and which should have gradually spent itself in subsequent years.

Statement showing the wholesale prices of Cane Jaggery at Important Stations.

Prices are in Rupees per Imperial Maund and are the average of the weekly prices furnished by the Agents of the Imperial Bank of the India at the Stations concerned.

Station.	April.	May.	June.	July.	August.	September.	October.	November.	December.	January.	February.	March.	Average.
1933-34.													
Vizagapatam . .	3·03	3·43	3·89	3·49	3·43	3·43	3·43	3·43	3·43	3·37	3·07	2·97	3·37
Rajahmundry . .	3·83	3·79	4·10	4·32	4·32	4·13	4·12	4·12	3·87	3·63	3·29	3·62	3·93
Bellary . . .	3·91	3·58	3·99	4·14	4·13	3·96	3·87	4·22	4·53	4·53	4·27	3·87	4·08
Vellore . . .	2·96	2·96	3·29	3·29	3·29	3·42	3·62	3·62	3·62	4·03	3·54	3·03	3·39
Erode . . .	4·29	5·57	6·00	6·00	5·14	5·14	5·14	5·14	5·14	5·04	4·39	4·46	5·12
Trichinopoly . .	3·23	3·12	4·06	4·15	3·53	3·76	3·82	4·04	4·34	4·41	4·04	4·53	3·92
1934-35.													
Vizagapatam . .	3·75	4·34	4·42	4·23	5·96	6·88	6·11	5·39	4·11	5·06	4·19	4·48	4·96
Rajahmundry . .	4·12	4·17	4·53	4·63	6·10	6·85	6·76	5·64	4·40	4·53	4·76	5·13	5·14
Bellary . . .	4·01	3·91	4·24	4·53	5·68	7·46	7·77	6·48	4·87	5·25	5·92	5·93	5·50
Vellore . . .	2·96	3·25	3·86	4·82	6·12	7·82	7·12	5·66	4·77	4·77	4·86	4·77	5·07
Erode . . .	5·14	5·14	5·14	5·36	6·00	7·71	10·29	10·29	10·29	9·42	6·86	6·68	7·36
Trichinopoly . .	3·89	3·82	4·47	4·70	5·00	6·02	7·05	7·05	7·05	5·73	5·14	4·41	5·36

Statement showing the wholesale prices of Cane Jaggery at Important Stations—contd.

Station.	April.	May.	June.	July.	August.	September.	October.	November.	December.	January.	February.	March.	Average.
1935-36.													
Vizagapatam . .	5·12	5·26	5·20	4·91	4·59	4·67	4·69	4·80	4·80	4·30	3·79	3·26	4·62
Rajahmundry . .	5·36	5·72	5·97	5·86	5·66	5·32	5·40	5·10	4·80	4·32	4·12	4·27	5·16
Belary . . .	5·81	5·97	6·37	6·58	6·42	5·35	5·35	5·35	5·21	4·94	4·58	4·32	5·52
Vellore . . .	4·77	5·60	5·39	5·27	5·27	5·02	4·90	4·67	4·61	4·61	4·12	3·73	4·83
Erode . . .	5·57	5·14	5·14	5·14	5·14	5·14	5·14	..	..	..	..	..	5·20
Trichinopoly . .	4·41	4·41	4·41	4·41	4·41	4·41	4·41	4·41	3·92	3·71	3·23	3·16	4·11
1936-37.													
Vizagapatam . .	3·39	2·93	3·03	3·20	2·97	2·91	2·78	2·86	3·39	2·51	2·43	2·49	2·91
Rajahmundry . .	4·32	4·32	4·32	4·32	4·32	4·32	4·32	4·67	4·51	3·51	3·24	3·37	4·13
Bellary . . .	4·14	4·05	4·12	3·95	4·12	4·12	3·70	3·70	3·70	3 55	3·13	2·86	3·76
Vellore . . .	3·62	3·62	3·62	3·75	3·79	3·79	3·69	3·29	3·29	3·96	3·70	3·13	3·60
Erode . . .	..	..	..	..		..	..	..	..	4·34	4·20	4·34	4·29
Trichinopoly . .	2·87	2·65	2·65	2·70	2·87	2·65	2·53	3·23	3·23	4·04	3·89	3·73	3·09

36. The estimated production of gur in 1934-35 and 1935-36 taken in conjunction with the movements of gur by rail and sea in 1935-36 and 1936-37 respectively will provide an estimate of the consumption of gur in the latter two years. As already indicated in answer to question No. 33 there are difficulties in the way of estimating the production of gur in the years previous to 1934-35. An estimate of the consumption of gur in this province in 1935-36 and 1936-37 may be struck on the following lines:—

The total consumption of gur in the Madras Presidency and the Cochin State in any one year may be taken as equivalent to the production of gur in these two areas in the previous year, *plus* net imports of gur by rail and sea into these two areas in the year in question. The production of gur in the Madras Presidency has been already estimated for 1934-35 and 1935-36 in the answer to question No. 7. An estimate of the production in Cochin has therefore to be made. A reference to the Agricultural Statistics of India, Volume II, shows that the area under sugarcane in the Cochin State in 1932-33 was 797 acres. This is the latest year for which this information is available. Assuming that the yield per acre of cane in the Cochin State is the same as that in the adjacent district of Malabar, the production of cane in the Cochin State may be estimated at 21,430 tons in 1932-33. Making an allowance of 16·1392 per cent. for chewing and seed, which is the same percentage as that adopted for the Madras Presidency and considering that no sugar is manufactured in the Cochin State the quantity of cane turned to the manufacture of gur in this State in 1932-33 may be estimated at 17,971 tons. The yield of gur from 17,971 tons of cane will be nearly 1,800 tons and if we allow for a slight increase in the acreage of sugarcane in the years subsequent to 1932-33, the yield of gur in the Cochin State in 1935-36 and 1936-37 may be assumed to be 2,000 tons. The figures of movements by rail shown against "Madras" and "Madras Ports" in the monthly statement of rail-borne trade published by the Director General of Commercial Intelligence and Statistics relates not only to the Madras Presidency proper, but to the bordering States of Cochin and Travancore as well. In striking an estimate of the total consumption of gur in the Madras Presidency and the Cochin State, we have therefore to leave out of account the movements of gur relating to Travancore. The best we can do is to make an allowance on this account. The net imports of gur by rail in 1935-36 amounted to −11,462 tons. The movements during the first ten months of 1936-37 for which figures are available, give a net import of −5,941 tons, but on the assumption that the movements during the remaining two months were of the same magnitude as those in the month preceding them, *i.e.*, in January, 1937, which assumption is justified on account of the fact that the crushing season generally extends from January to April when the movements of gur are heavy, the net import in 1936-37 may be estimated at −7,399 tons. We may not be far wrong if we assume that out of this the Madras Presidency and the State of Cochin together accounted for −6,500 tons. We may also assume that in 1935-36 they accounted for −10,000 tons. The latter figure is probably somewhat vitiated on account of the fact that previous to 1936-37, the classification of sugar and gur adopted in the statements of rail-borne trade published by the Director General of Commercial Intelligence and Statistics was rather confused as sugar was shown under sugar 'refined and unrefined', in which category, there was presumably every chance of jaggery also being inadvertently included. It was only in 1936-37 that the classification was altered on the representation of the Director of Industries, Madras. Sugar is now shown in a separate category and gur with molasses, rab, etc., in another category. As for movements by sea, the figures relating to this province include movements into and from Cochin. In 1935-36, the net imports of gur by sea into this province inclusive of Cochin amounted to −1,644 tons in 1936-37 to

—2,544 tons. The relevant statistics are shown below in the form of a tabular statement:—

Year.	Quantity of gur produced in		Net imports of gur by sea into the Madras Presidency and the Cochin State.	Net imports of gur by rail into the Madras Presidency and the Cochin State.	Consumption of gur in the Madras Presidency and the Cochin State, *i.e.*, total of Col. 2, 3, 4 and 5.
	Madras Presidency.	Cochin.			
1	2	3	4	5	6
	Tons.	Tons.	Tons.	Tons.	Tons.
1934-35 .	278,447	2,000	—1,644	—10,000	268,803
1935-36 .	298,661	2,000	—2,544	—6,500	291,617

On the basis of the above figures of total consumption of gur in the Madras Presidency and the Cochin State, we have to make the best estimate possible of consumption in the Madras Presidency. This can best be done on a population basis. The population of the Cochin State according to the Census of 1931 was 1,205,016 and that of the Madras Presidency was 46,740,107. The population of the Madras Presidency therefore accounts for 97·49 per cent. of the population of the Madras Presidency and Cochin State together. Calculating the consumption of gur on this basis, the consumption in 1935-36 may be estimated at 262,056 tons or 262,000 tons (rounded) and that in 1936-37 at 284,297 tons or 284,000 tons (rounded). In the above calculations the Madras Presidency has been taken to mean the Presidency as it existed before the reconstitution of the districts of Ganjam and Vizagapatam. There has been an increase of 22,000 tons or 8·4 per cent. in the consumption of gur in 1936-37 as compared with the consumption in the previous year. This can be accounted for by the low level of prices of gur which prevailed in 1936-37, especially as compared with the prices in the two previous years. Gur is a favourite article of consumption with the poorer classes on festive occasions and when prices are low they naturally resort to it to an increasing extent.

37. Gur (jaggery) is imported into the Madras Presidency by rail mainly from Mysore, Bihar and Orissa and the Nizam's Dominions. The imports by sea are negligible, amounting only to seven tons from Bombay during 1936-37. Figures of imports by rail during 1935-36 and 1936-37 (ten months only, April, 1936, to January, 1937), are given below:—

Province or State from which imported.	Quantity of gur, rab, molasses, jaggery, etc., imported by rail into the Madras Province in	
	1935-36.	1936-37 (ten months only, April, 1936, to January, 1937).
1	2	3
	Tons.	Tons.
Mysore	4,034	5,937
Bihar and Orissa	192	121
Nizam's Territory	46	453
Bombay Presidency	38	12
United Province of Agra and Oudh .	2	12
Total .	4,312	6,535

38. Gur/jaggery is exported from the Madras Presidency by rail mainly to the Nizam's Dominions, Bombay Presidency, Central Provinces and Berar, Mysore, Bihar and Orissa and Bengal Presidency, and by sea mainly to Ceylon, Federated Malay States, Kathiawar and Bombay. Figures of exports by rail during 1935-36 and 1936-37 (ten months only, April, 1936, to January, 1937), and of exports by sea during 1936-37 are given below:—

Province or State to which exported.	Quantity of gur, rab, molasses, jaggery, etc., exported by rail from the Madras Presidency in	
	1935-36.	1936-37 (ten months only, April, 1936, to January, 1937).
1	2	3
	Tons.	Tons.
Nizam's Territory	5,547	3,406
Bombay Province	4,668	2,597
Central Provinces and Berar	3,584	4,031
Mysore	936	328
Bihar and Orissa	569	1,575
Bengal Province	463	536
Central India	7	1
Total	15,774	12,474

II.

Country to which exported.	Quantity of molasses including palmyra and cane jaggery exported by sea from the Madras Presidency in 1936-37.
	Tons.
Ceylon	924
United Kingdom	350
Straits Settlements	4
Federated Malay States	4
Kathiawar	1,207
Bombay	60
Sind	1
Burma	1
Others	1
Total	2,552

39. (1) As there is considerable divergence of opinion on the question whether there is any correspondence between the prices of gur and sugar, the Director of Industries considered it worthwhile to examine the question in some detail and in as scientific a manner as possible. The following is an extract from his report:—

"From the records of retail prices of Aska sugar and gur supplied by the Triplicane Urban Co-operative Society which are attached to the answer to question 27, the annual average prices of each of these commodities were calculated for the period 1912-13 to 1928-29 and from the averages so calculated, two series of index numbers, one for gur and the other for

sugar, were constructed for the entire period, taking the average price in 1912-13 as equivalent to 100 in each case. The series are shown below:—

Annual average price of jaggery.

Base: Average price for 1912-13=100.

Year.	Price per viss.	Index No.
	As. p.	
1912-13	4 3	100
1913-14	3 11	92
1914-15	5 2	122
1915-16	5 3	124
1916-17	5 4	125
1917-18	5 0	118
1918-19	5 1	120
1919-20	8 3	194
1920-21	11 1	261
1921-22	8 9	206
1922-23	6 10	161
1923-24	6 6	153
1924-25	7 6	176
1925-26	6 11	163
1926-27	6 7	155
1927-28	5 5	127
1928-29	6 0	141

Annual average price of Aska sugar.

Base: Average price for 1912-13=100.

Year.	Price per viss.	Index No.
	Rs. a. p.	
1912-13	0 4 11	100
1913-14	0 4 8	95
1914-15	0 6 10	139
1915-16	0 7 9	158
1916-17	0 9 0	183
1917-18	0 8 0	163
1918-19	0 8 9	178
1919-20	1 0 2	329
1920-21	1 2 3	371
1921-22	0 10 5	212
1922-23	0 11 0	224
1923-24	0 11 7	236
1924-25	0 8 6	173
1925-26	0 7 6	153
1926-27	0 8 0	163
1927-28	0 7 0	142
1928-29	0 6 4	129

(2) The two series were correlated with each other and the coefficient of correlation calculated from them. The coefficient came to 0·8484, proving the existence of a very high degree of correlation between the prices of the two commodities. The last Tariff Board on the Sugar Industry in India had doubted the existence of any significant correlation between the prices of gur and sugar and had observed that such correlation as

emerged from the figures relating to the two was the result rather of variations in the general level of prices than of any direct reaction of sugar prices on gur. To test the validity of this observation, an endeavour was made to work out the correlation between the two series of gur and sugar prices after eliminating from each series the effect of a general movement of prices. It was necessary for this purpose to construct a series showing the general level of prices in this Presidency. Table I shows separate series of price indices for rice, cholam, cumbu, ragi, groundnut, cotton and sugarcane for the period 1912-13 to 1928-29 on the assumption that the average price in 1912-13 is 100 in each case. In view of the great importance of the above commodities in this province, a series of price movements which combines in itself the movements of prices relating to the different commodities is bound to reflect the general movement of prices in this Presidency. The problem was therefore to give proper weights to individual series. In Table II are set out the weights which have been given to the several series in the different years. The process of calculating the weights was as follows:—From a record of the areas under the several commodities in the different years, the percentage area of each commodity in each year was calculated. As this percentage will be representative of the relative importance of the commodity in the year in question, it was taken as the weight pertaining to it in that year. The weights were reduced to a system of percentages, merely for facility in calculating the weighted index. Weighting the series for the different commodities in Table I with the weights in Table II, a series of the general movement of prices was constructed. It was as follows:—

Year.	Weighted index of prices of commodities in the Madras Presidency.	Year.	Weighted index of prices of commodities in the Madras Presidency.
1912-13	100	1921-22	145
1913-14	96	1922-23	138
1914-15	87	1923-24	144
1915-16	88	1924-25	159
1916-17	95	1925-26	136
1917-18	106	1926-27	135
1918-19	157	1927-28	137
1919-20	180	1928-29	128
1920-21	149		

(3) Calling the series of index numbers of gur prices as '1', the series of sugar prices as '2' and the weighted index series as '3', the correlation between '1' and '2', '2' and '3' and '1' and '3' was separately calculated. Let r_{12} be the correlation coefficient between '1' and '2', r_{23} the correlation coefficient between '2' and '3', and r_{13} the correlation coefficient between '1' and '3', and r_{12} worked out to ·8484 as already stated, r_{23} worked out to ·6380 and r_{13} to ·6638.

Adopting the above coefficients of correlation, a partial correlation between gur and sugar prices, *i.e.*, a correlation from which the effect of the third factor, namely the general movement of prices of commodities, was eliminated, was calculated. It worked out to ·7378. This is fairly high and the result of eliminating the general movement of prices has been merely to reduce the correlation from ·8484 to ·7378, *i.e.*, by 14 per cent.

(4) The above calculations therefore prove the existence of a real correlation between gur and sugar prices. Even on *à priori* grounds it may be argued that the prices of the two commodities would tend to move sympathetically as both of them are manufactured from the same source and as their prices are therefore in a large measure dependent, other things being equal, on the price of cane which accounts for the greater portion of the cost of production of each of these products."

TABLE I.—*Index numbers of the prices of commodities in the Madras Presidency.*

Base: Average price in 1912-13=100.

Year.	Rice 2nd sort.	Cholam.	Cumbu.	Ragi.	Groundnut.	Cotton.	Jaggery.
1912-13 . .	100	100	100	100	100	100	100
1913-14 . .	96	94	100	97	100	96	92
1914-15 . .	91	88	92	92	63	64	122
1915-16 . .	90	83	88	88	79	88	124
1916-17 . .	93	90	95	92	72	134	125
1917-18 . .	94	103	102	99	70	195	118
1918-19 . .	132	156	152	145	153	256	120
1919-20 . .	161	197	206	201	186	170	194
1920-21 . .	140	156	176	163	128	133	261
1921-22 . .	135	147	157	153	153	153	206
1922-23 . .	129	129	145	140	147	185	161
1923-24 . .	127	136	148	140	149	224	153
1924-25 . .	144	150	157	156	149	190	176
1925-26 . .	134	134	144	141	130	140	163
1926-27 . .	134	137	150	144	123	118	155
1927-28 . .	133	140	151	146	121	146	127
1928-29 . .	123	129	137	138	121	138	141

TABLE II.—*Table giving the weights for the several commodities on the basis of the areas under them.*

Year.	Rice.	Cholam.	Cumbu.	Ragi.	Groundnut.	Cotton.	Sugarcane.	Total.
1912-13 .	44·07	17·05	12·61	10·39	5·86	9·62	0·40	100
1913-14 .	42·35	19·00	11·46	9·79	6·37	10·70	0·33	100
1914-15 .	41·96	19·69	13·44	9·38	7·20	8·05	0·28	100
1915-16 .	42·78	21·05	13·99	9·63	4·33	7·86	0·36	100
1916-17 .	44·05	18·18	13·03	9·16	6·86	8·28	0·44	100
1917-18 .	43·84	18·39	12·45	9·37	5·32	10·15	0·48	100
1918-19 .	41·53	20·10	12·02	9·46	3·97	12·43	0·49	100
1919-20 .	44·01	20·77	12·34	9·37	4·32	8·84	0·35	100
1920-21 .	43·18	20·32	11·72	9·89	6·23	8·26	0·40	100
1921-22 .	43·54	21·51	12·34	9·63	5·64	6·88	0·46	100
1922-23 .	42·73	19·90	11·65	9·78	6·64	8·80	0·50	100
1923-24 .	42·14	18·62	10·60	10·39	7·24	10·53	0·48	100
1924-25 .	41·52	18·88	11·64	9·32	7·27	10·95	0·42	100
1925-26 .	42·14	16·92	11·44	8·67	9·67	10·74	0·42	100
1926-27 .	41 ·88	18·13	11·90	8·78	10·35	8·52	0·44	100
1927-28 .	40·66	17·97	12·19	8·56	12·42	7·81	0·39	100
1928-29 .	40·53	18·97	11·28	8·29	13·53	9·07	0·33	100

40. It is not possible to say to what extent Indian factory sugar is replacing jaggery in this province. There is some reason to believe, however, that white sugar is being used in Indian households to an increasing extent in replacement of jaggery although jaggery will always be preferred for the preparation of certain domestic confections, and for use in connexion with certain ceremonial purposes.

41. The method of jaggery making as generally practised here suffers from the following defects, *viz.*, incomplete removal of scums, uncontrolled liming and prolonged boiling of the juice and as a result the jaggery produced is, more often than not black, unclean and of poor quality.

Though measures such as judicious liming, reduction in the time of boiling and efficient removal of scum have been able to effect some improvement in the quality, much yet remained to be done.

Accordingly, investigations were started to this end in the laboratory of the Agricultural Chemist, Coimbatore, in 1932, and it is gratifying to record that during the following years a simple and practical method was developed by the adoption of which the quality of the jaggery could be considerably improved.

The method consists in the use of activated carbon for clarification of the sugarcane juice.

The activated carbon recommended for the process is made from the cheap, waste product, paddy husk, by the following simple process. The latter is first carbonised at low temperature, subsequently heated out of contact with air at a high temperature for a few hours and then boiled with caustic soda. It is then thoroughly washed with water and dried in the sun. The active carbon thus produced is comparatively low in cost and of sufficiently high activity to produce excellent results.

The manner in which the above carbon is used for clarifying the juice is as follows:—

The raw juice is raised to the boiling temperature, the collecting scum efficiently removed, and the hot juice passed through a bed of activated carbon contained in a conical cylinder with a perforated bottom. The active carbon, by virtue of its highly porous structure, is able to absorb most of the colloidal impurities and the entire colouring matter present in the juice during the course of its passage through the layer of the carbon. The resultant percolate is colourless and transparent and on concentration to jaggery by the ordinary process yields a product of excellent colour and high quality. The product is further very clean and attractive.

It will be seen that both the above processes, *viz.*, the process of making active carbon and the method of its use in jaggery making, are simple and are capable of being adopted by any ryot of average means.

The new process has been demonstrated in numerous villages in different parts of the Presidency with ryots' canes in their own fields and the results have been uniformly successful.

As regards the economics of the method, it may be stated as a result of experience gained so far that a premium of 25 per cent. in price for the new product would leave a fair margin of profit to the manufacturer.

Small scale tests conducted in the laboratory have revealed the great potential value of the process with Palm products as well. The improvement effected in the case of Palmyra and Coconut jaggeries has been even more pronounced than with Cane jaggery.

42. The number of open pan factories in this province is negligible and although no estimate of the outturn of sugar, gur and molasses in such units can be given it must be very small indeed.

43. No reliable figures are available as to the cost of manufacture of sugar from cane in open factories in this Presidency. The cost of preparing sugar from palmyra juice at Navadur in the West Godavari district is as follows:—

Yield from 2,000 lbs. of juice—54 lbs. of sugar and 155 lbs. of molasses jaggery.

	Rs.	a.	p.
Cost of juice	3	15	3
Boiling of juice	2	8	0
Centrifuging	0	5	0
Chemicals	0	15	3
Salaries of staff	1	2	0
Interest and depreciation on capital . . .	1	13	8
Total .	10	11	2

44. So far as is known no open pan factories have been closed down as a result of competition from factory sugar, but the competition of factory sugar may have discouraged the setting up of open pan establishments in some areas.

45. The question of the open pan system of sugar manufacture was considered by a sub-committee of the Sub-committee of the Provincial Economic Council for Agricultural Development last year. The Sub-committee observed from a note on the subject by the Director of Agriculture, Bihar and Orissa, that the Khandsari sugar industry in that province had declined in importance during the last few years owing to (i) the comparative high cost of production rendering manufacture unremunerative at the reduced prices which sugar now commands and (ii) the competition of a large number of vacuum pan sugar mills which have been established. The Sub-committee considered that the open pan system of cane-sugar manufacture with centrifugals may have a limited field of usefulness in the interior tracts of the country where owing, either to want of communications or the scattered nature of the cane areas, manufacture in vacuum pan factories is impossible. Under such conditions, the Sub-committee opined that the open pan system of sugar manufacture may play a useful part in providing an oltlet for surplus cane and assist to maintain the price of jaggery, since the cost of production by this method is not so great as might be supposed. Overhead charges are low and the cost of supervision is negligible and this goes to offset the loss incurred by low extraction. But even under these conditions the market price of jaggery will, in the opinion of the Sub-committee, be a basic factor in determining the relative advantages of manufacturing sugar or jaggery, and at the prices then ruling for jaggery, it was considered that it would not be profitable to manufacture sugar by the open pan system in preference to utilizing the cane for the preparation of jaggery in areas where the jaggery industry is carried on, though if the price of jaggery falls below Rs. 24 per candy, the open pan system of sugar manufacture might be the more profitable of the two, provided there is a demand for the sugar produced at a reasonable price. Even so, if the ryot can dispose of his cane at anything over Rs. 10 per ton, it would in the view of the Sub-committee be more profitable for him to do so than to manufacture his own sugar by the open pan process. The chief advantage of this process appears to lie in the fact that, where there is no vacuum pan factory nearby, it enables the ryot to get from his cane crop a return comparable to what he may obtain by selling his cane to a factory when the manufacture of jaggery is not a profitable proposition, but as the production of vacuum pan factory sugar is increasing, the future of the open pan siystem does not, in the view of the Sub-committee, appear to be at all promising, especially if regard be had to the fact that Khandsari sugar is of lower quality than sugar produced in vacuum pan factories. The Sub-committee reported that no data was available in regard to the economics of the open pan method of sugar manufacture from cane when carried on in comparatively large scale units, producing from one to five tons of sugar per day, and this could only be determined definitely by experimental trial, but the falling off in the production of Khandsari sugar in Northern India went to show, in their view, that the open pan system is uneconomic as compared with vaccuum pan manufacture. The Agricultural Development Sub-committee of the Provincial Economic Council, which considered the report of the sub-committee, arrived at the conclusion that the open pan method of sugar manufacture is uneconomic.

46. Work done in the Chemical laboratory at Coimbatore on rab making by activated carbon treatment has been limited to small scale tests only. The indications are however promising. There is considerable improvement in the colour of the rab made by carbon treatment and the sugar obtained from such rabs compares favourably in colour with the white sugar in the market. The yield of sugar on rab also appears to be increased to a certain extent as a result of the rise in purity of the juice due to carbon treatment. From further experiments conducted in the laboratory, it appears that the present technique of rab making will admit much improvement. For example, a rab struck at 112° C., aerated in the usual

way and kept at a temperature of 60°-70° C. for a few hours with frequent stirring, has been found to yield 25 per cent. more sugar than the rab treated in the ordinary way.

No systematic large scale tests in rab making have however yet been made, using activated carbon.

47. (i) *Cane-grower.*—The price of cane having fallen, it has not benefited the cultivator but has tended to reduce his profits. The additional duty of 1937 has increased the working costs of the factory and this has also affected the grower inasmuch as the factories pay less for cane. In certain districts the value offered is said to be below cost of production. In Coimbatore this decrease synchronised with a slight increase in the cost of jaggery which is said to have made the growers not to sell the cane to the factory.

(ii) *Manufacturer.*—The tendency for the manufacturer is to throw the burden on the grower or consumer and he finds it easier to do so on the grower. In the case of the manufacturer it may be said that his profits if any are reduced. For when the supply of cane is insufficient, the factory works below its full capacity and it naturally increases cost of production and thereby reduces the profits. These in turn make the factory hesitate to pay a good price for cane. It therefore works in a vicious circle. The price paid by the consumer is affected by the competition set up between North Indian, foreign and local sugar.

(iii) *Dealer.*—Not affected.

(iv) *Consumer.*—As stated above, the consumer is not affected in view of the internal competition between different sugar producers.

48. Due to competition set up between Indian Sugar producers, the protective duties have probably helped the consumer to get his sugar cheaper than before, especially in view of the fact that the imported article has been considerably reduced in quantity.

49. The answer is in the negative.

50. *Statistics of acreage and outturn.*—The primary agency for the recording of the figures of acreage and outturn of sugarcane, as indeed of all other crops for which estimates of area and yield are prepared, is the village accountant. In the ordinary course of his work, which involves a detailed inspection of fields in the village, the village accountant sends each month to the Revenue Inspector, *i.e.*, the officer in charge of a group of villages varying in number, a detailed statement showing the sowings of crops and their estimated harvested outturn in terms of annas under the five separate heads—0 to 3 annas, 4 to 7 annas, 8 to 11 annas, 12 annas and 13 to 16 annas, 12 annas representing a normal crop. At the close of the fasli year, the Revenue Inspector prepares from the figures reported by the village accountants a statement of sowings of crops in his firka and their estimated outturn, classified according to the different anna heads. The statement so prepared is forwarded to the Tahsildar who consolidates the firka figures into taluk totals. The Tahsildar in turn submits the taluk figures of area and outturn to the Collector, in whose office the district statement of area and outturn is prepared before being finally sent to the Department of Industries.

The statistics of areas under crops are accurate in the case of ryotwari tracts which have been carefully surveyed, but the same cannot be said of Zamindari and whole inam areas which account for nearly a third of the Presidency, and of which only a part has been surveyed. Further, there is not the same elaborate revenue organisation in the latter areas, nor are the village accountants as efficient as those in the ryotwari areas. For these reasons, the agricultural statistics reported from the Zamindari and whole inam areas are not as accurate as those relating to the ryotwari tracts. In view of the defects inherent in the statistics relating to the Zamindari and whole inam areas, the Tahsildar or Deputy Tahsildar concerned estimates the area and outturn of crops as well as he can from the reports he receives

from the estate officials, modified in the light of his own knowledge and experience.

The yield of a crop is the resultant of three factors, namely, (i) the area under the crop in acres, (ii) the normal yield per acre and (iii) the seasonal factor or condition figure which represents the percentage relation of the crop in the field to the normal crop. The first of these factors has been discussed already. As regards the second factor, the normal yield per acre for sugarcane was last fixed by the Director of Agriculture in 1919. The figures or normal yield for the different districts are given in Appendix VIII to the Season and Crop Report. Steps have been taken to revise the present normals with reference to crop cutting experiments conducted on fields selected at random. Only when the results of the experiments now going on are known, will it be possible to pronounce an opinion as to the magnitude of the error introduced into the statistics of production by the adoption of standard yields fixed in 1919.

As regards the seasonal factor, the procedure adopted is as follows:—

The average anna figure for each crop in the district is first determined.

Let A acres be the total area under a crop made up of—

a_1 acres under 0 to 3 annas,
a_2 acres under 4 to 7 annas,
a_3 acres under 8 to 11 annas,
a_4 acres under 12 annas,
a_5 acres under 13 to 16 annas.

so that $A = a_1 + a_2 + a_3 + a_4 + a_5$.

The average anna figure (reported) will then be—

$$Y = \frac{(a_1 \times 1\frac{1}{2}) + (a_2 \times 5\frac{1}{2}) + (a_3 \times 9\frac{1}{2}) + (a_4 \times 12) + (a_5 \times 14\frac{1}{2})}{A.}$$

and the equivalent percentage figure will be $P = \frac{Y}{12} \times 100$ as 12 annas is equivalent to normal (=100). For sugarcane, figures of P are available from 1902-03 or thereabouts. A study of these figures has revealed that their average over a number of years rarely approximates to 100 as one would expect, but actually ranges from 70 to 90. This is due to the inherent pessimism of the village accountant, who is always inclined to underestimate the crop. His pessimism has to be allowed for in some way. The process of allowing for it is explained below with the help of an illustration:—

Let 80 be the average of the P's for sugarcane over a number of years in a district. If 75 is the P for the year in question, the corrected percentage (condition factor) will be entered as—

$75 \times 100/80 = 93{\cdot}75$ or 94.

100/80 is called the correcting factor and this figure varies for each district.

Accuracy.—The figures of area are on the whole fairly accurate. There is, however, a certain amount of inaccuracy in the figures reported from the Zamindari and whole inam tracts and this will no doubt to some extent react on the accuracy of the provincial totals of area and yield. The figures of normal yield per acre are out of date having been fixed in 1919, but as the result of crop cutting experiments now going on, revised normals will be available in a year or two and they will certainly be an improvement on the present standards, as the crop cutting experiments have been planned very carefully with due regard to the randomness of the experiments and the sufficiency of their number. As regards the seasonal factor, the process of correcting the annawari estimates of yield originating from the village accountants will to a large extent mitigate the error arising from this source. It is not possible to estimate the degree of error in the figures of production of gur published in the Season and Crop report, as they cannot be subjected to a post-mortem examination in the absence of figures of consumption of gur. The figures of production which are at present published are also largely hypothetical, as they are based on the assumption that the whole of the sugarcane produced is utilised for the manufacture of gur and no allowance is made for the other uses of cane.

Nevertheless there is every reason to suppose from the manner in which the statistics are compiled that the statistics of acreage, normal yield and seasonal factor published in respect of cane are in no way inferior to those published for other crops. It has, for instance been discovered as a result of post-mortem examination of the cotton forecasts in this Presidency, with reference to trade and consumption figures, that the forecasts compare favourably with the actuals. Since the reporting agency is the same for sugarcane and the manner of compiling the statistics is also the same, there is no reason to suspect the existence of any serious discrepancy in the figures of production of gur except to the limited extent indicated that the figures published take into account the whole of the sugarcane crop without making separate allowance for the cane turned into jaggery, used for chewing, etc.

Prices.—Continuous records of wholesale prices of jaggery at selected stations in the Presidency are available from January, 1933. Since 1st January, 1937, a new scheme of prices publication has been in operation in this Presidency, whereby the prices of both jaggery and sugar, among other commodities, ruling at important market centres in the Presidency on Monday each week are reported by the Agents of the Imperial Bank of India at the several centres so as to reach the Director of Industries the next day in time for publication in the *Fort St. George Gazette*. The retail prices of jaggery and sugar are also included in this scheme, but these prices are reported by the Tahsildars. Both the retail and wholesale prices are published in terms of rupees per imperial maund. The wholesale prices reported by the agents of the Imperial Bank of India are reliable. The retail prices reported by the Tahsildars are also on the whole fairly accurate, though occasionally discrepancies between retail and wholesale prices arise, and these are reconciled by correspondence with the reporting agencies.

51. Answers to questions 4, 7, 61, 94, 108, 109 and 110 of the General Questionnaire are attached.

Enclosure II.

GENERAL QUESTIONNAIRE.

4. The new factories which have come into existence in the Madras Presidency during the last few years employ the sulphitation process of manufacture. The carbonitation process has not been adopted in any factory in the Madras Presidency. In the latter process the large amount of lime used attacks the invert sugar, forming compounds which are insoluble when the operation is properly conducted. In consequence, the clarified juice is of a higher purity than is yielded by the sulphitation process. For the carbonitation process to be successful, however, it requires closer chemical control than the sulphitation process and to that extent is not particularly suitable for small size factories where the technical control is often not of the highest standard. Also the large amount of lime needed and the necessity for carbonic acid gas render a lime kiln at the factory more or less essential when the carbonitation process is employed and this also requires continuous skilled attention. For these reasons, it is somewhat unlikely that factories employing the carbonitation process will be set up in the Madras Presidency, except under special circumstances.

7. There is no optimum size of a sugar factory as in each case the capacity must necessarily be dependent on the area from which the cane supply is drawn and the position in regard to, and the facilities for, transport. Up to a point, the larger the factory, the lower will be the proportion of overhead charges in the cost of the finished product. In most sugar countries the view is held, it is said that a factory of less than 400 tons crushing capacity per day cannot prove economic except under special circumstances. In the Madras Presidency, however, the main difficulty attending the further development of the industry is the comparative absence of areas under sugarcane sufficient in extent to support sugar factories of

a size generally regarded as representing an economic unit and this explains why some sugar factories of small capacity have been established in the Madras Presidency. These small sugar factories were planned and erected even before the original excise duty was thought of and unless there is a substantial improvement in the price level of sugar, it will be impossible for these small factories to earn a profit after paying the enhanced excise duty, allowing for depreciation, and paying a reasonable price to the growers, whilst, if as a result of the overproduction in the North, prices fall away further, their position is likely to become extremely serious. There is therefore a strong case for waiving the excise duty in the case of small factories with a crushing capacity, of say, not more than 125 tons a day, and especially co-operative factories. If it is not possible to abolish entirely the excise duty on sugar produced by the small factories, they might well be placed on the same basis as Khandsari and open pan factories and called upon to pay only the lower excise duty applicable to such units.

61. *Molasses.*—In South India at present the disposal of molasses by the sugar factories, especially those which have no distilleries attached to them, presents a problem of considerable difficulty as there is little or no demand for this by-product except to a very small extend for tobacco curing. Molasses, it is understood, is now being exported from some ports in Northern India to Europe where it is used for the production of industrial alcohol, by yeast makers, and as an ingredient for cattle foods, but it is believed that the requirements of the exporting corporation represent less than half the production. This development therefore hardly appears to afford a solution of the problem of molasses disposal even in Northern India. In Mysore, experiments are in progress in regard to the use of molasses as a road surfacing material but it seems doubtful whether an outlet for any considerable quantity of molasses is likely at present to be found in this direction. Although it is possible to burn molasses in the boiler furnaces of sugar mills, no completely satisfactory furnace which will overcome the clinkering difficulty appears to have been evolved at yet. At Vuyyuru, however, the bagasse is sprayed with molasses through a perforated pipe at the point where the bagasse enters the conveyor from the mill, and as molasses has about the same calorific value as bagasse, a saving of bagasse is effected in this way, whilst no special difficulty in regard to clinkering appears to have been met with. The Agricultural Development Sub-committee of the Provincial Economic Council considered last year the question of conducting experiments in the matter of adding molasses to the diet of cattle on the Government Farms. As molasses by itself and in the form of molassine meal is used to a large extent in England and is considered a very useful food, particularly for milch cows, the Sub-committee considered that experiments could usefully be carried out in this direction by the Agricultural Department, and recommended that the offer of Messrs. Parry & Co., Ltd., Madras, to supply up to five tons of molasses free from their Samalkot factory for experimental purposes be accepted with thanks. The Sub-committee understood that field experiments carried out by Professor N. R. Dhar at Allahabad with molasses when mixed with soil showed that there is an appreciable increase in the total nitrogen and ammoniacal nitrogen contents and that as molasses contains potash, phosphate and lime, and as nitrogen is fixed in molassed lands, it is an excellent fertiliser for tropical soils. In short, the experiments carried out by Professor Dhar appeared to indicate that molasses is a useful fertiliser and reclaiming agent for alkaline soils and the Agricultural Development Sub-committee has recommended that the Agricultural Department should initiate experiments with a view to ascertaining the possibilities of utilising molasses as a fertiliser.

Another possible way of utilizing the molasses produced by sugar factories situated not far from ports would be to manufacture butyl alcohol from molasses by the direct fermentation process. Butyl alcohol is becoming of increasing importance as it is widely used in the varnish and lacquer

industries. It is a solvent for rosin, ester gum, dammer, shellac, mastic, manilla, and sandarac, whilst it counteracts the effect of moisture and gives flow in spray finishes and acts as a bloom-resisting agent in spirit varnishes; it is used as an anti-foam agent, is a constituent of penetrating oils, and is employed as a blending agent between methylated spirit and petroleum hydrocarbons. By the process referred to, acetone and ethyl alcohol are also produced, whilst hydrogen and CO_2 are obtained as by-products.

Acetone is one of the most widely used low-boiling point solvents for cellulose nitrate, cellulose acetate, ethyl cellulose, gums, oils, fats and waxes. It is used in large quantities in the manufacture of artificial silk, for all lacquers and dopes, celluloid, explosives, paint-removers and rosin varnishes. Ethyl alcohol is one of the most widely used chemicals in industrial processes. It can be converted into methylated spirit or used as a constituent of motor fuel, or in the preparation of perfumes, flavouring essences, xylonite, dyestuffs, explosives, varnishes, stains, celluloid, lamp filaments, lotions, photography, paints, etc. A plant handling 15 tons of molasses (with a sucrose content of 50 per cent.) and 2½ tons of rice per day would produce 726·5 tons of mixed solvents comprising 436 tons of butyl alcohol, 218 tins of acetone, and 72½ tons of ethyl alcohol, whilst the hydrogen output would be 1920 cubic metres a day. The possibility of attaching a factory for the manufacture of these chemicals to a sugar mill located within easy distance of a port would seem to be worthy of detailed examination although the production of butyl alcohol and acetone would have to be exported to England, as there is very little demand for the former in India at present and no demand for the latter except to a very limited extent by the Aruvankadu Cordite Factory. If, however, the manufacture of staple fibre by the acetate process could be developed in this country, a demand would arise for acetone. The whole productions of ethyl alcohol should be easily saleable in India. A factory manufacturing the solvents mentioned would seem to have an advantage over a factory manufacturing the same products in England from imported molasses. The capital required for a factory of the capacity mentioned, it is understood, would be in the region of Rs. 4,50,000. It is believed, however, that owing to competition between two combines, the prices of solvents in England has declined rendering the proposition less attractive than it appeared to be sometime ago, and two firms that considered the question of setting up a factory have decided not to proceed further with it.

Whatever uses may be found for molasses there is little doubt that the most important and universal use to which molasses could be put is the manufacture of power alcohol from it and in view of the increasing production of molasses and the difficulty of disposing of the by-product, it is very desirable that the question of introducing legislation rendering compulsory the admixture of a certain proportion of industrial alcohol with petrol for use as motor spirit should be taken up. For no industry can be considered at having been placed on a sound basis unless its by-products can be utilized commercially.

As a cattlefood, molasses by itself has very limited application, but an attempt has been made to make a compound cake with molasses which may be found useful in cattle feeding and as an outlet for molasses. This cake is made by mixing molasses and powdered groundnut cake and mineral mixture. The mixture is put into jaggery mould and allowed to set. It gives a hard brick, which is rapidly soluble in water and relished by cattle. In this form molasses can be handled easily. The cake keeps free from moulds, etc., for a year on ordinary storage. Experiments will be carried out with this product when it is made in bulk to determine its nutritive value.

In general, the question of molasses being fed on a large scale, turns on the economic aspect of cattle feeding. Molasses is a carbohydrate rich product and can thus only replace carbohydrate foods in animal feeding.

Here in India, carbohydrate rich foods, *i.e.*, Brans, and Dhall husk, are cheap and plentiful, and their per lb. calorific value compares favourably with molasses, under these conditions it is hardly likely that molasses will replace the Brans and Dhall husk to any appreciable degree as it has done in Western countries, which being non-agricultural have to import such foods, while molasses can be had cheaply and produced at home. There are few prospects therefore of molasses finding a large outlet in that direction.

Molasses contains only 0·88 per cent. potash, 0·03 per cent. phosphoric acid, 2·2 per cent. lime (CaO) and 0·2 per cent. of Nitrogen (N)—based on a moisture content of 19·0 per cent.

The mineral content being very small, molasses cannot be called a fertiliser. As a soil improver, Dr. Dhar has made claims that by its use alkaline soils can be reclaimed. These claims need to be substantiated.

Work done at Coimbatore has shown that when used for wet lands and garden lands there was no increase in crop yield, and molasses made no contribution to the soil in the shape of organic matter, the whole of the molasses having been fermented by bacterial action and lost as CO_2.

The use of molasses for reclamation of alkaline soils will be tried at the Siruguppa Irrigation Research Station.

94. In view of the overproduction of sugar in Northern India and of the resultant fall in prices, the need for a central sugar marketing organisation has become manifest. The reduction in price of Indian sugar has been due to intensive inter-factory competition and there seems no reason why if an organisation was set up to undertake the orderly marketing of sugar for the factories, higher prices should not be realised. A well ordered system of distribution of sugar from various producing centres to the consuming markets would eliminate wasteful competition and minimise freight charges. What seems to be required is a central marketing organisation on the lines of the NIVAS of Java, which would undertake to sell sugar jointly on behalf of the various sugar factories. The cement industry has shown what can be done by the introduction of efficient marketing methods, although the problem was admittedly far simpler in the case of the cement industry which is confined to a small number of manufacturers. Nevertheless, the cement industry has evinced a spirit of co-operation which the sugar industry might well strive to emulate, since the former industry has not only been able to compete successfully with imported cement, but also to raise price and institute quotas among the constituent factories. The creation of a central selling organisation for sugar would, however, in all probability have to be preceded by a survey of the markets in India, and also by the establishment of definite sugar standards in accordance with which sugar would be produced by the several factories comprising the marketing organisation.

108. In the short space of five years the industry has reached a stage where it is practically independent of foreign supplies of sugar, and it may reasonably be claimed that this remarkable development of the industry has fully vindicated the policy of protection afforded to it by the State. The grant of protection to the industry has assisted to improve the economic condition of a large number of cane cultivators, and has created a new avenue of employment for chemists, engineers and others engaged by the large number of factories which have come into existence. It has been computed that India is retaining 15 or 16 crores of rupees annually that had previously been paid to foreign producers and this represents a considerable economic gain to the country. Further, the consumer has not been affected as he is not paying more for his sugar now than before the grant of protection.

109. As is well known, the cost of production of sugar is much lower in Java than in India, as most of the factories in Java control their own sugarcane cultivation, and the yields per acre and the sucrose content of the cane are considerably higher. The efficiency of the Java sugar

factories is also greater than that of the factories in India. All these factors influence the cost of production and will render it necessary for protection to be given to the Indian sugar industry for a long time to come. The question of the rates of protection required by the industry involves a study of the costs of production of the several factories. These details will no doubt be supplied to the Tariff Board by the factories direct, but a good deal may be gloamed from an examination of the prices of Java and Indian sugars at ports. On the 28th May, 1937, the price of Java sugar at Calcutta was Rs. 9-9 per maund, or without the import duty of Rs. 6-13, Rs. 2-12 per maund, whereas the price of Padrauna Crystal No. I per maund *ex*-fatory Cawnpore was Rs. 5-11-6 or Rs. 4-3-6 per maund excluding the excise duty of Rs. 1-8. If the freight from Cawnpore to Calcutta of As. 13-7 is added, a figure of Rs. 5-1-1 delivered at Calcutta is arrived at, or Rs. 6-9-1 inclusive of the excise duty. In Madras, the last reported price of Java sugar on the 8th of May 1937 was Rs. 12-14 per cwt., or less the import duty of Rs. 9-4, Rs. 3-10 per cwt. This compares with a price of Rs. 9-6 per cwt. for Padrauna sugar ruling on the 5th of June, 1937. The nominal price of Nellikuppam sugar in Madras on the 5th of June, 1937, was Rs. 9-12 per cwt. These rates may not be strictly comparable and no provision has been made for handling and sales commission charges, etc., which may have to be added in some cases, but they do at least go to show that a considerable degree of protection is still required by the Indian sugar industry. If the fall in prices cannot be arrested and unless a recovery in prices sets in, the Indian sugar industry will be faced with a crisis of considerable magnitude and a reduction in the present rate of protection might be expected to have a demoralising effect on the industry and seriously to shake any confidence in the long term outlook for sugar which may yet remain.

110. The problems of the sugar industry are essentially problems of research, of the introduction of more efficient methods of sugarcane cultivation, of reduction in manufacturing costs, of organisation, and of marketing. Three main necessities are, a reduction in the cost of cane, improvement in extractive efficiency, and the utilization of molasses. It has been stated in reply to the previous question that, for the reasons briefly touched upon, the cost of production of sugar is much lower in Java than in India, and the ultimate success of the industry must, therefore, depend upon the availability of suitable cane at considerably lower prices than at present. More money should be set aside from the excise duty for providing grants for research with a view to the propagation of cane of higher sucrose content, of higher tonnage, and of early and late ripening varieties which would enable the crushing season to be prolonged and the factories to obtain a better recovery at the beginning and end of the season, thus reducing the cost of production of sugar. Without a reduction in the cost of production of cane, the cost of production of sugar cannot be reduced to a level at which India can hope to compete on equal terms with Java, since the cost of cane is the largest item in the cost of production of sugar. It will doubtless take a long time for these objects to be fully realised, but given an adequate protective tariff and other suitably regulated forms of assistance over a sufficiently long period, the industry should eventually be able to face foreign competition in the home market with only a revenue duty on foreign sugar. It is not obviously possible, however, to set a period within which it will be possible to dispense with protection.

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(4) *Note on the economic condition of the tapper in the Madras Presidency, supplied by the Director of Industries, Madras.*

In the note on the palmyra sugar industry of the Madras Presidency which I prepared in June last and which, I believe, was transmitted to the Sugar Tariff Board by my Government, the position of the industry was reviewed and the conclusion arrived at that the palmyra sugar industry

could not bear the burden of an excise duty. It was pointed out *inter alia* that the preparation of palmyra jaggery for refining purposes, is essentially a cottage industry affording a means of subsistence, directly or indirectly, to some 200,000 people, and that in the interests of the rural employment which the palmyra tapping industry provides, it is in the highest degree necessary that the palmyra sugar industry should continue to be exempted from excise duty, if widespread distress amongst the tapper community is to be avoided, especially in view of the marked fall in sugar prices which in itself is rendering increasingly difficult the position of this struggling industry. In the course of my oral evidence before the Sugar Tariff Board, I was asked to supply further information in regard to the economic condtion of the tapper and my three Assistant Industrial Engineers in charge of the Tanjore, Coimbatore and Bezwada divisions were instructed to collect information in regard to the income of the tapper, whether he devotes himself exclusively to tapping, or has other employment, or how he spends his time apart from tapping, how the tapping industry is organised, *i.e.*, how the tapper deals with the middlemen and on what basis the tapper is remunerated by them. The Assistant Industrial Engineers were also informed that any other information which has a bearing on the economic condition of the tapper and the organisation and economics of the industry would be of value. I enclose the reports received from the Assistant Industrial Engineers in regard to the economic position of the tapper in the west Godavari, Tinnevelly and Coimbatore Districts. Unfortunately, the Assistant Industrial Engineer, Coimbatore Division, has not submitted a report in regard to the tapping industry in the Palghat area, from where Messrs. Parry & Co., Ltd., and the Lakshmi Sugar Mills, Podanur, derive part of their supplies of jaggery for refining purposes.

2. It is extremely difficult to obtain accurate information from tappers in regard to their economic condition and as the Assistant Industrial Engineers have no experience of the industry, the figures given by them should perhaps be accepted with a certain amount of reserve. I am not altogether satisfied with the details of a tapper's expenditure supplied by the Assistant Industrial Engineer, Bezwada, who states that the expenditure for two persons engaged in tapping would be Rs. 147, but the expenditure of Rs. 73-8 for which he has given details is in respect only of a unit of 60 trees from which a yield of four candies of jaggery is given. If the tapping expenses went up to Rs. 147 by the employment of two tappers, the number of trees tapped would presumably be increased and so also the production of jaggery, since according to Messrs. Parry & Co., Ltd., the average production of a tapper in the Nidadavol area is from three to ten candies per unit of 60 trees per season. I have asked the Assistant Industrial Engineer to verify and elucidate his figures. Allowing for some possible inaccuracies in the figures given by the Assistant Industrial Engineers in their reports, however, it is only too evident that the economic position of the tapper is deplorable and that the imposition of an excise duty on palmyra sugar, which would in all probability result in the sugar factories paying still lower prices for jaggery—if they continued to buy jaggery at all—would be disastrous to the tapper community. The reports of the Assistant Industrial Engineers appear to indicate that there is scope for improving the economic condition of the tapper by co-operative methods with a view to eliminating the middlemen and the malpractices to which they are said to resort, so that the tapper may derive the full benefit from his labour. A demonstration of the manufacture of white sugar and improved jaggery from palmyra juice was carried out by the Department of Industries at Navadur in the west Godavari District last year, and the results went to confirm the conclusions arrived at from the experiments previously carried out at Rettakulam in the Tinnevelly District, that marketable white sugar could be produced from palmyra juice and that it is possible to prepare from palmyra juice, jaggery of a superior quality which should realise a higher price than

the jaggery at present prepared. The results of the experiments conducted at Navadur went to show that under the conditions then obtaining it would be more profitable to prepare improved jaggery than sugar and that this is likely to remain the case unless a greater yield of sugar is obtained or the price of jaggery declines further. Preliminary steps were taken with a view to organising a Co-operative Society for preparing the improved jaggery, but soon afterwards, the tappers went on strike and the Co-operative Department considered it desirable to defer the registration of the society until conditions became more normal. The Deputy Registrar of Co-operative Societies, Rajahmundry, informed me recently that conditions in the Navadur area had not yet reverted to normal, and that he proposed to take up the registration of the proposed Co-operative Society this month.

3. Since I prepared the note on the palmyra industry referred to in paragraph 1 *supra*, I have received some further data from Messrs. Parry & Co., Ltd., I understood that, according to their estimates, the approximate amount of palmyra jaggery produced during an average year is:—

	Candies of 500 lbs. each.
Palghat	20,000 to 25,000
Tinnevelly	80,000 to 90,000
Nidadavol	50,000 to 60,000

All this jaggery is not, of course, absorbed by refineries as considerable quantities go into direct consumption locally. The importance of the palmyra jaggery industry is further brought out by the following figures given to me by Messrs. Parry & Co., Ltd., of their expenditure on the purchase of jaggery in the three areas. To these figures would have to be added the value of jaggery going into direct consumption and of that purchased by other refineries.

Palghat.—17,000 to 18,000 candies at Rs. 16 per candy—Rs. 2,72,000 to Rs. 2,88,000.

Tinnevelly.—About 25,000 candies at Rs. 13 per candy—Rs. 3,25,000.

Nidadavol.—50,000 to 60,000 candies at Rs. 19 per candy—Rs. 9,50,000 to Rs. 11,40,000.

The purchase of these large quantities of jaggery by Messrs. Parry & Co., Ltd., during the season results in the disbursement of considerable sums of money in the tapping areas, and if this money ceased to circulate as a result of the imposition of an excise duty on palmyra sugar rendering refining unprofitable, considerable hardship would be caused to the rural population in the areas affected.

The following figures in regard to the net earnings of the tapper per month in a season of five months have been supplied to me by Messrs. Parry & Co., Ltd.:—

	Lowest production—Two candies. Highest production—Three candies.	
	Rs. A. P.	Rs. A. P.
Palghat—		
1931	1 11 0 to	4 6 0
1932	2 0 5 to	4 14 0
1933	1 15 7 to	4 13 2
1934	1 7 2 to	4 0 7
1935	5 1 7 to	9 8 2
1936	3 9 7 to	7 4 2
1937	2 3 2 to	5 2 7

	Lowest production Two and a half candies.	Highest production Four candies-
	Rs. a. p.	Rs. a. p.
Tinnevelly—		
1931	2 13 0	to 7 6 0
1932	3 8 0	to 8 9 0
1933	1 11 0	to 5 10 0
1934	2 5 0	to 6 10 0
1935	3 10 0	to 8 11 0
1936	3 3 0	to 8 0 0
1937	0 15 0	to 4 6 0
Nidadavol—		
1930	10 14 0	
1931	7 7 0	
1932	8 12 0	
1933	10 10 0	
1934	7 1 0	
1935	10 2 0	
1936	8 0 0	
1937	No production.	

It will be noted that the earnings of the tappers in the Tinnevelly District fell considerably in 1937, and also, but to a lesser extent, in Palghat. Owing to the strike of tappers practically no jaggery has been purchased by Messrs. Parry & Co., Ltd., in the Nidadavol area this year, but the price fixed by them at the beginning of the season was the lowest they have ever offered due to the fall in sugar prices.

REPORT BY THE ASSISTANT INDUSTRIAL ENGINEER, TANJORE, ON THE ECONOMIC CONDITION OF THE TAPPER IN THE TINNEVELLY DISTRICT.

The industry of preparing jaggery from the sweet juice of palmyra palm known botanically as *Borassus Flabelliformis*, is carried on by Nadars in the Tinnevelly District. Millions of palms grow in the coastal taluks of Tiruchendur, Nanguneri, Srivaikuntam and the western taluks of Tinnevelly, Ambasamudram and Tenkasi. They are nature's gift and the trees require practically no attention at all.

I visited Tinnevelly, Srivaikuntam, Tiruchendur, Udangudi, Tisayanvilai, Nanguneri, Panangudi and Tenkasi and met several tappers and their families actually engaged in the industry, middlemen or brokers who purchase the jaggery from the cottage workers, and some merchants who gather all the local jaggery and market it. I give below as accurately as possible the process of manufacturing jaggery and whatever information could be gathered in regard to the income of the tapper.

Tapping is a delicate and complicated art. Men who are conversant with the art are found in the Tinnevelly District itself but quite a large number of tappers migrate from the neighbouring state of Travancore during the tapping season. Palms utilised for jaggery manufacture are exempt from the excise tree tax. Trees below 10 years' growth are not generally ripe for tapping. Smooth trees which are of over 10 years' growth, are fit for tapping. Eastern pots freshly coated with lime on the inside are tied to the tree and a sweet juice trickles from the trees into these pots. These pots are emptied twice a day, morning and evening. The juice is saccharine and is liable to get fermented, hence the coating of lime which is the cheapest and best preservative. Jaggery manufacture is the process of eliminating water and non-sugar substances without affecting

the sucrose. The water is eliminated by evaporation. The non-sugar substances are separated by removing the scum that comes to the surface of the liquid when boiled. Heat must be applied quickly and constantly till the liquid becomes syrupy and after that the fire should be reduced. When the syrup becomes viscous it is poured into moulds of cocoanut shell.

The tapping palmyrah trees are of two varieties known in Tinnevelly as *Kattupanai* and *Parvappanai* or the male and the female. The former can be tapped for about two months beginning from February when the sprouts shoot out. The Paruvappanai yields juice for over three months, the season ending in July in Tinnevelly. The tapping season is therefore from February to July. An active tapper with a good constitution can climb on an average 50 trees a day, each tree having to be climbed two to three times daily. But for purposes of working out the economies of the industry it is safe to assume that an average tapper can climb 30 trees per day. This means that he can tap about 100 trees during the season. A tree yields from quarter to one and a half gallons of juice per day, the yield being greatest in the months of April, May and June. The quantity of juice that a tapper collects per day varies from six gallons during the first few days and the fag end of the season, to 30 gallons during the period of maximum juice flow. A fair average for the six months season may be assumed to be 16 gallons of juice per day for a tapper, who works at least 10 hours.

Income of the tapper.—It is assumed that the tapper takes on lease a palmyra tope containing about 100 tapping trees, 100 saplings and about 200 other trees or 400 palms in all, and that he pays an annual rent of Rs. 30. From 16 gallons of juice, which is the tapper's average daily outturn 150 palams of jaggery is made. One palam is approximately 5¼ rupees weight. This jaggery is sold by the tapper to the local broker, the price prevailing at the time of my investigation being As. 2-6 per thooku of 30 palams. A standard thooku is only 25 palams but the broker purchases from the tapper with an extra 20 per cent. or 5 palams per thooku as his brokerage. The tapper therefore gets As. 12-6 for the day and the broker makes an easy profit of As. 2-6. The tapper's gross receipt for the six months by the sale of jaggery therefore works out to As. 12-6 × 160 = Rs. 125 (number of working days is taken as 160 allowing for non-working days due to illness, festivals, etc.).

In addition to this he derives a small income by the sale of several articles made out of little parts of the palmyra tree. Leaves are lopped off from the non-tapping trees in August. These leave are used for roofing houses and for making mats, baskets, fans, water buckets, toys and other articles. From the ribs, which are removed with a little leaf attached, winnowing and onion baskets are made. From the stem of the leaves the upper smooth portion is extracted and used for caning cots, chairs, etc., for making ropes and for baskets. From trees under 10 years growth fibre is extracted from the portion that holds the stem to the trunk of the palm. A few years back there appears to have been a good demand for this fibre from exporting firms in Tuticorin, and the tappers got a good price. But now the demand is not so great. Untapped Paruvappanai or the female tree bears a fruit which is eaten when tender. The ripe fruit is also eaten. The ripe fruit is also buried underground for about a month and the roots that sprout out are sweet and are a delicacy with the local people. Thus the tapper engages himself in tapping during the tapping season when his wife, children and other members of his family will be employed in the boiling of juice, collecting firewood and manufacturing jaggery. During part of the off-season all of them engage themselves in the several small industries connected with the palmyra as detailed above, and at other times they work as coolies in their villages and earn whatever they can. The tapper's wife will be able to earn on an average about As. 2 a day by the sale of one or other of the several sundry articles made out of the palmyra.

Subsidiary income of the tapper from sale of the little products, mentioned above.

	Rs.	A.
1. By the sale of leaves	15	0
2. By the sale of nongu and fruit	6	0
3. By the sale of rope made from fibres	2	0
4. By the sale of charcoal obtained from the tappers furnace (the charcoal formed in the course of the previous days' work is collected every morning and sold periodically)	6	0
5. By the sale of mats or baskets or fibre, etc., at As. 2 a day for about 80 days	10	0
6. By cooly labour during the off-season (assuming that the tapper gets work for about three days a week and earns As. 3 a day for about 80 days)	15	0
	54	0

Thus, the gross income, *i.e.*, by the sale of jaggery and the subsidiary sales works out to Rs. 125 *plus* Rs. 54=Rs. 179 or Rs. 180 for a year for the tapper and his family.

Out of this income the tapper has to pay—

	Rs.	A.
1. Rent for the palms	30	0
2. Cost of about 100 earthen pots for collecting juice	1	8
3. Cost of 8 boiling pots at As. 2 each	1	0
4. Lime, Oil seeds, etc.	1	0
5. Firewood purchased in addition to the dried leaves, etc., collected from the tope	6	8
	40	0

Therefore net annual income Rs. 180 *minus* Rs. 40=Rs. 140.

The tapper lives in the tope itself and the manufacture of jaggery is also done in the same tope in another shed. The family expenditure for the year is roughly as below:—

	Rs.	A.
Rice at Rs. 5 a month	60	0
Other provisions (purchased in the weekly shandy)	60	0
Clothes for tapper	2	8
Clothes for his wife	5	0
Clothes for his children	5	0
Festivals	6	0
Miscellaneous	1	8
	140	0

Leaving nothing at all as the year's savings, the tapper and his family therefore eke out a hand to mouth living though they work over 10 hours a day during six months in the year and do whatever work is available during the rest of the year. Their condition is obviously very pitiable.

The industry therefore needs every help and encouragement, and whatever can be done to improve the price of jaggery will be a boon to the tapper. It has been said above that the jaggery is sold in retail at As. 2-6 of 25 palams. I understand that the price was nearly double this sometime back when the tapper was able to eke out a better livelihood.

The tapping industry is not at all organised. Most of the palms are leased out by the owners to individual tappers who manufacture jaggery as a cottage industry and sell it to their village broker. Where local tappers are not available the Nadar owners bring tappers from the neighbouring state of Travancore and have their trees tapped on a fifty fifty basis, *i.e.*, the owner gets the juice every alternate day and the tapper takes the rest to himself. The jaggery manufactured by these people is also sold to the local broker. The brokerage charged is as I have already indicated 20 per cent., *i.e.*, the broker weighs out 30 palams of jaggery and pays to the tapper the price for 25 palams only. If this brokerage can possibly be prevented and a way found for the tapper to derive the full benefit for his labours the industry will be greatly helped. But it appears from the little I have seen of the industry that the tapper must suffer. The broker passes on the jaggery to the merchant. The largest centre in the district for the export of jaggery is Nazareth in the Tiruchendur taluk. In the year 1936 about 18,600 candies of jaggery valued at Rs. 3,72,000 were exported from Nazareth to Madura, Trichinopoly, Ramnad, and other districts.

With a view to help the tapper and the industry, the Tinnevelly District Jaggery Loan and Sales Co-operative Society, Ltd., was started with its office at Udangudy on the Tiruchendur Tisayanvilai light railway. I met Mr. G. Y. Jeevamony, Secretary of the Society, and learnt that though the society was intended to help the tapper it is if at all helping the middlemen only. These middlemen take advances of upto Rs. 500 each and repay it from their profits in the business. The tapper is not able to obtain any loan as he is not in a position to offer sufficient security. Any small loan advanced by the brokers to the tappers is recovered with interest during the season; the rate of interest is always higher than what is charged by the Co-operative Society.

It seems to be that a minimum price for the jaggery should be fixed so that the hard labour of the tapper is properly paid for. Any arrangement that can be framed to enable the tapper to sell his jaggery at a price not below this minimum will be greatly appreciated. If a model sugar factory is run in the heart of the palmyra country and sugar is made from the sweet juice the lot of the tapper will probably be improved. The Kulasekharapatnam Factory owned by Messrs. Parry & Co. is reported to have run very successfully for some time and then failed. If any excise duty is levied on palmyra sugar the tapper will be immediately hit and his lot will be much worse even than now. Even without a charge of a duty he gets very little for his work, as we have seen above, and six months hard labour leaves the family practically nothing to fall back upon during a period of enforced idleness due to illness or other causes. It appears very surprising that the tapper should continue to do such hard work for such a low return. The reason is perhaps that he cannot find any other work to keep him living.

REPORT BY THE ASSISTANT INDUSTRIAL ENGINEER, COIMBATORE, ON THE ECONOMIC CONDITION OF THE TAPPER IN THE COIMBATORE DISTRICT.

I have visited the following villages of Coimbatore District to collect information in regard to the economics of tapping industry and the economic conditions of tappers:—

(1) Perundurai, (2) Chennimalai, (3) Pallakkatu, (4) Seenapuram, (5) Appichimadam, (6) Pulankulam, (7) Kunnathur and (8) Uttukuli.

The preparation of palmyra jaggery is carried on in and around these villages as a cottage industry by "Sanars" who are also called "Nadars" in these parts. It has been estimated on the strength of information gathered in these villages, that about 50,000 people in this district are directly or indirectly engaged in this industry and the annual production of jaggery is normally about 500 tons.

The tapping season for the palmyra tree commences in December each year and lasts till about April of the following year. The duration is therefore about five months in a year. The yield of juice from palmyra trees decreases as the season advances and completely ceases at the end of five months period.

On an average, a tapper of good physique can tap 25 trees in a day, and would be able to collect about 25 Madras measures of juice each day. When the day's collection of juice is over by about noon, the female member of the family would start boiling the juice for preparing the jaggery, while the male member again starts climbing each tree in the afternoon to renew the lime coat in each pot intended to collect juice and beat the yielding stem ("Palai" in Tamil) of each tree to permit free flow of juice. Thus the entire family has full work for the day. The 25 Madras measures of juice that can be collected by a tapper in one day, it is gathered, would give on an average about $\frac{3}{4}$ of a maund of jaggery. Thus, ordinarily, one male member and one female member can produce $\frac{3}{4}$ maund of jaggery in one day. This quantity is sold for nine to ten annas depending on the quality and demand. The present market rate for palmyra jaggery ranges from As. 12 to As. 14 per maund. The retail dealer sells at As. 15 to Re. 1 per maund. Taking an average gross earning of As. 10 per day, the net earnings will work out as follows:—

Expenditure for the whole season of five months.

	Rs.	A.
Cost of pots for tapping and pots for boiling juice and other sundries	2	8
Cost of lime for coating the inside of pots and cost of castor seeds for mixing with the boiling juice (roughly one anna per day)	10	0
Hire for 25 palmyra trees payable to the owner of the grove for the entire season	5	0
Fuel for boiling juice (roughly two annas per day) .	20	0
Total for 5 months .	37	8

Average daily expenditure $\frac{37.8}{5 \times 30}$ = As. 4.

The average net earnings per day would therefore come to six annas which may be distributed as a wage of annas four for the male member and annas two for the female member. This appears to be an inadequate living wage even though the labour involved is arduous and risky of all other rural occupations. Enquiries go to show that the tapper is not able to earn even this scanty wage during the remaining period of the year.

It is understood that formerly there was a fair demand for palmyra jaggery prepared in these parts from Messrs. Parry & Co., but there has been no such demand for the past two years as I gather that the percentage of sugar obtained from jaggery produced in these parts is rather low. Messrs. Parry & Co. are, therefore, obtaining their requirements of palmyra jaggery from Palghat and surrounding villages in Malabar District. Consequently, there has been a gradual fall in the price of palmyra jaggery in this district, as almost all the quantity produced has to go into direct consumption by the villagers. The tappers generally prepare jaggery every day during the season and stock it for a week to sell the produce in local

shandies. There are local merchants who purchases jaggery from the tappers on shandy days and sell in bulk to retail dealers. The tapper is not always able to dispose off his produce readily and at times he is forced to sell it at low rates without waiting for better rates, in order to avoid difficulty for the maintenance of his family. It is therefore apparent that this struggling industry is a very difficult means of subsistence to the tapper community.

The economic condition of tapper is precarious in the non-tapping season. The tappers in these parts find it extremely difficult to eke out their livelihood. This difficulty may be attributed chiefly to the limited scope for employment in rural areas, the inability on the part of the tappers to adjust themselves to other occupations and to the fact that the period during which the demand for agricultural labour is greatest synchronises with the tapping season. The tappers in these parts are generally engaged, apart from tapping, on the following occupations:—

1. Tapping coconut trees for manufacturing coconut jaggery.
2. Tapping toddy from coconut trees on wages.
3. Collecting palmyra leaves for thatching roofs.
4. Collecting fuel for sale in villages.
5. Engaging themselves as coolies on petty wages.
6. Manufacturing fibre from half grown and tender palmyra leaves.

Detailed enquiries have also been made into the economic conditions of tappers engaged in these subsidiary occupations and it is gathered that the earnings of the tappers in this period (May to November) are less than those in the tapping season. The tapping of coconut trees for jaggery making also gives the same rate of earnings, but the number of trees available are not many. The coconut trees available for tapping toddy in these parts are reported to be few. Therefore about 5 per cent. of the tappers, who are able-bodied are only employed in this work and paid Rs. 2 to Rs. 2-8 per week. Those who are engaged in collecting palmyra leaves for thatched roofing are able to earn daily annas two to three per head by collecting about 75 leaves per day. Those who cannot find work and who are not strong enough to do any manual labour engaged themselves on collecting fuel and sell them to villagers; thus making about a couple of annas per day.

Those who can do hard labour engage themselves as petty labourers in villages. They are able to get about three to four annas per day.

As regards the palmyra fibre industry the following information is gathered during the course of the enquiry. Palmyra fibre is taken from the leaves of young and half grown trees. It is sold by tappers in bundles to local merchants who have small factories for curing the fibre and making it a finished product (sample sent separately). It is understood that this fibre is used for caulking the joints of boats and for preparing ropes. I visited one such factory at Perundurai, 10 miles from Erode, owned by Mr. Daivasikamani Chettiar. Fibre from the factory is exported to Tuticorin. The raw fibre is purchased from the sanars in bundles at As. 12 per maund weight. It is gathered that it will take a week for a man to prepare about a maund and a half of fibre. Therefore a man engaged in this work cannot ordinarily earn more than two to two and a half annas a day.

From the facts given in the foregoing paragraphs it would appear that the tapping industry is quite uneconomic and the condition of tappers who solely depend on this industry, is miserable. In spite of the existing and risky labour involved in this industry, the tapper is hardly able to earn a minimum living wage. I had during my visits an opportunity to acquaint myself with the conditions of the tappers in interior rural areas. Their condition is very distressing and many of them including women and children do not have sufficient food and proper clothing not to speak of

other necessities of life. In order not to make their condition worse and also not to make the problem of rural unemployment more acute, it is necessary that the palmyra sugar industry should continue to be exempted from excise duty.

REPORT OF THE ASSISTANT INDUSTRIAL ENGINEER, BEZWADA, ON THE ECONOMIC CONDITION OF THE TAPPERS IN WEST GODAVARI DISTRICT.

Bhimavaram Taluk in West Godavary District is the centre of the major portion of tapper community. Nearly 70 per cent. of the tappers from this taluk go annually to several villages of Kovvur Taluk in the same district with their entire families. There are a good number of palmyra trees in that taluk which gives very good juice depending on the soil conditions there. The remaining 30 per cent. of the tappers who are in a somewhat more affluent position, remain in their villages and tap the trees therein and prepare the jaggery with some pains and care and sell it for local consumption during shandy days at a price of from Rs. 25 to Rs. 30 per candy according to the quality.

This kind of migration takes place generally at the end of December each year. The tappers remain there till the end of May. During this period each tapper taps about 30 male and 30 female trees generally assisted by his wife, widowed mother and two or three children. His family members help him in carrying the juice from the trees to the place of boiling, in collecting fuel for the hearth and in feeding the furnace, etc. The yield of the juice from the trees is very limited and scanty in the first and last month and is at its maximum in the middle three months. An average tapper assisted by his wife, mother and two or three young children can manufacture about four candies of palmyra jaggery during this period. Though the rate at which it is settled that Parry & Co. should buy the jaggery is Rs. 17-8 per candy delivery at their Nidadavole, godowns, the jaggery is purchased by the middlemen from the tapper at its site of manufacture at Rs. 15 per candy. This is what the tapper actually receives per candy of jaggery produced by him. This gives a margin of Rs. 2-8 per every candy to the middlemen being his share of profit and expenses.

Details for Rs. 2-8 are given below:—

	Rs.	A.
Carrying expenses from the site to Parry & Co. godowns and also fines levied by the company for the inferior qualities of jaggery if any . .	1	0
4 gunny bags for each candy	1	0
Gain per candy for the middlemen	0	8
	2	8

He in addition makes some more profit by incorrectly weighing the stuff at site as the tapper is ignorant and also generally does not see to the weighment made by the middlemen due to utter exhaustion from which he suffers after a day's exacting laborious work.

The middlemen weighs the jaggery and takes it off from the tapper either once or twice or thrice a week according to his convenience. He further advances loans to the tapper even at the beginning of the tapping season and also during the continuance of the season and whenever the tapper approaches him for the same at exhorbitant rates. He adjusts the interest and some portion of the principal every time and takes the jaggery from the tapper, thus always keeping him indebted to him.

It is seen from the figures that the jaggery of four candies manufactured by the tapper for the whole season is not fetching the expenses met by a tapper and further the tappers are paying fines for infringing the rules.

So the tappers are not at all earning any income but they are burdening themselves with debts year after year. The money lender is earning at

the expense of the tapper a good lot by false weighment and high interest and other illegal ways. I understand the tappers are compelled to sell the little landed or house property if any in the course of two or three years to the money lenders.

Some years back the price of the jaggery was Rs. 35 per candy for the best quality and Rs. 25 for the second quality. Now the price offered is very low and the quality of the jaggery also is very inferior.

The major portion of the tappers has to pass the rest of the seven months on agricultural operations only. Some take lands on lease and some live on cooly wages only in attending to agricultural operation in and around the villages. Generally they will have to be idle for a couple of months in a year for want of work and then they go in for petty loans for their maintenance. They go to Kovvur Taluk at the end of December with the hope of earning something to clear these debts but unfortunately they come back after the season with heavy debts on the other hand. So the major portion of them are always indebted. Their migration to Kovvur for tapping and manufacturing jaggery which is their heriditary profession is more for relaxation and enjoyment as they can enjoy drink free than for making money.

The major portion of the tappers are illiterate. They do not care to send their children to schools, but engage them on some petty works or other to get some income for the family.

The season for the tapping begins generally from January and ends by May. Thus it lasts for five months in a year. Details of expenses and income of an average tapper consisting of himself, his wife, 4 children and aged mother are furnished below:—

	Rs.	A.
1. Expenses to go and return after tapping to his village	8	0
2. Rice for the family of 7 members (10 bags of rice for 5 months at Rs. 8 per bag)	80	0
3. Miscellaneous expenses at one rupee per week	20	0
4 Sundries, cloth, etc.	20	0
	128	0
Expenses for one tapper for tapping the trees (as per details below)	73	8
1. Rent for 30 male and 30 female trees	20	0
2. Implements for tapping, 2 knives, leather belt, ropes, shoes	5	0
3. Chunam	5	0
4. Pots for trees and collecting and carrying the juice from the tope to manufacturing place	12	0
5. Pan for boiling the juice	5	0
6. Fuel	10	0
7. Jungili oil	2	0
8. Unforeseen expenses	1	0
9. Mamool to excise staff	4	0
10. Each tapper is allowed one male and one female tree for toddy to his family, so he has to pay to the Government at Rs. 3-12 per tree for 2 trees	7	8
11. Mamool for marking the tree to the peons—one rupee for each tree, for two trees	2	0
The expenses to be met by a tapper for one season	73	8

Generally in most of the families two persons tap, *viz.*, father and son. So the expenses for tapping will be Rs. 147. Thus, the total expenses that a family of two tappers will have to incur is Rs. 128 *plus* Rs. 147 or Rs. 275—

	Rs.	A.
Income of the tapper is 4 candies of jaggery, each at Rs. 15 per candy (father and son) .	120	0
The loss incurred by the tapper for the season .	155	0

The economic condition of the tappers in the West Godavari District is generally very poor and illiteracy is very great. There is no co-operation among them. To elevate this class of people who are industrious by themselves and make them live peacefully the following are suggested:—

1. Free elementary and compulsory education to the children.
2. Starting of co-operative credit and non-credit societies in every village and groups of villages and grant of loans and facilities to carry on their industry on an economic basis.
3. Arrangements may be made for the purchase of all jaggery prepared by them, by the society and for storing in a suitable building till better prices are available in the market. By this the tapper will be able to get better price for his jaggery and thus a decent income for himself. If he is to supply to a co-operative society he will be compelled to manufacture good quality as they were once doing.

An attempt can be made to better the economic condition of the tapper at this stage.

From the present situation of the tappers it is clear that there is very little chance for levying any tax on the palmyra sugar and I am afraid unless the Government take some interest and that too very shortly this industry will die and thus a good lot of people with their families must face death by starvation.

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(5) *Letter, dated the 28th August, 1937, from the Government of Madras, Development Department, Madras.*

SUGAR TARIFF BOARD, MADRAS PROVINCE, SUGARCANE GROWING AREA TRANSFERRED TO ORISSA.

I am directed to state that the Director of Industries, Madras, estimates that the acreage of Sugarcane producing area transferred from the Madras Presidency to the Province of Orissa with effect from 1st April, 1936, is about 12,500 acres.

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(6) *Letter, dated the 21st September, 1937, from the Government Madras, Development Department, Madras.*

SUGAR TARIFF BOARD, FURTHER REPRESENTATIONS.

I am directed to invite a reference to my letter, dated the 30th June, 1937, forwarding the Madras Government's replies to the questionnaire for Local Government as at present constituted fully endorse the views already expressed on the various questions raised. They are, however, anxious to stress the case for palmyra sugar Industry once again. The palmyra sugar is at present exempted from excise duty. As has been pointed out on more

than one occasion the palmyra sugar industry in this province is not on the whole a paying proposition. In spite of exemption from excise duty the production of palmyra sugar has not increased and the industry is struggling for bare existence. Any imposition of excise duty will not only consign it to annihilation but also throw thousands of poor tappers out of employment. I am directed to state that in view of these facts the Madras Government are very strongly of opinion that the exemption from excise duty the palmyra sugar now enjoys should be continued.

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(7) *Letter, dated the 9th October, 1937, from M. K. B. Bhatia, I.C.S., Secretary, Tariff Board, to Mr. P. H. Rama Reddi, Esqr., Director of Agriculture, Madras.*

Will you please refer to Mr. Paul's letter, dated the 30th June, 1937, forwarding Local Government's replies to the Boards' Questionnaire for Local Governments? In reply to question 4 of the Questionnaire the Board has been furnished by the Director of Agriculture with a statement showing the Sucrose content of some of the important varieties of sugarcane. It is shown to be 20·28 in the case of Fiji B and P.O.J. 2878 in Samalkot. As the figure appears to be very high could you please let me know whether this percentage has been calculated on the weight of juice or of cane itself?

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(8) *Letter, dated the 15th October, 1937, from Mr. P. H. Rama Reddi, Director of Agriculture, to Mr. K. B. Bhatia, I.C.S., Secretary, Tariff Board.*

With reference to your D. O. letter, dated the 9th October, 1937, regarding the sucrose content of Fiji B and P.O.J. 2878 at Samalkot, I have to inform you that the percentage has been calculated on the weight of juice only.

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(9) *Letter No. 442, dated the 11th July, 1937, from the Tariff Board, to the Government of Madras, Development Department, Madras.*

During the course of evidence given by the Directors of Agriculture and Industries before the Tariff Board at Madras on 7th July, it was considered necessary to supplement the reply of the local Government by obtaining information on the following points:—

(1) The forecast of area under cane for the year 1937-38.

(2) The average rainfall in each of the four divisions mentioned in answer to question 2 (Local Government Questionnaire).

(3) Water rates in different districts have been given in very full statements in reply to question 3. It is, however, desirable that a statement showing the water rates for sugarcane grown in the neighbourhood of and serving the sugar factories may kindly be supplied. It may also show the water rates for the area which is served by Cauvery-Mettur dam.

(4) The cost of cultivation of cane to the cultivator in various districts has been shown in answer to question 4 and the average yield of cane per acre has also been given in reply to the same question. During the examination, it however, transpired that the figures for the yield did not correspond with the actual holdings for which the cost of cultivation had been obtained. It is requested that a statement giving the details of the cost of cultivation in particular fields with the

yield in those fields may kindly be supplied. It may also be noted what the local Government consider a fair price to the grower for cane in different areas.

(5) A note on the wrapping and propping of cane and its cost to the cultivator in the Madras Presidency.

(6) A note on the research work done on provincial Government agricultural farms and the results of various experiments carried out there. A summary of the work done has already been given in reply to question 11 but the Board consider a fuller note will be useful.

(7) A note on the tappers of palmyra juice, their relations with middlemen and the general economics of the tapping industry.

(8) A note on the results of crop outturn experiments recently conducted in three districts of the Presidency.

(9) A note on the four natural divisions indicated in reply to question 2 to show the districts included in each division, the area under cane and the area under improved varieties of cane, the distribution of factories and the total crushing capacity of factories in each division.

(10) A note on the reduction of freights for rail borne cane obtained through the efforts of the local Government.

(11) The figures supplied in reply to various questions may also be completed for the year 1936-37.

2. I am directed to request that the information on the points mentioned in the first paragraph may be supplied when it is available.

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(10) *Letter No. 449, dated the 11th July, 1937, from the Tariff Board to the Government of Madras, Development Department, Madras.*

In continuation of this office letter No. 442, dated the 12th July, 1937, I am directed to request that the method of calculation of sucrose content the figures for which have been given in reply to question 4 (Questionnaire for Local Government) may kindly be explained, *i.e.*, has the percentage been calculated on the total weight of cane or on the sugarcane juice obtainable from it.

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(11) *Letter No. 456, dated the 12th July, from the Secretary, Tariff Board to the Government of Madras, Development Department, Madras.*

In continuation of this office letter No. 449, dated the 11th July, 1937, I am directed to request that figures for sugarcane in the area serving Nellikuppam Factory for the last seven years may kindly be furnished.

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(12) *Letter, dated the 8th October from the Government of Madras, Development Department, Madras.*

Reference your letters No. 442, dated the 11th July, 1937, No. 449, dated the 11th July, 1937, and No. 456, dated the 12th July, 1937, regarding supplementary information required by the Sugar Tariff Board.

With reference to paragraph 1 of your letter No. 442, dated the 11th July, 1937, I am directed to forward—*vide* Appendices I to VII—the information called for in respect of items (1) (forecast of areas under cane for 1937-38), (2) (average rainfall), (4) (cost of cultivation and average yield and fair price for cane), (5) (note on the wrapping and propping of cane), (6) (note on research work done), (9) (area under cane, distribution of factories, etc.) and (10) (reduction of freights). I am to add that, in respect of item (1) the report sent is the first forecast report for 1937-38, showing area up to 25th July, 1937. The next forecast report, *i.e.*,

the 2nd report will be ready only by about the middle of October, 1937. The prices given in Appendix III [*vide* item (4) above] would, in the opinion of the Director of Agriculture, be fair prices to growers in different areas. The Provincial Government have not examined the figures.* * * * * As regards the excepted items (3), (7), (8) and (11) in paragraph 1 of your letter referred to above, I am to state as follows:—

The details called for in respect of item (3) (water rates in different districts) will be furnished separately later. As regards item (7), a note on the tappers of palmyra juice, their relations with middle men and the general economics of the tapping industry was forwarded by the Director of Industries direct to the Board on 10th September, 1937, and hence no note is now furnished. As regards the note on the results of the recent crop outturn experiments required by the Tariff Board [*vide* item (8)], I am to inform you that the results are not yet to hand and that it is unsafe to proceed on one year's results. As regards item (11), I am to state that the Director of Industries reports that it is not possible at this stage to complete the figures supplied in the replies to questions (14) and (33) for the year 1936-37. I am also to enclose a statement [*vide* Appendix IX] showing the figures that may be added to several statements attached to the replies to question (27) to bring it up to date. In case of questions (28), (29), (36), (37), (38) and (39) the original replies require revision with reference to latest figures. I am accordingly to enclose revised replies in these cases embodying the latest figures [*vide* Appendix X].

2. In regard to the information relating to the method of calculating the sucrose content asked for in your letter No. 449, dated 11th July, 1937, the Director of Agriculture explains that it was calculated on the juice obtained and that with the help of the extraction percentage, the sucrose content on the weight of cane was worked out. Details asked for in your letter No. 456, dated the 12th July, 1937, will be furnished on receipt of further information called for from the Director of Agriculture.

APPENDIX I.

Statistics—Crop—Sugarcane—1937-38—First Report.

The average of the areas under sugarcane in the Madras Presidency during the five years ending 1935-36, has represented 3·4 per cent. of the total area under sugarcane in India.

2. The area under sugarcane up to the 25th July, 1937, is estimated at 81,620 acres. When compared with the area of 98,950 acres estimated for the corresponding period of last year, it reveals a decrease of 17·5 per cent. The decrease in area is general except in Anantapur, Malabar and South Kanara. The area is estimated to be the same as in the previous year in Anantapur and to have increased slightly in Malabar and South Kanara. The decrease in area elsewhere is generally attributed to the low price of jaggery which prevailed at the time of planting of cane.

3. The condition of the crop is generally satisfactory.

4. The wholesale price of jaggery per imperial maund of 82 2/7 lbs. as reported from important markets on 2nd August, 1937, was Rs. 5-8 in Adoni, Rs. 4-12 in Mangalore, Rs. 4-11 in Erode, Rs. 4-6 in Trichinopoly, Rs. 4-2 in Salem and Coimbatore, Rs. 3-13 in Cuddalore, Rs. 3-10 in Rajahmundry, Rs. 3-5 in Vellore, Rs. 2-15 in Cocanada, Rs. 2-12 in Vizianagram, Rs. 2-7 in Bellary and Rs. 2-6 in Vizagapatam. As compared with the prices reported in the corresponding forecast of last year, these prices reveal a fall of 41 per cent. in Bellary, 25 per cent. in Vizagapatam and Cocanada, 16 per cent. in Rajahmundry, and Adoni and 9 per cent. in Vellore and a rise of 49 per cent. in Trichinopoly, 16 per cent. in Salem and 7 per cent. in Mangalore the price remaining stationary in Coimbatore.

5. Figures by districts are given below:—

(Area in tens of acres, *i.e.*, 0 being omitted.)

District and group	Estimate of the area sown up to the end of July.		Increase (+) or decease (−) of the area in column (3) as compared with the area in column (2).
	1936.	1937.	
	Acs.	Acs.	Acs.
(1)	(2)	(3)	(4)
Vizagapatam	2,600	2,500	−100
East Godavari	800	600	−200
West Godavari	250	200	−50
Kistna	220	150	−70
Guntur	100	50	−50
Total, Circars	3,970	3,500	−470
Kurnool	80	40	−40
Bellary	800	670	−130
Anantapur	250	250	...
Cuddapah	36	25	−11
Total, Deccan	1,166	985	−181
Nellore	10	5	−5
Chingleput	34	26	−8
South Arcot	860	700	−160
Total, Carnatic	904	731	−173
Chittoor	970	800	−170
North Arcot	1,100	620	−480
Salem	370	300	−70
Coimbatore	500	400	−100
Trichinopoly	330	260	−70
Total, Central	3,270	2,380	−890
Tanjore	50	40	−10
Madura	110	90	−20
Ramnad	13	13	...
Tinnevelly	20	20	...
Total, South	193	163	−30
Malabar	2	3	+1
South Kanara	390	400	+10
Total, West Coast	392	403	+11
Total, Presidency	9,895	8,162	−1,733

L. B. GREEN,
Director of Industries.

Madras, 10th August, 1937.

APPENDIX II.

AVERAGE RAINFALL—MADRAS PRESIDENCY.

District.	1930-31.	1931-32.	1932-33.	1933-34.	1934-35.	1935-36.	1936-37.	Average for 7 years.
1	2	3	4	5	6	7	8	9
Vizagapatam	43·51	54·48	35·89	42·46	36·57	33·57	49·67	42·28
East Godavari	50·36	54·19	40·02	46·32	38·57	42·18	58·57	47·17
West Godavari	48·58	49·50	45·20	44·68	31·00	40·28	53·40	44·66
Kistna	49·45	44·57	36·26	41·77	30·89	35·36	43·41	40·24
Guntur	38·95	39·66	33·03	33·32	29·01	28·35	38·23	34·36
Nellore	52·43	43·72	30·58	28·31	28·99	30·98	38·66	36·25
Average (6 districts)	47·21	47·69	36·83	39·48	32·51	35·09	46·99	40·83
Chingleput	63·77	57·82	47·67	38·78	40·81	44·42	37·96	47·32
South Arcot	52·41	60·21	53·13	42·29	43·04	45·62	39·78	48·07
North Arcot	49·22	45·69	37·30	32·74	35·92	43·84	32·12	39·55
Tanjore	56·74	58·49	58·62	40·51	32·02	49·96	35·22	47·37
Trichinopoly	44·56	38·93	44·82	39·66	25·97	36·54	28·50	37·00
Madura	40·52	35·65	36·15	44·86	23·16	36·16	31·54	35·43

Ramnad	36·90	36·50	39·31	36·94	25·28	30·62	32·66	34·03
Tinnevelly	26·82	31·92	29·26	37·58	20·67	28·35	33·82	29·77
Salem	37·60	31·58	40·72	34·62	27·84	30·16	32·38	33·56
Coimbatore	41·58	25·33	36·18	38·19	22·18	26·01	26·68	30·88
Average (10 districts)	45·01	42·21	42·32	38·62	29·98	37·17	33·06	38·29
Chittoor	47·86	36·84	30·51	31·52	29·56	35·77	32·74	34·97
Cuddapah	35·09	22·68	19·33	23·47	20·90	30·22	22·60	24·90
Kurnool	23·76	23·85	22·68	26·40	20·30	28·46	22·83	24·04
Bellary	22·64	21·18	30·35	34·03	15·85	23·91	23·65	24·52
Anantapur	26·12	15·56	22·05	25·90	12·14	24·48	21·29	21·08
Average (5 districts)	31·09	24·02	24·98	28·26	19·75	28·57	24·62	25·90
Malabar	118·85	138·10	142·89	161·01	98·67	102·13	123·76	126·49
South Kanara	141·12	171·68	154·89	183·57	131·14	148·06	160·80	155·89
Average (2 districts)	129·98	154·89	148·89	172·29	114·91	125·09	142·28	141·19

APPENDIX III.

Sugar Tariff Board, 1937—Cost of cultivation per acre of sugarcane in the Madras Presidency and yield of cane in tons per acre.

(Supplementary answer to question 4 of the Questionnaire for Local Governments.)

District.	Locality.	Total cost of cultivation.	Yield in tons in respect of the fields for which cost of cultivation is given in column 3.	Yield in tons as furnished to the Tariff Board previously.
1	2	3	4	5
		Rs. A. P.		
Vizagapatam .	Kota Uratle .	413 13 4	39	30
	Kasapet . .	177 5 4	23½	20
East Godavari .	Paddapur . .	388 15 0	43	43
	Veeravaram .	210 3 8	28	28
West Godavari .	Panja Vemavaram	435 6 0	39	39
Guntur . .	Bapatla and Tenali taluks.	426 0 0	30	35
Kistna . .	Gudivada and Gannavaram.	134 0 0	19	20
Cuddapah . .	Chennur . .	338 1 7	30	30
Kurnool . .	Kurnool taluk .	353 0 0	28	28
	Cumbam taluk .	275 6 0	22	24
Bellary . .	Hospet . .	372 8 0	24	20 to 25 and 25 Fiji B.
	Kampli . .	382 8 0	25	Ditto.
Anantapur . .	Hindupur taluk .	359 6 0	20	..
South Arcot . .	..	326 0 0	25 Improved variety.	30 to 35 All thick canes.
	..	172 12 4	19 Nanal cane.	
North Arcot .	..	267 1 6	23	23 and 28.
Trichinopoly .	Lalgudi taluk .	268 1 0	25 Improved variety.	25 to 30 Improved variety.
	Trichinopoly taluk	179 12 0	Ditto	12 to 15 Local cane.
Madura . .	Periyar area .	221 4 0	25 to 30	25 to 30
Ramnad . .	Ditto . .	260 0 0	25 to 20	Ditto.

APPENDIX III—*contd.*

District.	Locality.	Total cost of cultivation.	Yield in tons in respect of the fields for which cost of cultivation is given in column 3.	Yield in tons as furnished to the Tariff Board previously.
1	2	3	4	5
		Rs. A. P.		
Sauth Kanara .	Mangalore . .	295 0 0	35	25 to 30
	Udipi . . .	344 0 0	40	Ditto.
	Coondapur . .	255 0 0	30	Ditto.
Coimbatore . .	Coimbatore taluk .	305 3 4	25	Ditto.
	Udumalpet . .	338 9 4	30	Ditto.
Salem . . .	Wet land . .	369 0 0	30	30
	Garden land .	230 0 0	15	15
Chittoor . .	..	362 12 0	28	28

NOTE.—Column 5 represents the average for the district.

Statement showing fair prices to the grower for cane in different districts.

Place.	Variety.	Fair price per ton.	
		Rs.	
Vizagapatam . . .	J. 247	10	(Factory).
	Co. 213	9	,,
Godavari . . .	J. 247	11	,,
Kistna	....	10	(Field).
Bellary	....	12	(Factory).
South Arcot . . .	Fiji B.	15	,,
	Co. 281	12	,,
	P.O J. 2871 . . .	13	,,
Tanjore and Trichinopoly	All improved varieties . .	12	,,
Malabar and South Kanara.	Red Mauritius . . .	10	(Field).
Coimbatore . . .	Co. 290 Thin canes . .	10	
	Co. 213		
	Thick canes..		
	413, 412 . . .	11	(Field).
	Poovan	12	

APPENDIX IV.

Note on the Wrapping and Propping of Cane.

I.—*Godavari District.*

Wrapping and propping is an important item of aftercultivation. It usually commences in the month of June for the normal crop. The first wrapping consists in removing old dry leaves and dead shoots and twisting two to four pairs of leaves round the stalks of plants themselves. The second wrapping is given a month later simultaneously with propping. About 4,000 bamboos are fixed into the ground *along rows of clumps*, one for every two or three clumps. These clumps of canes are wrapped and looped on to these bamboos. The third wrapping is given a month later and proceeds in the usual manner. The fourth wrapping and central propping proceed simultaneously. About 1,000 big bamboos are fixed into the ground *between rows of clumps*, one for three or four small bamboo units. The clumps are wrapped on to the small bamboos first and from each unit, some one or two pairs of canes are wrapped and looped on to the central bamboos. The fifth and sixth wrappings are given as the fourth one at intervals of 25 to 30 days. Sometimes the seventh one called "Panta chuttu" is given. It consists in wrapping canes of a clump together and finally tying up to the top of the last sheath.

2. The following is the cost of the operation of wrapping and propping:—

	Men (man at 4 as.)	Rs.	A.
1st wrapping	10	2	8
2nd wrapping and propping	35	8	12
⅛ cost of small bamboos at Rs. 30 per 1,000 (4,000 small bamboos)	...	40	0
3rd wrapping	25	6	4
4th wrapping and propping	30	7	8
½ cost of 1,000 big bamboos at Rs. 45 per 1,000	...	15	0
5th wrapping	25	6	4
6th wrapping	25	6	4
7th wrapping	30	7	8
Total	180	100	0

II.—*Vizagapatam District.*

In the Vizagapatam District, sugarcane is usually planted in March to May and commencing from June to July, three to five (rarely six to seven) wrappings of leaves around the canes are usually given at intervals of five to eight weeks. In some tracts individual canes are wrapped while as in others they are wrapped in pairs or rarely in triples. The actual mode of wrapping is different in different tracts and has to be learnt by actual practice, the winding of the leaves round the canes being done usually from upwards down.

2. The wrapping by itself prevents lodging to a certain extent by giving a free passage to the wind through the crop without offering much resistance. In some tracts where propping is not generally resorted to, the stools of cane are cocked two to four together to prevent lodging, in the course of the later wrappings which thus serve the object of propping. Even in cases where a crop lodges unexpectedly, it would be easier to lift and prop such a crop, if it was previously wrapped. In the case of crops, propped with bamboos or other material, wrapped canes are easily tied up to the props without additional ropes or other means.

3. Besides the above mechanical advantages, wrapping is also believed to quicken growth, though growth measurements on the Anakapalle Research Station do not confirm the belief. Wrapping is also believed to protect some varieties from cracking and infection with stem-borer and fungi, while keeping the cane soft and facilitating milling. It is also believed to prevent the shooting of buds by keeping off light. In the final wrapping, the number of leaves left in the top shoot are further reduced and this is believed to hasten the ripening of the cane.

4. Propping is usually resorted to in the case of shallow rooted canes, such as B. 208 and Purple Mauritius and tall growing ones such as J. 247 and in heavy and ill drained soils when the root system becomes shallow during the rainy season. The material used for propping and the method of propping depend upon the local conditions and the means of the ryot. Bamboos are the most commonly used material, but other jungle wood is also often used in areas near the hills owing to its cheapness.

5. Propping is usually done in conjunction with the second wrapping in July or August, but sometimes later if the crop is not sufficiently grown up by that time. In well-grown crops each large stool or two or three small stools together are propped on a single bamboo or other prop. If the props used are weak or if the crops overgrow them, a second propping with stronger bamboos is sometimes given later on usually with the fourth wrapping.

6. The lower ends of the props used are sharpened to a point and driven into the wet soil. One big bamboo is usually driven in the centre of every four small props previously fixed and all the four clumps tied together by their own leaves. Bamboo props usually last three to five years according to their size and equality.

7. A typical wrapping and propping calendar with labour required and the estimated cost is given separately in the appendix.

8. With the recent advent of deep rooted varieties such as Co. 213, some crops are being grown without any wrapping and propping or with a single preliminary wrapping, 15-20 tons of cane being obtained. In the Northern Taluks of Vizagapatam district in general, fairly good crops (yielding 20-30 tons) are grown with wrapping alone, while in the Southern Taluks, propping is also done as shown in the statement, and yields 30-40 tons are obtained.

A Typical Wrapping and Propping Calendar with estimated labour and costs.

Month.	Week.	Particulars.	Labour.		Cost.
			Men at 4 annas.	Women or boys at 2 annas.	
					Rs. A. P.
June . .	3rd .	1st wrapping and removing surplus shoots and removal of trash, etc.	16	4	4 8 0
August .	1st .	Sharpening ends and fixing bamboos.	12	..	3 0 0
		2nd wrapping and removing trash.	20	4	5 8 0
		⅓rd cost of 4,000 bamboos at Rs. 30 per 1,000 bamboos.	..	..	40 0 0

A Typical Wrapping and Propping Calendar with estimated labour and costs —contd.

Month.	Week.	Particulars.	Labour.		Cost.
			Men at 4 annas.	Women or boys at 2 annas.	
					Rs. A. P.
September .	2nd .	3rd wrapping and removing trash.	24	4	6 8 0
October .	4th .	*Second Propping*			
		Sharpening the ends and fixing bamboos.	6	..	1 8 0
		4th wrapping and removing trash.	30	4	8 0 0
		¼th cost of 1,000 big bamboos at Rs. 50 a thousand.	..	..	12 8 0
December .	2nd .	5th wrapping and removing trash.	30	4	8 0 0
		Total .	138	20	89 8 0

APPENDIX V.

I.—Varietal Experiments.

(a) *Anakapalle (Vizagapatam District).*—The study of sugarcane varieties from the Imperial Sugarcane Breeding Station, from time to time, forms one of the main items of work on this station. A very comprehensive scheme of investigations on the new varieties received, is laid out in order to find which of these varieties will suit this particular tract. Experience in sugarcane cultivation in this Presidency and elsewhere shows that varieties if grown year after year, deteriorate in yield or become susceptible to pests and diseases, so much so, that the trial of new varieties should be going on always.

Prior to 1928, B. 208, Bontha and certain other local varieties were the common varieties grown in that tract. Introduction of J. 247 was done afterwards. A seedling cane imported from Coimbatore, but selected at Anakapalle called M. A. 21 was compared with B. 208 and found to yield better than B. 208 giving as much as 57·62 per cent. higher yield in 1931 and this variety, being also found to resist drought condition and maturing early was introduced in that tract. This variety was, however, discarded later in favour of J. 247 which though a late maturing cane, gives very high tonnage and good jaggery.

Introduction of new Coimbatore seedling canes, namely, Co. 213, 281, 243, 313, etc., necessitated, the classification of varieties into two classes, namely, class I canes including hardy canes of the type of Co. 213, 243, requiring less water and manure and class II canes comprising B. 208, M. A. 21, etc., which require more irrigation and manure. According to

this system the canes as they are received from the Breeder are tested and classified under these classes.

Co. 213 did very well when compared with J. 247, M. A. 21 and B. 208. It yielded more, requiring practically no manure and irrigation save at the time of planting. The elaborate and very costly process of wrapping and propping which was a rule in the Circars could be done away with in the case of this cane, so much so that the cost of production of a ton of cane fell to a minimum. This cane resisted drought as well as water-logged conditions and did not respond to higher doses of Nitrogenous manure. To this was added Co. 243 which in some respects behaved better. Co. 281 and Co. 313 belonging to Class I gave higher yields than J. 247, better jaggery and one very good feature about these canes is they are early maturing, and rich canes giving good jaggery from November onwards. Then the sorghum hybrids were introduced. They were early maturing, drought resisting and by growing the sorghum hybrids (Co. 351—Co. 357) and Co. 281 and Co. 313, a factory can start work in November, thereby increasing the working period of factories by about two months. P.O.J. 2878, the wondercane of Java, was tested on this station and was found to be very promising. It is a particularly rich cane, early maturing and high yielding.

The recent introduction of Co. 419 and Co. 421, two thick canes from Coimbatore marks a new era in the study of new varieties in Madras Presidency. They combine in them all the desirable qualities of sugarcane. They possess a good habit, very high yielding capacity and very rich giving more than 19 per cent. sucrose in juice. Co. 419 is late in maturity while Co. 421 is earlier.

At present at Anakapalle the promising canes are Co. 419, Co. 421, P.O.J. 2878, Co. 213, Co. 243, C. 313 and Co. 281. Co. 419 and Co. 421 have thrown J. 247 to the background.

(b) *Samalkot (Godavary District).*—Conditions differ widely at Samalkot, when compared to Anakapalle. The soils here are very heavy alluvial clay with regular and steady supply of channel water throughout the growing season. Here, there is not much necessity to try drought resistant varieties. Thick canes which give bumper yields are most suitable.

Purple Mauritius is the cane of the tract. This is being replaced by J. 247, as this gives higher yields and resists drought better than purple Mauritius during one and a half months when the Godavari canals are closed. The recent introductions of cane varieties, *viz.*, Co. 213, 243, 281, P.O.J. 2878, Co. 419 have given very good results here. Among these, Co. 213 is suited to uplands where water supply is not assured. P.O.J. 2878 has done well and it resists drought during summer better than J. 247. Co. 419 is one of the best of the new introductions there. Among sorghums, Co. 356 was found to suit this tract for it resists drought best during the summer. Here, cane is planted during February-March just before the closure of the canals and till June no water is available and so varieties which suffer for want of water in the early period of their growth are not suited to this tract.

At present Co. 213, Co. 243, Co. 313, J. 247, P.O.J. 2878, Co. 419, and Co. 421 are the important varieties at Samalkot.

(c) *Palur (South Arcot District).*—Several varieties were tried on this station for a number of years. But all of them had to be discarded as unsuitable in favour of Fiji, B., which is the cane of the tract. More recently, however, J. 247 has been gaining ground. Co. 419 which was introduced recently is a promising cane. Sorghum hybrids are noted for their early maturity. P.O.J. 2878 is also very much liked for its high yield and rich juice. Co. 243, however, gives the highest tonnage. But P.O.J. 2878 gives the highest amount of jaggery. Co. 281 is noted for its early maturity and for its keeping well without deterioration even during cyclonic weather.

II.—Manurial Experiments.

(a) *Anakapalle.*—The relative effects of groundnut cake and ammonium sulphate were tested at Anakapalle as well as at Samalkot. At Anakapalle it was found that application of groundnut cake up to 15 cwt. per acre was economical. But the application of ammonium sulphate on the same nitrogen basis was giving more profits per acre although there was some difficulty in the setting of the jaggery from cane manured with ammonium sulphate. A profit of Rs. 83 per acre was recorded in favour of ammonium sulphate in 1931 as against Rs. 24 with groundnut cake on the same nitrogen basis. The same experiment was continued till 1933 and it was shown that ammonium sulphate was better than groundnut cake. To test the varied response of different varieties of cane, *viz.*, Co. 213, Co. 356, P.O.J. 2878 and J. 247, to the amount of nitrogenous manure, a complex scheme of experiments was laid with the above varieties giving nitrogen at 25 lbs., 50 lbs., 75 lbs., and 100 lbs., per acre. Increasing dose of nitrogen did not give correspondingly increased yield in the case of Co. 213, whereas with P.O.J. 2878 higher yields were recorded with higher amounts of nitrogen. In general, in all varieties, increased dose of nitrogen made the juice poorer and resulted in jaggery of very poor keeping qualities. No potassic manure was tried on sugarcane as these soils are rich in the plant food. Phosphate, however, was noted to make the juice richer. In the matter of yield, phosphate has no bearing. An experiment on the nutrition of cane was laid with the three important plant foods, namely, N. K. & P. The results are not of any practical application. Another experiment was made in which the seed sown was got from a manured plot and was compared with the "unmanured seed." Excepting in the matter of germination, the manured seed was not found superior to "unmanured seed."

(b) *Samalkot.*—The common practice in the tract is to apply Castor cake at the rate of 10 bags per acre (1,640 lbs.). To test whether this can be profitably substituted by ammonium sulphate, an experiment was laid which showed that so far as yield was concerned castor cake can be substituted by the application of 525 lbs. of sulphate of ammonia. But as there is possibility of the quality of jaggery being affected when cane is manured with sulphate of ammonia only, a partial substitution was advocated, using groundnut cake with $AmSO_4$.

Different quantities of Nitrogen from 25 to 100 lbs. N. per acre were applied to see the response of the varieties Co. 213, Co. 281, and J. 247, and purple Mauritius. It was found that J. 247, and purple Mauritius responded best to 100 lbs. while Co. 213 and Co. 281, responded to lower doses as 50 to 75 lbs.

(c) *Palur.*—One of the most important experiments done on sugarcane on the station is the manurial experiment. It was found the best dose is 200 lbs. N. per acre for Fiji B under Palur conditions. When applied at 200 lbs. N. Groundnut cake gave the best yield. But when a lower dose of Nitrogen is given the best results were in favour of replacing a portion by Ammonium Sulphate. The best method of applying is 30 per cent., 40 per cent. and 30 per cent. at the time of planting, at the time of first earthing after 3 months, and at the time of second earthing up after 5 months, respectively. A test was made to apply the manure in pits dug 6" deep near the stools; this method gave favourable yields in certain years but in others the higher yield obtained was not statistically significant. Phosphate and Potash were found to be not necessary for these soils. Sodium nitrate was compared with Ammonium Sulphate, for the supply of inorganic nitrogen and the latter was found superior.

III.—Cultural Experiments.

(i) *Irrigation.*

(a) *Anakapalle.*—Irrigation is the most costly and important item in sugarcane cultivation. Successful attempts were made at Anakapalle station, to grow cane with one irrigation at the time of planting. Varieties such

as Co. 213, Co. 243, Co. 281, Co. 313, Co. 419, Co. 421, etc., behaved very encouragingly and it is now possible to grow some of these varieties with one irrigation under Anakapalle conditions. Attempts were also made with some success to grow cane under purely rainfed conditions, starting the crop in June or September.

Sugarcane varieties Co. 213, Co. 281, P.O.J. 2878, Co. 419 were tried under swamp conditions, with the result that these canes besides giving normal yield matured earlier by about 2 months. This is another method for supplying cane to sugar factories earlier than the usual season.

(b) *Samalkot.*—As at Anakapalle it was found possible to grow sugarcane with one irrigation or as a purely rainfed crop but the yields were below normal by 50-60 per cent. When the varieties like Co. 281, Co. 313, P.O.J. 2878 were flooded they matured earlier, by a month or more. Again, when irrigation was withheld after the north-east monsoon the crop matured a month earlier.

(c) *Palur.*—No remarks.

(ii) *Wrapping.*

(a) *Anakapalle.*—Another costly item of work in sugarcane cultivation of cane is wrapping and propping which is practised extensively in the Circars. In order to obviate this, experiments were started with and without wrapping. It was found that some varieties of the type of Co. 213, Co. 243, etc., can be grown without propping and wrapping, thus decreasing the cost of production. The only difference between wrapped and unwrapped canes was that in the case of wrapped canes the juice was a bit richer.

(b) *Samalkot.*—It is not possible to leave canes of the type of J. 247, P.O.J. 2878 unwrapped in this tract as the canes grow very tall and cannot stand the very severe cyclonic weather during October and November.

(c) *Palur.*—No remarks.

(iii) *Chemical.*

(a) *Anakapalle.*—One important problem that confronts the sugarcane grower in this presidency now is to supply raw material to factories for a longer period. Therefore the ryot, by some means, must be able to start supplying millable canes earlier than the normal season and to continue supplying till long after the cessation of the normal season for the cane. Work was done at Anakapalle to see which of the varieties mature early and what cultural alterations would make the cane mature earlier and keep on in the field longer without deterioration. As already stated elsewhere in the note, Co. 351, Co. 357, Co. 313, Co. 281, Co. 419 and P.O.J. 2878 are early maturing. By growing the canes under water-logged conditions, canes mature earlier. For purposes of maturity the important cane varieties can be classified as follows:—

(1) Canes that mature early and keep on for a long time on the field without deterioration—Co. 281, Co. 313, Co. 357 and P.O.J. 2878.

(2) Canes that mature early and deteriorate early—Co. 243 and Co. 213.

(3) Canes that mature late—J. 247 and Co. 419.

(b) *Samalkot.*—No remarks.

(c) *Palur.*—The use of superphosphate to clarify juice at the time of jaggery-making was not found to be necessary. Jaggery obtained from cane grown with cake nitrogen only was the best and increasing dose of ammonium sulphate correspondingly increased the stickiness of jaggery.

(iv) *Spacing and seed-rate.*

(a) *Anakapalle.*—The economical seed rate under Anakapalle conditions was found to be 12,000 setts per acre. This differs slightly with the germination capacity of the variety. Spacing with 4 or 5 links does not give

any difference in yield but in the case of 3 link spacing low yields were recorded.

(b) *Samalkot* (Spacing).—By growing 4 lines in a bed, higher yields are recorded instead of growing 2 lines or 6 lines.

(c) *Palur.*—No remarks.

(v) *Ratooning.*

(a) *Anakapalle.*—Ratooning is not common in South India. Elsewhere in other countries where sugarcane is grown extensively this system is practised to a large extent. An experiment was started at Anakapalle to find the varieties best suited for ratooning and the effects of ratooning on the soil. Results so far achieved show that Co. 243 ratoons best and Co. 281 and Co. 213 came next. It is too early to say anything on the effect of ratooning on the soil and the economics of ratooning.

(b) *Samalkot.*—No remarks.

(c) *Palur.*—It was found uneconomical to ratoon sugarcane in this tract.

(vi) *Trench* vs. *Furrow Planting.*

(a) *Anakapalle.*—An increase of 5 per cent. in germination in favour of trench planting was recorded.

Trench vs. *Bed Planting.*

(b) *Samalkot.*—When cane is planted in trenches, it matures earlier and withstands lodging to a certain extent.

(c) *Palur.*—No remarks.

(vii) *Rotational experiments.*

Palur.—The rotational experiment is the foremost among the cultural experiments conducted at Palur. After the advent of the Nellikuppam Sugar Factory the ryots near about Nellikuppam started growing sugarcane every alternate year. Although in first few years they were getting economic yields, soon the soils got exhausted and they did not seem to give any economic returns afterwards.

To test this, an elaborate experiment was started and the following are the results:—

(1) In the 2 year rotation although good yields are obtained in the first few years very soon it was found uneconomical.

(2) The three year rotation, namely:—

Sugarcane—March to March,
Cumbu dry—June to September,
Ragi and Groundnut—January to August,
Garden paddy—October to February.

was found to be most sound economically.

(3) The four year rotation is not economical although higher yields are recorded.

(viii) *Short crop system.*

Palur.—For the supply of best seed material the short crop system was found very good. The cost of production of 1,000 setts was always below Rs. 2 which is far less than the local price.

(ix) *White-ant control.*

Palur.—This was successfully controlled by the application of tar emulsion with irrigation water.

Work done on sugarcane on a small scale in the rest of the farms.

Name ofStation.	Area under sugarcane.		
	1934-35.	1935-36.	1936-37.
	Ac.	Ac.	Ac.
1. Hagari	1·60	1·52	1·95
2. Kalahasti . . .	2·25	1·50	1·60
3. Aduturai . . .	1·97	1·01	2·22
4. Pattukkottai . . .	...	2·25	1·50
5. Koilpatti . . .	...	0·19	0·25
6. Taliparamba . . .	0·59	0·635	0·692
7. Central Farm . .	2·78	3·19	3·29

Objects of growing cane in the above farms.

1. To multiply seed material and distribute to the Hospet factory area.

2. To test the suitability of different improved varieties of cane to the tract.

3. To find suitable varieties for the Tanjore delta and the effect of restricted irrigation.

4. Varietal trials as well as trials to see whether the crop will mature by 31st January before closure of channels.

5. Multiplication of varieties for distribution.

6. The introduction and comparison of the important varieties, M. 55, J. 247, Red Mauritius, P.O.J. 2878 and H. M. 544 and other Coimbatore varieties.

7. Varietal trials, investigations about ratooning, economics of reduced cost of cultivation, monthly plantings and Mosaic disease control.

RESEARCH WORK THAT HAS BEEN UNDERTAKEN IN REGARD TO SUGARCANE AND THE CONTROL OF DISEASE.

Control of diseases and insect pests.

Investigations on—

(1) Red-rot,

(2) Mosaic and

(3) Smut diseases of sugarcane have been carried out.

1. *Red-rot.*—Research was directed towards finding out cheap and effective control measures under South Indian conditions. They are (1) planting disease free setts, (2) improvement of drainage in the fields, (3) replacement of old degenerate varieties by more vigorous ones and (4) allowing a longer interval between two successive sugarcane crops than is usual (*i.e.*, at least 3 years).

2. *Sugarcane Mosaic.*—Attention was paid to the investigation of this disease.

(1) The comparative susceptibilities of a large number of sugarcane varieties have been tested by carefully laid out field experiments with a view to evolve disease resistant varieties.

(2) The loss in yield (tonnage and sugar contents) due to this disease has been determined for the variety Co. 213. Under experimental conditions it has been found that the loss is more than 15 per cent. in tonnage and 10 per cent. in sugar contents.

(3) The transmissibility of the disease to Sorghum and maize has been established.

(4) The peculiar behaviour of masking and attenuation of virus by certain varieties like Co. 360 and Co. 361 towards this disease has also been studied.

3. *Sugarcane smut.*—Field experiments in the methods of control were done at Nellikuppam, South Arcot (Messrs. Parry & Co.'s plantations).

(1) Selection of setts from healthy clumps.

(2) Adequate sanitary measures in infected fields, *i.e.*, prompt removal of affected shoots and rendering them innocuous by destroying them by fire with precautions to prevent spreading of infection have proved effective in controlling the disease. A gang of coolies provided with cloth bags (of closely woven material such as drill) go round the fields and collect the smutted shoots taking care to avoid disturbing the shoots in the process. When the bag is full it is immersed in boiling water and allowed to remain there for about 10 minutes in order that the fungus may be completely killed. The shoots are then burnt. This method reduces the possibility of dispersal of spores at the time of collection and also sterilises the bags immediately after use.

Insect Pests.

There are a number of pests of sugarcane such as the moth borers, white ants, mealy bugs, leaf hoppers, mealy wings, aphis, thrips, grass-hoppers, etc. Of these the most important pests are the moth borers. White ants, mealy bugs, leaf hoppers, and mealy wings also do damage in certain localities. The others are only very minor pests.

2. *Moth borers.*—Much attention is being paid to the study of the moth borers in Coimbatore. Information on the different species concerned, their distribution, seasonal occurrence, nature and extent of damage, natural enemies, and control methods is being gathered. Detailed studies of the habits and life-history of the three borers—*Distragea stricraspi*, *D. Venosata* and *Scirpophage*—are being made. The egg and larval parasites of these pests are also receiving attention. The control measures which are suggested at present are the collection of egg masses and destruction of plants showing 'dead hearts'. The question of utilising the natural enemies especially the egg parasite Trichogramma is under investigation. Earthing up of soil for the control of Diatraea larvae is also being tried.

3. *Mealy bugs.*—Another pest which is receiving some attention at Coimbatore is the cane mealy bug Ripersia. Life-history studies of the pest have shown progress. The more important of the natural enemies of the pest include a Lady bird and a chalcid fly. Dipping setts of cane in Crude oil emulsion, Fish oil, Rosin soap, etc., is being tried to see whether this method is effective in reducing the mealy bug attack.

4. It may be stated in this connection that until more staff is appointed as suggested by the Imperial Council of Agricultural Research an elaborate study of the various pests affecting cane in different parts of the Presidency and their control including parasite liberation will not be possible.

APPENDIX VI.

Natural division as previously reported.	District comprising of	Average rainfall for the last 7 years.	Total area under cane in 1936-37.	Area under Improved varieties of cane in 1936-37.	Sugar factories working.		Remarks.
					Capacity.	Factory located at No.	
1	2	3	4	5	6	7	8
		Inches.	Ac.	Ac.	Tons.		
The Northern Circars	Vizagapatam	42·28	32,300*	19,921	150	Bobbili, Bobbili Taluk.	
					50	Thummapala, Anakapalle Taluk.	(3)
					50	Ettikoppaka, Sarvasidhi Taluk.	
	East Godavari	41·17	10,307		120	Kirlampudi, Peddapur Taluk.	(1).
	West Godavari	44·66	2,378		..		
	Kistna	40·24	2,267	1,102	850	Vuyyur, Gennavaram Taluk.	(1).
	Guntur	34·36	1,282		..		
	Nellore	36·25	78				
The Southern Districts	Chingleput	47·32	451	329	..		
	South Arcot	48·07	10,222	9,860	850	Nellikuppam, Cuddalore Taluk.	(1).
	North Arcot	39·55	11,710		50	Mailpatti, Gudiyattam Taluk.	(1) Not manufactured sugar yet.
	Tanjore	47·37	719	2,682	200	Karur, Karur Taluk.	(2) Proposed to be started in the future.
	Trichinopoly	37·00	5,488		250	Lalgudy, Lalgudy Taluk.	

* Estimated in the final forecast for 1936-37, actuals not yet received by the Director of Industries.

Natural division as previously reported.	District comprising of	Average rainful for the last 7 years.	Total area under cane in 1936-37.	Area under Improved varieties of cane in 1936-37.	Sugar factories working.		Remarks.
					Capacity.	Factory located at No.	
1	2	3	4	5	6	7	8
		Inches.	Ac.	Ac.	Tons.		
The Southern Districts—*contd.*	Madura	35·43	1,900*	229			
	Ramnad	34·03	200*				
	Tinnevelly	29·77	236				
	Salem	33·56	4,926				
	Coimbatore	30·88	6,270	4,053	50	Podanur, Coimbatore Taluk.	(1) No crushing done in 1936-37 season.
The Ceded Districts and Chittoor.	Chittoor	34·97	11,508	374			
	Cuddapah	24·90	519	200	400	Hospet, Hospet Taluk	(1).
	Kurnool	24·04	781				
	Bellary	24·52	10,000*				
	Anantapur	21·08	2,794				
The West Coast	Malabar	126·49	31	3,900			
	South Kanara	155·89	4,042		50	Kalyanpur, Udipi Taluk	(1).

* Estimated in the final forecast for 1936-37, actuals not yet received by the Director of Industries.

APPENDIX VII.

Freight concessions obtained for Sugar Factories.

The concessions on the transport of cane obtained so far from the Railways converge round three factories, namely, those at Vuyyuru, Hospet and Podanur.

Podanur.—The following rates were granted for the transport of cane from the undernoted stations to Podanur:—

	Ordinary rate per maund.	Special rate per maund.	Percentage reduction.
	As. P.	As. P.	Per cent.
Kinnattukadavu . . .	1 8	0 10	50
Kovilpalayam . . .	1 10	0 11	50
Pollachi	2 1	1 0	52

Hospet.—The rates per maund granted for cane for sowing purposes were as follows:—

	As. P.
Poona to Hospet	7 0
Anakapalli to Hospet	9 1

These concessions, which were granted from 1st November, 1934, were subsequently withdrawn and again reintroduced with effect from 1st November, 1935.

Concessions were also granted for the carriage of cane for crushing from Munirabad to Hospet and the rate was a lump sum wagon rate of Rs. 10 per four-wheel wagon, excluding siding charge of Rs. 1-8 per wagon. Another concession obtained in respect of cane for seed purposes was as follows:—

	Ordinary rate per maund.	Special rate per maund.	Percentage reduction.		
	Rs. A. P.	Rs. A. P.	Per cent.		Rs. A. P.
From Coimbatore to Hospet *via* Jalarpet.	1 1 3	0 11 0	36	S. I. Ry.	0 3 9
				M. S. M. Ry.	0 7 3

This was granted with effect from 1st April, 1935.

The Madras and Southern Mahratta Railway Company, Limited, also granted the following concessional rates for the transport of cane for crushing from 5th October, 1935:—

From	To	Per four-wheeled wagon.	
		Rs. A. P.	
Ginigara . . .	India Sugars and Refineries siding at Hospet.	8 4 0	including the siding charges of Rs. 1-8
Hampapatnam . .	....	9 4 0	

Vuyyuru.—Special rates for sugarcane for crushing purposes were granted from certain stations to Bezwada with effect from 22nd October, 1935. The rates ranged from 9 pies to As. 2-4 per maund. These rates were subsequently (with effect from 18th December, 1936) reduced and the highest and lowest rates per maund amounted to As. 1-10 and 3 pies.

Concessions were also introduced with effect from 25th January, 1936, on cane from certain stations to Gudivada subject to certain conditions. The rates ranged from 3 pies to As. 1-6.

With effect from 25th August, 1936, the following rates were introduced:—

From	To	Rate. Rs. A. P.
Dwarapudi	Bezwada . .	0 2 1
Biccavole	Do. . .	0 2 3
Samalkot	Do. . .	0 2 5

The rates were said to be on a lower basis than the rate offered to the Nizam's State Railway from Bonakulu to Bezwada. The latter rate had, however, been reduced with effect from 15th August, 1936, from As. 2-9 to 1 anna per maund, or by 64 per cent.

The last concession was the grant of a rebate amounting to the difference between the existing rates ordinary or special—and Rs. 2 per ton to any one consignee at Bezwada receiving sugarcane from Rajahmundry, Kadiam, Dwarapudi, Anaparti, Biccavole, Madapeedu and Samalkot, provided a quantity of not less than 5,000 tons was booked during the period 11th January to 30th June, 1937, both days inclusive.

A statement is attached showing the rates in force in January, 1934, and August, 1937. It will be seen that the percentage reduction was in all cases over 50 per cent. and in some instances amounted to as much as 85 per cent.

Sugarcane—OR, L W/300 BG., W/160 MG.

From	To Bezwada. Rate during January, 1934. Per maund. As. P.	Rate in August, 1937. Per maund. As. P.
Akividu	3 1	1 2
Ammanabrolu	3 5	1 7
Anakapallo	7 3	3 3
Angalakuduru	1 11	0 6
Ampapuram	1 11	0 5
Appikatala	2 7	0 10
Badampudi	3 3	1 4
Bapatla	2 8	1 0
Bhatuprolu	2 4	0 9
Bhimadol	2 10	1 0
Bhimavaram	3 5	1 5
Biccavol	4 7	1 3
Chagallu	3 8	1 9
Chebrole	3 1	1 3

To Bezwada.

From	Rate during January, 1934. Per maund. As. P.	Rate in August, 1937. Per maund. As. P.
Chiluyur	1 7	0 3
Chinnaganjam	3 5	1 5
Chirala	3 0	1 2
Denduluru	2 8	0 11
Dosapadu	2 0	0 6
Duggirala	1 8	0 4
Dwarapudi	4 4	1 3
Ellore	2 5	0 9
Gannavaram	1 8	0 3
Gudivada	2 1	0 7
Guntur	1 11	0 5
Indupalli	1 10	0 5
Kodavakoduru	3 4	1 5
Kaikaram	3 0	1 2
Kaikalur	2 8	1 0
Karavadi	3 7	1 8
Kavali	5 0	2 1
Kistna Canal	1 7	0 3
Kolakalur	1 9	0 4
Kolakonda Quarry Siding	1 7	0 3
Kollar Road	2 2	0 7
Kovvur	3 10	1 10
Mandavalli	2 7	0 10
Medapadu	4 9	1 3
Moturu	2 3	0 8
Modukuru	2 2	0 7
Mustabada	1 7	0 3
Narasapatnam Road	6 5	2 10
Navabpalem	3 5	1 6
Nidadavolu	3 6	1 8
Nidamanuru	1 7	0 3
Nidubrolu	2 4	0 9
Nuzvid	2 1	0 7
Ongole	3 9	1 9
Palakol	3 7	1 8
Pallevada	2 10	1 1
Pallikonda	2 5	0 10
Peddayutapalli	1 9	0 4
Paddavadlapudi	1 7	0 3
Penumaru	2 4	0 8
Pulla	2 11	1 1
Putalacheruvu	2 5	0 9
Repalli	2 7	0 10

From	Rate during January, 1934. Per maund. As. P.	Rate in August, 1937. Per maund. As. P.
To Bezwada.		
Ramavarappadu	1 7	0 3
Samalkot	5 0	1 3
Sanganjagarlamudi	2 1	0 6
Stuartpuram	2 10	1 1
Tarigoppula	1 9	0 4
Tsundunu	2 1	0 7
Tenali	1 11	0 5
Uppalaru	1 8	0 3
Undi	3 3	1 4
Uppugundur	3 5	1 6
Vatlur	2 3	0 8
Vajendla	2 2	0 7
Vetapalem	3 2	1 3
Zampani	2 1	0 7
Tadapalligudem	3 4	1 5
To Gudivada.		
Akividu	2 2	0 8
Aravalli	2 10	1 0
Attili	2 11	1 1
Bhimavaram	2 7	0 10
Kaikalur	1 10	0 5
Kaldhari	3 4	1 4
Lankalakoderu	2 10	1 1
Mandavalli	1 8	0 4
Moturu	1 7	0 3
Narasapur	3 2	1 3
Nidadavolu	3 5	1 6
Palakol	3 0	1 2
Pallevada	2 0	0 6
Pennada Agharam	2 8	0 11
Putlacheruvu	1 7	0 3
Relangi	3 0	1 2
Tanuku	3 2	1 3
Undi	2 5	0 9
Vendra	2 8	1 0
Viravasaram	2 9	1 0

From.	To Hospet. Rate during January, 1934. Per maund.	Rate in August, 1937. Per wagon.	Per maund.
	As. P.	Rs. A.	As. P.
Munirabad . . .	1 7	7 8 or	0 6 (*a*)
Ginigera . . .	1 7	8 4 or	0 7 (*a*)

APPENDIX IX.

27. The following figures may be added to the statement attached to the answer to this question showing the price per viss of sugar obtained from the Triplicane Urban Co-operative Society:—

Date of alteration.	Price per viss.
	As. P.
28th May, 1937	4 6
13th July, 1937	4 8
29th July, 1937	4 9

The following figures may be added to the statement showing the prices of sugar extracted from daily statement of Messrs. Parry & Co., Ltd.:—

Date.	Java.	Nellikuppam.	Northern India.
		Per cwt.	Per cwt.
		Rs. A.	Rs. A.
16th June, 1937 . .	No stock.	9 9	10 2
22nd June, 1937 . .	Do.	9 9	10 2
29th June, 1937 . .	Do.	9 8	10 0
6th July, 1937 . .	Do.	9 10	10 2
13th July, 1937 . .	Do.	9 12	10 4
20th July, 1937 . .	Do.	9 12	10 4
27th July, 1937 . .	Do.	9 13	10 4
3rd August, 1937 . .	Do.	9 13	10 0
10th August, 1937 . .	Do.	9 14	10 2
17th August, 1937 . .	Do.	...	10 2
24th August, 1937 . .	Do.	...	10 2

The following figures may be added in the statement showing the price per viss of jaggery obtained from the Triplicane Urban Co-operative Society:—

Date of alteration.	Price per viss.
	As. P.
27th May, 1937	2 8
29th June, 1937	2 9
13th July, 1937	3 0

(*a*) Maund rate shown after deducting siding charge of Rs. 1-8 and taking the carrying capacity of the wagon as 200 maunds.

OR:—Owner's risk.

W/300:—Minimum wagon load of 300 maunds.

L:—Owners to load and unload.

W/160:—Minimum wagon load of 160 maunds.

APPENDIX X.

28. *Revised reply.*—A statement showing the average retail and wholesale prices of sugar each month in Madras from January, 1934, to June, 1937, is enclosed. The retail prices are those supplied by the Triplicane Urban Co-operative Society, Madras, from whom it has been ascertained that their supplies of sugar are obtained from Messrs. Parry & Co., Ltd. The wholesale prices shown in the statement are the averages of the maximum and minimum prices of sugars Indian supplied by Messrs. Parry & Co., Ltd., which has been given in the statement supplied in answer to Question No. 27.

The percentage difference between wholesale and retail prices is shown in a separate column in the statement enclosed. The percentage difference ranges from 3·7 to 14·9. The absence of uniformity in the variation between retail and wholesale prices of sugar may be explained in the following way. The retail dealers in Madras generally buy their requirements wholesale from Messrs. Parry & Co., Ltd., or other supplier and until the consignments bought are exhausted, the retail prices charged on the sale will, in general, be fixed, and will approximate to the wholesale prices at which the consignments have been bought *plus* the merchant's profit and the cost of transport. Though the wholesale prices may have varied in the meantime, their effect will not generally be felt on the retail prices until the old stocks are exhausted, and fresh stocks are laid on. The correspondence between retail and wholesale prices will therefore depend on the frequency of purchase of their consignments by the retail dealers from the wholesale dealers or direct from the factories. The more frequently they buy their requirements or in other words the smaller the consignments bought each time, the more uniform will be the variation between the retail and wholesale prices. On the other hand, when consignments are bought at long intervals, the correlation between retail and wholesale prices will generally be characterised by the existence of a time lag. This will be clear from an examination of the prices shown in the statement. Thus, barring the two months October and November, 1934, for which figures of wholesale prices are not available, and considering the variation month by month, the wholesale prices appear to have risen on 15 occasions as compared with the previous month's prices, but retail prices have risen concurrently only thrice during those 15 months. There was also a fall in wholesale prices on 21 occasions, followed by a fall in retail prices only 10 of those occasions. During the two months on which the wholesale prices were stationary, the retail prices either rose and fell. Thus concurrent rise or fall in retail and wholesale prices was in evidence in only 13 out of thirty-eight months.

29. *Revised reply.*—Sugar and its allied products received two headings in the accounts relating to the Inland Trade of India, namely "Sugar refined and unrefined", and "Gur, rab, molasses, jaggery, etc.", and it was not possible under the arrangement to distinguish between white sugar and gur or, as a corollary, to arrive at an estimate of the consumption of sugar in the Madras Presidency. The matter was taken up with the Director-General of Commercial Intelligence, and it was decided in consultation with the Sugar Technologist of the Imperial Council of Agricultural Research to substitute the existing head "Sugar—Refined and Unrefined" by "Sugar —All kinds". The revised head includes all sugar which is treated as such in ordinary commerce and comprises (i) all imported sugar, (ii) sugar manufactured by central sugar factories in India, (iii) sugar manufactured by gur refineries in India, and (iv) sugar produced by khandsari factories. Figures for gur, rab, molasses, jaggery, etc., continue to be shown under the existing omnibus heading. From 1936-37, therefore, it should be possible to estimate with more precision the consumption of sugar in the Madras Presidency. Making somewhat arbitrary allowances for the distribution to and consumption in Travancore and Cochin, the Director of Industries estimates that the net amount of sugar received into the Presidency by sea and rail *plus* the production amounted to a little short of 100,000 tons

during 1936-37 and this may be taken as the approximate consumption. This, it may be mentioned, compares with an estimated production of the cane and palmyra factories in the Madras Presidency in the 1936-37 season of about 33,000 tons. The estimated consumption of sugar by South India, including Mysore, Travancore and Cochin and a little of the southern part of Hyderabad, is 120,000 tons against a total production of the Madras Presidency, Mysore and Travancore of about 56,000 tons in 1936-37. It will be seen, therefore, that there is still considerable scope for the development of the sugar industry in the Madras Presidency provided that a reasonable level of prices can be maintained. There should be a gradual, albeit, slow, increase in the consumption of sugar consequent on the drift to the towns from the countryside, whilst it seems to be the case that white sugar is being used to an increasing extent in the ordinary Indian household, although there are certain purposes for which jaggery must always be used.

The details of consumption of sugar are as follows:—

	Tons.
Net railborne imports	50,312
Net imports by sea—foreign and coastwise . .	15,640
Production in Madras Presidency	33,120
Allowance for sugar brought over the borders of French India	2,000
	101,072
Less Cochin consumption estimated at . . .	2,500
	98,572

It has been taken that the imports by sea into Travancore *plus* the production in that State are about equivalent to the consumption within it. On the above basis the consumption of sugar has been estimated at a little short of 100,000 tons. The estimate of 120,000 tons for the consumption in South India including Madras, Mysore, Travancore and Cochin and a little of the southern part of Hyderabad, is an arbitrary estimate which has been put forward by Messrs. Parry & Co., Ltd., and is, the Director of Industries considers, fairly accurate.

The details of production in different factories in the Madras Presidency during the last season are as follows:—

	Tons.	
Nellikuppam	13,343	
Samalkot	7,780	
Thummapala	326	} (estimated).
Ettikoppaka	365	
Thachanallur and Alwartirunagari . .	1,400	
Bobbili	2,062	
Hospet	3,519	
Kirlampudi	794	
Podanur	866	
Vuyyuru	2,401	
Mailpatti	210	
Kallianpur	54	
	33,120	

If to this figure of 33,120 tons is added the production of the Mysore factory which was about 22,000 tons and of the Thuckalay factory in Travancore which was about 1,290 tons we get a figure of about 56,000 tons as representing the total production of the Madras Presidency, Mysore and Travancore.

36. *Revised Reply.*—The estimated production of gur in 1934-35 and 1935-36 taken in conjunction with the movements of gur by rail and sea in 1935-36 and 1936-37 respectively will provide an estimate of the consumption of gur in the latter two years. As already indicated in answer to question No. 33 there are difficulties in the way of estimating the production of gur in the years previous to 1934-35. An estimate of the consumption of gur in the province in 1935-36 and 1936-37 may be struck on the following lines:—

The total consumption of gur in the Madras Presidency and the Cochin State in any one year may be taken as equivalent to the production of gur in these two areas in the previous year, *plus* net imports of gur by rail and sea into these two areas in the year in question. The production of gur in the Madras Presidency has been already estimated for 1934-35 and 1935-36 in the answer to question No. 7. An estimate of the production in Cochin has therefore to be made. A reference to the Agricultural Statistics of India, Volume II shows that the area under sugarcane in the Cochin State in 1933-34 was 330 acres. This is the latest year for which this information is available. Assuming that the yield per acre of cane in the Cochin State is the same as that in the adjacent district of Malabar, the production of cane in the Cochin State may be estimated at 8,870 tons in 1933-34. Making an allowance of 16·1392 per cent. for chewing and seed, which is the same percentage as that adopted for the Madras Presidency and considering that no sugar is manufactured in the Cochin State, the quantity of cane turned to the manufacture of gur in this State in 1933-34 may be estimated at 7,438 tons. The yields of gur from 7,438 tons of cane will be nearly 740 tons and if we allow for a slight increase in the acreage of sugarcane in the years subsequent to 1933-34, the yield of gur in the Cochin State in 1935-36 and 1936-37 may be assumed to be 1,000 tons. The figures of movements by rail shown against "Madras" and "Madras Ports" in the monthly statement of Railborne Trade published by the Director General of Commercial Intelligence and Statistics relates not only to the Madras Presidency Proper, but to the bordering States of Cochin and Travancore as well. In striking an estimate of the total consumption of gur in the Madras Presidency and the Cochin State, we have, therefore, to leave out of account the movements of gur relating to Travancore. The best we can do is to make an allowance on this account. The net imports of gur by rail in 1935-36 amounted to −11,462 tons and in 1936-37 to −10,206 tons. We may not be far wrong if we assume that out of these imports the Madras Presidency and the State of Cochin together accounted for −10,000 tons in 1935-36 and −8,700 tons in 1936-37. The figure for 1935-36 is probably somewhat vitiated on account of the fact that previous to 1936-37, the classification of sugar and gur adopted in the statements of Railborne Trade published by the Director General of Commercial Intelligence and Statistics was rather confused as sugar was shown under sugar refined and unrefined; in which category, there was presumably every chance of jaggery also being inadvertently included. It was only in 1936-37 that the classification was altered on the representation of the Director of Industries, Madras. Sugar is now shown in a separate category and gur with molasses, rab, etc., in another category. As for movements by sea, the figures relating to this province include movements into and from Cochin. In 1935-36, the net imports of gur by sea into this province inclusive of Cochin amounted to −1,644 tons and in

1936-37 to −2,544 tons. The relevant statistics are shown below in the form of a tabular statement:—

Year.	Quantity of gur produced in		Net imports of gur by sea into the Madras Presidency and the Cochin State in the following year.	Net imports of gur by rail into the Madras Presidency and the Cochin State in the following year.	Consumption of gur in the Madras Presidency and the Cochin State in the following year, *i.e.*, total of Cols. 2, 3, 4 & 5.
	Madras Presidency.	Cochin.			
1	2	3	4	5	6
	Tons.	Tons.	Tons.	Tons.	Tons.
1934-35 . .	278,447	1,000	—1,664	10,000	267,803
1935-36 . .	298,661	1,000	—2,544	8,700	288,417

On the basis of the above figure of total consumption of gur in the Madras Presidency and the Cochin State, we have to make the best estimate possible of consumption in the Madras Presidency. This can best be done on a population basis. The population of the Cochin State according to the Census of 1931 was 1,205,016 and that of the Madras Presidency was 46,740,107. The population of the Madras Presidency, therefore, accounts for 97·49 per cent. of the population of the Madras Presidency, and Cochin State together. Calculating the consumption of gur on this basis, the consumption in 1935-36 may be estimated at 261,081 tons or 261,000 tons (rounded) and that in 1936-37 at 281,117 tons or 281,000 tons (rounded). In the above calculations the Madras Presidency has been taken to mean the Presidency as it existed before the reconstitution of the districts of Ganjam and Vizagapatam. There has been an increase of 20,000 tons or 7·7 per cent. in the consumption of gur in 1936-37 as compared with the consumption in the previous year. This can be accounted for by the low level of prices of gur which prevailed in 1936-37 especially as compared with the prices in the two previous years. Gur is a favourite article of consumption with the poorer classes on festive occasions and when prices are low they naturally resort to it to an increasing extent.

37. Gur (jaggery) is imported into the Madras Presidency by rail mainly from Mysore, Bihar and Orissa and the Nizam's Dominions. The imports by sea are negligible, amounting only to seven tons from Bombay during 1936-37. Figures of imports by rail during 1935-36 and 1936-37 are given below:—

Province or State from which imported	Quantity of gur, rab, molasses, jaggery, etc., imported by rail into the Madras Province in	
	1935-36.	1936-37.
	Tons.	Tons.
Mysore	4,034	7,334
Bihar and Orissa . . .	192	121
Nizam's Territory . . .	46	607
Bombay Presidency . . .	38	16
United Provinces of Agra and Oudh	2	12
Total .	4,312	8,090

38. Gur/jaggery is exported from the Madras Presidency by rail mainly to the Nizam's Dominions, Bombay Presidency, Central Provinces and Berar, Mysore, Bihar and Orissa and Bengal Presidency, and by sea mainly to Ceylon, Federated Malay States, Kathiawar and Bombay. Figures of exports by rail during 1935-36 and 1936-37 and of exports by sea during 1936-37 are given below:—

Province or State to which exported.	Quantity of gur, rab, molasses, jaggery, etc., exported by rail from the Madras Presidency in 1935-36.	1936-37.
	Tons.	Tons.
Nizam's Territory . . .	5,547	4,087
Bombay Province . . .	4,668	3,955
Central Provinces and Berar .	3,584	7,368
Mysore	936	357
Bihar and Orissa . . .	569	1,723
Bengal Province . . .	463	594
Central India	7	212
Total .	15,774	18,296

II.

Country to which exported.	Quantity of molasses including palmyra and cane jaggery exported by sea from the Madras Presidency in 1936-37.
	Tons.
Ceylon	924
United Kingdom	350
Straits Settlements	4
Federated Malay States	4
Kathiawar	1,207
Bombay	60
Sind	1
Burma	1
Others	1
Total .	2,552

39. As there is considerable divergence of opinion on the question whether there is any correspondence between the prices of gur and sugar, the Director of Industries considered it worthwhile to examine the question in some detail and in as scientific a manner as possible. The following is an extract from his report: "From the records of retail prices of sugar and gur supplied by the Triplicane Urban Co-operative Society, which are attached to the answer to question 27, the annual average prices of each of these commodities were calculated for the period 1912-13 to 1936-37 and from the averages so calculated two series of index numbers, one for gur and the other for sugar were constructed for the entire period, taking the average price in 1912-13 as equivalent to 100 in each case. The series are shown below:—

Annual average price of jaggery.

Base: Average price for 1912-13=100.

Year.	Price per viss.	Index No.
	Rs. A. P.	
1912-13	0 4 3	100
1913-14	0 3 11	92
1914-15	0 5 2	122
1915-16	0 5 3	124
1916-17	0 5 4	125
1917-18	0 5 0	118
1918-19	0 5 1	120
1919-20	0 8 3	194
1920-21	0 11 1	261
1921-22	0 8 9	206
1922-23	0 6 10	161
1923-24	0 6 6	153
1924-25	0 7 6	176
1925-26	0 6 11	163
1926-27	0 6 7	155
1927-28	0 5 5	127
1928-29	0 6 0	141
1929-30	0 7 6	176
1930-31	0 4 5(a)	104
1931-32	0 3 11	92
1932-33	0 3 6	82
1933-34	0 3 2	75
1934-35	0 4 5	104
1935-36	0 3 10	90
1936-37	0 3 0	71

(a) Estimated.

Annual average price of sugar.

Base: Average price for 1912-13=100.

Year.	Price per viss.	Index No.
	Rs. A. P.	
1912-13	0 4 11	100
1913-14	0 4 8	95
1914-15	0 6 10	139
1915-16	0 7 9	158
1916-17	0 9 0	183
1917-18	0 8 0	163
1918-19	0 8 9	178
1919-20	1 0 2	329
1920-21	1 2 3	371
1921-22	0 10 5	212
1922-23	0 11 0	224
1923-24	0 11 7	236
1924-25	0 8 6	173
1925-26	0 7 6	153
1926-27	0 8 0	163
1927-28	0 7 0	142
1928-29	0 6 4	129
1929-30	0 6 1	124
1930-31	0 6 0(*a*)	122
1931-32	0 6 9	137
1932-33	0 6 11	141
1933-34	0 6 6	132
1934-35	0 6 2	125
1935-36	0 6 1	124
1936-37	0 5 3	107

(*a*) Estimated.

2. The two series were correlated with each other and the co-efficient of correlation calculated from them. The co-efficient came to 0·7987, proving the existence of a very high degree of correlation between the prices of the two commodities. The last Tariff Board on the sugar industry in India had doubted the existence of any significant correlation between the prices of gur and sugar and had observed that such correlation as emerged from the figures relating to the two was the result rather of variations in the general level of prices than of any direct reaction of sugar prices on gur. In order to test the validity of this observation, an endeavour was made to work out the correlation between the two series of gur and sugar prices after eliminating from each series the effect of a general movement of prices. It was necessary for this purpose to construct a series showing the general level of prices in this Presidency. Table I shows separate series of price indices for rice, cholam, cumbu, ragi, groundnut, cotton and jaggery for the period 1912-13 to 1936-37 on the assumption that the average price in 1912-13 is 100 in each case. In view of the great importance of the above commodities in this province, a series of price movements which combines in itself the movements of prices relating to the different com-

modities must reflect the general movement of prices in this Presidency. The problem was therefore to give proper weights to individual series. In Table II are set out the weights which have been given to the several series in the different years. The process of calculating the weights was as follows:—From a record of the areas relating to the several commodities in the different years, the percentage area relating to each commodity in each year was calculated. As this percentage will be representative of the relative importance of the commodity in the year in question, it was taken as the weight pertaining to it in that year. The weights were reduced to a system of percentages, merely for facility in calculating the weighted index. Weighting the series for the different commodities in Table I with the weights in Table II, a series of the general movement of prices was constructed. It was as follows:—

Year.	Weighted index of prices of commodities in the Madras Presidency.
1912-13	100
1913-14	96
1914-15	87
1915-16	88
1916-17	95
1917-18	106
1918-19	157
1919-20	180
1920-21	149
1921-22	145
1922-23	138
1923-24	144
1924-25	153
1925-26	136
1926-27	135
1927-28	137
1928-29	128
1929-30	112
1930-31	85
1931-32	74
1932-33	72
1933-34	61
1934-35	74
1935-36	77
1936-37	74

3. Calling the series of index numbers of gur prices as "1", the series of sugar prices as "2" and the weighted index series as "3", the correlation between "1" and "2", "2" and "3" and "1" and "3" was separately calculated. Let r12 be the correlation co-efficient between "1" and "2", r23 the correlation co-efficient between "2" and "3" and r13 the correlation co-efficient between "1" and "3", r12 worked out to ·7987 as already stated, r23 worked out to ·6777, and r13 to ·7920.

Adopting the above co-efficients of correlation, a partial correlation between gur and sugar prices, *i.e.*, a correlation from which the effect of the third factor, namely the general movement of prices of commodities was eliminated, was calculated. It worked out to ·5835. This is a fairly

high correlation and when tested for significance by means of Fisher's "t" test, the co-efficient of partial correlation has been found to be quite significant. By eliminating the general movement of prices, the correlation between gur and sugar prices has, however, been reduced from ·7987 to ·5835, *i.e.*, by about 27 per cent.

4. The above calculations therefore prove the existence of a real correlation between gur and sugar prices. Even on *a priori* grounds it may be argued that the prices of the two commodities would tend to move sympathetically as both of them are manufactured from the same source and as their prices are therefore in a large measure dependent, other things being equal, on the price of cane which accounts for the greater portion of the cost of production of each of these products."

TABLE I.

Index numbers of the prices of commodities in the Madras Presidency.

Base: Average price in 1912-13=100.

Year.	Rice 2nd sort.	Cholam.	Cambu.	Ragi.	Ground-nut.	Cotton.	Jaggery.
1912-13	100	100	100	100	100	100	100
1913-14	96	94	100	97	100	96	92
1914-15	91	88	92	92	63	64	122
1915-16	90	83	88	88	79	88	124
1916-17	93	90	95	92	72	134	125
1917-18	94	103	102	99	70	195	118
1918-19	132	156	152	145	153	256	120
1919-20	161	197	206	201	186	170	194
1920-21	140	156	176	163	128	133	261
1921-22	135	147	157	153	153	153	206
1922-23	129	129	145	140	147	185	161
1923-24	127	136	148	140	149	224	153
1924-25	144	150	157	156	149	190	176
1925-26	134	134	144	141	130	140	163
1926-27	134	137	150	144	123	118	155
1927-28	133	140	151	146	121	146	127
1928-29	123	129	137	138	121	138	141
1929-30	111	109	118	118	103	117	176
1930-31	89	79	92	88	66	86	104
1931-32	74	71	74	78	76	77	92
1932-33	69	71	78	73	71	78	82
1933-34	59	58	70	66	47	80	75
1934-35	69	74	83	80	69	87	104
1935-36	72	76	87	86	70	86	90
1936-37	69	73	82	79	75	83	71

TABLE II.

Table giving the weights for the several commodities on the basis of the areas under them.

Year.	Rice.	Cholam.	Cambu.	Ragi.	Ground-nut.	Cotton.	Sugar-cane.	TOTAL.
1912-13 . .	44·07	17·05	12·61	10·39	5·86	9·62	0·40	100
1913-14 . .	42·35	19·00	11·46	9·79	6·37	10·70	0·33	100
1914-15 . .	41·96	19·69	13·44	9·38	7·20	8·05	0·28	100
1915-16 . .	42·78	21·05	13·99	9·63	4·33	7·86	0·36	100
1916-17 . .	44·05	18·18	13·03	9·16	6·86	8·28	0·44	100
1917-18 . .	43·84	18·39	12·45	9·37	5·32	10·15	0·48	100
1918-19 . .	41·53	20·10	12·02	9·46	3·97	12·43	0·49	100
1919-20 . .	44·01	20·77	12·34	9·37	4·32	8·84	0·35	100
1920-21 . .	43·18	20·32	11·72	9·89	6·23	8·26	0·40	100
1921-22 . .	43·54	21·51	12·34	9·63	5·64	6·88	0·46	100
1922-23 . .	42·73	19·90	11·65	9·78	6·64	8·80	0·50	100
1923-24 . .	42·14	18·62	10·60	10·39	7·24	10·53	0·48	100
1924-25 . .	41·52	18·88	11·64	9·32	7·27	10·95	0·42	100
1925-26 . .	42·14	16·92	11·44	8·67	9·67	10·74	0·42	100
1926-27 . .	41·88	18·13	11·90	8·78	10·35	8·52	0·44	100
1927-28 . .	40·66	17·97	12·19	8·56	12·42	7·81	0·39	100
1928-29 . .	40·53	16·97	11·28	8·29	13·53	9·07	0·33	100
1929-30 . .	41·13	18·90	10·55	8·29	11·72	9·05	0·36	100
1930-31 . .	42·86	17·48	10·69	7·95	13·11	7·49	0·42	100
1931-32 . .	43·70	18·30	10·90	8·33	9·98	8·35	0·44	100
1932-33 . .	43·29	17·02	10·57	8·14	13·20	7·32	0·46	100
1933-34 . .	43·58	16·43	9·53	7·91	14·07	8·03	0·45	100
1934-35 . .	42·80	19·91	10·44	8·35	9·10	8·92	0·48	100
1935-36 . .	41·24	20·08	10·68	7·09	9·94	10·49	0·48	100
1936-37* . .	38·56	19·79	10·75	6·91	13·63	9·89	0·47	100

* The percentage weights have been calculated with reference to the figures of area in the final forecasts in the case of some crops and in other cases on the basis of district reports so far as received.

APPENDIX XI.

Sucrose content of cane in the Nellikuppam area.

Messrs. Parry & Co., who purchase canes for their mills state as follows:—

"Generally we mix the different varieties for crushing in our Mills, and the only complete figures for sucrose content covering the whole season relate to the mixture of varieties crushed. These are as follows for the past five years:—

	Per cent.
1932-33	13·12
1933-34	11·37
1934-35	11·74
1935-36	12·93
1936-37	12·56

The sucrose is calculated from the following:—

Actual weight of cane.

Actual weight and polarization of juice.

Actual weight of imbibition water.

Calculated weight and polarization of bagasse.

It is not possible to submit accurate sucrose figures for each variety crushed."

The following were the areas of sugarcane crushed at the Nellikuppam factory:—

	Acres.
1932-33—1933 crushing season	4,556
1933-34—1934 crushing season	5,760
1934-35—1935 crushing season	5,982
1935-36—1936 crushing season	5,114
1936-37—1937 crushing season	5,250

Of the 5,250 acres in 1937, the following were the proportionate areas in varieties:—

	Acres.
Fiji B	3,500
P.O.J. 2878	250
Co. 281	1,500
	5,250

The Nellikuppam factory crushes every year from 3rd January to 21st May, *i.e.*, for a period of 4½ months and the crushing is done for all the 24 hours of the day. After 21st May, there is no crushing as no canes are available for crushing as there is only one season of planting from February to May.

The percentages of extraction of sugar to cane are as follows:—

Fiji B—10 per cent.

Co. 281 and P.O.J. 2878—8 to 9 per cent.

(13) *Letter dated the 25th October, 1937, from the Government of Madras, Development Department, Madras.*

SUGAR—TARIFF BOARD—SUPPLEMENTARY INFORMATION—WATER RATES.

In continuation of my letter, dated the 8th October, 1937, I am directed to forward a statement (*vide* Appendix I) showing the water rates for sugarcane grown in the neighbourhood of and serving the sugar factories and those for the area served by Cauvery-Mettur Dam with reference to item (3) in paragraph 1 of your letter No. 442, dated the 11th July, 1937, I am to add that information will be furnished separately in respect of the rate in force in the South Kanara District. The Director of Industries has since completed the figures supplied in replies to questions (14) and (33) for the year 1936-37 and I am accordingly to forward revised answers to questions 14 and 33 (*vide* Appendix II) embodying up-to-date figures.

District.	Taluk.	Factory at	Water cess on dry lands.		Wet assessment (W) ranging		Charge for sugarcane on wet lands.	Remarks.
			2nd class source.	1st class source.	From	To		
			Rs. A.	Rs. A.	Rs. A.	Rs. A.		
Vizagapatam .	Sarvasiddi .	Etikopaka . .	4 8	6 0	5 6	8 5	1½ times wet assessment.	
	Anakapalle .	Thummapala . .	Zamindari. No water-cess levied.					
	Bobbili . .	Bobbili . .						
East Godavari .	Peddapur .	Kirlampudi . .	7 8	..	9 3	13 8	Compounded wet assessment. No separate second crop charge. 1½ times W.	
	Cocanada .	Samalkota . .	10 0	9 6 Ryotwari				
			(under Minor Irrigation tanks).	12 8 Inam & Zamindari.	4 8	14 4		
North Arcot .	Gudiyattam .	Mailpatti . .	..	6 0	..	8 2	1½ times W. (largest block).	
South Kanara .	Udipi . .	Kalyanpur . .	No water-cess levied.		..	8 7*	No separate charge for sugarcane.	*Actual rate paid by the largest compact block.

Bellary . .	Hospet . .	Hospet . . .	4 8	15 0(*a*) 6 0(*b*)	5 15	13 0	1½ times W.	(*a*) Under Basavanna channel, Raya channel and Kamalapuram tank. (*b*) Under other 1st class sources.	
Tanjore . .	Shiyali . .	Kunnam village (no factory).	..	..	7 2	8 4	W *plus* 5 concessional rate. W *plus* 7½ ultimate rate.		
Salem . .	Nemakkal .	..	..	9 6 (ultimate rate). 7 8 concessional rate.	10 0	19 2	Compounded rate. No separate second crop charge.	Area served by Cauvery-Mettur Dam.	
Trichinopoly .	..	..	..	9 6 (ultimate rate). 7 8 concessional rate.	10 10	14 4	1½ W. concessional rate. W. *plus* 7-8-0 ultimate rate.		
Kistna . .	Gannavaram .	Vuyyur . . .	..	9 6 12 8	9 6*	17 13*		*Actual rate for sugarcane.	
South Arcot .	Cuddalore .	Nellikuppam . .	No compact block liable to water-cess.		8 6	9 8	1½ W.		

APPENDIX II.

14. The following are estimates for 1935-36 and 1936-37 in tons:—

	1935-36.	1936-37.
(*a*)	191,380	242,800
(*b*)	Negligible.	Negligible.
(*c*)	2,986,609	2,595,553
(*d*)	611,611	546,247
Total .	3,789,600	3,384,600

NOTE.—The total production of cane shown against the year 1935-36 is the estimated production for the Madras Presidency as it existed before the reconstitution of Ganjam and Vizagapatam districts. The total production shown against the year 1936-37 is however the estimated production for the Presidency as it exists now. Hence the figure for 1936-37 is about 10·7 per cent. lower than that for 1935-36.

33. The total production of cane in this Presidency may be taken at 3,511,000 tons in 1934-35, 3,789,600 tons in 1935-36 and 3,384,600 tons in 1936-37. Making an allowance of 16·1392 per cent. for chewing and seed, and deducting the quantity of cane crushed in factories the quantity of cane used for the manufacture of jaggery in 1934-35, 1935-36 and 1936-37 will be approximately as follows:—

Year.	Estimated quantity of cane produced.	Estimated quantity used for chewing and seed.	Quantity of cane crushed in sugar factories.	Quantity of cane turned into gur.
	Tons.	Tons.	Tons.	Tons.
1934-35 . .	3,511,000	566,647	159,881	2,784,472
1935-36 . .	3,789,600	611,611	191,380	2,986,609
1936-37 . .	3,384,600	546,247	242,800	2,595,553

In the absence of information as to the quantity of sugarcane crushed in sugar factories during the earlier years, it will not be possible to estimate with confidence the quantity of cane used for the manufacture of gur in the years previous to 1934-35. If the extraction of gur from cane is taken at ten per cent., the quantity of gur produced in 1934-35 comes to 278,447 tons, in 1935-36 to 298,661 tons and in 1936-37 to 259,555 tons.

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(14) *Letter, dated the 6th December, 1937, from the Government of Madras, Development Department, Madras.*

SUGAR—TARIFF BOARD ENQUIRY—NELLIKUPPAM AREA.

With reference to your letter No. 456, dated the 12th July, 1937, and in continuation of my letter, dated the 8th October, 1937, I am directed to furnish below information regarding the total production of cane in the Nellikuppam factory area as estimated by the Director of Agriculture and

the quantity crushed by the factory as given by Messrs. Parry & Co., Ltd., Madras—

Season.	Total production of cane in the factory area.	Quantity crushed by the factory.
	Tons.	Tons.
1930-31	62,291	60,032
1931-32	83,321	78,333
1932-33	95,271	94,395
1933-34	83,931	81,121
1934-35	144,756	129,639
1935-36	101,932	95,911
1936-37	110,905	108,501

Some of the cane produced in this area is used for chewing and also for the manufacture of jaggery.

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(15) *Letter dated the 27th July, 1937, from Government of Madras, Development Department, Madras.*

PROTECTION TO SUGAR INDUSTRY—ENQUIRY—MOLASSES CONSUMED BY DISTILLERIES.

With reference to your letter No. 303, dated the 18th June, 1937, I am directed to state that there are ten distilleries in this Presidency out of which only three, *viz.*, Samalkot, Nellikuppam and Techanallur distilleries are using molasses. The total quantity of molasses consumed, the sources of their supply and their prices are given in the statements enclosed. There is no concern manufacturing rectified or denatured spirit other than distilleries.

Statement showing the aggregate quantity of molasses used in the three distilleries at Tachanallur, Samalkot and Nellikuppam in the Madras Presidency.

Year.	Molasses used.			Value.	Remarks.
	*Java.	Molasses from adjoining sugar house of the distillers.	Total Molasses Used.		
1	2	3	4	5	6
	Candies.	Candies.	Candies.	Rs. A. P.	
1934-35 . .	2,398·6	28,404·8	30,803·4	6,51,243 13 11	Amount shown in column 5 represents the total value of molasses for the year as declared by the Distillers. 1 candy = 500 lbs.
1935-36 . .	3,244·6	33,636·35	36,880·95	7,82,920 13 8	
1936-37 . .	3,648·0	34,424·25	38,072·25	7,31,594 0 9	

* Imported from Java.

Statement showing Molasses used for distilling purposes in the Madras Presidency at the Distillery at Tachanallur.

Year.	Molasses used.		Total Molasses Used.	Rate per candy.	Total value.	Remarks.
	Java.	Molasses from adjoining sugar house of the distillers.				
1	2	3	4	5	6	7
				Rs. A. P.	Rs. A. P.	
1934-35 .	*Nil*	2,167·2	2,167·2	20 0 0	43,344 0 0	Amount shown in column (6) represents the total value of Molasses for the year as declared by the distillers.
1935-36 .	*Nil*	2,436·05	2,436·05	20 0 0	48,721 0 0	
1936-37 .	*Nil*	1,939·95	1,939·95	20 0 0 & 15 0 0	37,265 0 0	1 candy=500 lbs.

Statement showing Molasses used for distilling purposes in the Nellikuppam Distillery.

Year.	*Java.	Molasses from adjoining sugar house of the Distillers.	Total Molasses used.	Rate per candy.	Total value.	Remarks.
1	2	3	4	5	6	7
	Candies.	Candies.	Candies.	Rs. A. P.	Rs. A. P.	
1934-35	934·6	16,984·2	17,918·8	23 11 0 & 24 13 0	4,34,366 6 10	Amount shown in column (6) represents the total value of molasses for the year as declared by the distillers.
1935-36	1,706·8	20,854·8	22,561·6	23 11 0	5,42,541 2 9	
1936-37	1,292·0	21,362·8	22,654·8	24 13 0 & 22 5 2	5,09,445 11 3	1 candy=500 lbs.

* Imported from Java.

Statement showing Molasses used for distilling purposes in the Samalkot Distillery.

Year.	Molasses used.		Total Molasses used.	Rate per Candy.	Total value.	Remarks.
	*Java.	Molasses from adjoining sugar house of the distillers.				
1	2	3	4	5	6	7
	Candies.	Candies.	Candies.	Rs. A. P.	Rs. A. P.	
1934-35	1,464·0	9,253·4	10,717·4	15 12 4	1,73,533 7 1	Amount shown in column 6 represent the total value of molasses for the year as declared by the distillers. 1 candy = 500 lbs.
1935-36	1,537·8	10,345·5	11,883·3	15 12 4 & 16 15 0	1,91,658 10 11	
1936-37	2,356·0	11,121·5	13,477·5	16 11 10 & 13 6 3	1,84,883 5 6	

* Imported from Java.

(16) *Letter, dated the 26th May, 1937, from the Government of Madras, Finance Department, Madras.*

Reference your letter No. 181, dated the 15th May, 1937, addressed to the Secretary to Government, Development Department.

I am directed to state that the prevailing rate of interest on advances to cultivators is 5¼ per cent.

(17) *Letter, dated the 21st June, 1937, from the Agricultural Demonstrator, Mangalore.*

SUB-QUESTIONNAIRE FOR JAGGERY MERCHANTS—MANGALORE.

As there are no merchants dealing only in jaggery and as the answers furnished by them may not indicate the actual state of affairs, for want of systematic records, the following information obtained, by approaching a number of merchants is furnished.

1. The principal marketing centres are smaller towns within the District.

2. (*a*) Local cube jaggery—known as "Urbilla".

(*b*) Ghati cube jaggery—obtained from Mysore State.

(*c*) Coimbatore cube jaggery.

3. (*a*) Local jaggery is obtained from the neighbouring villages of Kulur, Ullal and Harekala and sometimes from Kaseragode.

(*b*) Ghati jaggery is obtained from Chikkamangalore, Hasan Mudgere and Sakaleshpur.

(*c*) Coimbatore jaggery from Coimbatore.

Quantity obtained for the last 7 years (approximate).

	Local.	Ghati.	Coimbatore.
	Mds.	Mds.	Mds.
1931	5,600	7,500	15,000
1932	56,700	9,000	18,000
1933	56,350	11,250	19,500
1934	56,700	12,000	19,500
1935	63,000	18,000	12,000
1936	65,000	19,500	9,000
1937	70,000	27,000	...

For the last 3 years the import of Coimbatore jaggery declined due to the fall in the price of Ghati jaggery from Mysore.

4. There is no variation in the Quality of jaggery in recent years.

5. The prices of jaggery.

	Local.	Ghati.	Coimbatore.
	Rs. A. Rs. A.	Rs. A. Rs. A.	Rs. A. Rs. A.
1931 . .	5 0 to 5 12	4 8 to 5 0	5 4 to 6 0
1932 . .	4 4 to 5 0	4 0 to 4 8	4 8 to 5 8
1933 . .	5 0 to 5 12	4 8 to 5 0	5 8 to 6 4
1934 . .	5 6 to 6 0	4 12 to 5 4	5 14 to 6 8
1935 . .	4 10 to 5 6	4 0 to 4 8	5 2 to 5 14
1936 . .	4 4 to 5 0	3 4 to 3 12	4 12 to 5 8
1937 . .	3 14 to 4 6	3 4 to 4 0	No imports.

The variation is due to the increase in the production in the Mysore State and the consequent fall in prices.

6. There is no relation between the price of jaggery and sugar.

7. There is no competition, sugar is not replacing jaggery in S. Kanara.

8. Keeping quality.

(*a*) Local jaggery for one year.

(*b*) Coimbatore from 3 to 5 months.

(*c*) Ghati only 3 months.

In the rainy season the jaggery absorbs moisture and gets deteriorated very quickly.

Note on local jaggery—

Coondapur:—Mostly liquid jaggery is made and sold in Ains.

Udipi:—Jaggery is sold in balls known as upper jaggery.

Mangalore:—Jaggery is sold in cubes bigger in size than Coimbatore.

Kaseragodi:—Very big cubes are made.

Udipi and Coondapur are not importing Ghati or Coimbatore jaggery. The Ghati and Coimbatore jaggery is imported by lorries and rail to Mangalore and other towns and is consumed in Mangalore, Puthen and part of Karkal and Kaseragode Taluks.

The area under sugarcane is increasing in the district year after year.

The variation in the total quantity produced is due to the condition of the cane crop. The red rot disease is common in spite of careful selection of cane setts for planting and when even the disease spreads the production is less. Due to the fall in price for ghati jaggery the import from Mysore

is increasing by leaps and bounds. The total quantity imported may be estimated to be about 50 per cent. of the production in the district. The Ghati and Coimbatore jaggery is preferred to local jaggery for the preparation of coffee by the majority of people in the Mangalore Taluk.

REPLIES FROM THE GOVERNMENT OF ORISSA.

(1) *Letter, dated the 4/6th August, 1937, from the Government of Orissa, Education Department, Cuttack.*

Subject:—EXTENT OF PROTECTION REQUIRED BY THE INDIAN SUGAR INDUSTRY FROM THE PERIOD FROM THE 31ST MARCH, 1938, TO THE 31ST MARCH, 1946.

I am directed to enclose a statement containing replies to the questionnaire for Local Governments. The replies are not complete in certain cases as materials for complete answers are not available and it will take a long time to gather them.

1. The area under sugarcane in Orissa, during the last seven years has been as noted below:

Year.	Area.	Remarks.
1930	16,200	
1931	16,400	
1932	17,000	
1933	17,000	
1934	18,200	
1935	18,923	
1936	31,000	The increase in 1936 is due to the addition of Ganjam and Koraput districts from Madras to the newly created province of Orissa.

In north Orissa almost the entire cane crop consists of improved Coimbatore varieties, introduced by the Agricultural Department. These are Co. 213 for uplands and Co. 205 and Co. 285 in flooded and water-logged areas. Of the last two varieties, Co. 285 is replacing Co. 205.

The common improved variety grown in the Koraput and Ganjam Districts is J. 247.

The acreage under Co. 285 is about 6 to 8 per cent. of the total area under cane in North Orissa.

2. The cane growing area in Orissa may be broadly divided into two classes, (*a*) highland and (*b*) low land and flooded areas. The whole of the highland crop is irrigated. It has been found in the flooded area farm at Kujang that cane can be grown in those tracts without any irrigation at all, provided the planting is done by the end of October or early in November. At Kujang farm, the tonnage of Co. 285 has been as high as 1,000 maunds per acre, without any irrigation. This method is being demonstrated in the flooded tracts by the Agricultural Department, and it is gradually becoming popular.

3. The North Orissa irrigation rate (Canal) is Rs. 7-8 per acre. It is not known on what basis it has been determined. It has not varied during the last seven years.

4. The cost of cultivation in the Canal irrigated tracts is about Rs. 75 to 85 and in areas with lift irrigation about Rs. 85 to 95. In unirrigated areas in flooded tracts the cost comes up to about Rs. 70 to 75 per acre.

There has not been any appreciable variation in the last seven years.

The average yeild per acre is about 500 maunds.

The sucrose content varies from 16 to 17 per cent. on juice in Co. 213 at different periods of maturity and 15-16 per cent. in Co. 285.

5. Under the present conditions, six annas per maund is a good price. The cost of cultivation is about As. 3 per maund. With cartage the cost comes to As. 4 or a little over. Hence As. 6 will represent fair earning.

6. The area under cane in Orissa is generally affected by two factors.

(1) Weather—years of heavy flood have been seen to be followed by larger area under cane in the affected tracts, on account of the power of resistance of the recommended variety to flooded conditions, which are too severe for other cultivated crops, and this appeals to the cultivators of the affected villages.

(2) Price of gur—low price of gur is generally followed by a shrinkage in area in the following season and similarly high price by an increase.

7. In Orissa there has been no overproduction in 1936-37 or in the previous years. On the other hand the high price of gur in Orissa, *e.g.*, Rs. 5-8 to Rs. 3 in Cuttack in 1936, and the fact that Madras and Bihar are still exporting a fair quantity of it to Orissa, tend to show that there is much scope for further extension of the crop in suitable tracts in this province.

8. On fertile light loamy soil with irrigational facilities, tobacco and vegetables form an alternative to sugarcane. The profits from these crops are estimated at Rs. 100 per acre.

9. *Vide* Statement A.

10. The province did not receive any contribution from the Government of India out of the Sugar Excise Duty, until the present year. A sum of Rs. 10,000 has now been allotted by the Government of India and trained staff have recently been posted in four important centres, for the general improvement of cultivation by—

(1) better and economical methods of cultivation,

(2) use of improved implements, fertilizers and power irrigation,

(3) correct method of harvesting,

(4) manufacture of compost, and

(5) supply of disease-free seeds.

The sum is not adequate as all the important cane growing tracts are not covered by it. Two more such units costing Rs. 2,500 each per year are necessary.

11. (1) The research work on sugarcane was confined mainly to variety trials to find out their suitability to conditions in Orissa with special reference to their sucrose content, tonnage, resistance to water-logging, etc., in the Central farm at Cuttack and also at small farms scattered over the province and to manurial trials.

No regular research work has so far been done on the control of diseases, except such precautionary measures as selection of seeds, etc. But work has been taken up in the present season in collaboration with the second Imperial Entomologist (in charge of the Imperial Council of Agricultural Research Scheme of Insect Pest of sugarcane) and for the trial of parasites on cane-borers.

(2) A large number of free demonstrations are annually given by the Department on cultivators' land in suitable tracts for the introduction of improved varieties suitable to the local conditions. Improved methods of cultivation, improved methods of planting, use of manures, improved methods of gur making, etc., form a regular feature of the propaganda work of the Department.

12. (1) None from the Imperial Council of Agricultural Research.

(2) All facilities are given by the Coimbatore Station. New seedlings are sent out by the station for trial.

(3) None from the Institute of Sugar Technology.

There are no special funds for research, either agricultural or technical, on sugarcane. The cost of the work is met from the general grants.

Government have approved the proposal for an Assistant Agricultural Chemist for cane analysis work subject to budget provision.

13. The open pan factory at Banki has its own cane plantation and in consultation with the Agricultural Department it is experimenting with varieties with different periods of maturity for introduction among the cane-growers in the villages.

14. The quantities of cane crushed in the Vacuum Pan Factory at Aska are as follows:—

Year.	Maunds.
1930-31	37,155
1931-32	71,735
1932-33	89,079
1933-34	171,051
1934-35	196,060
1935-36	77,481
1936-37	95,028

(*b*) In the open Pan factory in Banki:—

Year.	Maunds.
1934-35	36,878
1935-36	20,487
1936-37	67,293

(*c*) About 85 per cent. of the total production.

(*d*) About 10-15 per cent. of the total production.

15. The main difficulty of cane-growers is lack of capital, as it is an expensive crop to grow. Transport presents no difficulty as the factories draw the cane from a short range of 5-10 miles only.

16. There are no cane growing or cane supplying Co-operative Societies, but many members of many Co-operative Societies grow sugarcane financed by the Co-operative Banks. Certain Banks have trained Kamdars for general agricultural improvement in its Societies.

17. As Orissa is not a controlled area under the sugarcane Act XV of 1934, no minimum price has been fixed for sugarcane in the province.

18. In the absence of a larger number of factories this question does not arise in Orissa.

19. As Orissa is not a controlled area, with prices fixed under the sugarcane act, there is no case for the introduction of the bonus system.

20. It differs in different localities. The average is about 3 pies (¼ anna) per maund per mile.

21. Generally they use their own carts. When not available, they use hired carts, the rate being As. 2-6 a mile per cart.

22. It does not apply to Orissa with its two factories, situated in the centre of the cane growing areas.

23. No

24. No particular assistance has been rendered to any factory.

25. There is no Co-operative Sugar Factory in the Province.

26. Yes, generally speaking.

27 & 28. Figures are not available except for 1936-37. No conclusions can therefore be drawn.

29. The normal consumption will be approximately 200,000 maunds. The railway imports at the principal stations amount to 141,000. This perhaps excludes the import into the Koraput district through Vizagapatam. Adding 20,000 maunds for that district, the product of the 2 factories roughly about 10,000 maunds, the sea-borne trade (27,000), and allowing a margin, an estimate of 200,000 is considered fair. The consumption will increase naturally replacing gur, which, however, is a more suitable food than sugar in the diet of the people in general.

30. None.

31. No.

32. There are great possibilities for the manufacture of sweets, syrup, fruit canning, etc., in the province with the rapid popularisation of fruit-growing.

33. About 13-14 lakhs of maunds last year. This is calculated on the basis of 85 per cent. of cane produce " gur " and the cane gur is 10 per cent.

34. Date, cocoanut and palmyra palms are not used for gur making in this province.

35. Does not arise.

36. The information is not known. Figures can only be given as in Question No. 33.

37. Mostly from Madras, United Provinces and Bihar.

1930	. . . . .	12 lakhs of Standard maund.	
1931	. . . . .	10	,, ,,
1932	. . . . .	8	,, ,,
1933	. . . . .	7	,, ,,
1934	. . . . .	6	,, ,,
1935	. . . . .	5	,, ,,
1936	. . . . .	4	,, ,,

The figures above have been supplied by a gur merchant—Abdul Gani Suleman. From the Bengal Nagpur Railway Return of Principal Commodities in 1935-36 it appears that about 100,000 maunds came into Orissa mainly from the United Provinces and Bihar and partly from Madras.

38. There is no export of the commodity from Orissa.

39. There is practically no relation between the price of gur and that of Indian factory sugar in this province. But the opinion is held by the cane-growers that if the price of Indian factory sugar is high at the time of cane harvest, the price of gur goes up.

40. The use of Indian factory sugar is necessarily restricted to the upper classes in the urban area in this province, but it is gradually extending amongst the poorer classes with the habit of tea drinking. It has not gone into the rural areas yet.

41. The Agricultural Department devised a special furnace and boiling pan for the purpose. Very clean gur is produced by the use of the improved furnace and pan and it is becoming increasingly popular among the cane-growers. Besides producing gur of a very good quality, the furnace is very economical in the matter of fuel.

42. (i) One open Pan Factory.

The outturn of Rab, sugar and molasses for the last three years is given below :—

Year.	Outturn of Rab.	Manfactured Sugar.	Molasses.
	Cwt.	Cwt.	Cwt.
1934-35	3,500	1,080	1,995
1935-36	1,870	650	950
1936-37	6,000	2,150	3,250

(ii) There is no Khandsar.

43. The Manager of the Open Pan Factory states that his cost is Rs. 1-6 per maund.

44. This has not happened in Orissa.

45. In view of a very small number of factories, Khandsars will be useful in taking off the surplus cane. But manufacture of gur is of greater importance at the present time and will remain so for some time to come for the home market.

46. No research work has been done on this line in this province.

47 & 48. We have in Orissa 2 small factories. The price of sugar and sugarcane over a period of years is not available, and not easily obtainable. In the absence of this data it is impossible to give any considered opinion based on practical observation on these two questions.

49. No industry in this province is dependent on the supply of sugar products or molasses.

50. The statistics are not reliable. One district, *viz.*, Koraput, has not been surveyed. Of the other 5 districts the agency for reporting the acreage is the village chaukidar in 4 districts and the village official in the fifth district, which has come to the new province from Madras. Production is not based on crop-cutting experiments on any scale. Production in Government farms is known and this is reinforced by the experience of the agricultural officers. Price at important markets is collected by a reliable agency and verified from time to time by a senior officer of gazetted rank.

STATEMENT A.

	Rs.
1930-31—	
Seeds	150
Manures	472
*Pay and T. A. of Overseers and Kamdars . .	1,265
Total .	1,887
1931-32—	
Seeds	200
Manures	228
Pay and T. A. of Overseers and Kamdars . .	1,694
Total .	2,122
1932-33—	
Seeds	280
Manures	111
Pay and T. A. of Overseers and Kamdars . .	1,265
Implements	112
Total .	1,768

	Rs.
1933-34—	
Seeds	390
Manures	96
Pay and T. A. of Overseers and Kamdars	2,445
Total	2,931
1934-35—	
Seeds	180
Manures	136
Pay and T. A. of Overseers and Kamdars	2,286
Total	2,602
1935-36—	
Seeds	432
Manures	66
Pay and T. A. of Overseers and Kamdars	2,966
Total	3,464
1936-37—	
Seeds	470
Manures	114
Pay and T. A. of Overseers and Kamdars	3,754
Total	4,338

* Represents Pay and T. A. for 3 months in a year, representing the share that sugarcane can claim in the general work of demonstrations.

(2) *Letter, dated the 14th August, 1937, from the Government of Orissa, Education Department, Cuttack.*

In continuation of my letter, dated the 4/6th August, 1937, I am directed to forward for your information copies of letters noted below:—

(1) A copy of letter No. 4888, dated the 26/29th July, 1937, from the Director of Development, Orissa.

(2) A copy of letter No. 5253 Agri., dated the 5th August, 1937, from the Director of Development, Orissa.

Copy of letter No. 5253 Agri., dated the 5th August, 1937, from the Director of Development, Orissa, to the Secretary to the Government of Orissa, Education, Health and Local Self Government Department.

In continuation of my letter No. 4888, dated the 29th July, 1937, I have the honour to report on the following points in connection with the enquiry of the Tariff Board.

(1) Retail prices of sugar and gur of different qualities—A statement showing retail prices of sugar in the Cuttack town during the last three years is enclosed. Report in respect of Berhampur will follow.

(2) Malpractices of sugar factories—No complaints of malpractices have been received.

(3) Names of a few representatives of cane-growers who are suitable for examination.—There is no large cane-growers' Co-operative Society in this province and no accounts are kept by any cultivator of education to furnish useful information.

(4) Report to Tariff Board of the names of those to whom their questionnaires have been distributed.

A list is given below—

Names.	*Questionnaires distributed.*
Manager, Aska Sugar Factory . .	General questionnaire.
Manager, Banki Sugar Factory . .	General questionnaire and questionnaire for manufacture of sugar by the open pan system.
Messrs. Tarmohamad Janoo, Cuttack	Questionnaire for gur/jaggery Merchants.
Messrs. Kasimbhoi Monzi, Cuttack .	
Messrs. Hazizalal Noor Mahamad, Cuttack.	
Messrs. Kesurichand Gobori Chand, Cuttack.	
Messrs. Ghani Suleman, Cuttack .	
Messrs. Ganesh Das Dwaraka Das, Cuttack.	
Messrs. Surjomul Bindeswari Prasad, Cuttack.	
Messrs. G. Jagannath, Balasore .	

Statement showing retail selling price of sugar in the Cuttack town, during the last three years.

Name of town.	Variety of sugar.	1934-35.	1935-36.	1936-37.	Remarks.
		Srs. Ch.	Srs. Ch.	Srs. Ch.	
Cuttack .	Indian sugar .	3 10	3 13	3 10	Seers per Rupee.
Do. .	Refined sugar .	2 15	3 3½	3 3½	Do.
Do. .	Crystal sugar .	5 0	5 5½	5 5½	Do.

Statement showing retail selling price of gur in the Cuttack town, during the last three years.

Name of town.	Variety of Gur	1934-35.	1935-36.	1936-37.	Remarks.
		Srs. Ch.	Srs. Ch.	Srs. Ch.	
Cuttack .	....	6 6	7 4	7 4	Seers per Rupee.

Copy of letter No. 4888, dated the 26/29th July, 1937, from the Director of Development to the Secretary to the Government of Orissa, Education, Health and Local Self Government Department.

In continuation of my letter No. 219 T. Agri., dated the 20th July 1937, and with reference to question 3 of the Tariff Board's questionnaire for

local Government, I have the honour to furnish below details of the rates of sugarcane irrigation in force in this province.

	Per acre. Rs. A.
(1) For water supplied throughout the cultivation of the crop	7 8
(2) For supply of water between 1st April and 16th June on lands leased for a term of years .	5 8
(3) For a single watering between 1st April and 16th June	1 5

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(3) *Letter, dated the 1st October, 1937, from the Director of Development, Orissa, Cuttack.*

I have the honour to send a statement showing the retail and wholesale prices of sugar and gur in Berhampur town during the 3 years 1935 to 1937.

Statement showing retail and wholesale prices of sugar and gur in the Berhampur town, during the years 1935 to 1937.

	1935. Per Md. Rs. A.	1936. Per Md. Rs. A.	1937. Per Md. Rs. A.
GUR.			
Retail price . . .	6 0	5 8	5 0
Wholesale price . .	5 8	4 8	4 0
SUGAR.			
Aska (Ganjam) Sugar—			
Retail price . . .	10 0	9 3	8 5
Wholesale price . .	9 0	8 0	7 4
Cawnpore Sugar—			
Retail price . . .	13 5	11 10	10 0
Wholesale price . . .	9 8	8 0	7 8

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(4) *Letter, dated the 28th/30th June, 1937, from the Government of Orissa, Education Department, Cuttack.*

With reference to your letter No. 181, dated the 15th May, 1937, I am directed to say that the rate of interest on loans to members of Co-operative Societies varies from 9⅜ per cent. to 15⅝ per cent. in North Orissa and from 7½ per cent. to 9⅜ per cent. in South Orissa, irrespective of the purpose for which money is borrowed. The rate of interest charged by the village money lenders varies from 12 to 18 per cent. in South and 18¾ to 25 per cent. in North Orissa. The rate of interest charged on the money borrowed by the cultivators from Government as takavi loan is 6¼ per cent.

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(5) *Letter, dated the 31st August, 1937, from the Government of Orissa, Education Department, Cuttack.*

With reference to your letter No. 303, dated the 18th June, 1937, I am directed to enclose herewith a statement containing information about Orissa on all the points raised in your letter under reply.

A. (1) The number of distilleries—One.

(2) Total quantity of

(*a*) molasses consumed—

	Cwts.
1934-35	3,289·6
1935-36	4,899·4
1936-37	2,889·5

(*b*) Sources of their supply—Aska Sugar Factory, Ganjam.

(3) The price paid for molasses—

	Rs.	A.	P.
1934-35	22,928	10	4
1935-36	33,365	3	8
1936-37	18,299	15	6

B. (1), (2) & (3). *Nil*

REPLIES FROM THE GOVERNMENT OF CENTRAL PROVINCES AND BERAR.

(1) *Letter, dated the 9th July, 1937, from the Government, Central Provinces and Berar, Commerce and Industries Department, Nagpur.*

Sub:—ENQUIRY REGARDING CONTINUANCE OF THE PROTECTION AFFORDED TO THE SUGAR INDUSTRY.

I am directed by the Governor of the Central Provinces and Berar to refer to the correspondence resting with you letter No. 333, dated the 22nd June, 1937, on the subject noted above and to say that the provincial Government does not propose to depute any representative for tendering oral evidence before the Board, in addition to the Director of Industries and Registrar, Co-operative Societies and the Director of Agriculture, whom the Board wish to examine, as intimated in your letter No. 147, dated the 30th April.

2. As regards the representatives of cane-growers the Provincial Government is doubtful, if any cane-growers in the Province would be able to give material assistance to the Board. The following gentlemen are reported to have supplied cane to the Sugar Factory at Ghana, and if the Board considers it worthwhile to examine them they will be instructed to meet the Board at Nagpur, on the 11th August, 1937:—

(1) Mr. Manoranjan Chatterjee, Pleader and Malguzar of Dundi, Piparia, and

(2) Mr. Chironjilal Gosain, Retired Assistant Medical officer, Malguzar Lakhanwara, tahsil and district Jubbulpore.

With reference to paragraph 2 of your letter No. 147, dated the 30th April 1937, I am to state that the qualities of gur that are generally sold in the local market and are most in demand are Ankapalli and Banarsi. Before the imposition of customs duty on imported sugar gur had a good demand but its sales at present are negligible. A kind of sugar known as "Desi Sugar" was being made out of imported sugar and was in good demand but it has disappeared from the market along with the imported variety. At present the largest sale in the local market is of Cawnpore quality, the Mirzapur quality coming next in order of preference. A statement showing prices of different varieties of gur and sugar in the local market for the years 1931 to 1937 is enclosed.

The provisions of sections 3 to 8 of the Sugarcane Act, 1934, have not yet been extended to this province and accordingly no minimum and maximum prices of sugarcane have been fixed by the Provincial Government. The question of malpractices referred to in paragraph 3 of your letter No. 147, dated the 30th April, 1937, does not therefore arise so far as this Province is concerned.

5. A statement containing replies to the questionnaire to be answered by the Provincial Government is enclosed. In view of the insignificant nature of the sugar industry in the province Government has no comments to offer on the other questionnaires.

Average selling price of Gur and Sugar at Nagpur.

Year.	Gur Rs. per maund of 13 seers.		Sugar—Rs. per maund of 12 seers and 13 chataks.					
	Banarsi.		Ankapalli.		Cawnpore.		Mirzapur.		Desi.		Java.	
	Rs.	A.	Rs.	A.	Rs.	A.	Rs.	A.	Rs.	A.	Rs	A.
1931 .	2	6	2	6	4	8	6	0	3	4	4	8
1932 .	2	6	2	2	4	4	5	0	3	8	5	2
1933 .	2	6	2	0	4	0	4	8	...		...	
1934 .	2	6	1	14	3	8	4	4	...		...	
1935 .	2	14	2	4	3	8	4	0	...		...	
1936 .	2	0	2	0	3	8	4	0	...		...	
1937 .	1	7	1	6	2	12	3	8	...		...	

REPLY TO QUESTIONNAIRE FOR PROVINCIAL GOVERNMENTS.

	Season.	Total Acreage.	Improved varieties.
1.	1930-31	21,354	9,333
	1931-32	22,042	10,556
	1932-33	27,965	12,445
	1933-34	28,806	14,087
	1934-35	28,890	15,490
	1935-36	30,483	16,901
	1936-37	30,352	...

Coimbatore varieties Co. 210, Co. 219, Co. 237 are the improved varieties grown. Prior to the introduction of Coimbatore varieties, the Agriculture Department recommended Khari. Ponda, Ashy Stripped and Red Mauritius are mostly grown for chewing purposes.

Information regarding area under various improved varieties is not readily available.

2. This Province can be broadly divided into three tracts according to cropping, *viz.*, (1) Rice, (2) Wheat and (3) Cotton tract.

Sugarcane cultivation is mostly in the Rice and Wheat tracts, only about $\frac{1}{10}$th of the total cane acreage being in the cotton tract. Important cane growing districts are:—Chanda, Bhandara, Bilaspur, Balaghat and Raipur.

Most of the cane is grown as an irrigated crop. Statistics of irrigated and unirrigated area are as given below:—

Season.	Irrigated.	Unirrigated.
1930-31	19,396	1,958
1931-32	20,044	1,998
1932-33	25,220	2,745
1933-34	26,230	2,576
1934-35	26,768	2,122
1935-36	27,358	3,125

3. Water rates prevalent during the years 1929-30 to 1935-36—

(i) All tanks and canals in Nagpur, Bhandara, Chanda, Chhindwara and Balaghat—Rs. 20 per acre.

(ii) Balaghat and Wainganga canal and Pathree tank—Rs. 25 per acre.

(iii) All tanks in the Jubbulpore District—Rs. 20 per acre for thick quality and Rs. 15 per acre for medium and thin quality.

(iv) All tanks in the Saugor District including Damoh and Hutta Tahsils—Rs. 12 per acre for thick quality and Rs. 8 per acre for medium and thin quality.

(v) All tanks and canals in Raipur Drug and Bilaspur Districts—Rs. 15 per acre.

NOTE 1.—The rates were not fixed on a definite basis but on general consideration of (1) the value of the crop and (2) the quantity of water required.

NOTE 2.—The rates have not been varied during the last 7 years.

4. In irrigated condition the cost of cultivation varies between Rs. 100 and Rs. 150 while under unirrigated condition it varies between Rs. 60 and 75. Average sucrose content is 16 per cent.

The outturn of gur under irrigated condition varies between 35 and 60 maunds per acre while under dry condition it is between 25 to 30 maunds.

5. Rs. 4 to Rs. 5 per maund of gur is a fair price to the grower.

6. There is a gradual rise owing to general fall in prices of staple crops. Area under unirrigated condition is also rising owing to value of alternative crops having gone down.

7. No over-production of sugarcane so far.

8. For the present there are no alternative cash crops to sugarcane which is mostly grown in areas where either rice or rabi crops were grown before. At certain places Onions, Brinjals, Garlic, Potatoes are the alternative paying crops.

9. Most of the work has been done by field staff of Agriculture Department and as this formed one of their several duties it is not possible to apportion cost for cane extension work.

10. No contribution is received.

11. (i) Research work consists of—

(*a*) trials of Coimbatore canes suited to soil and climatic condition of the tracts.

(*b*) Manurial trials to find out economic dressings.

(*c*) Methods of planting to bring down cost of cultivation.

(*d*) Study of sugarcane insect pests and the control measures by Entomologist.

(*e*) Measures to control spread of Striga disease by Mycologist.

(ii) Propaganda is done by means of ocular demonstrations on Government farm and private demonstration plots and demonstrations arranged at shows and fairs. The subjects are dealt with in Agricultural Association

meetings. District Staff also carries out propaganda in the improvement of cane cultivation in the course of their tour. Provision of taccavi loans is also made so as to enable cultivators to purchase seed and manure. Agricultural Associations stock costly Implements and give them on hire to the cultivators.

12. (i) No financial assistance from Imperial Council of Agricultural Research.

(ii) Seed of new varieties are received from Coimbatore.

(iii) The Agriculture Department deputed an Agricultural Assistant to Imperial Institute of Sugar Technology to undergo a course of open pan sugar factory methods.

13. No co-operation has been asked of or received from the one small factory that is working in the province.

14. Almost all the cane is turned into gur and only a small portion is used for chewing.

15. The large capital required including charges for irrigation is the main difficulty of cane-growers. The question of delivery to the factories does not arise.

16. No special assistance is rendered by Co-operative Department to cane-growers. Recently three Co-operative cane growing societies are started in the Eastern Circle.

17. No minimum prices have been fixed as the only factory in the province is very small and is struggling for its existence.

18. Does not arise.

19. Does not arise.

20. The average transport charges would be about 3 pies per maund for a distance of about four miles.

22. Yes, as regards second part no assistance has been given in this province towards the development of feeder roads and tramways leading to such factories.

23. At the instance of the Director of Industries, Mr. R. G. Pradhan, Sugar Technologist, H. R. Sugar Factory, Bareilly, surveyed the farm of Mr. S. S. Bhargava, Landlord, Jubbulpore, and surrounding villages and drew up a report on the establishment of a Sugar Factory near Jubbulpore. It has resulted in the establishment of the Sugar Factory entitled "The C. P. Sugar Factory" at Ghana near Jubbulpore.

24. *Nil.*

25. The Co-operative Agricultural Association, Balaghat, manufactures sugar on a small scale at Lanji in the Balaghat Tahsil.

26. Yes.

27. A statement showing the average (i) wholesale and (ii) retail prices of sugar in the province for the last seven years is enclosed herewith.

28. No.

29. (*a*) The normal consumption of sugar in the province is about 11·4 lakh maunds annually. (This is obtained by taking the average of the excess of imports over exports in the province, the production being negligible. A statement of imports and exports for the last few years is enclosed.)

(*b*) The consumption of sugar can be increased in the following ways:—

(1) Increase in the number of confectionery works and development of the existing ones.

(2) Establishment of fruit preserving and canning works.

(3) Grant of special waggon rates of freight by the Railway Company for importing sugar.

(4) Standardization of the quality of sugar made in the Indian Factories.

30. A list of peppermint factories in the province is as follows:—

Jethlal Chimanlal, Nagpur.
M. Sugnichand, Nagpur.
M. Sugnichand, Akola.
Haji Wali Ibrahim, Amraoti.

They use best white sugar crystals in their works.

31. No. There is only one sugar factory in the province.

32. There is good scope for starting more peppermint works as this article is being imported from other places into this province. Canned fruits are imported from the United Provinces. There appears to be some scope for starting more works of sweet and syrup manufacture and fruit preservation, especially orange preservation.

33. 15 tons of cane yielding about 40,642 maunds of gur. Percentage of gur to cane varies between 9 to 12.

34. Gur is not manufactured from any material other than cane in this province.

35. A statement showing the prices of the two main varieties of gur, *viz.*, Ankapalli and Banarasi, sold in this province is enclosed.

Gur sold in the province is mainly imported from outside. The variation in prices is therefore not due to (i) and (ii) in this province. Indian sugar does not compete with gur.

37. The import of gur during the last seven years into the province was as follows:—

Year ended March.	Maunds.
1931	961,061
1932	981,322
1933	968,706
1934	1,088,526
1935	958,824
1936	1,262,053
1937 (for 10 months April, 1936 to January, 1937)	809,149

(for 10 months April, 1936 to January, 1937.)

It is mainly imported from Madras, United Provinces, Bihar, Orissa, and Bombay.

38. The export of gur outside this province is negligible. The figures of exports of gur during the last seven years are as follows:—

Year ending March.	Maunds.
1931	9,075
1932	10,537
1933	6,410
1934	13,574
1935	8,151
1936	5,601
1937 (for 10 months April, 1936 to January, 1937)	4,974

It is mainly exported to the Central India.

39. There is no definite relation.

40. The consumers of gur and sugar are different and one is not replaced by the other unless there is abnormal difference in prices, although there is a noticeable tendency to use more sugar.

41. Improved furnaces for the manufacture of gur are developed. Trials are also conducted to strain juice through activated charcoal to find out if the colour of gur and its keeping quality is improved.

42. There are no regular open pan factories in this province and only 1 Khandsari factory producing annually 1,434 cwts.

45. There does not appear to be any scope for the expansion of the industry in this province as the conditions are not so favourable as in other provinces for the growth of sugarcane.

46. *Nil.*

47. Sugar Excise duty has had no appreciable effect on the dealers and consumers in this province as the price of sugar has not increased on this account.

48. The duty does not seem to have led to any increase in price to the consumer. On the other hand the price of sugar has fallen, but this must be the result of the inter-action of a number of factors.

49. No.

50. Statistics of acreage is prepared by Land Records Department by actual inspection in each village and is fairly accurate. Production figures are based on the standard outturn and condition factor for the season. Agricultural Department carries crop cutting experiments from year to year in order to ascertain acreage yields. Fair degree of accuracy is obtained.

The prices of sugar and gur have been obtained from the account books of the past years of the prominent merchants. They may, therefore be taken to be fairly accurate. The statistics of imports have been taken from the "Annual Report of the Rail Borne Traffic of the Central Provinces and Berar" (now discontinued up to the year ended March, 1933) and thereafter from the "Accounts relating to the inland (Rail and River Borne) Trade of India" published by the Government of India.

51. No.

Statement referred to in the answer to Question No. 27.

Sugar (Cawnpore).

	Wholesale.	Retail.
	Rs. A.	Rs. A.
1931	12 0	14 1
1932	12 0	13 4
1933	11 4	12 8
1934	10 6	10 15
1935	10 6	10 15
1936	10 6	10 15
1937	8 0	8 9

Statement referred to in the answer to Question No. 29.

EXPORTS AND IMPORTS OF SUGAR AND GUR IN THE CENTRAL PROVINCES AND BERAR.

SUGAR.

(In maunds.)

Year ending March.	Import.	Export.	Excess of imports over exports.
1931 . . .	1,223,373	12,625	1,210,748
1932 . . .	1,148,844	8,334	1,140,510
1933 . . .	1,412,760	7,666	1,405,094
1934 . . .	1,107,394	8,572	1,098,822
1935 . . .	1,050,463	8,200	1,042,263
1936 . . .	1,084,894	6,214	1,078,680
(10 months—April, 1936 to January, 1937) .	806,892	3,631	803,361

GUR.

(In maunds.)

Year ending March.	Import.	Export.	Excess of imports over exports.
1931 . .	961,061	9,075	951,986
1932 . .	981,322	10,537	970,785
1933 . .	968,706	6,410	962,296
1934 . .	1,088,526	13,574	1,074,952
1935 . .	958,824	8,151	950,673
1936 . .	1,262,053	5,601	1,256,452
1937 . .	809,149	4,974	804,175

Statement referred to in the answer to Question No. 35.

Gur. Price Rs. per maund of 82-2/7 lbs.

	Ankapalli. Rs. A.	Banarasi. Rs. A.
1931	7 5	7 5
1932	7 5	6 9
1933	7 5	6 3
1934	7 5	5 12
1935	8 13	6 15
1936	6 3	6 3
1937	4 7	4 4

(2) *Letter, dated the 28th May, 1937, from the Government of the Central Provinces and Berar, Revenue Department, Nagpur.*

With reference to your letter No. 181, dated the 15th May, 1937, I am directed by the Governor of the Central Provinces and Berar to say that in this Province takavi under the Agriculturists' and Land Improvement Loans Acts is advanced to cultivators at one anna 3 pies per rupee or Rs. 7-13 per cent. per annum.

(3) *Letter dated the 10th July, 1937, from the Government of the Central Provinces and Berar, Revenue Department, Nagpur.*

I am directed by the Governor of the Central Provinces and Berar to refer to your letter No. 303, dated the 18th June, 1937 and to say that the number of distilleries in this province was 3 during each of the three years 1934, 1935 and 1936. The other information asked for is blank as molasses is not used in the distilleries of this province; nor is rectified nor denatured spirit manufactured here.

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(4) *Letter dated the 26th August, 1937, from the Director of Agriculture, Central Provinces and Berar, Nagpur.*

With reference to my oral evidence before the Tariff Board at Bombay, I have the honour to forward herewith the following information:—

Area in acres under ratoon sugarcane in the Central Provinces and Berar.

Irrigated	Dry.	Proportion to total area under sugarcane.	
		Irrigated.	Dry.
4,941	138	15·3 per cent.	0·43 per cent.

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(5) *Letter dated the 17th September, 1937, from Director of Agriculture, Central Provinces and Berar, Nagpur.*

With reference to my oral evidence given before the Board at Bombay, I have the honour to enclose herewith a statement showing the details of the cost of making gur per maund.

Gul making cost per maund.

		As.	P.
Wages prevalent per day	Man	3	
	Boy	2	
	Pair	6	
One man and one boy working with a pair and a mill give 22 tins (880 lbs.) of juice per day.	1 man	3	
	1 boy	2	
	1 pair	6	
Depreciation per day on a mill costing Rs. 150 at 10 per cent. for a working period of 120 days in a season.		2	
Boiling the above juice	1 man	3	
	1 boy	2	
	1 female coolie	2	
Depreciation on Pan costing Rs. 30 at 33 per cent. in a season of 120 days.		1	6
Other miscellaneous charges Oil, Ropes, Furnace, etc.		2	6
Total output of Gul per day two maunds		Rs. 1	8 0
or As. 12 per maund.			

(6) *Letter dated the 17th June, 1937, from the Superintendent, Government Seed Farm, Betul (Central Provinces).*

With reference to the Director of Industries, Central Provinces and Berar, Memo. No. 3180, dated the 8th June, 1937, I have the pleasure to inform you as follows:—

I. On this Government Farm about 8 to 12 acres of sugarcane of Coimbatore varieties is being grown under lift irrigation. The outturn is partly sold as seed to cultivators and partly turned into "gud". No sugar so far has been made. A little trial was attempted in the year 1933, which was not proved to be economical as "gud" could get ready market. This trial was made from "rab" to sugar. The "rab" was required to be kept for a week's time for crystallization and then it was centrifused in centrifugal machine, giving sugar of ordinary colour which could not satisfy the public as compared with the local market sugar. Another difficulty, which was experienced, was of molasses which could get no market.

Due to these circumstances, no further attempts were made to manufacture sugar in this Farm. I reply some questions, required in this memo.

(i) The sugar is manufactured from "rab". The process of manufacture is given above.

(ii) We get the produce of our own Farm and turn it into "gud". We do not deal on business-line. We try to dispose of our own produces.

(iii) & (iv) We do not purchase juice or "rab" from outside.

(v) We do not make sugar, therefore, is not calculated. We use ordinary "Sultan bullock power crusher", which gives an extraction of 62 to 65 per cent. (cane to juice) according to varieties of cane. We are generally growing medium Coimbatore variety of cane.

(vi) No sugar making is tried.

(vii) We have got no details for the cost of manufacture of sugar as "gud" could get ready market for our limited cane cultivation area.

(viii) For "gud" we have got Berar as the chief market.

(ix) to (xiii) Do not arise, as no sugar is manufactured.

(xiv) In this tract, there is no irrigation facilities therefore it is not possble to start a sugar factory. The cost of cane cultivation, due to lift irrigation, increased per acre. "Gud" gets a ready market in Berar for our limited produce.

REPLIES FROM THE GOVERNMENT OF SIND.

(1) *Letter dated the 19th June, 1937, from the Government of Sind, Revenue Department, Karachi.*

Subject:—INDIAN SUGAR INDUSTRY—PROTECTION REQUIRED BY THE—.

With reference to your letter No. 147, dated the 30th April, 1937, to the address of the Secretary to the Government of Sind, Finance Department, on the subject noted above, I am directed to forward a copy of letter No. R.-3328, dated the 15th/16th June, 1937, from the Collector of Karachi furnishing information regarding the retail prices of (*a*) gur/jaggery, and (*b*) sugar of different qualities.

2. I am further to state that only in Sinjhore taluka of the Nawabshah District is sugarcane grown as a commercial crop. The growers are a Joint Stock Company styled "The Pioneer Sind Sugar Mills Company, Limited, Pritamabad". The Company owns about three thousands acres of land on lease from the neighbouring zamindars. As there is no cultivation of this kind in the neighbourhood of the Company's holdings on the part of other zamindars, the malpractices referred to in paragraph 3 of your letter do not exist in Sind.

Copy of letter No. R./3328 of 1937, dated the 15th/16th June, 1937, from Mr. E. G. Taylor, Collector of Karachi, to the Secretary to Government, Revenue Department, Karachi.

Subject:—FIGURES REGARDING THE RETAIL PRICES OF GUR/JAGGERY AND SUGAR OF DIFFERENT QUALITIES.

In reply to your endorsement No. E./2650, dated the 26th May, 1937, on the subject mentioned above, I have the honour to state that the figures of retail prices of—

(1) Gur/jaggery and

(2) Sugar of different qualities

for past years are not available.

The retail prices of the above commodities at present prevailing in the Karachi Market as reported by the City Deputy Collector, Karachi, are as follows:—

Desi sugar thin chun chun—Rs. 7 a maund.

Desi sugar thick chun chun—Rs. 7-8 a maund.

Desi sugar thicker chun chun—Rs. 8 a maund.

There are two kinds of gur available in the market, *viz.*:—

(1) Gur Chakla.

(2) Gur Rava.

The retail price of the former is Rs. 4-8 a maund and that of the latter at Rs. 5-8 a maund.

No figures of retail prices prevalent at the mofussil markets in this district are available except for Mirpur Sakro.

The retail prices of gur and sugar per maund at which they were available at this market during the past five years were as follows:—

	1931-32.	1932-33.	1933-34.	1934-35.	1935-36.
	Rs.	Rs.	Rs.	Rs.	Rs.
Indian made sugar .	10	10	10	10	10
Gur (locally made) .	7	6	6	6	5

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(2) *Express letter, dated the 2nd July, 1937, from the Secretary to the Government of Sind, Finance Department, Karachi.*

Reference to your letter No. 172, dated the 11th May, 1937, regarding protection required by the Sugar Industry.

2. Six spare copies of the answers of the following officers to the questionnaire for Local Governments are forwarded herewith as desired:—

(1) Director of Agriculture, Sind.

(2) Registrar of Co-operative Societies, Sind.

(3) Assistant Director of Industries, Sind.

The views of this Government will follow.

Letter No. 332, dated the 8th June, 1937, from the Assistant Director of Industries, Sind, to the Secretary to Government, Revenue Department, Karachi.

I have the honour to refer to your Memorandum No. E.-2652, dated the 26th May, 1937, and also to the letter No. I. B. 3/7871, dated the 5th June, 1937, addressed to you by the Director of Industries, Bombay, on the above subject, and am enclosing herewith the questionnaire for Local Government. Several questions are such for which local inquiry is necessary. As the papers have to be submitted by the 8th June, 1937, it has been possible to give replies only to some of the questions in the questionnaire.

Local enquiries for information on other questions that can be dealt with by the Department of Industries are however being made and I shall submit any further information that may be obtained.

23. Assistance has been rendered only by supply of information.

24. The Department of Industries has rendered no help under these heads 1, 2 and 3. The Revenue Commissioner and the Public Works Department may have rendered help under 2 and 3; they will no doubt reply to this query.

30. Apart from the "Indian" style sweetmeat makers, there is one factory at Sukkur which makes sugar coated almonds, etc.

31. I do not consider this necessary at present for Sind.

32. Reasonably good possibilities.

41. No research has been undertaken by Department of Industries. The Department of Agriculture is concerned in the matter.

46. The Department of Agriculture is concerned in the matter.

48. The consumer has actually paid for his sugar progressively less for sugar than before protection was granted.

49. No.

Letter No. R. E.-1193, dated the 12th June, 1937, from the Registrar, Co-operative Societies in Sind, Hyderabad, to the Secretary to Sind Government, Revenue Department, Karachi.

In reference to your endorsement No. E.-2652, dated the 26th ultimo, I have the honour to state that the only questions in the questionnaire for Local Governments pertaining to this Department are Nos. 16 and 25 and my replies to them are as under:—

16. No separate society for cane-growers has yet been organized in Sind there being no demand to that effect either from the growers themselves or the Agricultural Department.

25. No such Co-operative Sugar Factory has yet been registered in Sind.

As regards my comments on other questionnaires I would state that I have none to offer.

Memorandum No. 402-B. of 1937, dated Karachi Saddar, the 14th June, 1937, from the Director of Agriculture, Sind, to the Secretary to Revenue Department, Karachi.

The Director of Agriculture, Sind, presents compliments to the Secretary to Government of Sind, Revenue Department, Karachi, and with reference to their endorsement No. E.-2652 of 26th ultimo, forwarding therewith a copy of Government, Finance Department No. 406-C. of 22nd May, 1937, with accompaniments, has the honour to enclose herewith six copies of replies to the questionnaire on sugarcane intended for Local Governments. The undersigned has no comments to make on questionnaires relating to factories, etc.

QUESTIONNAIRE FOR LOCAL GOVERNMENTS.

1. The area cropped with sugarcane, during the past seven years for which details are available in this office are as follows:—

	Acres.
1930-31	2,225
1931-32	2,644
1932-33	2,602
1933-34	2,656
1934-35	2,954
1935-36	3,072
1936-37	4,770

The local varieties, red and white canes are grown—red variety being more common. Of the improved varieties, Co. 213, Co. 313, Co. 331, Co. 290, Co. 312, Co. 270, P.O.J. 2878, occupy about 2,000 acres. It is not possible to give the area occupied by each variety separately as the details are not available. Of these varieties Co. 290 and Co. 213 are gradually being eliminated owing to their susceptibility to insect pests and other environmental factors.

2. Sugarcane areas may be classified as under:—

(1) South Sind Area comprising of Karachi and Hyderabad Districts.

(2) Barrage areas mostly in Middle Sind (Nawabshah District).

(3) North Sind (Sukkur District).

Sugarcane is grown as an irrigated crop only. Sind has little rainfall.

3. Sugarcane is charged about Rs. 6 in Kharif season and about Rs. 4-12 in the Rabi season, *i.e.*, Rs. 10-12 for the entire growing period. The Pioneer Sind Sugar Company, have obtained special facilities for water on their sugarcane Farm at Pritamabad in Nawabshah District and have been charged at the rate of Rs. 18 per acre ($\frac{9}{10}$ths for irrigation and $\frac{1}{10}$ths land assessment). It is proposed to introduce this enhanced rate uniformly in other places also. This rate is based on water requirement of sugarcane, *i.e.*, 63 acre inches during the kharif season and 37 acre inches during rabi season, total 100 acre inches. The kharif dry crops say cotton require 36 inches of water and are charged Rs. 6 per acre and rabi crops require 16 inches of water and are charged at the rate of about Rs. 4-8.

4. The cost of cultivation is as follows:—

	Rs.	A.	
Cost of Setts	15	0	(normally the cultivator has his own setts for sowing).
Preparatory Tillage	10	0	(this consists of 3 to 4 ploughings and samarings).
Making ridges	5	0	
Sowing charges	5	0	
Irrigations	6	4	
Manure	25	0	
Earthing Weeding	15	0	
Striping and cutting	31	4	
Carting (1 anna a maund of cane).			
	112	8	

There has been some increase in the wages of labour employed after the construction of the Lloyd Barrage Canals, *i.e.*, since 1932 by about 10 per cent.

The average yield of cane is about 500 maunds per acre and yield of gur is about 90 maunds per acre.

5. Under the present conditions 5½ to 6 annas per maund would be a fair price of sugarcane to the growers.

6. With the opening of Pioneer Sugar Factory at Pritamabad, there has been marked increase in the cultivation of sugarcane in Nawabshah District. The conditions (i) to (iv) have made no alteration in the extension of the crop. On the other hand especial facilities of water supply given to the sugar Company have not been available to other growers; at the same time higher cost of cultivation, scarcity of labour and inadequate supply of manure have been discouraging factors for the cultivation of sugarcane.

7. The cane cultivation is very limited in Sind, hence the crop of 1936-37 was in no way over produced.

8. The most important cash crops in Sind are, cotton in the Kharif season and wheat in the rabi season. The actual yield of cotton is 8 maunds per acre valued at Rs. 56 of which half is paid to the tenant for the labour, seed, etc., and the remaining is retained by the zamindar who has to pay Rs. 6 as irrigation charges and land assessment leaving a balance of Rs. 22 per acre as net profit. Sugarcane requires 1¾ times more water than cotton during the Kharif season. The wheat crop yields at the rate of about a 10 maunds per acre valued at Rs. 25, half of which goes to the hari (tenant) and half to the zamindar who pays Rs. 4-12 per acre as assessment leaving Rs. 7 per acre. Sugarcane requires 2¼ times more water than wheat during rabi season. Thus it has been found that considering the water requirement, cost of cultivation, it is safer and more economical to grow cash crops like cotton and wheat than sugarcane.

9. No special effort is made for extension and improvement of sugarcane cultivation in the Province of Sind. As a matter of fact, the policy of the Department is not to encourage the sugarcane cultivation in the Barrage zone, in as much as Barrage canals are not designed to supply water for extensive sugarcane cultivation. Varietal tests have been made on a small scale and the successful varieties are distributed to zamindars. The expenditure on this account is small.

10. No contribution has hitherto been received from Central Government out of sugar excise or otherwise.

11. The research work on sugarcane crop consists of—

(1) Testing of varieties which suit local climatic and soil conditions with special reference to—

(*a*) frost resistance,

(*b*) early maturing,

(*c*) high yielding capacity.

(2) Testing promising varieties in demonstration plots on zamindari holdings in selected centres. In Karachi District this method has succeeded and Co. 213 is grown replacing the local red variety.

(3) Cultivation methods—

No work has been done on diseases of sugarcane. With regard to measures adopted for the introduction of improved varieties of cane, improved methods of cultivation and use of manures, demonstration plots are taken up on zamindars' lands where improved varieties, etc., and improved methods of cultivation are demonstrated.

12. (i) Assistant Entomologist, Research Institute, Delhi, recently visited Sakrand and Pritamabad in connection with sugarcane pests.

(ii) Coimbatore sugarcane Research Station has been supplying setts free of charge whenever called for.

(iii) Advice from Imperial Institute of Sugar Technology has been called for whenever necessary.

There is no special grant for research work on sugarcane. If funds were available, the problem of water requirement of the crop and other problems connected with cultivation could be taken up.

13. There is only one factory in Sind which has fully co-operated with the Agricultural Department to test the varieties recommended by the Department. The method of sowing cane in furrows introduced by the Department is being adopted on this Estate as also the cultivation of green manure crops. Sulphate of Ammonia is applied as a top dressing to all the cane crop at the recommendation of the Department.

14. The crop of about 2,000 acres is being crushed in Sugar Factory for making sugar, while the remaining crop is mostly sown for chewing purposes. A small percentage is crushed in cane crushers and converted into gur. There are no open pan factories. Khandsari system of making sugar is not prevalent in Sind.

15. (1) Additional water supply required for cane is not allowed.

(2) High cost of production.

(3) Want of sufficient organic manure.

(4) Scarcity of labour are the main difficulties which come in the way of extended cultivation of sugarcane.

16. There is no cane-growers co-operative society in Sind.

17. No.

18. There is only one factory in the Province and the price paid for the cane last year was about 6 annas per maund delivered at the Factory.

19. System of bonus payment is out of question until facilities for cane-growing are available.

20. Average cost of transport per mile by carts works out approximately to 3 pies per maund, at Pritamabad (Nawabshah District).

21. The factory has its own carts and also employs local carts on hire. The charges are paid as shown in question 20. .

22. This does not arise in view of the limited cultivation of sugarcane in Sind. A feeder line connecting Pritamabad with Khadro (J. Railway) would help the Sind Pioneer Sugar Company. Some feeder lines have been opened in Sind but they will not be helpful in Sind in the extension of cane cultivation.

23. Improved cane crushing sets were introduced some years ago by the Agricultural Department and they are reported to be working well. The Industries Department has been created only recently in Sind.

24. The Pioneer Sugar Factory has been assisted by the Agricultural Department on the following lines:—

(1) Extra water supply has been provided by the Irrigation Department at the recommendation of the Agricultural Department.

(2) Setts of improved varieties have been supplied to the Factory.

(3) Advice are regards cultivation irrigation, etc., is supplied free.

(4) Sprayers and other implements are lent free of charge.

(5) Agricultural Officers inspect the crop for remission of assessment in case of failures and liberal remissions are granted.

25. There are none.

26. Conditions of labour in Sind Factory may be said to be fairly satisfactory though owing to malaria and intensive cultivation in the neighbourhood it is difficult to obtain required labour and higher wages have to be paid.

27. Information is being collected.

28. Not known.

29. Not available.

30. Besides that country sweetmeats made from sugar the sweets like lemon drops, etc., are manufactured in some towns like Sukkur and Karachi.

31. No.

32. With the development of fruit orchards in Barrage areas preservation and canning industry are likely to be introduced in the future. I represent that laying of fruit orchards is going on at a fairly good pace.

33. Information is being collected.

34. No other material is utilised for making gur or jaggery.

35. Not known.

36. Information is being collected.

37. Gur is imported from Punjab, actual figures of import are being collected.

38. Gur is consumed locally.

39. Not known.

40. The local factory sugar is selling cheaper than the foreign sugar, as it is not so refined. It is possible that it may replace imported gur very considerably.

41. No research work has been done on improvement of methods of making gur.

42. There are no open pan factories and khandsaries in Sind.

47. As most of the crop is consumed locally for chewing and gur except at Pritamabad where a sugar factory has been installed, the price of sugar has fallen low and this has already made the position of the factory difficult for its existence. The additional excise duty has been another handicap in the economic working of the factory.

50. The figures of acreage under sugarcane are collected by Revenue Department and supplied to this office. Three forecast reports on sugarcane are issued by the Agricultural Department in August, October and January every year. The figures of production of gur and not of sugarcane are published. The yield of gur per acre as is normally taken into calculation is 7,200 lbs. per acre. Taking the average yield of gur per acre as shown above, the total yield of gur is worked out.

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(3) *Letter dated the 15th July, 1937, from the Secretary to the Government of Sind, Finance Department, Karachi.*

In continuation of this Department express letter, dated the 2nd July, 1937, regarding protection required by the Sugar Industry, six copies of a statement showing the prices of sugar which have ruled in Karachi market during the last two years 1935-36 and 1936-37, are forwarded herewith.

This is with reference to the Director of Agriculture, Sind's answer to item 27 of the questionnaire for Local Government.

Copy of Memorandum No. 402-B. of 1937, Karachi, dated the 25th June, 1937, from K. I. Thadani, Director of Agriculture, Sind, to the Secretary to Government, Revenue Department, Karachi.

The Director of Agriculture, Sind, presents compliments to the Secretary to Government of Sind, Revenue Department, Karachi, and in inviting attention to this office memorandum No. 402-B. of 14th instant forwarding therewith 6 copies of replies to questionnaire of Sugarcane Tariff Board Enquiry, has the honour to forward 6 copies of the attached statement showing the prices of sugar which ruled in Karachi market during the last two years 1935-36 and 1936-37 only (reference item No. 27 of the questionnaire). The information on the remaining items, *viz.*, 33 and 36 of the questionnaire is not available.

	Per cwt. Rs. A. P.	Per cwt. Rs. A. P.
1935-36—		
Java Whites	12 15 0 to	14 7 6
British Refined	13 0 9 to	14 8 0
Motipur AA	13 3 6 to	14 1 0
Motipur AA 1		to 12 14 0

	Per cwt.				Per cwt.		
	Rs.	A.	P.		Rs.	A.	P.
1935-36—							
Lohat, Sakri	12	14	0	to	14	1	0
Marhowrah, Champaran	13	2	0	to	14	5	0
1936-37—							
Java Whites	13	4	0	to	12	15	6
British Refined	13	5	6	to	13	4	9
British Refined (March, 1937)	13	7	9	to	13	12	0
Motipur AA 1	12	12	0	to	10	8	0
Babhnan	13	2	0	to	11	14	0
Balrampur	13	1	0	to	11	14	0
Champaran	12	15	0	to	11	15	0
Lohat	12	6	6	to	11	1	0
Hathwa	12	14	0	to	10	10	0
Hargaon	12	0	0	to	11	1	0

The above quotations are for Karachi market. For other markets you will know from other people.

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(4) *Letter dated the 14th August, 1937, from the Government of Sind, Finance Department, Karachi.*

With reference to paragraph 2 of this Department letter, dated the 2nd July, 1937, regarding protection required by the Sugar Industry, six copies of the replies of this Government to the Questionnaire for Local Governments are forwarded herewith.

QUESTION NO. 3—RATES OF ASSESSMENT IN DIFFERENT AREAS.

The District Officers report as under:—

Karachi.—The following irrigation rates are in existence in Talukas Mirpur Sakro, Tatta and Ghorabari:—

	1st group.		2nd group.		3rd group.	
	Rs.	A.	Rs.	A.	Rs.	A.
Mirpur Sakro—						
Kharif	1	4	1	0	0	12
Rabi	1	14	1	8	1	2
Ghorabari—						
Kharif	1	4	1	0	0	12
Rabi	1	12	1	6	1	2
Tatta—						
Kharif	1	8	1	4	...	
Rabi	2	4	1	14	...	

Hyderabad.—In non-barrage area, assessment is levied according to the mode of irrigation. The rates are as under:—

Lift—Rs. 2 per acre.

Flow—Rs. 2-12 per acre.

In barrage area sugarcane pays highest irrigation rate in each season in which it takes water, which is as under:—

Kharif Rs. 6-8 per acre—Flow.

Kharif Rs. 4-6 per acre—Lift.

Sukkur.—Not reported.

Larkana.—The irrigation rates which are the same as assessment rates for sugarcane during the last 7 years have been as under:—

Year.	Rate.
1929-30 1930-31 1931-32	From Rs. 3-4 to Rs. 3-12 per acre.
1932-33 1933-34 1934-35 1935-36	Rs. 10-12 per acre.

The above rates are based mainly on facilities for water supply and also on the net profit from the crop to the cultivator. The rates have varied in the district after the advent of the Barrage.

Nawabshah.—The rates of assessment for cane cultivation are as under:—

	Group I.	Group II.	Group III.
	Rs. A.	Rs. A.	Rs. A.
1930-31—Other flow . .	3 4	3 0	2 11
1931-32—			
Flow lift . . .	2 11	2 8	2 5
Other lift . . .	2 2	2 0	1 14
1932-33 to 1936-37 . .	Sugarcane to pay the highest rate according to the mode of irrigation in each season in which it takes water.		
Kharif—			
Flow	3 8	3 0	2 12
Lift	2 6	2 0	1 14
Combined flow lift .	2 15	2 8	2 5
Rabi—			
Flow	4 4	3 2	3 6
Lift	2 14	2 8	2 4
Combined flow lift . .	3 9	3 2	2 13

The Pioneer Sugar Mills Company, however, are charged at Rs. 18 per acre. This is levied on consumption of water and the rate has been agreed to by the Company.

Thar Parkar.—The irrigation rates (flow) prevailing in this district in the two sub-divisions, where sugarcane is grown are as under:—

	Group I.	Group II.	Group III.
	Rs. A.	Rs. A.	Rs. A.
Mirpurkhas sub-division .	6 0	5 8	5 0
Nara Valley sub-division .	5 8	5 0	...

The rates are based mainly on facilities for irrigation, quality of soil and net profits of the zamindar. The former rates were as under:—

	Group I.	Group II.	Group III.
	Rs. A.	Rs. A.	Rs. A.
Mirpurkhas sub-division .	4 0	3 12	3 6
Nara Valley sub-division .	4 0	3 12	...

The rates were enhanced on account of the improved water supply due to the functioning of the Barrage.

Dadu.—Sugarcane is mostly grown in the Barrage area and according to the Barrage Settlement, which came into force from the year 1932-33, sugarcane pays the highest rate according to the mode of irrigation in each season in which it takes water; the highest rate in this district is Rs. 5-4 in kharif and Rs. 4-4 in rabi.

Upper Sind Frontier.—The sugarcane is not grown in this district.

QUESTIONNAIRE FOR LOCAL GOVERNMENTS.

1. The area cropped with sugarcane, during the past seven years for which details are available in this office are as follows:—

	Acres.		Acres.
1930-31 . . .	2,225	1934-35 . . .	2,954
1931-32 . . .	2,644	1935-36 . . .	3,072
1932-33 . . .	2,602	1936-37 . . .	4,770
1933-34 . . .	2,656		

The local varieties, red and white canes are grown—red variety being more common. Of the improved varieties, Co. 213, Co. 313, Co. 331, Co. 290, Co. 312, Co. 270, P.O.J. 2878, occupy about 2,000 acres. It is not possible to give the area occupied by each variety separately as the details are not available. Of these varieties Co. 290 and Co. 213 are gradually being eliminated owing to their susceptibility to insect pests and other environmental factors.

REPLIES OF THE REVENUE DEPARTMENT TO THE QUESTIONNAIRE FOR LOCAL GOVERNMENTS.

1. A statement showing the figures of area under sugarcane during the last seven years is enclosed. The figures have been reported by the District Officers.

The varieties grown are shown in the Director of Agriculture's reply to this question (copy enclosed).

2. This department agrees with the classification proposed by the Director of Agriculture. There is no unirrigated sugar crop in Sind.

3. The rate of assessment is different in different areas. Copies of the replies of the District Officers on the point are enclosed. The reply of the Director of Agriculture has already been submitted. The existing rates in the Barrage area were fixed in the year 1932. They are due for revision next year.

In the non-Barrage area of the Province the rate of assessment has not undergone variation during the last 7 years while in the Barrage area it raised after the Barrage canals began to flow in the year 1932-33.

4 & 5, 7-15, 17, 24 & 25, 30-32, 34, 38 & 40. This Department agrees with the replies of the Director of Agriculture and has nothing to add to them.

6. There has been no marked variation in the sugarcane cultivation in Sind except in Nawabshah District on account of the recent opening of a sugar factory and the special water facilities allowed to it, the cultivation has increased considerably.

16. The Co-operative Department has given no assistance to cane-growers. Cane-growers are not organized. No cane-growing or cane supplying societies have been formed so far.

18. Does not arise in the case of Sind as there is only one sugar factory in the province.

19. Does not arise in the case of Sind as the cane required for the manufacture of sugar is grown by the owners of the sugar factory.

20. The sub-joined statement shows the average cost of transport of cane by carts per maund per mile in the several districts of Sind:—

Karachi—From 6 to 12 pies per maund per mile.

Hyderabad—6 pies per maund per mile.

Larkana—3 pies per maund per mile.

Dadu—3 pies per maund per mile.

Tharparkar—12 to 18 pies per maund per mile.

Upper Sind Frontier—No cane cultivation.

Nawabshah—2 pies per mile in the area commanded by the sugar mill.

Sukkur—6 pies per maund per mile.

21. The sugar mills in the Nawabshah District have their own means of transport while other cane-growers who grow for local consumption mostly use hired carts at the rates shown in reply to question No. 20.

22. Looking to condition of communications in Sind in general, it may be stated that road and rail facilities are fairly adequate and being improved. The tram facilities are not adequate.

23 & 49. This department has to add nothing to the replies given by the Assistant Director of Industries, Sind.

26. The condition of the labour in the Pritamabad Factory is reported to be satisfactory. There is no other cane factory in Sind.

27. The only important market in Sind for sugar is Karachi. The wholesale and retail prices of sugar for the period prior to 1935 are not available. The wholesale prices of sugar for the years 1935 and 1936 have been supplied by the Director of Agriculture. The retail prices of sugar for the same period are not available.

28. In the absence of retail prices of sugar it is not possible to say whether there has been considerable variation between the wholesale and retail prices of sugar.

29, 33 & 36. It has not been possible to collect information during the short time. It is not available on Government record.

35. The sub-joined statement shows the prices obtained for various kinds of gur in the various districts of Sind:—

Karachi—Varies from Rs. 4 to Rs. 6 per maund.

Hyderabad—Varies from Rs. 5 to Rs. 8 per maund.

Sukkur—Varies from Rs. 3 to Rs. 5 per maund.

Larkana, U. S. D.—Not supplied.

Nawabshah—Current price Rs. 4-12 per maund. The prices for past years are not available.

Tharparkar—Information not available.

Dadu—The prices for past years not available. Current price Rs. 3-12 to Rs. 4 per maund.

The variations are apparently due to competition by sugar turned out from sugar factories in India but this Department is not sure about it.

37. Gur is imported from the Punjab and United Provinces. The figures of import are not available.

39. Yes. Any marked variation in the price of sugar is bound to affect the price of gur.

41. This Department has nothing to add to the replies given by the Assistant Director of Industries or Director of Agriculture, Sind.

42-46. Does not arise in the case of Sind as there are no open pan factories and Khandsaries in Sind.

47. Copies of the replies of the District Officers are herewith submitted. In the opinion of the Revenue Commissioner the Sugar Excise Duty of 1934 has not affected any of the four classes of persons concerned. The effect of the additional duty imposed in 1937 is still to be seen. It is expected that it will not be adverse.

48. The price of sugar has been falling. The protective duties have therefore not hit the consumer.

50. The statistics of acreage of sugarcane are obtained from the revenue records. No record is, however, kept of production and prices. These statistics are collected by local inquiries from dealers and zamindars specially growers. The accuracy of the information cannot therefore be vouchsafed.

51. No. It may, however, be stated that refined Java sugar is used by rich people only, the middle class people use desi sugar while gur is used by lower class people in the mofussil.

Statement showing the area in acres under sugarcane in the Hyderabad District during the last seven years.

Name of the district.	1929-30.	1930-31.	1931-32.	1932-33.	1933-34.	1934-35.	1935-36.	1936-37.	Remarks.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	
Karachi . . .	341	549	850	707	879	970	747	..	These figures are for Tatta sub-division.
Hyderabad . .	634	710	584	817	986	798	536	..	
Sukkur . . .	..	445	350	468	394	308	362	329	
Larkana . . .	105	77	101	121	173	127	116	..	
Nawabshah . .	249	249	237	289	242	958	1,698	2,403	
Thar Parkar . .	352	569	1,087	1,185	656	635	931	..	
Upper Sind Frontier	No cane cultivation.								
Dadu	..	..	..	290	53	65	54	52	The figures for the years 1929-30 to 1931-32 are not available as the district was created from 1st October 1931.
Total .	1,681	2,689	3,210	3,877	3,383	3,861	4,444	2,784	
Figures reported: by Director of Agriculture.	..	2,225	2,644	2,602	2,656	2,954	3,072	4,770	

(5) *Letter dated the 14th August, 1937, from the Government of Sind, Revenue Department, Karachi.*

With reference to your letter No. 303, dated the 18th June, 1937, I am directed to sub-join the information required by the Tariff Board:—

"A (1) 1.

(2) About 31,000 to 32,000 maunds. Originally the source of supply was Java, but now the molasses from the Punjab, the United Provinces and Pritambad in this Province are used.

(3) The Contractor of the distillery is not prepared to divulge the prices paid by him.

A copy of his letter is enclosed.

B (1) *Nil.*

(2)

(3)".

Letter dated 3rd August, 1937, from Adarjee Mancherjee Dalal and Co., Kotri Distillery Contractors, Karachi, to the Superintendent of Salt and Excise in Sind, Karachi.

With reference to your letter No. 21/1003-E. of 1937-38, dated the 24th July, 1937, we have the honour to say that we extremely regret we are unable to supply the cost of molasses, which, being a business secret, we cannot divulge, as a general principle, and specially in view of the fact that tenders for the distillery contract are very shortly to be submitted. We trust you will be pleased to appreciate our difficulty in this matter.

---

(6) *Letter dated the 23rd July, 1937, from the Secretary Tariff Board, to the Chief Secretary to the Government of Sind, Karachi.*

With reference to your letter, dated the 2nd July, 1937, I am directed to refer to reply to question 4 of the Local Government Questionnaire by the Director of Agriculture, Sind, in his memorandum No. 402-B, dated the 14th June, 1937, supplied as an enclosure to your letter, and to request that figures for the costs of cultivation per acre may kindly be supplied in as much detail as possible for the area which supplies cane to the factory together with an estimate of the average yield from such cultivation. The cost of transport from the field to the factory may be shown separately.

---

(7) *Letter dated the 4th September, 1937, from the Government of Sind, Revenue Department, Karachi.*

With reference to your letter, dated the 23rd July, 1937, to the address of the Chief Secretary to the Government of Sind, I am directed to forward a copy of letter No. 402-B, dated the 26th August, 1937, from the Director of Agriculture, Sind, which supplies the information required by you.

Letter No. 402-B of 1937, dated the 26th August, 1937, from the Director of Agriculture, Sind, to the Secretary to Government of Sind, Revenue Department, Sind.

With reference to your endorsement No. 4321 of 17th instant forwarding therewith a copy of letter No. 523, dated 23rd July, 1937, from the Secretary, Tariff Board, addressed to the Chief Secretary to the Government of Sind, I have the honour to submit hereunder the details of the cost of

production of sugarcane crop per acre as required by the Secretary, Tariff Board:

	Rs.	A.
1. The first operation that a cultivator attends to is the manuring of the cane land. Usually 40 cart loads of farm manure are applied per acre. The cost of a cart-load is As. 8 a maund. Spreading manure on the land and carting cost about As. 2 a cart-load. The total cost is therefore . . .	25	0
2. *Preparatory tillage.*—The land is ploughed 4 times and rolled. A pair turns out 25 gunthas ($\frac{5}{8}$ of acre) per day and the cost of one ploughing is Rs. 2. One dry ploughing given before spreading manure, therefore in all 5 ploughings at Rs. 2 per ploughing	10	0
3. *Making ridges and furrows.*—This is usually done with hand and costs wages of 10 men per acre at As. 8 each. If made with a ridger one acre costs Rs. 2 and 5 men are required to dress end portions and divide the plots in small compartments .	4	8
4. *Planting sets.*—This operation consists of cutting sets and planting in furrows. 10 men are required to complete the operation per acre	5	0
5. *Irrigation.*—In all 25 irrigations are applied and one man is able to irrigate 2 acres per day. Therefore each irrigation costs As. 4 per acre	6	4
6. *Earthing and weeding.*—Normally one weeding and two earthings are given each costing 10 men per acre at As. 8 per day . . .	15	0
7. *Stripping and cutting cane.*—This operation is usually done on contract at Rs. 4-8 to Rs. 5 per 100 maunds and costs 9 pies per maunds of produce. If 500 maunds is the yield the cost amounts to . . .	23	7
8. *Carting.*—Carting by locomotive costs approximately 3 pies a maund. Therefore for 500 maunds the cost amounts to . . .	7	13
9. Cost of 40 maunds sets at As. 5 a maund .	12	8
10. Irrigation tax and assessment at Rs. 18 per acre	18	0
Total .	127	8

Replies from the Government of North West-Frontier Province.

(1) *Letter dated the 23rd June, 1937, from the Revenue and Divisional Commissioner, North-West Frontier Province, Peshawar.*

I have the honour to forward herewith answers to questionnaires received from the Deputy Commissioners, Mardan and Bannu. Similar answers from the Director of Agriculture and Allied Departments, North-West Frontier Province are still awaited and will be forwarded as soon as these are received.

Questionnaire for Local Government.

1. The area under sugarcane in this district for both the varieties, *viz.*, Ponda (Desi) and Coimbatore during the last 7 years was as under:—

Year.	Acres.	
1930-31 . . .	9,109	There was no classification of sugar cane in these years.
1931-32 . . .	8,747	
1932-33 . . .	11,916	
1933-34 . . .	12,147	
1934-35 . . .	11,574	
1935-36 . . .	17,521	
1936-37 . . .	22,996	Ponda—12,099, Coimbatore—10,897.

Coimbatore sugarcane is the improved Passity which is gradually taking the place of Ponda.

2. Similar climatic conditions and methods of cultivation prevail throughout the whole district. The entire crop grows in irrigated area.

3. The Irrigation Department has fixed permanent irrigation rates for sugarcane at Rs. 10 per acre.

4. The cost of cultivation of sugarcane to the cultivators comes to about Rs. 80 per acre. Information in regard to variation in the cost of production during the last 7 years is—Average yield per acre of Ponda sugarcane is approximately 150 maunds and of Coimbatore variety between 250 to 300 maunds.

5. Four annas per maund would appear to be a fair price of sugarcane to the growers.

6. Yes, there has been a marked tendency towards increased cultivation of sugarcane which is attributable to enhanced price of gur during 1934-35 and 1935-36.

7. Yes, *vide* answer to question No. 6 above, but it does not seem desirable to restrict the area under cane at present.

8. Tobacco is the other principal cash crop in this district. Cultivators generally prefer sugarcane because of greater income when the rates for gur are favourable. Tobacco would suit as an alternative to sugarcane. The return per acre of various cash crops cannot be estimated at present.

9. & 10. *Nil.*

11. This concerns the Agricultural Department.

12. & 13. *Nil.*

14. (*a*) There is no sugar refinery in the district.

(*b*) 5 to 600 maunds of sugarcane per annum is utilized by the only small open pan factory at Takht Bai. This factory is, however, about to be closed down.

(*c*) Excepting the use at (*b*) above, the bulk of sugarcane is turned into gur.

(*d*) The use of sugarcane for chewing is smaller as compared with its use for conversion into gur.

15. Lack of capital constitutes the main difficulty of the cultivators. They are also confronted with another obstacle, *viz.*, want of adequate means of transport.

16. No special assistance is given to sugarcane growers in their individual capacity. There are 65 Co-operative Societies in the Mardan Tehsil and nearly 20 members in each society are given timely help, whenever required, in the form of wages for labour price of seed. Loans are advanced to them to enable them to sell gur at better prices.

17. No.

18. There being only one open pan factory, there is no competition of any sort.

19. *Nil.*

20. Nearly ½ anna per maund.

21. The cane growers generally use their own bullocks for conveyance of their produce to the nearer markets. They have to hire carts at Rs. 1-12 per cart per day for the transport of their goods to the distant marts.

22. Rail and road facilities are adequate but no assistance has so far been given towards development of feeder roads. Tramways do not exist in this district.

23 to 25. *Nil.*

26. Yes.

27.

Year.	Rate per maund of sugar. Wholesale.		Retail sale.	
	Rs.	A.	Rs.	A.
1930	16	0	16	12
1931	14	0	14	12
1932	11	8	12	0
1933	12	0	12	8
1934	11	0	11	8
1935	10	12	11	4
1936	10	4	10	10
1937	9	0	9	8

28. Only khandsari sugar is manufactured in the district, the wholesale rate of which is nearly Rs. 7 per maund. Its retail price is Rs. 8 per maund. Variations in rates of sugar are contingent on the rates prevailing in the adjoining district markets.

29. Normal sugar consumption of the district cannot be estimated.

30. & 31. *Nil.*

32. There is plenty of fresh fruit in this district and there are possibilities of starting fruit preservation industry.

33. No information is available.

34. No material other than cane is used for manufacturing sugar or gur.

35. The average prices of gur and shakar (gur in powdered form) are given below. Prices have fallen now as the result of overproduction of sugarcane and also because of cheap factory sugar.

Year.	Rate per maund. Gur.		Shakar.	
	Rs.	A.	Rs.	A.
1930-31	6	8	7	10
1931-32	5	3	5	6
1932-33	4	3	4	11
1933-34	3	15	4	2
1934-35	4	14	5	3
1935-36	5	12	6	8
1936-37	4	10	5	6
Current rate	2	10	3	1

36. No information is available.

37. No sugar is imported into this district from outside.

38. Gur is exported to the Hazara district as well as to Campbellpur, Rawalpindi, Mainwalli, Jhelum and Sargodha districts, in the Punjab.

39. Sugar affects the price of gur but the latter does not affect the former.

40. Sugar has almost replaced gur.

41. *Nil.*

42. There is only one open pan factory in the district as already stated. Outturn of sugar is given in the relevant questionnaires.

43. Rs. 10 per maund is the average cost of production of sugar by open pan system during the last five years.

44. Cheapness of factory sugar is responsible for the failure of open pan factory.

45. Khandsari sugar has been holding its own against the factory sugar until the imposition of excise duty on this sugar in 1934, when it was adversely affected by the cheap factory sugar. There seem to be no prospects for Khandsari sugar now.

46. *Nil.*

47. The manufacturer of Khandsari sugar alone has been adversely affected by duty.

48. Sugar of Indian manufacture has become much cheaper in consequence of the protective duty on foreign sugar.

49. *Nil.*

50. Statistics of acreage and price of sugar and gur are compiled by Revenue Officials. Statistics of production of Khandsari sugar are checked by Excise Officials by periodical inspections. These statistics are accurate as far as possible.

51. There are no special comments to offer except those detailed in the covering memorandum.

Questionnaire for manufactures of sugar by the open pan system and Khandsari.

1. Sugar is manufactured from cane by open pan system.

2. Cane is obtained directly from the cultivators.

3. Average price per standard maund of sugarcane were as follows:—

	As.	P.		As.	P.
1933	4	0			
1934	5	0	1936	6	6
1935	6	6	1937	3	0

4. (*a*) There is no vacuum pan factory.

(*b*) Price of cane is dependant on the price of gur.

5. (i) 60 maunds juice.

(ii) Approximately 18 maunds.

(iii) About 35 maunds.

6. Only one quality, *viz.*, the Khandsari sugar. The yearly output has been as under:—

Year.	Mds.	
1933	1,250	
1934	1,750	
1935	350	
1936	198	
1937	122	upto 12th June, 1937.

7. *Per one maund of sugar.*

——	1933	1934	1935	1936	1937
	Rs. a.	Rs. a.	Rs. a. p.	Rs. a. p.	Rs. a. p.
(i) Cost of cane . .	5 0	6 4	8 2 0	8 2 0	3 12 0
(ii) Cost of Manufacture .	2 0	2 0	2 0 0	2 0 0	2 0 0
(iii) Labour . . .	0 8	0 8	0 8 0	0 8 0	0 8 0
(iv) Over head charges .	0 8	0 8	0 8 0	0 8 0	0 8 0
(v) Interest and depreciation.	0 1	0 1	0 1 0	0 1 0	0 1 0
(vi) Excise duty . .	*Nil*	*Nil*	0 7 4	0 7 4	0 11 8
(vii) Cost of gunny bags .	0 3	0 3	0 3 0	0 3 0	0 3 0
(viii) Commission on sales .	0 3	0 3	0 3 0	0 3 0	..
Total .	8 7	9 11	12 0 4	12 0 4	7 14 8

8. Mardan, Havellian (Hazara) and Haripur (Hazara) are the markets for disposal of sugar manufactured in this factory. Sugar is sent to Mardan by carts and by rail to the Hazara District markets. Sales are made on credit basis.

9. The prices per maund obtained were as under:—

Year.	Rs. a.	Year.	Rs. a.
1933 . . .	11 0	1936 . . .	8 8
1934 . . .	10 0		
1935 . .	9 8	1937 . . .	7 0

10. Our sugar is preferred to gur but not to Indian factory sugar, as it is not of refined quality and tastes like gur. Our sugar is consumed by humble classes and persons of orthodox views.

11. To a very great extent.

12. One other open pan factory at Takht Bai closed down working in their very first year because of factory sugar.

13. In this connection attention is invited to answers given against items 6, 7 and 9 above.

14. (1) The method of transport in rainy weather.

(2) Climatic conditions during the winter.

(3) Heavy cost of labour in this district.

(4) Dearness of fuel in this district.

(5) Heavy duty on Khandsari sugar.

(6) Crude method of boiling juice.

(7) Low quantity of sugar manufactured.

(8) Molasses fetch no price in these days due to low prices of gur.

Suggestions—

(i) Improvement of boiling system.

(ii) Abolition of excise duty on Khandsari sugar.

(iii) Government's help in this industry.

Sd. W. N. Sawhney,
Proprietor.
The Sawhney Sugar Factory, Takht Bai.
(Mardan District, N.-W. F. Province.)

Answers to Questionnaire for Local Government are as follows:—

1. Area under sugarcane in Bannu district during last seven years is as follows:—

Year.	Irrigated acres.	Unirrigated acres.
1930	3,956	...
1931	4,377	2
1932	5,772	3
1933	4,798	9
1934	3,665	14
1935	4,145	24
1936	5,359	19

No improved varieties are cultivated, except the common local sugarcane of ordinary variety.

2. There are no different areas as regard the climatic condition. Crop sown under irrigated and unirrigated is shown above.

3. No irrigation rates are levied. The water belongs to the owners.

4. Estimate of cost is Rs. 32 per acre in irrigated and unirrigated areas. Variation in cost in last seven years is not much. Average yield per acre is 12 maunds.

5. Rs. 5 per maund would be the fair price of gur to the growers.

6. Sugarcane was sown abundantly in 1934 in Bannu assessment circle owing to fall in prices of grain.

7. No figure for 1936-37 is comparatively less than that of 1934-35. The fall of gur price is the only scheme for restricting the area under cane.

8. Vegetables are the only cash crops. But these are beneficial only to those growers who are located near the Bannu city. Estimate of return per acre to an average cultivator from vegetable crops is Rs. 250 per annum.

9. No amount was spent.

10 & 11. Not known.

12. No assistance has been received from either.

13. Not known.

14. 4,241 acres was turned into gur, 400 acres was used for—and 756 acres was used for chewing purpose last year.

15. No factory exists.

16. No special assistance has been received from Co-operative Department.

17. No.

18. As. No. 15.

19. In the absence of factories no system of bonus payments is deemed practicable.

20. Two annas.

21. Hired carts are used and the cost is As. 2 per maund per mile.

22. Rates of hiring rail, lorries, tongas are much higher than those of carts. None.

23-26. Not existing.

27.

—	1930.	1931.	1932.	1933.	1934.	1935.	1936.
	Rs. a.	Rs. a.	Rs. a.	Rs. a.	Rs. a.	Rs. a.	Rs. a.
Wholesale .	4 0	3 0	3 0	2 12	4 8	4 8	3 4 acre.
Retail .	4 4	3 4	3 4	3 0	4 12	4 12	3 8 ,,

28. Variation in wholesale and retail prices is not considerable.

29. Normal consumption of sugar per annum is about 18,000 maunds. There is no possibility of increasing it.

30. Not existing.

31. Not known.

32. None.

33. About 300,000 maunds.

34. None.

35 to 46. Not known.

47. No practical effect is noted in respect of (*a*), (*b*), (*c*) and (*d*).

48. Not known.

49. Statistics of acreage of gur is prepared from Girdawari, production from the settlement, directory and prices from the attestation of the dealers.

50. No.

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(2) *Letter dated 12th July, 1937, from the Revenue and Divisional Commissioner, North-West Frontier Province, Peshawar.*

In continuation of this office letter, dated the 23rd June, 1937, I have the honour to forward herewith answers to questionnaires received from the Director of Agriculture and Allied Departments, North-West Frontier Province.

Replies to questionnaire for Local Government.

1. The area under sugarcane in the North-West Frontier Province during the last seven years has been as follows:—

Year.	Acres.
1929-30 . .	(Not given in Season and Crop Report).
1930-31	46,877
1931-32	44,268
1932-33	53,212
1933-34	49,391
1934-35	42,844
1935-36	58,512

No statistics regarding improved varieties were taken till 1934 since when the following figures have been recorded:—

1934. (Peshawar, Hazara and Bannu Districts.)	Acres.	*1936.* (Peshawar District.)	Acres.
Paundah . .	37,400	Paundah . .	41,982
Assam Red . .	2,918	Assam Red . .	14,910
Co. 290 . . .	751	Co. 290 . . .	7,814
Co. 263 . . .	4	Kahu . . .	122
Kahu . . .	68	Hazarawal . .	7
Saharni . .	14½		

2. There are three areas in the North-West Frontier Province which grow sugar:—

(i) Peshawar District.

(ii) Hazara District.

(iii) Bannu District.

All the crop is irrigated.

3. Presumably information regarding the irrigation rights will be obtainable from the Canal Department.

4. The following is an estimate of the cost of cultivation per acre:—

Cost of growing sugarcane per acre.

	Rs.	A.	P.
(1) Two Rajah ploughings	4	0	0
(2) One coiled breaking	0	8	0
(3) Levelling	1	8	0
(4) Four spring timed harrowings . . .	2	0	0
(5) Preparing cane seed	4	0	0
(6) Cost of seed used	20	0	0
(7) Raising ridges and plotting	3	8	0
(8) Planting	3	8	0
(9) Irrigations 24	7	8	0
(10) Two hoeings and one weeding . . .	8	8	0
(11) Cost of manure (compost) 16 carts at Re. 1-4 per cart	20	0	0
(12) Dumping and casting manure . . .	4	0	0
(13) Spreading manure	0	14	0
(14) Three bullock hoeings	2	10	0
(15) Earthing up	3	8	0
(16) Renewing channels, etc.	1	12	0
(17) Cutting and stripping	14	0	0
(18) Carting	9	8	0
(19) Revenue	5	11	0
(20) Water rates	6	10	0
Total .	123	9	0

The only variation in cost has been due to the practice of ratooning which has come in with the introduction of Coimbatore canes in the last 2-3 years. The average yield per acre may be put at:—

(i) Paundah 365 maunds stripped cane with a sucrose content of 10-11 per cent.

(ii) Coimbatore 290; 487 maunds with a sucrose content of 12-13 per cent.

5. Under present conditions 4 annas per maund would be a fair price of sugarcane to the growers.

6. There has been a large increase in cane in the Peshawar district in the last 2-3 years which is mainly due to the comparative ease with which cane can be cultivated by ratooning and also to the fact that the Coimbatore varieties are more frost resistent than the indigeneous poundah.

7. There was certainly a great over-production in the season 1936-37 especially in the Peshawar District. Some form of restriction of the area under cane is essential. The method of restriction which suggests itself is that cane should not be grown except under license and violations of the rule would be punishable by increased revenue demands.

8. The other cash crops in this province are (i) chillies, (ii) tobacco and (iii) cotton. The following is an estimate of the gross cost of cultivation and return per acre:—

(i) *Chillies.*—Cost of cultivation Rs. 58 to Rs. 60. Net profit between Rs. 15 to Rs. 20.

(ii) *Tobacco.*—Cost of cultivation Rs. 55 to 56. Net profit between Rs. 30 and Rs. 40.

(iii) *Cotton.*—Cost of cultivation about Rs. 29. Net profit between Rs. 7 and Rs. 9.

9. It is not possible to give an accurate estimate of the amount spent during the last seven years for the extension and improvement of sugarcane in this province.

10. The North-West Frontier Province receives no contribution from the Government of India.

11. About 10 acres are allotted every year to sugarcane at the Government Research Station, Tarnab and 5 acres at Serai Naurang. Varietal, manurial, rotational and spacing trials are carried out.

Co. 290 and Co. 285 have been distributed in the districts. Demonstrations of the use of manures have been made on the zamindars lands. The use of the bullock hoe and plough for weeding and earthing up have been extensively recommended but very few zamindars have followed the advice of the Department.

12.(i) The Imperial Council of Agricultural Research has sanctioned a scheme of Sugarcane Research in this Province which it is hoped will start this year.

(ii) Coimbatore Sugarcane Research Station has sent many varieties for trial.

(iii) Advice has been obtained from the Imperial Institute of Sugar Technology on the subject of Power Crushers.

At present funds for research are by no means adequate, but matters will be improved when the Sugarcane Research Scheme starts.

13. There are no sugarcane factories in this province.

14. Of the sugarcane grown in this province 5 per cent. is used for chewing purposes and the rest for conversion into gur.

15. The main difficulties experienced by the cane growers in this province up to date have been the incidence of red rot on Poundah cane, with the introduction of Coimbatore varieties this difficulty has been overcome. The second main difficulty is on account of severe frosts which start in

this province in the beginning of December. Here again the introduction of Coimbatore varieties has overcome, to some extent, the difficulties.

16. The Co-operative Department, as far as I am aware, has not been able to render any assistance to cane growers.

17. Minimum prices of sugarcane are not fixed in this province.

18. Does not arise.

19. Does not arise.

20. The average cost of transport of cane may be put at approximately ·65 pies per maund per mile on metalled roads and about 50 per cent. higher on village roads.

21. Cane growers usually use their own carts.

22 & 23. As there are no factories in this province the question does not arise.

24-28. As no factories exist in this province the questions do not arise.

29. The figure for consumption of sugar in this province is 245,700 maunds.

30. There are no large scale manufactories of confectionery in this province. Indian sweetmeats and pastry, etc., are prepared by local Halwais and Bakeries with a varied material of sugar, gur, maida, khawa, nuts, raisins, etc.

31. As no sugar industry exists in this province the question does not arise.

32. There are great possibilities in connection with fruit preservation, canning, etc., in this province but this industry is greatly handicapped by the high cost of sugar and containers. It is calculated that the sugar in imported jam only pays a duty of 1·1 annas per lb. whereas the manufacturer of jam who has to buy Indian sugar pays for it at a rate which depends on an import duty of 1·4 annas per lb.

33. Figures for the production of gur from sugarcane for the last seven years are as follows:—

	Mds.
1929-30	1,717,033
1930-31	figures not available.
1931-32	1,492,136
1932-33	1,217,034
1933-34	1,484,246
1934-35	1,112,038
1935-36	1,768,521

34. In this province sugar is not made from any other materials.

35. The following are the prices of gur for the last seven years:—

Year.	Price per standard maund.	Year.	Price per standard maund.
	Rs. A. P.		Rs. A. P.
1930	6 3 0	1934	4 8 7
1931	5 11 0	1935	6 7 10
1932	4 6 2	1936	4 13 7
1933	3 9 10	1937	2 8 0

The present low prices have been attributed to overproduction. The cheapness of sugar has also a depressing effect on the demand for gur and so affect gur prices.

36. It is estimated that two-third of the total production of gur is consumed in the province and one-third is exported to near Punjab markets, Kashmir, the neighbouring Tribal areas and States. On this basis the estimated normal consumption of the province would amount to 27,698 tons. The increasing consumption of sugar is replacing gur to some extent.

37. No gur or jaggery is imported into this province.

38. Gur is exported to near Punjab markets, Kashmir, the neighbouring Tribal areas and States. It has been estimated that the figures for normal exports amount to 13,849 tons. The exports to Punjab are decreasing to some extent owing to the increasing production of gur there and increasing use of sugar.

39. The cheapness of sugar has a depressing effect on the demand for gur and so affects gur prices.

40. The increasing use of sugar on account of its cheapness has no doubt replaced gur consumption to some extent. The imports of sugar are estimated at 9,000 tons and on this basis at present, sugar caters to ¼th of the total combined consumption of gur and sugar in this province.

41. In the year 1935 the Hadi Gur Boiling Furnace was set up at Tarnab Farm and an expert from K. B. Hadi Khan was employed. The results were, however, disappointing as a yield of sugar to cane of 4·88 per cent. was obtained. Experiments were also carried out on the use of sumaphos and activated charcoal but were disappointing.

42. There were two small open pan factories in this province in 1933, 1934 and 1935 but they have both since closed down.

43. Below is given an estimate of the cost of manufacturing sugar by the open pan process (figures taken from the working of a small factory since closed down):—

1. *Labour employed and the working cost (daily).*

	Per mensum.	Per day.
	Rs.	Rs. A.
Head Mistri	60	2 0
Two Assistant Drivers at Rs. 20	40	1 6
Total		3 6

2. *Expenses of running the machinery.*

	Rs. A.
(*a*) Cost of Crude/Diesal oil—per 20 hrs., 20 gals.; at As. 7	8 12
(*b*) Mobil oil 1 gal. at Re. 1-8	1 8
(*c*) Grease, etc.	1 0
Total	11 4

3. *Working of crushers (cane).*

	Rs. A.
Labour required: 8 men at As. 5	2 8 day.
	2 8 night.

4. *Working the Centrifugal machineries only during the day.*

	Rs.	
One sugarcane	30	
One helper	15	
Two men to bring rots from the tanks and feed the pug mill	24	
Total	69	=2-4 per day.

5. To dry bagasi and collect it in the field. 3 men at As. 6=Re. 1-2 per day.

6. To dry sugar in the sun and pack up in bags. 3 men at As. 6=Re. 1-2 per day.

7. *To work the Hadi Bels:*

	Per month.
One bel during the day—	
Two Halvais	45
One Nikhar	15
One Waterman	12
Two Furnace Feeding Bagassis	24
Two coolies	20
Total	116
For night and day	232
For two bels	464
Two Darogas, one for day and one for night—Rs. 15 each—Rs. 30 (Rs. 464+Rs. 30=Rs. 494, *i.e.*,	12-8
Fuel for one Bhati 60 mds. daily, at 8 annas per md.	30-0
Total	66 10

9. *Overhead charges.*

	Per mensem.		
(*a*) Manager	150		
(*b*) Accountant	50		
(*c*) Two mistris as Rs. 15	30		
(*d*) Two chowkidars at Rs. 15	30		
	260	=	8 8
Grand Total			75 2

i.e., Rs. 75 approximately.

10. *Calculations for output.*

(*a*) 400 maunds local cane purchased at As. 7 per maund=Rs. 175.

(*b*) Sugar manufacture at 5 per cent. 20 mds. (local) at Rs. 12 per md.

(*c*) 6 per cent. 24 mds. at Re. 1 per md.

44. It is difficult to say whether the two open pan factories closed down on account of competition in factory sugar imported from other provinces.

45. As the Khandsar sugar does not exist in this province the question does not arise.

46. Please see reply to question 41.

47, 48 and 49. Do not arise.

50. Statistics of acreage, production and prices of sugar and gur, etc., are prepared by the Revenue Staff. It is difficult to say what degree of accuracy is being maintained.

51. No.

Answer to questionnaire for gur/jaggery merchants.

1. The principal gur and jaggery markets are Peshawar, Charsadda, Mardan and Takht Bhai.

2. There are two kinds of gur with the local trade description of
(*a*) Deshi (from Paunda cane).
(*b*) Farmi (from New Coimbatore cane).

3. The chief areas of supply are Charsadda, Mardan, Peshawar and Bannu. The quantities available for the last seven years from these areas cannot be accurately ascertained. However the production is increasing due to the spread of new varieties.

4. There has been variation in the quality of the Desi gur whenever any disease, *e.g.*, 'red rot' attack the local cane Paunda.

5. The following is a statement of gur prices for the last seven years in Peshawar:

Year.	Per standard maund.	Year.	Per standard maund.
	Rs. A. P.		Rs. A. P.
1930 . . .	6 3 1	1934 . . .	4 8 7
1931 . . .	5 11 0	1935 . . .	6 7 10
1932 . . .	4 6 2	1936 . . .	4 13 7
1933 . . .	3 9 10	1937 . . .	2 8 0

The present low prices have been attributed to overproduction.

6. The cheapness of sugar has a depressing effect on gur prices.

7. With reference to point (i) the question does not arise as there is no Indian factory gur in competition here. Regarding (ii) the general remarks in reply No. 6 apply. The consumption of sugar is becoming popular and is replacing gur to some extent.

8. Desi gur has good keeping qualities and can keep well for about 6 to 12 months under good storing conditions in a dry climate. The Farmi gur is not reported to have good keeping qualities as compared with the Desi.

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(3) *Letter dated the 5th July, 1937, from the Revenue and Divisional Commissioner, North-West Frontier Province.*

Subject:—MOLASSES CONSUMED BY DISTILLERIES AND OTHER CONCERNS MANUFACTURING RECTIFIED AND DENATURED SPIRIT.

With reference to your letter No. 303, dated the 18th June, 1937, I have the honour to inform you that there is no Distillery in the North-West Frontier Province nor is rectified or denatured spirit manufactured anywhere in the Province.

Replies from the Government of Delhi.

(1) *Letter dated the 7th July, 1937, from the Chief Commissioner, Delhi.*

With reference to your letters Nos. 147 and 172, dated the 30th April and the 11th May, 1937, respectively, I have the honour to say that as there is no sugar industry in the Delhi province, I am unable to assist materially with questionnaires and witnesses, or to express opinions on matters such as the treatment of growers by the manufacturers.

2. I enclose statements for the years 1933-37 (up to June last) showing the average monthly prices of gur/jaggery of different qualities.

3. I also enclose replies (with 6 spare copies) to the questionnaire to be answered by local governments.

Replies to Questionnaire for Local Governments.

1. The area under sugarcane during the last seven years has been as below:—

Name of the year.	Total area under sugarcane.	Area under improved varieties. (estimated).	Approximate under different improved varieties				
			Co. 213.	Co. 205.	Co. 244.	Co. 285.	Co. 290.
1930-31 .	4,584 acres.	15 acres.	..	15	..	..	..
1931-32 .	3,225 do. .	25½ do. .	½	25	..	..	..
1932-33 .	4,382 do. .	450 do. . (According to revenue records.)	25	400	13	12	..
1933-34 .	3,504 do. .	3,420 acres.	800	1,820	400	400	..
1934-35 .	7,621 do. .	4,259 do. .	1,200	800	1,100	1,100	59
1935-36 .	3,411 do. .	3,110 do. .	1,600	400	500	500	110
1936-37 .	4,599 do. .	3,667 do. .	1,950	500	300	900	15

2. In 1936-37 4,091 acres of sugarcane were irrigated. In the riverain and in low-lying *jhil* land there is some unirrigated cane, but very little.

3. The present irrigation rates are Rs. 11 for flow and Rs. 5-8 for lift. Before 1934 the rates for flow and lift were Rs. 12 and Rs. 6 respectively. Owing to the fall in commodity prices the rates were revised by the Punjab Government.

4. The approximate cost of cultivation is about Rs. 80, Rs. 85 and Rs. 65 per acre on canal, well irrigated and unirrigated lands respectively. There has been no significant variation in the cost of cultivation during the last seven years. The average yield is about 35 and 25 maunds per acre on irrigated and unirrigated land respectively. The figures for sucrose content are unknown.

5. In existing conditions As. 5 to As. 5-6 per maund.

6. In the years 1931-32 and 1935-36 the area under sugarcane was below average owing to (i) scarcity of rainfall and canal supply and (ii) shortage of sound seed, owing to frost.

7. No.

8. The other cash crops ordinarily grown on land suitable for sugarcane are *chari* and cotton. Cotton is a risky crop owing to its susceptibility to damage by the monsoon rain. *Chari* yields about Rs. 40 per acre and the cost of cultivation is small.

9. No direct expenditure has been incurred. Improved varieties have been popularised through the Agricultural Department and *taccavi* was given in 1935-36 when the seed failed.

10. No contribution is received.

11. (i) None.

(ii) See above. Propaganda has been done by the Agricultural Department and by Revenue Officers.

12. No assistance has been received. There are no funds for research.

13. There is no sugar factory in the province.

14. The sugarcane grown in the province at present is used approximately as below:—

(i) About 5 to 10 per cent. is sold to the sugar factory at Sonepat and crushed there; (The factory usually purchases stripped canes at different railway stations, *e.g.*, Naugloi and Narela);

(ii) About 20 to 30 per cent. of the cane is purchased in the form of cane juice for the manufacture of jaggery by the dealers; or by owners of open pan factories and khandsaris;

(iii) About 60 to 65 per cent. of the crop is crushed for manufacture of gur by the cultivators themselves;

(iv) About 5 to 10 per cent. is eaten as cane or used for the extraction of cane juice as a beverage.

15. The main difficulties in cultivation are:—

(i) The excessive fragmentation of holdings; and

(ii) Shortage of irrigation water. There is no sugar factory in the Province.

16. Nothing of importance has yet been done.

17. No.

18 & 19. Do not arise.

20. The average cost of transport of cane by cart is about ½ anna per maund per mile.

21. Usually the cane growers employ their own carts otherwise they hire the cart at ½ anna per mile per maund.

22. Does not arise. Communications in the Province are average to good.

23-27. Do not arise.

The following statement shows the average wholesale and retail prices of sugar desi (Indian) in the market of Delhi for the last seven years:—

	Wholesale prices. (per maund of 82⅔ lbs. Delhi.	Retail prices (per rupee) Delhi.
	Rs. A. P.	Srs. Ch.
1930	16 7 9	2 4
1931	16 0 0	2 7
1932	13 12 0	2 14
1933	11 15 3	3 2
1934	11 7 3	3 9
1935	11 9 3	3 4
1936	10 14 6	3 11
1937 (Up to June 15) . . .	9 14 4	3 15

28. There has been no marked variation between wholesale and retail prices.

29. About 200,000 maunds. There are no special possibilities of increasing it.

30. Confectionery is manufactured at Delhi and Delhi-Shahdara.

31. Does not arise.

32. Delhi has a favourable position as a possible industrial centre, but it is doubtful if it will attract subsidiary industries of the kind mentioned in any large numbers.

33. The average yield of gur during the last seven years was estimated as below:—

Year.	Approximate yield.	Year.	Approximate yield.
	Mds.		Mds.
1930-31	96,264	1934-35	160,041
1931-32	67,788	1935-36	95,508
1932-33	92,022		
1933-34	73,962	1936-37	128,772

34. No material other than cane is used.

35. The average wholesale prices of gur in the Delhi market for the last seven years are as follows:—

Year.	Wholesale price per maund of 82⅔ lbs.	
	Desi.	Lawar.
	Rs. A. P.	Rs. A. P.
1930	6 7 0	7 10 0
1931	4 6 9	5 11 3
1932	3 3 3	3 15 9
1933	2 15 6	4 0 9
1934	3 12 0	6 1 0
1935	4 10 3	5 15 3
1936	3 14 0	4 12 6
1937 (Up to June 15)	3 1 9	3 14 9

The variations are mainly due to competition from Indian factory sugar.

36. The estimated total annual consumption of gur in the province since 1930 is as follows:—

Year.	Consumption in maunds.	Year.	Consumption in maunds.
1930	167,687	1934	168,374
1931	112,164	1935	126,108
1932	154,045		
1933	140,528	1936	165,972

37. Gur is generally imported into Delhi from the districts of Meerut, Bulandshahr and Aligarh in the United Provinces, and the mandis of Palwal and Rohtak in the Punjab.

The following statement shows imports of gur into Delhi during the last seven years:—

Year.	Imports in maunds.	Year.	Imports in maunds.
1930	138,229	1934	119,595
1931	90,821	1935	105,635
1932	125,629		
1933	127,009	1936	137,944

38. The export of gur is mainly confined to Rewari and certain Rajputana States.

The following statement shows approximate figures of exports during the last seven years:—

Year.	Exports in maunds of 82⅔ lbs.	Year.	Exports in maunds of 82⅔ lbs.
1930	3,422	1934	3,436
1931	2,289	1935	2,574
1932	3,144		
1933	2,868	1936	3,389

39. Yes.

40. Indian factory sugar is probably replacing gur but there are no reliable statistics.

41. None, provincially.

42-43. There are none.

44. The khandsars of Delhi-Shahdara have been closed as a consequence of competition by sugar factories in the neighbouring districts.

45. The khandsari industry might have some future if modernised (*cf.* activated charcoal process). But broadly speaking Delhi can use all the cane produced in any case.

46. None.

47 & 48. The sugar excise duty of 1936 and the additional duty imposed in 1937 do not seem to have affected the growers very seriously. It is not easy to express an opinion about manufacturers, dealers and consumers.

49. There is no production of sugar or its bye-products locally. The protective duties do not appear to have influenced any industry in Delhi.

50. Statistics for acreage are taken from the Revenue Records. Those for prices are ascertained by local enquiry. Figures for production of gur, etc., are necessarily approximate. The accuracy of the acreage figures and figures for prices is however high.

51. No.

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(2) *Letter dated the 29th June, 1937, from the Chief Commissioner, Delhi.*

With reference to your letter No. 303, dated the 18th June, 1937, I have the honour to inform you that there is no distillery in this province, neither are there any firms manufacturing rectified or denatured spirit.

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(3) *Letter dated the 9th July, 1937, from the Chief Commissioner, Delhi.*

In reply to your letter No. 181, dated the 15th May, 1937, I have the honour to state that the average prevailing rate of interest at which cultivators can borrow money in Delhi, is Rs. 15 per cent. per annum.

(1) *Replies to Questionnaire for Local Governments and states funished by the Government of H. E. H. the Nizam of Hyderabad.*

1. *Sugarcane acreage.*

Districts.	1930-31. 1339-40 Fasli.	1931-32. 1340-41 Fasli.	1932-33. 1341-42 Fasli.	1933-34. 1342-43 Fasli.	1934-35. 1343-44 Fasli.	1935-36. 1344-45 Fasli.	1936-37. 1345-46 Fasli.	Percentage increase in acreage since 1930-31.
Hyderabad City	..	..	..	..	..	..	..	..
Baghat	..	..	..	..	..	..	52	..
Atraf-i-Balda	133	175	371	235	228	728	1,635	1,130
Warangal	3	3	29	36	96	83	205	6,733
Karimnagar	3	5	3	4	4	33	222	7,300
Adilabad	65	64	76	100	196	195	308	374
Medak	156	171	202	473	2,205	3,907	4,150	2,560
Nizamabad	1,082	905	1,396	2,153	5,058	10,074	10,449	866
Mahbubnagar	89	54	64	83	138	127	594	567
Nalgonda	..	..	3	4	71	84	61	..
TELINGANA	1,532	1,377	2,144	3,088	7,996	15,231	17,676	1,054
Aurangabad	1,380	1,608	1,947	2,222	2,798	2,670	2,884	109
Bir	902	914	3,170	5,015	4,729	4,972	1,300	44
Nanded	317	350	433	560	688	984	982	210
Parbhani	714	1,360	965	1,238	1,129	1,443	1,405	97
Gulbarga	476	372	521	538	1,607	1,333	1,334	176
Osmanabad	6,023	5,982	6,698	7,554	7,050	7,817	5,874	—2
Raichur	2,444	2,667	2,635	2,784	2,474	2,649	3,895	60
Bidar	20,690	20,763	21,699	23,481	22,109	21,406	21,601	4
MARATHWARA	32,946	34,016	38,068	43,392	42,584	43,274	39,275	19
HYDERABAD STATE	34,478	35,395	40,212	46,480	50,580	58,505	57,951	68
ALL INDIA	2,801,000	2,971,000	3,317,000	3,311,000	3,481,000	4,003,000	..	..

The local variety of sugarcane alone used to be grown, a thick soft cane of the Pundiya type. Improved varieties have been introduced during the last seven years. Coimbatore No. 213 is being grown extensively. Introduction of Coimbatore No. 290 and P.O.J. 2878 has been started, with a view to replace Coimbatore No. 213, as they have proved better. About 30 per cent. of the total sugarcane area in the Hyderabad State is now occupied by improved varieties, as will be found from the following table:—

Area (in acres) of sugarcane local and improved in Hyderabad State.

Year.	Total.	Local.	Improved varieties			
			Co. 213.	Co. 290.	P. O. J.	Total.
1930-31 .	34,478	34,427	51	...	...	51
1931-32 .	35,395	34,865	530	...	...	530
1932-33 .	40,212	38,296	1,916	...	...	1,916
1933-34 .	46,480	39,906	6,568	3	6	6,577
1934-35 .	50,580	36,835	13,702	7	36	13,745
1935-36 .	58,505	40,952	17,108	209	236	17,553

2. Sugarcane can be grown successfully in practically all parts of the Hyderabad State. Extremes of heat and cold are unknown. The annual rainfall ranges from about 28 inches in the south-west corner to about 50 inches in the north-east corner of the State, but sugarcane can be grown in all parts being invariably grown under irrigation. There are three main kinds of soil in the State, *viz.*, red sandy soil, black cotton-soil and laterite. Good crops are being raised on all the three kinds of soil, laterite being the most fertile. In Bidar District, mainly on laterite soil, is raised under wells in small valleys more than one-third of the total acreage of the Dominions. Irrigation is mainly from canals and tanks in Telingana and from wells in Marathwada. Practice in all parts of he State is planting in flat beds, which is giving place to the method of planting in trenches recommended by the Agricultural Department. Sugarcane is being grown according to the new method on considerable areas already.

3. SUGARCANE.

Rates of assessment for the districts chiefly growing cane.

Maximum in O. S. Rupees.

Serial No.	District.	Under Tank or canal.	Under Government wells.
1.	Medak	34 to 40	...
2.	Nizamabad . . .	34 to 40	...
3.	Mahbubnagar . . .	22½ to 30	...
4.	Nalgonda . . .	22½ to 31-8	...
5.	Bidar	30	4-8 to 6-12

The latest basis for determining the rate for sugarcane is double the consolidated wet-rate, but in certain districts 1½ times still obtains. Under wells (*e.g.*, in Bidar) the garden-rate has been adopted. There has been no marked change during the last seven years.

4. No systematic enquiry has been carried out into the cost of cultivation of sugarcane in different parts of the State. The following rough estimate

was made by a Deputy Director of Agriculture in 1931 with regard to improved varieties of cane:—

	Rs.
1. Preparatory tillage (ploughing, trenching, hoeing, etc.)	60
2. Manuring (20 cart-loads of F. Y. M. and 40 Mds. of castor cake)	60
3. Fencing	5
4. Sowing with cost of seed (40 Mds. of cane at As. 8 per maund)	30
5. Irrigation (labour only)	10
6. Weeding and hoeing	15
7. Earthing (twice)	30
8. Harvesting	33
9. Land assessment (revenue and water tax)	45
Total	288

All sugarcane in Hyderabad State is grown under irrigation. There has been no appreciable variation in the cost in the last seven years. The yield of cane per acre is estimated to be 750 maunds. The variety Co. 213 has given 19·5 per cent. sucrose in juice, on the average based on expriments at the Agricultural Farms during the last five years.

5. There is no experience for any estimate.

6. Only in the Nizamabad District due to development under the canal—

	Acres.
1930-31	1,082
1936-37	10,449

There has been a fall this year of over sixty per cent. owing to the fall in the price of gur from O. S. Rs. 6 to O. S. Rs. 4-6 per maund of 40 seers.

7. *Nil.*

8. Following is a list of other important cash crops in the State. Accurate figures of return to the cultivator are not available. A very rough estimate of net profit per acre by the Director of Agriculture is:—

Sl. No.	Crop.	Net profit per acre in rupee.	Sl. No.	Crop.	Net profit per acre in rupee.
		Rs.			Rs.
1.	Cotton	20	7.	Turmeric	70
2.	Linseed	10	8.	Onion	80
3.	Groundnut	20	9.	Garlic	60
4.	Castor	15	10.	Chillies	85
5.	Seasamum	10	11.	Tobacco	35
6.	Sufflower	5			

Of the above turmeric, onion, garlic, chillies and tobacco are grown as alternative crops to sugarcane.

9. It is not possible to give such an estimate. There is no separate staff or budget grant for sugarcane work. Experimental work on sugarcane is done at the Government farms along with other crops and the same staff which does extension work in connection with other crops carries out work in connection with sugarcane also.

10. *Nil.*

11. (i) Research work has up till now been confined to observations and plot experiments on Government farms and some chemical analysis. The cultivators used to grow a thick soft cane of the Pundiya type, which could not stand without artificial support, was liable to attack by wild animals and required a large number of irrigations for satisfactory growth. Varietal experiments were, therefore, started and are continued on some of the Government farms. Most of these varieties have been obtained from the Imperial Sugarcane Research Station, Coimbatore. As a result, the area under sugarcane has increased very much during the last seven years. Coimbatore No. 213 has spread in almost all districts. As a result of later experiments Coimbatore No. 290 and P.O.J. 2878, which have proved better in quality, are now being extended with a view to replace Co. 213. Experiments are in progress with a large number of other varieties. A planting-time experiment has been carried out with Co. 213, with the object of finding out how far planting and harvesting times could be extended economically. The results indicate that earlier planting is better. A manurial experiment is also in progress. The indications are that a combination of 2,000 lbs. of castor cake and 100 lbs. of ammonium sulphate per acre gives the highest outturn. Chemical analysis of sugarcane juice has been carried out every year in connection with the above experiments. Investigation with regard to the alleged saltishness in the gur produced in some districts has also been taken in hand. The results so far obtained show that the saltish taste is not due to any defect in the sugarcane itself, but it is due to alkalinity in the soil.

(ii) Cane sets are supplied free to cultivators and they are planted in their own lelds according to the improved methods which is explained to them—the improved method is the planting of cane in trenches adequate manuring with green manure, castor cake and ammonium sulphate as against planting of cane in flat beds and insufficient manuring with farm yard manure. To give effect to this Demonstration plots are established every year in selected villages and the following table gives details:—

Fasli year.	Varity.	Number of plots.	Total.
1930-31—1340 . . .	Co. 213	15	15
1931-32—1341 . . .	Co. 213	27	27
1932-33—1342 . . .	Co. 213	45	50
	P.O.J. 2878	5	
1933-34—1343 . . .	Co. 213	82	118
	290	15	
	P.O.J. 2878	21	
1934-35—1344 . . .	Co. 213	73	85
	290	4	
	P.O.J. 2878	8	
1935-36—1345 . . .	Co. 213	113	184
	290	43	
	P.O.J. 2878	28	

12. (i) It is proposed to extend the experimental work at the Government farm at Rudrur in the Nizamsagar Canal Area near where a sugar factory is being erected. The Imperial Council of Agricultural Research has recently sanctioned a lump sum grant of Rs. 5,000 as their contribution towards this work.

(ii) At the invitation of the Hyderabad Government, the Imperial Sugarcane Expert from Coimbatore visited Hyderabad and toured in the Nizamsagar Canal Area, to advise the Government with regard to further work in connection with the introduction of better varieties and the further extension of area under cane under Nizamsagar. His report on the development of sugarcane cultivation in the Nizamsagar Canal Area has been published as Bulletin No. 9 of the Hyderabad Agricultural Department. Beside this, the Agricultural Department has been frequently consulting the Imperial Sugarcane Expert and he has been giving the required advice readily. Most of the large number of improved sugarcane varieties, which are under experiment at the Government farms, have been obtained from the Coimbatore Research Station.

(iii) The Sugar Technologist to the Imperial Council of Agricultural Research visited Hyderabad, at the invitation of the Hyderabad Government, and toured in the Nizamsagar Canal Area to advise with regard to the establishment of a sugar factory. His report on the prospects of a sugar factory in the Nizamsagar Canal Area has been published as Bulletin No. 7 (New series) of the Department of Commerce and Industries. Seven students from Hyderabad are taking training at the Imperial Institute of Sugar Technology.

There are no separate grants for agricultural and technological research in respect of sugarcane.

13. The first sugar factory in the State is under erection now.

14. There is no sugar factory in this State at present, nor are there any regular open pan factories and khandsaris. It is estimated that about 10 per cent. of the produce is used for chewing purposes and for seeds the remaining being turned into gur.

15. The main difficulty of the cultivators is want of capital for production of better crops (for instance manuring) and want of a satisfactory market.

16. Forty Co-operative Credit Societies are working in the Nizamsagar Canal Area, of which the majority of members numbering about 500 are cane-growers. There is demand for more. A sale-and-supply society was organised about two years ago at Nizamabad in order to help cane-growers in the marketing of gur and the supply of seed and manure. It is not functioning properly, but the Registrar of Co-operative Societies hopes that, after the appointment of the Co-operative Sales Officer, it will be able to effect some good for cane-growers.

17-19. *Nil.*

20. As cultivators generally make gur near the field, there are no data for the cost of transportation of sugarcane by carts.

The cost of transportation of wheat and rice on hired bullock carts in different districts of the Dominions were calculated in connection with the survey of marketing of agricultural produce. The average cost of transportation of wheat to 10 different markets in the Mahrathwara and rice to about half-a-dozen markets in Telingana is given below (details are given in Table No. 1 below):—

Cost of transportation on hired bullock-carts.

	Mahrathwara wheat.		Telingana rice	
	Metalled road.	Cart track.	Metalled road.	Cart track.
B.G. pies per maund per mile .	1·55	2·65	1·35	1·62

It may be presumed that unless there is a very great demand for conveyance, the average cost of transportation of the cane will be the same as for other commodities.

TABLE No. I.

Cost of Transportation by cart in prices per maund (82 2/7 lbs.) per mile.

Wheat.

Places.	METALLED ROAD.		CART TRACK.	
	O. S.	B. G.	O. S.	B. G.
Hingoli	2·99	2·56	4·42	3·79
Jalna	1·52	1·30	2·23	1·91
Bidar	1·58	1·35	3·3	2·8
Udgir	1·58	1·35	3·15	2·7
Purli	2·04	1·75	3·06	2·62
Bid	2·01	1·72	4·13	3·54
Manwath	·79	0·68	1·89	1·62
Purna	2·00	1·71	3·2	2·74
Mominabad	1·8	1·54	2·89	2·48
Nanded	1·88	1·61	2·77	2·37
Average	1·81	1·55	3·09	2·65
	Rice.			
Warangal	1·21	1·04	1·33	1·16
Mahbubabad	1·55	1·33	1·8	1·54
Khammam	1·11	0·95	...	...
Mahbubnagar	2·22	1·9	...	...
Jangaon	...	...	1·4	1·2
Sangareddi	1·88	1·55	...	...
Siddipet	...	...	1·98	1·7
Mancherial	...	...	2·92	2·5
Average	1·58	1·35	1·89	1·62

21. The reply in 20 above covers this question.

22. A branch line from Jankampet to Bodhan has recently been constructed, mainly for the sugar factory, at a cost of B.G. Rs. 5·42 lakhs. The Company has guaranteed half a lakh annually of gross earnings. No special road system and no tramway system has yet been created.

23. A preliminary survey was made regarding the prospects of a sugar factory, in the Nizamsagar Area.

24. (1) Government has taken shares to the extent of half the capital of the Company floated in June, 1937, *i.e.*, 17½ lakhs and has made advances.

(2) No other sugar factory will be permitted to be established within the Nizamsagar Area without giving the company the first refusal.

(3) Unoccupied lands will be given on patta, and lands will be leased from pattedars, the good offices of Government being made available; and if necessary lands will be acquired under Land Acquisition Act.

(4) The factory will pay the same water-rates as the ordinary ryot.

25 & 26. *Nil.*

27. Prices are available for the capital only and for wholesale business.

TABLE No. II.

Monthly average wholesale prices of Java Sugar per maund of 40 seers at Secunderabad and Hyderabad.

Months.	1931.		1932.		1933.		1934.	
	O. S.	B. G.	O. S.	B. G.	O. S.	B. G.	O. S.	B. G.
January	12 2 3	10 5 6	15 0 10	13 1 10	14 6 9	12 9 0	13 8 1	11 12 1
February	12 11 3	10 12 4	14 15 2	13 0 4	14 7 10	12 7 9	13 9 2	11 13 1
March	12 8 10	10 10 8	14 11 1	12 12 2	14 7 0	12 7 8	13 4 3	11 8 9
April	12 8 0	10 9 2	14 2 1	12 2 11	14 4 7	12 5 2	13 5 1	11 9 5
May	12 15 4	10 14 5	14 7 0	12 4 8	14 4 7	12 5 6	13 10 9	11 14 5
June	13 2 8	11 1 1	14 6 9	12 4 11	14 6 2	12 7 7	13 9 2	11 12 3
July	13 2 8	11 1 9	14 7 0	12 6 2	14 5 1	12 7 0	13 10 0	11 12 0
August	13 4 3	11 3 7	14 7 0	12 6 5	14 2 8	12 4 4	13 10 0	11 12 3
September	13 3 0	11 1 4	14 7 7	12 7 8	14 3 8	12 5 6	13 9 0	11 11 2
October	14 11 1	12 8 11	14 7 0	12 7 9	14 2 2	12 4 8	13 8 0	11 10 1
November	14 14 5	12 13 8	14 11 8	12 11 10	14 2 2	12 4 6	..	..
December	14 15 3	13 0 1	14 10 10	12 12 5	13 4 4	11 8 6	13 4 0	11 6 4
Annual average	13 5 7	11 5 11	14 9 2	12 9 3	14 3 9	12 5 1	13 8 11	11 11 3

TABLE No. III.

Monthly average wholesale prices of sugar (Indian white crystal) at Hyderabad per maund of 40 seers.

Months.	1934.		1935.		1936.		1937.	
	O. S.	B. G.	O. S.	B. G.	O. S.	B. G.	O. S.	B. G.
January	12 15 4	11 4 6	13 6 0	11 10 5	12 9 0	10 13 6	11 10 0	10 0 8
February	13 0 2	11 5 3	13 8 6	11 12 3	12 11 6	10 15 3	10 8 3	9 1 2
March	13 0 11	11 5 10	13 3 0	11 6 11	12 5 6	10 10 4	10 6 6	8 15 10
April	13 1 9	11 6 6	13 0 0	11 3 7	12 2 6	10 7 10	10 7 6	9 0 8
May	13 3 5	11 8 0	13 2 0	11 5 5	12 2 9	10 7 5	10 2 0	8 11 7
June	13 2 7	11 6 6	13 2 0	11 4 4	12 5 3	10 9 1	9 14 0	8 7 7
July	..	..	13 2 0	11 3 7	11 15 0	10 3 11	..	..
August	13 8 0	11 10 6	13 1 6	11 3 9	11 14 3	10 3 4	..	..
September	13 5 0	11 7 9	13 3 0	11 5 0	11 9 6	9 15 4	..	..
October	13 4 0	11 6 8	14 7 6	12 6 9	11 11 9	10 1 8	..	..
November	13 3 6	11 6 7	13 10 6	11 12 2	11 9 9	10 0 5	..	..
December	13 1 0	11 5 5	12 10 6	10 14 10	11 7 6	9 14 7	..	..
Annual Average	13 4 4	11 6 8	13 4 9	11 7 5	12 0 8	10 5 11	10 8 1	9 10 11

TABLE No. IV.

Monthly average wholesale prices of sugar (Indian white) at Hyderabad per maund of 40 seers.

Months.	1934.		1935.		1936.		1937.	
	O. S.	B. G.	O. S.	B. G.	O. S.	B. G.	O. S.	B. G.
January	..	..	12 12 0	11 1 8	12 6 0	10 11 1	11 0 0	9 8 1
February	..	..	13 8 0	11 11 10	12 9 6	10 13 6	10 8 0	9 0 11
March	..	..	13 3 0	11 6 11	12 4 0	10 9 1	..	..
April	..	..	12 12 0	11 0 2	11 15 6	10 5 3	..	..
May	..	..	13 0 0	11 3 8	11 14 6	10 3 9	9 12 0	8 6 5
June	..	..	13 0 0	11 2 8	11 13 9	10 2 7	9 7 0	8 1 7
July	..	..	13 0 0	11 1 10	11 11 0	10 0 6	..	..
August	..	..	12 15 0	11 1 7	11 8 0	9 13 11	..	..
September	..	..	13 0 0	11 2 5	11 5 2	9 11 7	..	..
October	..	..	14 4 0	12 3 8	11 5 9	9 12 6	..	..
November	..	..	13 8 0	11 10 0	11 3 6	9 11 0	..	..
December	..	..	12 8 0	10 12 8	10 15 6	9 7 8	..	..
Annual Average	..	..	13 1 10	11 4 11	11 12 0	10 1 10	10 2 9	8 12 3

28. No data.

29. Annual average import of sugar during the last ten years from 1336-1345 F. (October, 1926-27 to 1935-36) was 5,13,290 maunds. Re-export is negligible. The normal consumption of sugar for the 1931 population is 2·92 lbs. per head.

The average per capita (based on estimated population) is given below for the last 10 years:—

Year.	Per capita consumtion of sugar in lbs.
1336 F. (October, 1926-27)	2·44
1337 F. (October, 1927-28)	2·80
1338 F. (October, 1928-29)	3·65
1339 F. (October, 1929-30)	3·39
1340 F. (October, 1930-31)	2·98
1341 F. (October, 1931-32)	2·69
1342 F. (October, 1932-33)	2·74
1343 F. (October, 1933-34)	2·67
1344 F. (October, 1934-35)	2·76
1345 F. (October, 1935-36)	2·94

The average per capita consumption reached its maximum in 1928-29. It shows a gradual increase from 1932-33. The average consumption of 2·94 lbs. in 1935-36 is still much lower than the maximum. The following table shows the percentage rise and fall in per capita consumption and its price as compared with the previous year:—

	1931.	1932.	1933.	1934.	1935.	1936.
Per cent. rise or fall in price	. . . .	+9·17	−2·32	−4·76	+0·20	−9·44
Per cent. rise or fall in consumption	. . .	−9·73	+1·86	−2·55	+3·37	+6·52

On the whole it seems that unless there are special factors such as a sudden change in the taste of consumers or the establishment of sugar-using industries, the demand for sugar during the next few years may not increase much above the maximum reached in 1928-29. The relation between the movements of per capita consumption of sugar and its price indicates that the demand for sugar is not very elastic.

It appears from certain figures of halvai shops that on an average the consumption of sugar is higher in Mahratwara, which is also a gur producing tract than in Telingana. The extension of sugarcane cultivation in Telingana may increase the consumption of gur and ultimately that of sugar in that tract.

30. In the city of Hyderabad there are only one or two considerable firms which manufacture jams, biscuits, ices and other sweets on modern lines. There are also sweet manufacturers (generally from Madras) who make special kinds of sweets in their homes and hawk them round. Halvais are distributed all over the Dominions. White factory sugar is used for almost all the sweets.

31. No.

32. There is scope for organised production of the special kinds of sweets referred to in question 30 above. If these sweets are prepared in a standard form and are neatly packed, it is expected that they will command a good market. Preparation of sweets from raw mangoes ("murabba") and other fruits seems to be another industry which stands a good chance of success.

Fruit preservation and canning do not seem to have any prospects at present, as Hyderabad is not a fruit producing area. Custard apple, which grows in large quantity in the State, may be the only fruit which can be preserved and canned but on account of lack of research in that direction it is not a practical proposition at the present moment.

33. Dr. Mann estimated the total production in 1926-27 at 103,000 tons. A statement for the years 1340 to 1346 Fasli (1931-1937) is given below. One-tenth may be deducted for sets and chewing.

TABLE No. V.

Sugarcane outturn.

(Gur in tons.)

Districts.	1930-31.	1931-32.	1932-33.	1933-34.	1934-35.	1935-36.	1936-37.
	1340 F.	1341 F.	1342 F.	1343 F.	1344 F.	1345 F.	1346 F.
Hyderabad City	..	..	..	..	..	..	..
Baghat	..	..	..	..	..	..	117
Atraf-e-Balda	134	234	497	323	310	1,214	4,022
Warangal	3	3	29	36	128	78	336
Karimnagar	5	5	5	6	6	48	411
Adilabad	87	52	86	103	238	222	468
Medak	313	344	304	832	4,509	6,984	8,460
Nizamabad	2,173	1,818	2,805	3,424	8,042	14,716	24,463
Mahbubnagar	89	54	64	97	164	155	1,112
Nalgonda	..	..	2	4	86	110	101
TELINGANA	2,805	2,510	3,792	4,825	13,483	23,527	39,490
Aurangbad	2,079	2,423	3,178	2,272	4,024	4,052	5,216
Bir	1,132	1,377	4,776	7,243	7,084	7,513	2,224
Nander	517	571	761	896	1,170	1,375	1,932
Parbhani	986	2,049	1,454	2,126	1,832	2,221	2,773
Gulbarga	478	420	589	703	2,159	1,558	1,440
Osmanabad	6,050	8,262	6,728	6,930	9,663	9,421	7,807
Raichur	3,068	2,344	3,639	2,343	2,831	3,922	5,660
Bidar	32,328	44,608	50,857	44,352	50,883	45,607	56,961
MARATHWARA	46,638	62,054	71,982	66,865	79,646	75,669	84,013
Hyderabad State	49,443	64,564	75,774	71,690	93,129	99,196	1,23,503
Yield per acre in lbs.	3,228	4,160	4,256	3,506	4,085	3,759	4,774
All India	32,28,000	39,75,000	46,76,000	48,96,000	51,40,000	59,03,000	..

34. Gur/jaggery is not manufactured from any other material excepting sugarcane, in the Hyderabad State.

35. Average prices in Secunderabad and in the important gur producing districts are given in the tables below:—

TABLE No. VI.

Monthly average prices of Gur (Desi) per maund of 40 seers at Secunderabad.

Months.	1933.		1934.		1935.		1936.		1937.	
	O. S.	B. G.	O. S.	B. G.	O. S.	B. G.	O. S.	B. G.	O. S.	B. G.
January	5 13 1	5 1 1	..	..	5 3 3	4 8 6	4 4 7	3 11 3	2 6 5	2 1 2
February	5 8 2	4 11 11	..	..	5 14 8	5 2 4	3 15 8	3 6 10	2 3 11	1 15 0
March	5 1 0	4 6 7	..	..	5 14 4	5 1 9	3 10 9	3 2 8	2 6 5	2 3 11
April	..	..	4 12 9	4 2 9	6 3 7	5 6 0	3 7 6	2 15 11	2 13 9	2 7 6
May	..	..	5 3 3	4 8 6	6 3 7	5 6 1	3 8 4	3 0 6	2 13 9	2 7 5
June	..	..	5 13 1	5 0 8	6 13 5	5 14 0	2 13 9	2 7 3	3 1 0	2 10 0
July	4 12 4	4 2 4	5 1 5	4 14 10	6 10 2	5 10 10	2 10 6	2 4 6	3 2 7	2 11 4
August	..	..	5 11 5	4 14 11	7 8 10	6 8 10	3 7 6	2 15 8	..	..
September	..	..	6 5 3	5 7 4	7 2 4	6 2 1	3 2 7	2 11 6	..	..
October	..	..	6 2 0	5 4 5	6 11 9	5 12 6	3 1 0	2 10 3	..	..
November	..	..	6 2 0	5 4 7	6 11 9	5 12 9	3 1 0	2 10 4	..	..
December	5 0 10	4 6 3	5 4 11	4 9 9	6 3 7	5 6 0	2 9 8	2 4 0	..	..
Annual Average	5 4 0	4 8 10	5 10 11	4 14 8	6 7 1	5 9 0	3 5 1	2 13 9	2 11 5	2 5 10

TABLE No. VII.

Monthly average prices of Gur (Ankapalli—Madras Presidency) per maund of 40 seers at Secunderabad.

Months.	1931		1932		1933		1934		1935		1936	
	O. S.	B. G.	O. S.	B. G.	O. S.	B. G.	O. S.	B. G.	O. S.	B. G.	O. S.	B. G.
January .	7 5 7	6 4 2	6 11 9	5 13 11	6 1 11	5 5 3	..	..	..	..	5 14 8	5 1 9
February .	7 9 8	6 7 2	6 5 3	5 8 2	5 14 8	5 1 7	..	..	..	..	5 9 9	4 13 3
March .	7 3 11	6 2 6	6 10 2	5 12 3	5 4 11	4 9 5	..	..	6 15 10	6 0 11	5 8 2	4 6 5
April .	6 11 9	5 11 1	6 15 0	5 15 2	5 0 0	4 5 0	5 8 2	4 7 1	7 8 10	6 8 4	6 2 0	5 4 7
May . .	6 7 8	5 7 2	7 5 7	6 4 1	5 8 2	4 12 2	6 2 0	5 5 4	7 12 1	6 11 2	6 2 0	5 4 4
June . .	6 6 10	5 6 7	7 12 1	6 9 11	5 10 7	4 14 7	7 10 5	6 10 1	8 2 7	7 0 2	5 8 2	4 11 7
July . .	6 5 3	5 5 5	7 15 4	6 13 5	5 13 1	5 0 10	7 2 4	6 3 2	7 12 1	6 10 1	5 11 5	4 14 8
August .	7 3 11	6 2 0	7 14 6	6 12 8	5 14 8	5 2 0	7 5 7	6 5 6	8 2 7	7 0 0	5 15 6	5 2 0
September .	7 5 7	6 2 10	8 1 0	6 15 2	6 1 2	5 4 3	8 9 2	7 6 4	7 10 5	6 9 0	6 2 0	5 4 3
October .	6 11 9	5 11 7	8 2 8	7 1 0	6 8 6	4 12 11	8 2 8	7 0 7	7 3 11	6 3 6	5 11 5	4 14 9
November .	6 10 2	5 11 7	7 13 9	6 12 9	6 5 3	5 7 11	8 1 0	6 15 0	7 5 7	6 5 3	5 9 9	4 13 7
December .	6 15 0	6 0 6	8 2 8	7 1 9	..	..	..	..	6 11 9	5 13 1	5 8 2	4 12 3
Annual Average .	6 14 9	5 14 1	7 8 6	6 7 10	5 13 3	4 15 8	7 5 2	6 4 8	7 8 7	6 7 9	5 12 7	4 15 3

TABLE No. VIII

Average prices per maund of various kinds of Gur in important Gur producing districts during the last seven years.

Year.	NIZAMABAD.			BIDAR.		OSMANABAD.		RAICHUR.		
	I Grade.	II Grade.	III Grade.	I Grade.	II Grade.	I Grade.	II Grade.	I Grade.	II Grade.	III Grade.
	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.
1931	6 7 0	4 11 0	4 4 0	6 7 0	5 11 0	11 3 0	7 15 0	4 2 0	3 12 0	3 7 0
1932	5 13 0	5 3 0	5 0 0	6 5 0	5 10 0	8 13 0	7 0 0	4 7 0	4 2 0	3 12 0
1933	5 11 0	4 14 0	4 3 0	4 11 0	3 10 0	7 0 0	5 13 0	4 7 0	4 2 0	3 12 0
1934	4 4 0	3 13 0	3 7 0	5 0 0	3 13 0	8 13 0	5 5 0	6 8 0	6 3 0	5 13 0
1935	6 15 0	6 11 0	6 7 0	5 10 0	4 9 0	9 11 0	7 0 0	4 7 0	4 2 0	3 12 0
1936	4 10 0	4 7 0	3 3 0	3 9 0	2 14 0	7 0 0	3 15 0	3 12 0	3 7 0	3 1 0
1937	2 15 0	2 4 0	1 11 0	3 4 0	2 8 0	5 5 0	2 15 0	3 1 0	2 9 0	2 7 0

The rise in prices in 1934-35 was the result of earthquake in Bihar followed by frost in North India and Gujerat. There is no evidence to show that the fall in the prices of gur in the State is due to competition from Indian factory sugar. A note by the Marketing Officer is below.

Note by the Marketing Officer.

The monthly average prices of Ankapalli and "deshi" gur are given in Tables Nos. VI and VII above. The annual average price of these two qualities of gur and that of "Bidri" gur are as follows:—

Average price of "gur" at Hyderabad.

	Ankapalli.	Deshi.	Bidri.
	Rs. A. P.	Rs. A. P.	Rs. A. P.
1931—O. S. . .	6 14 9	...	6 13 0
B. G. . .	5 14 1	...	5 12 8
1932—O. S. . .	7 8 8	...	6 9 1
B. G. . .	6 7 10	...	5 10 8
1933—O. S. . .	5 13 3	5 4 0	4 14 11
B. G. . .	4 15 8	4 8 10	4 4 5
1934—O. S. . .	7 5 2	5 10 11	5 13 3
B. G. . .	6 4 8	4 14 8	5 0 10
1935—O. S. . .	7 8 7	6 7 1	6 1 2
B. G. . .	6 7 9	5 9 0	5 4 3
1936—O. S. . .	5 12 7	3 5 1	3 8 3
B. G. . .	4 15 3	2 13 9	3 0 5

It may be noted that whenever there is a rise in the price of gur "deshi" has risen less, and whenever there is a fall, it has fallen more, than Ankapalli. The price of Ankapalli, in 1935, was 29 per cent. higher than in 1933, but the "deshi" shows a rise of only 22 per cent. in the same period. In 1936, Ankapalli fell by 23 per cent. and "deshi" by 48 per cent. as compared with 1935.

The margin between the two qualities of gur was as follows:—

1933.	1934.	1935.	1936.
Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.
0 9 3	1 10 3	1 1 6	2 7 6

The increase in the margin from annas 9 in 1933 to about Rs. 2-8 in 1936 is attributed mainly to the lower quality of Nizamabad "gur".

(i) The table below shows the area, outturn and available quantity of gur and the rise and fall in its price. The area under sugarcane shows a continuous upward trend since 1931-32 and only a slight decrease in 1936-37. Though the price of gur fell heavily in 1933, it regained the loss in the two following years, and the area under cane increased without any check. The fall in the price of gur in 1935-36 had an immediate effect on the area under sugarcane.

TABLE No. IX.

Years.		Area in acres (of sugar-cane).	+ —	Outturn of Gur in Mds.	+ —	Available quantity of Gur in Mds.	+ —	Price of Gur in O. S.	+ —	Import of sugar in Mds.	+ —	Price of Sugar in Mds.	+ —
Fasli.	A. D.												
1340 .	1930-1931	34,478	..	1,211,360	..	1,845,545	..	4 14 9	..	523,423	..	13 5 7	..
1341 .	1931-1932	35,393	+ 0·02	1,581,827	+30·58	2,229,434	+20·80	7 8 8	+ 8·95	477,903	— 8·70	14 9 2	+ 9·17
1342 .	1932-1933	40,212	+13·6	1,856,472	+17·36	2,465,565	+10·59	5 13 3	—22·72	494,922	+ 3·56	14 3 9	— 2·32
1343 .	1933-1934	46,480	+15·50	1,756,404	— 5·39	2,170,815	—11·95	7 5 2	+25·65	487,026	— 1·59	13 8 11	— 4·76
												*13 4 4	
1344 .	1934-1935	50,580	+ 8·80	2,281,656	+29·91	2,536,338	+16·84	7 8 7	+ 2·92	511,176	+ 4·96	*13 4 9	+ 0·20
1345 .	1935-1936	58,505	+13·06	2,430,289	+ 6·51	2,709,181	+ 6·82	5 12 7	—23·22	552,819	8·15	*12 0 8	— 9·44
1346 .	1936-1937	57,951	..	3,025,829	+24·50	..	..	4 15 4	..	..	..	*10 8 1	..

* Indian Crystal (Sugar).

(ii) The outturn of gur shows fluctuations from year to year and it is reflected in the available quantity of gur given in column 6 of the Table IX. (Available quantity, *i.e.*, production *plus* net import.)

If the movements in the prices of gur were examined by themselves without reference to other relevant factors, *e.g.*, price of sugar or general index number of prices, it will be seen that the prices, apparently, respond to the available supply in three years, *i.e.*, 1932-33, 1933-34 and 1935-36.

In 1932-33 and 1935-36 an increase in the supply is accompanied by a fall in prices and in 1933-34 a decrease in supply shows the reverse movement in prices. But in 1931-32 and 1934-35, the increase in supply is accompanied by a rise in price.

In two years out of four in which the supply increased, the prices show an upward trend instead of the reverse. The remarkable factor is that these two years are those in which the available supply increased the most, *i.e.*, by 20 per cent. and 16 per cent. as compared with the previous year and production by 30 per cent. and 29 per cent. It may also be noted that in the other two years in which the increase in supply was accompanied by a fall in the price, the rate of increase in the supply was less, *i.e.*, 10 per cent. in 1932-33 and 6 per cent. in 1935-36 and that of production 17 per cent. and 6 per cent. respectively.

There is a curious relation in the increase in supply and the prices. When the rate of increase in supply is high, the prices show an upward trend and when the rate of increase slackens, the prices fall very precipitately,

Rate of increase in supply and prices as compared with previous years are given below: —

Year.	Rate of increase in supply.	Price.
	Per cent.	Per cent.
1931-32	+20	+8
1932-33	+10	−22
1934-35	+16	+2
1935-36	+6	−23

From the figures quoted above it may, reasonably, be argued that when the supply increased very heavily as in 1931-32 and 1934-35 the whole of the supply might not have been dumped on the market. A large quantity of gur might have been carried in stock to the following year in the expectation of higher prices. Though the rate of increase in the supply of gur slackened in the other two years, *i.e.*, 1932-33 and 1935-36, the actual supply, augmented by the stock from the previous year, must have been very large. This increased supply, dumped on the market, resulted in a precipitate fall in prices. Two years accumulated supply seems to precipitate a heavy fall in prices. This statement cannot, however, be tested by facts as the figures for stock are not available.

The foregoing may provide an explanation for the precipitancy of the fall in price in alternate years in the period under discussion, but in absence of a reliable data in regard to stock, no satisfactory explanation can be given for the fact that in two out of five years an increase in the supply of gur was accompanied by a rise in its price.

The movements in the relevant factors, *e.g.*, the supply of gur and its price, the price of sugar and the general index number of prices are such that it is very difficult to establish any precise relation between any two factors.

The Tariff Board in their report on sugar in 1931 had come to the conclusion "that the consumption of gur is fairly constant and its price depends in the main on production and consequently on the area under cane and on climatic conditions during the year" (page 88).

For long periods, this relation may hold good, but for the year to year movement of production and prices, the production does not seem to be constantly or directly related to the price. It has been shown above that the highest increases in production are accompanied not by fall but by a rise in price. The carry-over of gur from year to year may count a good deal in movement of its prices.

(iii) Please see answer to question 39.

36. TABLE No. X.

Statement showing the area and outturn, etc., of gur and import of sugar.

Years.	Gur.			Sugar.	
	Area in	Outturn in	Import in	Export in	Import in
	acres.	Tons.	Mds.	Mds.	Mds.
1340—1930-31 . .	34,478	40,443	637,326	3,141	523,425
1341—1931-32 . .	35,393	55,564	662,206	4,599	477,903
1342—1932-33 . .	40,212	66,774	618,057	8,964	494,922
1343—1933-34 . .	46,480	62,690	427,668	13,257	487,026
1344—1934-35 . .	50,580	83,129	290,436	35,754	511,176
1345—1935-36 .	58,505	89,195	306,606	27,714	552,819

The net available quantity and per capita consumption of gur is given below :—

Year.	Net available.	Per capita consumption Lbs.
	Mds.	
1340 F. (October, 1930-31) . .	1,845,545	10·52
1341 F. (October, 1931-32) . .	2,229,434	12·54
1342 F. (October, 1932-33) . .	2,465,565	13·68
1343 F. (October, 1933-34) . .	2,170,815	11·89
1344 F. (October, 1934-35) . .	2,536,338	13·71
1345 F. (October, 1935-36) . .	2,709,181	14·46

The normal consumption for the six years is 12·53 lbs. per head. If the year 1930-31 is excluded when the consumption is very low, the average is 13·06 lbs.

The average consumption given above does not take into account the carry-over of gur from year to year. For long period trends the carry-over may reasonably be assumed to be a constant factor but it cannot be ignored in calculating the annual consumption. Lack of data about stock makes the variations in consumption unreal and no definite reasons can be assigned for them. It may however be safely concluded that with the increase in production, the average consumption is also going up.

37 & 38. A statement showing the quantity of gur/jaggery and sugar imported into and exported from this State by rail during the last three years is given below. Further a statement by the Customs Department is given for the last seven years which includes both rail and road.

Gur/jaggery is imported into the State from Ankapalli (Madras Presidency), Baramati (Poona), samalkot (East Godavari), Belapur and Kopargaon (Ahmednagar District), Shahjahanpur and Bareilly (U. P.) and Tolhar (Sind). The gur produced in these Dominions is not exported in any appreciable quantity to British India.

TABLE No. XI.

Imports into Hyderabad State (in maunds).

Serial No.	Imported from	1933-34.		1934-35.		1935-36.	
		Refined and unrefined.	Gur, rab, molasses, jaggery, etc.	Refined and unrefined.	Gur, rab, molasses, jaggery, etc.	Refined and unrefined.	Gur, rab, molasses, jaggery, etc.
1	Assam . .	..	..	..	..	..	..
2	Bengal . .	..	..	..	..	..	..
3	Bihar and Orissa	285	4,243	2,443	2,383	18	..
4	U. P. of Agra and Oudh.	33,591	4,786	16,072	6,327	13,009	2,902
5	Punjab . .	899	1,765	..	1	1	..
6	Sind and British Baluchistan.	..	..	..	..	..	..
7	C. P. and Berar	903	87	832	184	557	173
8	Bombay . .	64,273	125,898	81,407	61,990	123,178	61,980
9	Madras . .	96,370	232,734	97,349	187,400	98,478	150,513
10	Rajputana .	..	..	..	..	..	..
11	Central India .	18	..	378	..	..	..
12	Mysore . .	14,111	10,429	20,266	7,376	64,836	8,380
13	Kashmir . .	..	..	..	..	..	..
14	Calcutta . .	18	..	..	..	..	..
15	Bombay Port .	171,851	138	173,180	17	146,352	3
16	Karachi . .	8	..	..	..	..	..
17	Madras Ports .	50,573	10,139	50,799	379	43,857	431
	Total .	432,900	390,218	442,721	266,057	490,286	224,382

TABLE No. XII.

Exports from Hyderabad State (in maunds).

Serial No.	Exported to	April 1933 to March 1934.		1934-35.		1935-36.	
		Sugar, refined and unrefined.	Gur, rab, molasses, jaggery, etc.	Sugar, refined and unrefined.	Gur, rab, molasses, jaggery, etc.	Sugar, refined and unrefined.	Gur, rab, molasses, jaggery, etc.
1	Assam . .	..	..	..	..	..	..
2	Bengal . .	..	..	..	..	..	..
3	Bihar and Orissa	..	..	..	..	2	..
4	U. P. of Agra and Oudh	1	..	..	..	..	..
5	Punjab . .	57	..	..	..	59	..
6	Sind and British Baluchistan.	..	..	..	..	..	..
7	C. P. and Berar	1	61	..	10,242	2	1,074
8	Bombay . .	47	1,434	16	9,520	10	3,639
9	Madras . .	24	284	199	559	1,446	1,231
10	Rajputana .	..	..	..	..	..	..
11	Central India .	..	..	..	654	..	..
12	Mysore . .	..	2	..	..	22	4
13	Kashmir . .	..	..	..	..	..	..
14	Calcutta . .	..	..	..	..	..	..
15	Bombay Port .	..	60	..	429	..	2,013
16	Karachi . .	..	..	..	..	..	..
17	Madras Port .	..	2	..	..	..	54
	Total .	136	1,843	215	21,404	1,541	8,015

TABLE No. XIII.

Statement of Import and Export, Quantity and Value of Sugar and Gur for Hyderabad State from 1339 F. to 1345 F. (1929-30 to 1935-36).

Serial No.	Articles.	Years.	IMPORTS.		EXPORTS.	
			Value in O. S. Rs.	Quantity in maunds.	Value in O. S. Rs.	Quantity in maunds.
1	Sugar . .	1929-30 1339 F.	6,985,000	..	..	..
	Gur . .	„	4,108,000	..	45,000	..
2	Sugar . .	1930-31 1340 F.	5,988,758	523,425	319	8
	Gur . .	„	4,240,846	637,326	19,576	1,047
3	Sugar . .	1931-32 1341 F.	5,517,991	477,903	377	32
	Gur . .	„	4,348,038	652,206	30,668	4,598
4	Sugar . .	1932-33 1342 F.	5,591,436	494,924	99	9
	Gur . .	„	4,120,384	618,057	57,941	..
5	Sugar . .	1933-34 1343 F.	5,756,731	367,026	..	..
	Gur . .	„	2,851,151	427,670	88,316	13,257
6	Sugar . .	1934-35 1344 F.	5,979,000	511,176	..	..
	Gur . .	„	1,765,360	290,436	238,316	35,754
7	Sugar . .	1935-36 1345 F.	6,439,082	552,818	787	74
	Gur . .	„	1,533,082	306,607	167,813	27,715

Source.—Trade Review, Hyderabad, received from Customs Office.

39. The following table shows the percentage rise or fall in the prices of sugar and of gur as compared with the previous year:—

	1931.	1932.	1933.	1934.	1935.	1936.
Sugar	+9·17	−1·32	−4·76	+0·20	−9·44	
Gur	+8·95	−22·72	+25·65	+2·92	−23·22	

Except in 1934, the movements in the price of gur are in the same direction as those of sugar. But the sudden fall in the supply of gur in 1934 seems to have had an effect on its price which went up in spite of a fall in the price of sugar. Moreover the precipitate fall in the price of gur in the years 1933 and 1935 are out of all proportion to the fall in the price of sugar, and may be due to accumulated supply of gur from the previous year.

In respect of quantity, the available supply of sugar is only 23 per cent. of gur. Per capita consumption of gur is four times that of sugar and its prices is about half of the price of sugar. The class of people which consumes gur either by habit or by economic necessity is very large. It may, therefore, be presumed that there is no "substantial correspondence between the variations in the prices of sugar and of gur".

40. At present the evidence does not show replacement.

41. No research work towards improvement in the methods of manufacture of gur/jaggery has yet been undertaken. Some 8,000 odd improved bullock-power iron sugarcane crushers are in use in large numbers in place of the local wooden crushers, and the improved McGlashan's furnace has also been introduced. A total of 108 power crushing plants have also been introduced.

42-44. *Nil.*

45. There is no experience in Hyderabad.

46. *Nil.*

47 & 48. Duty not yet collected. No data for effect of British Indian duty.

49. Nothing has come to the knowledge of this Government.

50. The Village Accountant reports to the Tehsildar the survey number of the area under sugarcane. The Girdawar (Revenue Inspector) and the Tehsildar verify the report by inspection. The area, therefore, is regarded as accurate; but accuracy cannot be claimed for the figures of production. It is only an estimate based on experience of the primary reporter.

The wholesale price of gur is ascertained from the wholesale dealers in the markets every fortnight and registered and there is no reason to doubt the accuracy of the figures supplied.

51. *Nil.*

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(2) *Replies to Questionnaire for Local Governments, furnished by the H. H. the Maharaja of Mysore.*

	Year.	Acres.
1.	1929-30	33,186
	1930-31	37,734
	1931-32	36,076
	1932-33	42,093
	1933-34	42,282
	1934-35	45,525
	1935-36	50,554

The improved varieties are H. M. 320, H. M. 544 and H. M. 602.

H. M. 320 about 30,000 acres.
,, 544 ,, 6,000 ,,
,, 602 ,, 1,000 ,,

2. Sugarcane area of the State might be classified into three regions:—

(*a*) The Maidan tract comprising Bangalore, Kolar and Tumkur and parts of Mysore, Simoga and Chitaldrug Districts with its large number of tanks and irrigation wells under tanks. With a rain fall of about 30 inches cane is irrigated by tank water supplemented in summer by well irrigation in the early stages of the cane where necessary.

(*b*) The Irwin Canal Tract with its system of extensive river channel and Block System of Irrigation and rotation of crops—cane, paddy, dry. Rainfall in the tract is about 30 inches.

(*c*) The Malnad area with over 100 inches of rainfall. The sugarcane crop is an irrigated one throughout the state.

3. The irrigation rates vary from Rs. 4 to Rs. 10 per acre on an average. The average of Rs. 10 per acre in the Mandya area is obtained from Rs. 15 for sugarcane, Rs. 10 for paddy and Rs. 5 for irrigated dry crop. The rates are determined with reference to the nature of water supply. They are higher for assured supply from river channels. The water rates are sometimes included in wet assessment and sometimes separate.

4. The following estimates of cost of cultivation have been arrived at by the Industries and Commerce Department after making local enquiries in the several places mentioned below:—

Name of place.	Kind of irrigation.	Total cost per acre.
		Rs.
1 Hassan	Tank and Canal.	218
2 Channarayapatna	,,	174
3 Kunigal	Tank	264
4 Manchenahalli. (Kolar District.)	Tank and well	257
5 Tiptur	Tank	127
6 Simoga	Canal	233
7 Sagar	Mainly rain-fed	
8 Anandapur	Tank	
9 Shiralkoppa	Mainly rain-fed	
10 Bhadravathi	Canal	253

N.B.—These figures are not very accurate and include the cost of making jaggery.

Details for the total cost are given in the appended statement.

The enclosed statements furnish the cost of cultivation of sugarcane in the Mandya area by an average ryot, the cost on the Company's Farms as also data as to cost collected by the Department of Agriculture at Bannur and Sabbanahalli. Estimates of what it will cost to raise and cultivate an acre of cane in the Shimoga area as furnished by Mr. N. Rama Rao, Retired Director of Industries and Commerce in Mysore and as to what it will cost in the neighbourhood of Bangalore as furnished by Mr. Urugahalli Krishna Iyengar are also shown in separate statements.

There has been no variation in the cost of cultivation during the last 7 years. The yield per acre varies from 15 to 30 tons. The average yield may be taken at 20 tons per acre. The sucrose content is on an average 13 to 17 per cent.

5. The minimum price has been fixed by Government at Rs. 10 per ton in the Irwin Canal area for the present.

6. There has been a marked increase in the area under sugarcane in the Irwin Canal Tract due to the abundant supply of water and the Establishment of a Sugar Factory at Mandya. In the last 7 years the area under sugarcane in this tract increased by about 12,000 acres. In other areas, sugarcane cultivation is not very profitable on account of low prices of jaggery.

7. No.

8. The other cash crops are groundnut, tobacco, cotton, chillies cardamons, coffee, areca and castor. These are mostly grown in unirrigated areas and as such, cannot be said to form an alternative to sugarcane.

9. Information is being collected and will be furnished later.

10. No contribution is being received from the Government of India. Mysore levies an Excise duty in sugar equal to that prevailing in British India. The receipts from this source were

Year.	Amount.
1933-34	...
1934-35	87,332
1935-36	5,11,715
1936-37	6,02,000 (revised estimate).

This revenue is not utilised for any specific purpose but is merged in the general revenue of the State.

11. (i) and (ii) Research work on sugarcane comprises—

(*a*) production of improved varieties,

(*b*) Improvement in cultivation,

(*c*) Manurial experiments,

(*d*) Control of diseases and insect pests.

Varietal trials comprise:—

(i) Collection and testing of Indian canes mostly Coimbatore varieties.

(ii) Collection and testing of World canes,

(iii) Production of Mysore seedling canes,

(iv) The application of X-ray to induce bud mutations.

Numbers (i) and (ii) are found unsuitable for the table land conditions of Mysore. Number (iii)—H. M. 320 is one of the best. It is practically the single variety in the Irwin Canal area which supplies sugarcane to the Mysore Sugar Company. It has spread practically to all the sugarcane areas of the State. There are many other popular varieties which are either already being grown on an increasing scale or are being tested in various parts of the State. H. M. 608 is probably the World's richest cane with a high sucrose content of about 28 per cent. It takes more than 14 months to fully ripen, but is ready for milling even when 9 or 10 months old. One of Mysore seedlings H.M. 87—is among the standard cane recommended by the Bombay Department of Agriculture to their ryots. It has not come up to our standard in Mysore. Other canes like 544, 320 and 87 have spread in several parts of the Bombay Presidency.

Of the improvement effected in cane cultivation, the most important is the popularisation of the Iron Plough and Disc Harrow. The Iron Plough is in fairly general use in the State now. The costliness of the Disc Harrow accounts for its limited use in the State. Many bullock-driven cane crushing

mills have been tested. A very efficient mill has been designed and manufactured by an enterprising local gentleman and is very popular. The correct spacing both in the row and between rows (3 feet) has been tested and found out. The narrow spacing between rows has almost been given up by the ryots. Various methods of planting such as pit planting, shallow planting which were in vogue have definitely given place to planting and deep trenches and subsequent earthing up as in Java.

Oil-cakes and artificial manures are being largely used now on cane as the direct result of the Department's research and demonstration.

The spread of Mosaic Disease in cane is being successfully controlled by rigorous selection of planting material. Breeding work has resulted in the production of several promising Mosaic-resistent seedlings of high quality and tonnage. These are being multiplied for further steps.

Of the insect pests, the sugarcane Borer is the most destructive. It is now being effectively held under check with the help of a simple cultivation device (earthing up in early stages) and biological control by parasitising the eggs of the borer moth by a parasite (Trichogramma).

12. (i) A grant of Rs. 21,000 has been sanctioned by the Imperial Council of Agricultural Research for a scheme of breeding thick canes in Mysore, the grant being spread over for a period of 5 years ending 31st January, 1938. In this period it is estimated that the Mysore Government's share of expenditure on this scheme will be about Rs. 35,000.

(ii) The best of Coimbatore seedlings are being got for trial here every year. They flower very early and the yield is low. The quality of many of them as regards sucrose content is, however, very high.

(iii) None.

More funds are required both for agricultural and technological researches.

13. A Factory at Mandya grows on its farms H.M. 320—the cane recommended by the Department of Agriculture. It has also adopted the improved methods of cultivation recommended by the Department. By giving crop advances to ryots it has enabled them to adopt improved methods of cultivation in the Irwin Canal Tract.

14. The total acreage under sugarcane in the State during the year 1935-36 was 50,554:—

(*a*) Of this it is estimated that 9,100 acres supplied cane to the Sugar Factory at Mandya.

(*b*) There are no open pan factories and Khandsaries in the State. There are only three producers who are manufacturing sugar on a very small scale with sugar centrifugals. The acreage under cane utilised for this purpose may not exceed 50 per year.

(*c*) The bulk of the acreage is utilised for supplying cane for manufacturing jaggery. It is estimated that about 35,000 acres are utilised for this purpose.

(*d*) the remaining acreage of 6,404 is utilised for supplying cane for shewing and seed purposes. The estimated corresponding figures for the year 1936-37 are—

(i) 13,000 acres of cane for supplying the Sugar Factory,

(ii) 51 acres for centrifugals,

(iii) 32,750 acres for manufacturing jaggery,

(iv) 6,800 acres for chewing and seed purposes.

Total acreage—52,601.

15. The sugarcane crop in the Irwin Canal area takes 14 to 16 months to mature, while the Block System of irrigation which prevails in this area contemplates this crop remaining on the field for 12 months only. The ryot is thus precluded from raising the paddy crop in the second year. This seems to be the main difficulty of cane-growers in this area.

16. Co-operative Credit Societies are helping cane-growers in the rural areas with funds to some extent. There are no cane growing and cane suppling societies in the State.

17. Yes, the minimum price is fixed at Rs. 10 per ton under the Mysore Sugar Industries Safe-guarding Regulation IV of 1934. The questions considered in fixing the minimum price of cane are—

(1) what is the price realised by the sale of sugar, and what proportion of it may be considered as an adequate payment for cane?

(2) What is the actual cost of cultivation and whether at the price obtained for cane there is a reasonable return to the ryot for his labour and expense, and

(3) whether the price which the cane supplier obtains from the factory compares favourably with what he gets if he converts his cane into jaggery.

As the price has been fixed only recently it takes some time to see if it is working satisfactorily.

18. There is only one Factory in the State, and so there is no local competition.

19. The proposal does not seem to be quite practicable.

20. It is understood that the cost is about 1½ to 1¾ pies per maund per mile in the Mandya area.

21. Normally the cane-growers employ their own carts but when they hire the carts the hire ranges from 3 to 4 annas per ton per mile.

22. Road and rail facilities are fairly adequate in the State. Government is giving financial assistance to improve and develop feeder roads. Special concessions in the matter of railway freight have been given to the cane-growers who have also been provided with loading centres on the rail road.

23. The Director of Industries and Commerce in Mysore is a Member of the Board of Directors of the Company.

24. Government have subscribed 60 per cent. of the share capital and 60 per cent. of the debentures issued by the Company. Lands have been leased to the Company for growing sugarcane for a period of 10 years. The other facilities provided for the Company are in regard to water supply, electric power and lands required for the establishment of the factory on the same lines as facilities granted to other industrial concerns in the State.

25. None.

26. Yes.

27 & 28. The following statement furnishes information regarding the wholesale prices in Bangalore since 1929. It is the principal sugar market in the State:—

Year.	Refined or crystallised.	Index No.	Unrefined sugar.	Index No.
	Rs. A. P.		Rs. A. P.	
1929-30 .	11 1 6	100	10 11 3	100
1930-31 .	10 10 3	96·4	10 5 9	97·6
1931-32 .	10 2 0	93·6	10 10 0	99·4
1932-33 .	10 10 6	96·4	10 11 0	99·99
1933-34 .	11 5 6	102·8	10 12 0	100·06
1934-35 .	10 1 0	93·2	9 6 0	87·7
1935-36 .	10 2 6	93·6	9 14 0	92·4

The following statements furnish further details regarding the monthly variations in the wholesale prices of sugar refined and unrefined in Bangalore since 1929-30 expressed in terms of pies per pound.

Wholesale prices of refined sugar in terms of pies per pound.

Month.	1929-30	1930-31	1931-32	1932-33	1933-34	1934-35	1935-36	1936-37
April .	28	26	25	30	27	25	27	25
May .	27	26	25	28	27	26	26	25
June .	26	26	26	28	28	25	26	24
July .	27	26	26	28	28	25	27	26
August .	27	26	26	28	27	26	26	25
September	27	26	26	28	27	26	27	24
October .	27	25	26	28	27	25	28	21
November	27	25	29	30	27	25	27	23
December	26	24	31	29	27	25	27	24
January .	25	24	30	27	27	25	27	23
February	25	25	30	27	26	26	26	22
March .	26	26	30	27	25	26	26	23

Wholesale prices of unrefined sugar in terms of pies per pound.

Month.	1929-30	1930-31	1931-32	1932-33	1933-34	1934-35	1935-36	1936-37
April .	26	25	26	29	27	25	25	24
May .	26	25	25	27	26	25	25	24
June .	25	25	25	27	25	23	25	24
July .	26	26	25	27	26	27	26	24
August .	26	26	25	27	25	25	26	24
September	26	26	25	27	25	25	25	23
October .	26	25	25	27	25	25	27	19
November	25	24	28	29	25	25	26	23
December	25	24	30	31	25	25	25	22
January .	25	23	29	28	25	24	25	21
February	25	23	29	27	26	27	25	21
March .	25	25	29	27	28	25	25	21

Average retail prices of sugar (refined and unrefined) in terms of pies per pound.

Month.	1929	1930	1931	1932	1933	1934	1935	1936	1937
January . . .	25	27	24	31	30	28	26	27	24
February . .	25	26	..	31	30	28	29	27	25
March . . .	25	27	27	31	29	28	28	27	24
April . . .	25	27	27	31	29	27	27	27	23
May . .	25	27	27	28	30	27	27	27	22
June . . .	27	27	27	28	30	26	27	27	..
July . . .	27	27	27	29	30	26	28	27	..
August . . .	27	27	27	29	29	27	29	26	..
September . .	27	27	27	29	28	27	27	26	..
October . . .	27	26	26	29	28	27	30	25	..
November . .	..	26	29	30	29	26	27	25	..
December . .	27	26	31	31	29	26	27	25	...

The relationship between the wholesale and retail prices of sugar in Bangalore since the year 1929-30 is illustrated in the accompanying chart.

29. The present consumption of refined and crystallised sugar in the State is about 6,500 tons per year. There is also a consumption of about 25,000 tons of jaggery in the State. With the steady advance in the standard of living a good deal of the jaggery consumption is bound to be replaced by white sugar.

30. There are two factories engaged in the manufacture of peppermints, sweets, etc., in Bangalore. Other than this there are a large number of indigenous sweet-meat sellers both in the urban and rural areas in the State who prepare several kinds of sweet-meats. Crystal sugar and brown sugar are used for this purpose.

31. As there is only one Factory now in the State the questions of zoning and fixation of quota do not arise. By Regulation IV of 1934, Government have reserved the right to license new factories in the State.

32. Several varieties of fruits are grown in considerable quantities and are being exported from the State, such as mangoes, apples, pine-apples, citrus fruits, etc. But as the price is generally high there seems to be but limited scope for starting an industry for preservation and canning of fruits.

33. The following figures show the estimated production of jaggery in the State since 1929-30. These figures have been arrived at on the basis of figures furnished by the Revenue Department in the Season and Crop Report and after making necessary allowance for cane utilised by the Sugar Factory and for chewing and seed purposes.

Year.	Jaggery produced in Railway Maunds.
1930-31	856,144
1931-32	775,255
1932-33	932,625
1933-34	894,003
1934-35	821,073
1935-36	993,485
1936-37	955,216 (forecast)

34. A very small quantity of jaggery is made from Bagani Palm (Caryota urens) in the Malnad.

35. The appended statement furnishes the average annual wholesale prices of jaggery in different areas in the State. It is seen therefrom that prices of jaggery in the several areas in the State were on a high level during 1929, and have since then more or less continuously declined during the succeeding years up to 1937 excepting 1934 and 1935 when the prices showed an upward tendency. The variations in prices of jaggery seem to be mainly due to a general fall in the level of prices of all agricultural commodities which occurred after 1929-30. During the year 1934-35, the prices of jaggery showed an upward trend on account of the fact that production was low owing to unfavourable seasonal conditions and also due to the fact that there was a good demand from outside the State for what was produced here. Of the several places mentioned in the above statement Bangalore is entirely a consuming and distributing Centre and it gets its supplies of jaggery mostly from Manchenahalli, Goribidnur and Chikballapur in the State and from Udamalpet, Coimbatore, Ambore, Hindupur, etc., places in the Madras Presidency. Hence the prices in the Bangalore Market are generally higher than the prices in the other places. Of the other places, Manchenahalli is mainly a producing and assembling centre, Chikballapur and Goribidnur are both producing, assembling as well as distributing centres and Tiptur and Shimoga are mainly trade or assembling and distributing centres. The jaggery produced in the Manchenahalli, Goribidnur and Chikballapur areas is generally in the form of lumps or small balls and in the other areas it both in the form of lumps and flat or square pieces. From the point of view of quality the Manchenahalli area jaggery and generally the jaggery produced in the maidan areas of the State are said to be better than the jaggery produced in the Malnad parts of the State.

36. The appended statement furnishes information regarding the annual consumption of jaggery in the State during the last 7 years. It is seen from the statement that the annual consumption of jaggery in the State has varied from 538,102 railway maunds or 19,767 tons to 791,712 railway maunds or 29,083 tons during the last 7 years. On the basis of the above figures, the average annual consumption of jaggery in the State is estimated at 669,971 railway maunds or 24,611 tons. The above figures have been arrived at mainly on the basis of production and imports and exports by rail. In the absence of road-borne trade statistics it is difficult to give an exact estimate of the consumption of jaggery in the State. It may, however, be stated that consumption of jaggery has not decreased in the State though the consumption of sugar is also on a high level. This seems to be due to three facts namely the increase in the population since the last Census, the low prices of jaggery and the special type of demand for jaggery which cannot be met by sugar.

37. Mysore State is an exporting unit so far as trade in jaggery is concerned. Very small quanties of jaggery are, however, imported into the State every year mostly to Bangalore. The statement appended gives details of import since 1928-29. It is seen from that statement that the

Madras Presidency is the most important source of supply. The important places from which jaggery is imported are Udamalpet, Coimbatore, Ambur and Hindupur.

38. The statement appended furnishes information regarding the annual export of jaggery during the last seven years. The important areas to which jaggery is exported from the State are the Districts of Kurnool, Anantapur and Bellary, Cuddappa and South Canara in the Madras Presidency. The Hyderabad State and the Districts of North Canara, Dharwar and Belgaum in the Bombay Presidency and Coorg, Cochin and Goa.

39. The statement appended shows the prices of sugar and jaggery in Bangalore, during the last seven years. It is seen therefore that there is no definite relationship between the prices of sugar and jaggery. This is due to the fact that the uses to which jaggery is put are different from those of sugar and the demand for jaggery cannot be met by sugar to that extent.

40. Consumption of sugar in the preparation of beverages such as coffee, tea, etc., has been going up replacing jaggery. The upper classes also use sugar more and more where jaggery was being used before but such replacement of jaggery by sugar is to a very limited extent since many Indian dishes with their peculiar taste and flavour can be prepared only by using jaggery.

41. Research on improved methods of gur making was one of the earliest taken up by the Mysore Agricultural Department. The improvements are—

(*a*) filtering the cane juice after extraction preliminary to boiling,

(*b*) removal of scum and

(*c*) lining the cane juice to neutral reaction.

These processes help to produce clean and light coloured jaggery with keeping qualities.

(*d*) improvement of the furnace to manufacture jaggery with the aid of bagasse and trash alone.

42. There are no open pan factories at Khandsaries engaged in the manufacture of sugar in the State. Three producers have maintained sugar centrifugals. Information is not available regarding the total output of sugar.

43 & 44. Information is not available.

45. Since there is no Khandsari sugar industry in the State no opinion can be offered in this connection.

46. A considerable amount of laboratory work on the preparation of white sugar by the open pan system was done in the years 1904 to 1907 and the results of this work were tested on a commercial scale in 1911 and subsequently. It was found that the recovery of white sugar was never higher than 8·8 per cent. whereas test boilings of jaggery at the same time gave about 20·5 per cent. recovery on the weight of juice. Subsequent trials were of the same nature. It was therefore felt that not much advantage accrued by pursuing this method. The advantage if any at all, has been progressly dwindling, particularly in view of the rapid growth of factory manufacture of white sugar.

47. The levy of sugar excise duty in 1934 does not seem to have adversely affected the consumer. This is borne out by the fact that the price of sugar during the years subsequent to the levy of excise duty is much lower than in the period prior to the levy of this duty. For details of prices please see statement appended. This means that the consumer is not paying anything more on account of the levy of excise duty. The dealer also does not appear to have been adversely affected except perhaps as the result of speculation during the time when the question of this levy was being considered by Government. The cane-grower has suffered to a slight extent as a result of this levy.

The following figures show how the burden of the excise duty is distributed between the cane-grower and the manufacturer in the Mandya area (see statement appended).

It is seen from these figures that the burden of excise duty has mainly been borne by the manufacturers though a small portion of it seems to have been transferred to the cane-growers in the beginning, *i.e.*, 1935-36. The effect of the additional excise duty imposed in February, 1937, is disadvantageous to the manufacturer for the present.

48. Though soon after the levy of protective duties there was a rise in the price of sugar, subsequently the prices fell to lower levels than those prior to the levy of these duties. (Please see statement). Therefore the consumer has not suffered on this account.

49. No.

50. The statistics of acreage and production of sugarcane are based on information collected from the Village Officials periodically. The figures of yield are estimated by reference to the standard rates fixed for the crops. The figures compiled cannot be said to be altogether accurate. The prices of sugar, jaggery, etc., in Bangalore are periodically collected after local enquiry in the market by a responsible official of the Department of Industries and Commerce. The statistics of prices, cost of cultivation, etc., in the different areas in the State given in this note were collected by officials of the Industries and Commerce Department, the Agricultural Department and the Sugar Factory after local enquiry. The statistics of imports and exports by rail of sugar, jaggery, etc., along with the imports and exports of several other commodities are compiled, analysed and published by the Department of Industries and Commerce in Mysore on the basis of information furnished by the Madras and Southern Mahratta and Mysore Railways. These statistics are fairly accurate.

Statement showing the cost of cultivation of sugarcane per acre in different areas.

Serial No.	Details of cultivation.	Hassan area.	Channarayapatna area.	Kunigal area.	Manchenahalli area.	Tipfur area.	Simoga, sugar, Shikaripur, Anandapur area.	Bhadravati area.
		Rs. a.	Rs. a.	Rs. a.	Rs. a.	Rs. a.	Rs. a.	Rs.
1	Digging or ploughing.	15 0	22 0	22 8	11 8	9 0	4 8	5
2	Cost of manure and manuring.	20 0	30 0	50 0	23 0	23 0	10 0	35
3	Cost of setts and planting.	21 0	7 8	22 0	34 0	10 8	27 0	15
4	Weeding and earthing up.	5 0	5 0	8 0	10 12	5 0	16 0	10
5	Wrapping . .	10 0	..	12 0	20 8	..	15 0	8
6	Cost of artificial manure and manuring.	50 0	10 0	29 8	32 0	..	..	..
7	Irrigation and watchin .	10 0	25 0	20 0	59 0	29 0	36 0	30
8	Harvesting, milling and jaggery boiling.	87 0	75 0	100 0	75 0	60 0	125 0	150
	Total cost .	218 8	174 8	264 0	256 12	127 8	233 8	253

Cost of cultivation of cane on Mr. Urugahalli Krishna Iyengar's Estate.

Particulars.	Cost per acre. Rs. A.
(1) Land preparation	5 12
(2) Planting	4 8
(3) Seeds	...
(4) Manure	82 4
(5) Cultivation	7 8
(6) Irrigation	30 0
(7) Cutting	...
(8) Sundries	...
(9) Transport	...
Total	130 0

Cost of cultivation on Mr. Alkere Venkatachar's Lands.

	Rs.
(1) Preparatory cultivation	14
(2) Seed and Sowing	52
(3) Manures and manuring	44
(4) Irrigation	8
(5) After cultivation	10
(6) Drainage	4
(7) Harvesting	17
(8) Transport	34
Total	183

ESTIMATE I.

Santekadur and round about Shimoga.

Cost of cultivation of 2 acres with sugarcane. (The figures do not include the wages of the peasant himself, but provide for the extra labour necessary).

	Rs.
Fencing	24
Manure	24
Seed	40
Planting	4
Harrowing	20
Wrapping	10
Weeding	5
Cutting, cleaning and bundling	20
Total	147
Add—Kandayam	10
Total	157
Say	160
Deduct—Receipts from tope and setts (seed)	30
Total	130

The above estimate is for preparing sugarcane for sale as cane. If it is to be milled and made into jaggery omit last item "cutting, cleaning and bundling, Rs. 20" and substitute "Harvesting, milling boiling Rs. 70.".

The estimated production is Rs. 250 maunds (one maund is equal to 25 lbs.) of jaggery. On the basis of 10 of cane to 1 of jaggery, this means an estimated yield of nearly 28 tons or 14 tons per acre.

Cost per ton 130/28 or about Rs. 4-10 per ton.

(Sd.) N. RAMA RAO.

Statement of cost of cultivation of sugarcane per acre as estimated by the Cane Superintendent.

	Rs.
1. Preparatory Cultivation: Ploughing, Furrowing, Levelling, etc.	8
2. Setts—10,000 per acre	23
3. Manures: 2½ bags Amm. Sul., ½ bag conc. super, 6 bags of oil cake	58
4. Irrigation: Wages	18
5. Weeding	5
6. Earthing up	4
7. Harvesting (as 12 per ton)	18
8. Transporting	31
9. Interest on principal	8
Total	173

This cost of Rs. 173 per acre towards cultivation charges is exclusive of Land Revenue, etc., due to Government.

Statement of cost of cultivation of sugarcane per acre, as estimated by the Farm Superintendent.

S. L. No.	Particulars.	Rs.	Rs.
1.	Preparatory cultivation—including fallow ploughing with Tractor and bullocks	32	
2.	Planting	5	
3.	Interculture	13	
4.	Manuring	4	
5.	Earthing up	4	
6.	Irrigation	17	
7.	Seeds	35	
8.	Manures	70	
9.	Green manure	12	
10.	Bullock work (for after cultivation)	7	
11.	Harvesting	30	
12.	Transport	45	
	Total direct cost	...	274

Statement of cost of cultivation of sugarcane per acre, as estimated by the Farm Superintendent—contd.

S. L. No.	Particulars.	Rs.	Rs.
13.	Farm supervision	16	
14.	General wages, including watch and ward	8	
15.	Maintenance of drains, roads, etc.	4	
16.	Other charges, including implement, spares, sundry stores, etc.	6	
17.	General supervision of farms	8	
18.	Depreciation	10	
19.	Lease on lands (for 18 months)	44	
	Total in direct charges	...	96
	Total cost	...	370

Cost of production per acre of sugarcane crop worked out on the basis of 1934-35 accounts of Bannur Centre.

Particulars	Rs.	A.	P.
1. Preparatory	32	0	0
2. Planting	4	8	0
3. Interculture	43	0	0
4. Harvesting	28	0	0
5. Jaggery boiling	82	12	0
6. Seed	19	4	0
7. Manure	54	8	0
8. Rent		...	
9. Land Revenue and Cesses	10	8	0
Grand Total	274	8	0
Gross income	350	0	0

Yield of Jaggery—290 maunds.

Cost of bullock labour—As. 12 pies 3 per day.

Total area cultivated—10 acres.

Cost of production and income per acre of sugarcane crop, worked out on the basis of 1934-35 account—Subbanahalli Centre.

Particulars.	Average cost per acre. Rs.	A.	P.
1. Preparatory	22	6	3
2. Planting	1	15	10
3. Interculture	21	5	3
4. Harvesting	11	6	3
5. Jaggery Boiling	27	2	8
6. Seed	37	2	3
7. Manure	10	3	7
8. Rent		...	
9. Land Revenue and Cesses	6	2	5
Grand Total	163	0	6
Yield of Jaggery, 87 maunds		...	
Cost of bullock labour per day	0	9	10
Total area cultivated, 3-03 acres		...	

Cost of cultivation on Company's Banasvadi Farm.

Particulars.	Cost per acre. Rs. A. P.
1. Land preparation	15 5 8
2. Planting	4 0 0
3. Seeds	53 4 0
4. Manure	66 9 6
5. Cultivation	19 8 9
6. Irrigation	15 6 2
7. Cutting	30 0 0
8. Sundries	27 0 7
Total	231 2 8
9. Transport	30 0 0
10. Land assessment including water rate	43 8 0
11. Fodder and upkeep of cattle	19 8 1
12. Farm supervision	18 6 0
13. General Supervision of Farms	7 8 0
14. Depreciation of Farm Assets	14 3 5
Grand Total	364 4 2

Wholesale prices of jaggery in different areas in the Mysore State from 1921 to 1937.

(Rate per Railway maund—82-2/7 lbs.

Year.	Bangalore.	Tiptur.	Shimoga.	Chickballapur.	Goribidnur.	Kanchenahalli.
	Rs. a.	Rs. a.	Rs. a.	Rs. a.	Rs. a.	Rs. a.
1929	10 14	..	..	8 1	..	7 9
1930	6 14	7 8	..	5 2	6 1	4 11
1931	4 8	4 6	..	4 7	4 1	4 15
1932	4 13	3 8	4 12	4 7	3 8	4 4
1933	4 1	3 5	4 12	4 13	3 5	3 14
1934	5 4	3 11	5 8	7 0	6 13	4 7
1935	5 5	3 5	5 2	5 5	4 15	4 13
1936	3 9	2 6	5 4	4 7	4 7	3 11
1937 (up to the end of April).	3 7	..	3 8	3 5	3 5	..

Statement showing the consumption of jaggery in the Mysore State.

(Quantities are expressed in Railway maunds of 82-2/7 lbs. each).

Year.	Production.	Import by rail.	Total supplies.	Export by rail.	Net supplies available for consumption on the state.
	Rs.	Rs.	Rs.	Rs.	Rs.
1930-31 . . .	856,144	44,506	900,650	138,442	762,208
1931-32 . . .	775,255	9,054	784,309	246,207	538,120
1932-33 . . .	932,625	31,896	964,521	199,292	765,229
1933-34 . . .	894,903	34,050	928,953	137,241	791,712
1934-35 . . .	821,073	26,431	847,504	190,924	656,580
1935-36 . . .	993,485	26,308	1,019,793	239,245	780,548
1936-37 . . .	955,216	13,753	968,969	288,636	680,333

NOTE.—Statistics of Road Borne Trade are not available for recent years. They are available only for 9 months—September, 1929 to March, 1931. The approximate quantities imported into and exported from the State by road, every year, on the basis of these statistics amount to 10,987 Railway Maunds and 51,689 Railway Maunds respectively. If these figures are also taken into account, the average annual consumption of jaggery in the State works out to 669,971 Railway Maunds or 24,611 tons.

Statement showing the total quantities and values of jaggery imported into the Mysore State by rail under five main blocks during the past seven years.

Year.	Madras Presidency (Excluding Sea Port).	Bombay Presidency (Excluding Bombay Sea Port).	Madras port.	Bombay port.	Other blocks.	Total Raly. Mds.	Value in Rs.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
1929-30	47,555	21,694	5,245	823	2,072	77,389	7,87,762
1930-31	30,205	9,131	5,170	..	..	44,506	2,86,159
1931-32	8,622	358	74	..	..	9,054	40,194
1932-33	19,669	6,406	5,821	..	..	31,896	1,58,052
1933-34	21,312	12,734	2	..	2	34,050	1,31,850
1934-35	19,999	6,014	417	1	..	26,431	1,45,546
1935-36	24,949	1,346	9	..	4	26,308	1,35,769
1936-37	9,724	4,026	..	..	3	13,753	..

Statement showing the total quantities and values of jaggery exported from the Mysore State by rail under five main blocks, during the past seven years.

Year.	Madras Presidency (Excluding Madras Ports).	Bombay Presidency (Excluding Bombay Ports).	Madras Ports.	Bombay Ports.	Other blocks.	Total Rs. Mads.	Value in Rs.
	Rs.	Rs.	Rs.		Rs.	Rs.	Rs.
1929-30	55,681	20,437	1,224	..	8,483	85,825	7,77,589
1930-31	71,107	43,072	2,595	..	21,668	1,38,442	8,68,354
1931-32	1,14,598	1,00,733	7,402	..	23,474	2,46,207	10,39,712
1932-33	83,929	1,00,223	2,906	..	12,234	1,99,292	8,93,676
1933-34	85,232	31,369	3,350	..	17,090	1,37,241	5,17,292
1934-35	92,307	80,427	2,753	..	15,437	1,90,924	9,44,003
1935-36	1,03,201	1,24,974	1,323	..	9,747	2,39,245	12,33,519
1936-37	1,96,409	85,035	1,345	..	5,847	2,88,636	..

Average annual prices of sugar and jaggery in Bangalore since 1929-30 (price per Railway maund).

Years.	Refined sugar.	Percentage change as compared with the previous year.	Unrefined sugar.	Percentage change as compared with the previous year.	Jaggery.	Percentage change as compared with the previous year.	General Index number of prices.	Percentage change as compared with the previous year.
	Rs. a.		Rs. a.		Rs. a.			
1929-30	11 2	..	10 11	..	10 0	..	149	..
1930-31	10 10	—4·5	10 6	—2·9	6 6	—36·3	126	—15·4
1931-32	10 2	—4·7	10 10	2·4	4 4	—33·3	108	—14·3
1932-33	10 11	5·6	10 11	0·6	4 14	14·7	107	—0·9
1933-34	11 6	6·4	10 12	0·6	3 13	—21·8	95	—11·2
1934-35	10 1	11·5	9 6	—12·8	5 10	47·5	102	7·4
1935-36	10 3	1·2	9 14	5·3	5 2	—8·8	106	3·9
1936-37	..	..	..	..	3 5	—35·4	107	0·9

Statement showing the burden of excise duty.

Year.	Average price of cane per ton.	Percentage change as compared with the previous year.	Price of Mandya Fy. sugar per ton.	Percentage change as compared with previous year.	Percentage proportion of excise duty to the price of sugar.
	Rs.		Rs.		
1933-34 . .	12·09	..	257	..	..
1934-35 . .	12·0	—0·7	253	—2·0	10·0
1935-36 . .	11·05	—8·0	244	—4·0	11·0
1936-37 (Up to Feb.) . .	10·75	—3·0	215	—11·0	12·0
March 1937 . .	10·75	—3·0	207	—15·0	20·0

(3) *Letter dated the 26th October, 1937, from the Government of His Highness the Maharaja of Mysore, Local Self Government Department, Bangalore.*

With reference to your letter No. 303, dated 18th June, 1937, regarding distilleries, I am directed to forward herewith a statement furnishing the particulars required.

Statement showing the consumption of molasses by distilleries and other concerns manufacturing rectified and denatured spirit (in Mysore State) for each of the last three years.

Particulars.	1934-35.	1935-36.	1936-37.
A.—(1) The number of Distilleries .	One.	One.	One.
(2) Total quantity of molasses consumed and the sources of their supply.	1,485 tons. (Molasses is supplied by the Mysore Sugar Company, Limited, Mandya).	3,801 tons.	3,982 tons.
(3) The price paid for the molasses	Rs. 7 per ton of molasses.		
B.—(1) The number of concerns manufacturing rectified and denatured spirit other than distilleries.	None.	None.	None.
(2) Total quantity of molasses consumed and the source of their supply.	"	"	"
(3) The price paid for molasses .	"	"	"

(4) *Answers to questionnaires furnished by the Government of H. H. the Nawab of Bhopal, Rokkan Khas Department, Bhopal.*

(ANSWERS TO QUESTIONNAIRE FOR LOCAL GOVERNMENT).

1. Figures are not available. Co. 221, Co. 281, S. 48, P.O.J. 36, Manjav. Recently P.O.J. 2878 has been introduced. Figures of approximate acreage are not available.

2. The cane-growing area falls on the border line of Malwa. There is very little difference in the climatic conditions, methods of cultivation, etc. 99 per cent. of the crop is irrigated. Major portion of cane is grown in Sehore, Ichhawar, Ashta, Jawar, Doraha and Shampur Tehsils.

3. Information not available.

4. Sehore—Rs. 120 per acre, Ichhawar—Rs. 120 per acre, Ashta—Rs. 125 per acre, Jawar—Rs. 130 per acre, Doraha—Rs. 125 per acre, Shampur—Rs. 120 per acre.

Unirrigated cane is negligible. No cost figures are, therefore, given. There has been a good deal of variation in the cost of cultivation during the last seven years, owing to downward trend of commodity, prices and availability of cheap labour. Average yield of sugarcane is 20 tons per acre and the average sucrose content 13·62 per cent. on cane.

5. Four and a half to five annas per standard maund.

6. There has been considerable increase in area. The causes for increase in the area are:—

(1) Introduction of improved varieties.

(2) Fall in the price of cotton and cereals.

(i) Had no effect. (ii) Had very little effect. (iii) Had considerable effect, because the profit per acre from wheat, cotton, etc., was considerably less than that from sugarcane when converted into gur. (iv) Had considerable effect, because the price of cotton was lower than that of gur in terms of yield per acre.

7. Not in Bhopal. No.

8. Cotton, wheat, gram, juar, rice and oil seeds. None of them forms an alternative under the prevailing conditions.

9. Figures not available.

10. *Nil.*

11. (i) Varietal and manurial trials have been carried out recently on forty improved and exotic varieties of sugarcane. A scheme for disease control has been submitted to the Government.

(ii) The tested varieties have been distributed to cultivators, improved methods of cultivation have been demonstrated, and the use of natural and artificial manures has been brought home to cultivators by carrying out manurial tests on cultivators' own fields.

12. (i) None.

(ii) A little.

(iii) A little. No.

13. There are no sugar factories in the State. Cultivators have co-operated to a considerable extent.

14. (*a*) & (*b*) *Nil.*

(*c*) 75 per cent.

(*d*) 25 per cent.

15. Non-existence of a sugar factory, inefficient and defective system of irrigation, lack of manure and better seed and above all the slum in the price of gur.

16. Information is not available.

17. Price of cane is fixed, namely, 4 annas per standard maund for crop and 3½ annas for rootine. No such or any Act is in force at present but steps are being taken to enforce necessary legislation on the subject.

18 & 19. We have no Sugar Factory at present.

20. About 2 pies per maund per mile.

21. Cane-growers use their own carts.

22. Yes. None.

23. There were no Sugar Factories in the State.

24, 25 & 26. The suestion does not arise.

27. Figures are not available.

28. There were no unreasonable variations between the wholesale and retail prices during the last seven years.

29. The estimated consumption of white crystal sugar is about 50,000 maunds a year. Except the normal increase in consumption we do not see any possibilities of consumption going up to any great extent.

30. Except Halwais and a few bakeries we have no manufactories of confectionery in Bhopal.

31. We have no Sugar Industry in the vicinity, and as such we cannot answer this question. A sugar factory is under construction and is expected to commence crushing from December, 1937.

32. In the absence of a sugar factory, this problem has not been investigated.

33. The requisite data is not available.

34. Gur is only produced from cane in this State.

35. The requisite data is not available. The cause in deterioration in prices was due to over-production of gur and the import of gur from outside—

(i) Increase of sugarcane area has naturally brought about a downward trend in prices

(ii) Frost has to a certain extent affected the prices.

(iii) Had a little effect.

36 & 37. Requisite data is not available.

38. No gur is exported from Bhopal.

39. None.

40. Sugar is not replacing gur in the Bhopal markets.

41. In place of single pan furnace, a multiple furnace has been devised. Old stone iron mills have been replaced by more efficient bullock driven iron mills. Methods of dealing with a much larger quantity of juice than was possible with single pan furnace have been introduced. Clarification of juice by the use of indigenous chemicals and other articles has resulted in the production of superior quality gur.

42. The estimated number of gur factories is 600. Data as regards outturn of sugar, gur and molasses is not available.

43 & 44. We have no open pan sugar factories.

45. The establishment of a large number of modern factories has affected the Khandsari Industry to a considerable extent. In our opinion, the Khandsari Industry has a place in Indian Economics for some years to come. Research work in this line should, therefore, be pursued and methods of eliminating waste devised.

46. A good deal of research work has been done to determine the striking point with a view to control the size of grain and to obtain maximum possible yield. A large number of temperature readings were taken to determine these points and it was found that as much as 15 to 20 per cent. higher recovery could be obtained by this simple means. The method of storing rab in tin containers instead of earthen pots resulted in the yield of better quality sugar and economy in expenditure.

Work on gauges for centrifugal machines also gave higher out-turn. Rapid boiling of molasses and use of replaceable pans gave a high yield of second sugar.

47. In the absence of a sugar factory, we are unable to gauge the position.

48. The protective duties have not affected the consumption of sugar in any way.

49. None.

50. Careful statistics have not been maintained in this State and as such we cannot vouch for the accuracy of the figures. They are, however, correct to the extent of 75 per cent.

51. We have no comments to make.

ANSWERS TO GENERAL QUESTIONNAIRE.

Production of Sugar.

Introductory.

1. Our sugar is under construction and is expected to commence crushing from December, 1937.

2. None.

3. We have nothing to report at this stage.

4. Double sulphitation.

5-8. We have nothing to report.

9. (i) Yes.

(ii) Yes. We have no suggestions to offer.

Raw materials.

10. No.

11. (*a*) *Nil.*

(*b*) Information not available.

(*c*) Co. 221, Co. 281, S. 48, Manjav, P.O.J. 36 and recently P O.J. 2878.

(*d*) Three systems are in vogue—(1) Bare Fallow, (2) Green Fallow, (3) Kharik.

The rotation is:—

First year—Sugarcane plant crop.

Second year—Ratoon crops.

Third year—Sannu (Crotalaria Juncea) grown for fibre or seed during the rains, and the *Mansur* (Ervum Lens) during the rabi season.

Fourth year—Ditto.

Fifth year—Rice during the rains and then Tiura (Lathyrus Sativus) or Masur (Ervum Lens) during the rabi season.

Sixth year—Sanai (Crotalaria Junceas) for green manuring during the rains followed by sugarcane during the rabi season.

Manuring.

(*e*) Manuring. Mostly stable manure is used but artificials are also coming in vogue.

Variety.	Yield per acre.	Sucrose.
	Tons.	Per cent.
Co. 221	20	13·5
Co. 281	20	13·7
S. 48	20	14·00
Manjav	22	13·5
P.O.J. 36	23	13·8

(f) Statement of Income and Expenditure per acre.

Ploughing with C. T. Plough	Twice.
Expenses	Rs. 14.
Ploughing and Cross ploughing with disc plough after the advent of rains.	Twice.
Expenses	Rs. 5.
Patela	Four times.
Expenses	Rs. 1-8.
Bakkhar	Four times.
Expenses	Rs. 3.
Preparing Trenches	Rs. 3-12.
Farm Yard Manure	150 maunds.
Expenses	Rs. 7-8.
Artificials	Rs. 7-8.
Cane seed	2,000 canes.
Price	Rs. 20.
Sowing Expenses	Rs. 2-4.
Harvesting Expenses	Rs. 3-12.
Irrigations	Nine.
Expenses	Rs. 27 to Rs. 29-4.
Hoeing and weeding	Seven.
Expenses	Rs. 15.
Earthing up	Twice.
Expenses	Rs. 6.
Tying up of canes	Rs. 1-14.
Watching	One man for ten months at Rs. 2 per month, per acre.
Expenses	Rs. 20.
Fencing	*Nil.*
Expenses	*Nil.*
Supervision per acre Expenses	Per acre Rs. 10.
Expenses of making Barha	Rs. 2.
Land rent	*Nil.*
Expenses	Rs. 10.
Cartage from 20 miles, per cart, per maund, in cultivator's cart.	As. 1-3 per maund.
Cartage from 10 miles in cultivator's cart.	¾ annas per maund.
Yield per acre	Agriculture Dept. 27 tons—735 Std. Mds. Cultivators 20 tons—544 Std. Mds.
Expenses per maund	3·49 annas.
Cultivator's price of cane in his village.	3 to 3½ annas per Md.
Cultivator's price of cane in his village 20 miles away in his own cart.	4½ to 5 annas per Md.
Cultivator's price of cane in his village 10 miles away in his own cart.	3½ to 4 annas per Md.

Cultivators in these parts carry their produce 20 miles in their own carts if they get even 2 annas per maund higher rate for their produce.

NOTE 1.—The expenses of irrigation per acre cannot be regarded as an absolute figure. They will depend upon the depth of the well and the type of appliance used for lifting water.

NOTE 2.—Expenses of making Burha will depend upon the level of the land and the distance to which water is carried.

NOTE 3.—Expenses of fencing will depend upon the type of fencing material used, but Rs. 5 per acre may be regarded as an average figure for thorn fencing.

NOTE 4.—The figures given in this statement are those of Agricultural Department. The yield on cultivator's land will be approximately 20 tons per acre and the expenses about Rs. 120 per acre. Such expenses as supervision charges, ploughing with C. T. plough, use of Patela and use of artificial manure are not incurred by a cultivator.

NOTE 5.—Expenses on growing thick canes will be Rs. 10 to Rs. 20 more per acre than those incurred on medium canes.

12. (*a*) One acre.

(*b*) One acre. Recently seven acres more have been put under cane at Sehore for distribution purposes, and a larger area is to be planted in the next season. Imported seed has also been distributed to several cultivators from whom it will be purchased and distributed to a still larger number.

13. Different Coimbatore varieties have been tested in regard to their earliness and late maturity, as for example:—

(1) Co. 285 medium ripening draught resisting.
(2) Co. 299 early ripening.
(3) Co. 300 early ripening.
(4) Co. 313 early ripening.
(5) Co. 312 medium ripening, heavy yielder.
(6) Co. 331 and Co. 341 late ripening.

It has also been established that the best procedure in cane cultivation is to grow green manure first, as for example, *Sanai* (Crotalaria Juncea), plough it in when six weeks old, and supplement it with stable manure and artificials to obtain the best yield. The minimum quantity of Nitrogen required per acre comes to 80 lbs.

14. (*a*) The quantity has increased.

(*b*) The quality has improved.

15. In recent years due to unusual weather conditions, cane crops have been often seriously damaged by frost but Bhopal does not get spells of frost very often. Insect-pests are conspicious by their absence, except Chilo simplex and certain stem borers, but the damage done by these borers is overcome by cane crops during rains and healthy crops are usually obtained after rains even when the field is attacked by borers. The loss under present conditions is not more than 10 per cent. but with the increase in area under cane our problems are likely to multiply.

16. Yes.

Variety.	Yield per acre.	Sucrose.
	Tons.	Per cent.
Co. 221	20	13·5
Co. 281	20	13·7
S. 48	20	14·0
Manjav	22	13·5
P.O J. 36	23	13·8

17. We have nothing to report at this stage.

18. (*a*) No. The area has increased in recent years.

(*b*) There has been considerable increase in area. The causes for increase in the area are:—

(1) Introduction of improved varieties.

(2) Fall in the price of cotton and cereals.

(i) Had no effect. (ii) Had very little effect. (iii) Had considerable effect because the profit per acre from wheat, cotton, etc., was considerably less than that from sugarcane when converted into gur. (iv) Had considerable effect because the price of cotton was lower than that of gur in terms of yield per acre.

19. No. In our area there is very great scope for development and we do not consider any restriction necessary.

Variety.	Yield per acre.	Sucrose.
	Tons.	Per cent.
Co. 221	20	13·5
Co. 281	20	13·7
S. 48	20	14·00
Manjav	22	13·5
P.O.J. 36	23	13·8

21. Lack of water supply because the irrigation is mainly from wells. The lack of a central factory, but one is being established now. Establishment of Lorry Service to cart the cane from distant areas will help the cultivators putting down larger area under cane.

22. (*a*) I agree with Tariff Board's view except where the project is financed by Government and necessary legal safe-guards are provided to prevent any hardship coming to cultivators.

(*b*) The problem had not arisen with us. A system of zones can be worked satisfactorily if a sliding scale of prices is fixed for sugarcane to prevent factory owners from taking undue advantage of cultivators who, in the case of zoning system, are left at the mercy of factory owner.

23. Our Government will be pleased to give all possible assistance to cultivators when we find the need of introducing zone system. We are already going ahead with road development programme to help the cultivators to bring their products to the factory.

24. We have nothing to suggest.

25. We have nothing to report at this stage.

26. Carts. Twelve maunds. Very great extent. Rubber-tyre cart carries 22 maunds of cane as opposed to 12 maunds carried by ordinary country cart.

27. Yes. Good.

28. This problem will be studied as soon as the factory is established in Bhopal.

29-34. We have nothing to report.

35. We have no tramways.

36 This question does not arise in our case.

37-45. We have nothing to report.

46. No.

47-49. We have nothing to suggest.

50. Four months. Yes.

51. We have nothing to report at this stage.

52. Work has been commenced only recently.

Labour.

53-56. We have nothing to report.

57. This problem will be studied when our sugar factory, namely, Bhopal State Sugar Industries, is established.

58. The question does not arise in our case.

59. This problem will be studied when the sugar factory is established.

60-87. We have nothing to report.

88. They keep sugar in bags in store rooms. The polarization goes down by two degrees and moisture content is increased when the weather is wet.

89. Yes, because the imported sugar is usually refined sugar. Slight.

90. It depends on the class of consumer. People with esthetic taste prefer Indian sugar while those who lack this taste prefer refined sugar.

91. No. It is not as highly refined as Java sugar.

92-94. We have no suggestions to offer.

95. Yes. Polarization.

96-111. We have no suggestions to offer.

Questionnaire for sugar refineries.

We have no sugar refineries in Bhopal and as such we are unable to answer these questions.

Questionnaire for the manufacture of Sugar by Open Pan System and Khandsari.

We have no khandsari sugar or open pan system in Bhopal. Our process will be double sulphitation.

Question for gur/jaggery merchants.

The requisite information is not available. We have a factory under erection and have just started collecting useful information affecting this industry.

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(5) *Letter dated the 7th July, 1937, from the Robkari Khas Department, Government of H. H. the Nawab of Bhopal, Bhopal.*

With reference to your letter No. 303, dated the 18th June, 1937, addressed to the Secretary, Revenue Department, Government of Bhopal, I have the honour to inform you that there is only one Distillery in the State and that Mhowa is the only base from which country spirit is distilled. No molasses are used. There are no concerns manufacturing rectified or denatured spirit other than distilleries in the State.

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(6) *Letter dated the 4th July, 1937, from the Secretary, Tariff Board, to the Robkari Khas Department, Government of H. H. the Nawab of Bhopal, Bhopal.*

I am directed to acknowledge receipt of your letter, dated 26th June, 1937, with thanks enclosing the reply to the general questionnaire and to enquire the size of the proposed factory at Bhopal.

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(7) *Letter dated the 3rd August, 1937, from the Robkari Khas Department, Government of H. H. the Nawab of Bhopal, Bhopal.*

In reply to your letter dated the 4th July, 1937, I have the honour to inform you that the Bhopal State Sugar Factory, under erection, will crush 750 tons (2,240 lbs.) of cane per day of 22 hours and will produce direct consumption white sugar by the double sulphitation process.

(8) *Letter dated the 21st June, 1937, from the Hon'ble Revenue and Finance Minister, Rampur State, Rampur.*

With reference to your No. 171, dated the 11th May, 1937, enclosing copies of questionnaire, I have the honour to inform you with regard to Nos. 2, 3 and 4 are as follows:—

2. There are no gur refineries in State.

3. The number of manufacturers of sugar by the open pan system and the number of khandsaris is small. These men keep entirely inadequate records. It is not possible to collect any really reliable information from any particular manufacturer, and I doubt whether general information based on the opinion of local officers would be of great value. One fact is quite certain, however, that is, that in regard to question 11, the opening of two sugar factories in the State has resulted in closing over 500 open pan factories since 1930-31. The replies to the questionnaire are submitted separately with six copies for what they are worth.

4. There is no appreciable trade in gur except for local consumption and the figures supplied are in this case even less reliable. The replies to the questionnaire are submitted separately with six copies for what they are worth.

REPLIES TO THE QUESTIONNAIRE FOR MANUFACTURERS OF SUGAR BY THE OPEN PAN SYSTEM AND KHANDSARIES.

1. Sugar is generally manufactured from rab. The juice is boiled into rab and then converted into a low grade white sugar, usually by centrifugal machines operated by mechanical power. Indigenous method of converting rab into white sugar also survive.

2. Sugar makers buy juice crushed by cane-growers by small bullock-power crushers. There is no intermediary.

3. The approximate average prices for one standard maund of juice/rab during the last 7 years are as follows:—

	1930-31.	1931-32.	1932-33.	1933-34.	1934-35.	1935-36.	1936-37
	Rs. A.	Rs. A.	Rs. A.	Rs. A.	Rs. A.	Rs. A.	Rs. A.
Juice	0 6	0 5	0 5	0 4	0 4	0 3	0 3
Rab	6 8	6 0	6 0	5 0	4 8	4 0	3 4

The Khandsaries do not purchase cane.

4. It will be seen that prices of juice and rab have steadily deteriorated. Opinions differ as to the reason. The price of juice is settled in July or August when the Khandsaries enter into contracts with the growers. This price is governed by the anticipated price of khandsari sugar in the subsequent winter. The prices obtainable for cane supplied to vacuum pan factories are, on the whole, more attractive to cane-growers than the prices obtainable from Khandsaries. Had these prices effected the price of juice, one would have expected a rise rather than a fall in the latter. The truth appears to be that those Khandsaries who have so far survived competition with factory sugar, have been enabled to do so by steadily reducing the price of their sugar. This has only been possible by the steady reduction in the price paid for juice. And this in turn has only been made possible by the enormous increase in the production of cane due in its turn to propaganda and to the presence of demand from factories.

5. (i) Average extraction of juice is from 60 to 67 maunds from 100 maunds of cane.

(ii) Out of 100 maunds of juice, about 18 maunds of rab are extracted.

(iii) Out of 100 maunds of rab, about 40 maunds of sugar are extracted.

The above figures are estimates only.

6. Three qualities of sugar are manufactured.

7. No reliable figure has been ascertained.

8. Sugar is exported from Rampur to Bareilly, Shahadra, Agra, Chandausi, and Moradabad.

9. Reliable figures for the last 7 years are not available. In 1936-37 retail prices were as follows:—

(*a*) First class—Rs. 8 per maund.

(*b*) Second Class—Rs. 7 per maund.

(*c*) Third class—Rs. 6 per maund.

10. Khandsari sugar still appears to enjoy a certain preference over factory sugar among orthodox Hindus owing to certain misapprehensions as to the materials used in the manufacture of factory sugar.

11. It is estimated that over 550 open pan factories have been closed down in the last 7 years owing to competition with the vacuum pan factories.

12. Indian factory sugar is to a certain limited extent replacing Khandsari sugar. But this depends purely on the relative prices of the two sugars. The local consumer will always buy in the cheapest market.

13. The sugar excise duty of 1934 and the addition imposed in 1937 has not effected Khandsaries in the State as their establishments do not fall under the definition of "factory" laid down in the Sugar Excise Duty Act.

14. The main problem with which the open pan factories are faced, is competition with vacuum pan factories' sugar. The Khandsaries although able to obtain their raw materials at very low rates representing to the grower a lower return than he can obtain by sale of cane to vacuum pan factories, are unable to compete with factory sugar owing to the relatively low yield of sugar obtainable by the open pan process. The resulting sugar is also of lower quality than the factory sugar, and the preference previously enjoyed by Khandsari sugar among orthodox Hindus, is rapidly dying out. It would appear that in due course the Khandsari system will die out entirely as it is wasteful. Certain advantages to the cultivators due to the presence of the bél in the village are equally obtainable to him, if he manufactures gur for which there is and is likely to be a large market.

REPLIES TO THE QUESTIONNAIRE FOR GUR/JAGGERY MERCHANTS.

1. The local gur/jaggery merchants deal only in local market. There is little export trade except, perhaps, to the markets in the Tarai.

2. Three different kinds of gur are marketted—

(1) Gur with whitish yellow colour and fairly good grain.

(2) Gur with yellow colour and some grain.

(3) Brownish gur with no grain.

3. No reliable information is available.

4. There has been little variation in the quality of gur in recent years.

5. The prices of gur in the last 7 years are said to be as follows:—

Years.	Seers a rupee.	Years.	Seers a rupee.
1930-31	6	1934-35	10
1931-32	7	1935-36	12
1932-33	8		
1933-34	8	1936-37	15

Again opinions vary as to the causes of the fall. The most acceptable opinion appears to be over-production due to the increased cane area.

6. No reliable opinion can be given.

7. No reliable reply can be given.

8. Gur will keep in good condition for one year. Some qualities keep better than others.

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(9) *Letter dated the 6th July, 1937, from the Hon'ble Revenue and Finance Minister, Rampur State, Rampur.*

I have the honour to enclose herewith the replies to the questionnaire for Local Government in six copies.

REPLIES TO THE QUESTIONNAIRE FOR LOCAL GOVERNMENT.

1. The area under sugarcane in the State during the last seven years was:—

Years.	Acres.	Years.	Acres.
1930-31 . . .	15,186	1934-35 . . .	26,351
1931-32 . . .	16,259	1935-36 . . .	37,053
1932-33 . . .	19,440		
1933-34 . . .	20,790	1936-37 . . .	50,101

The improved varieties of sugarcane which are grown in the State are Co. 213, 290, 331, 393, 421, etc. The approximate acreage under Co. 213 was 60 per cent., under Co. 290 and 331 was 20 per cent., under Co. 393 and 421 negligible and under Desi canes (Agrol and Chin, etc.) 20 per cent.

2. The State may be divided roughly into three areas:—

(*a*) In the extreme north tarai conditions prevail and cane, if grown, requires little irrigation.

(*b*) In the centre, conditions are typical of this part of Rohilkhand where rainfall is in the neighbourhood of 40 to 45 inches per annum. The soil is generally good loam which retains moisture for a long period and irrigation is only necessary in periods of drought.

(*c*) In the area south of the Ramganga where rainfall is considerably less, the soil is much lighter and irrigation generally essential for good crops. The majority of the sugarcane is grown in the central area which is close to the sugar factories. Separate figures for irrigated and unirrigated sugarcane are not available.

3. The prevailing irrigation rates in the State vary from Rs. 2-4-6 to Rs. 6-6-9 per acre, according to the quantity of water available and the intensity of demand in different areas of the State. The rates before 1932-33 were from Rs. 1-10-8 to Rs. 4. In the year 1932-33 they were enhanced to from Rs. 3 to Rs. 8 and in 1934-35 were reduced to from Rs. 2-6-4 to Rs. 6-6-9 per acre.

4. The cost of cultivation of cane to the cultivators is roughly estimated at a maximum of Rs. 60 per acre (irrigated). Average yield per acre is 300 maunds. Average sucrose content is 14 per cent. and recovery of sugar is 10·7 per cent.

5. A fair price for sugarcane to the growers would be As. 4-6, which would leave a small margin, after paying for cartage at an average rate of one anna per maund.

6. The steady increase in the area under sugarcane is due to the recent construction of 2 sugar factories in the State. Price factors have not yet

entered in, but as sufficient cane is now grown within easy reach of the factories to meet their requirements, the area is likely to be more susceptible in future to price variations.

7. There was no over-production of sugarcane in the season 1936-37.

8. Other cash crops in the State are cotton, chillies, oil-seeds. They are not extensively grown. Rent is paid mainly from the proceeds of wheat, maize and rice crops.

9. Exact figures are not available.

10. Rampur State does not receive any contribution out of sugar excise. Sugar factories which are in the State pay excise duty on the exported sugar. Substantial funds arising out of the excise duty have been sanctioned by the Rampur Government on the advice of the Development Board towards development of Agriculture, Industry and communications in particular, and in addition to other grants the Government have sanctioned a sum of Rs. 50,000 for the construction of tube-wells close to Rampur in order to assist in the improvement of sugarcane cultivation.

11. (i) No research work has been undertaken in regard to sugarcane and the control of disease.

(ii) In 1936 a Department of Agriculture was established and has since devoted its energies primarily to developing sugarcane cultivation.

12. (i) No assistance.

(ii) No assistance.

(iii) No assistance.

13. The factory distributed improved varieties of seed to cultivators free of charge. The cost was met from the Development Fund mentioned in question 10, otherwise the factories have done nothing practical to assist the improvement of cane cultivation methods.

14. Of the sugarcane grown in the State—

(*a*) Not less than 65 per cent. is crushed in sugar factories.

(*b*) Approximately 27 per cent. is utilised in open pan factories, and

(*c*) Khandsars and turned into gur.

(*d*) Approximately 8 per cent. is used for chewing purposes and for seed.

15. The main difficulties of cane-growers in the cultivation of cane are—

(1) ignorance of proper methods of cane cultivation,

(2) poverty, which prevents them from applying adequate quantities of manure or supplying irrigation,

(3) lack of facilities for irrigation,

(4) shortage of plough-cattle, also due to poverty.

The natural tendency is to grow far too many ratoon, as many as 4 to 5 ratoons not being uncommon. The main difficulty in the delivery of cane to the factory is the element of delay. This will not be eliminated until factories organise their supplies on a contract basis and follow a rigid time table which will ultimately become known to the tenants.

16. There is no Co-operative Department in the State. There is only one *Co-operative Sugarcane marketting and rent paying Society* which has worked successfully for one season.

17. Minimum prices for sugarcane in the State are fixed under the Sugarcane Act XV of 1934. The prices fixed follow those announced by the United Provinces Government. The system has worked fairly satisfactorily although factories tend to look on the minimum price also as the maximum. Moreover there is no incentive to the grower to grow early cane or late maturing cane or to grow a cane with a better sucrose content.

18. The price paid by the factories for cane is definitely influenced by the competition of other factories. In 1935-36 there was a shortage of cane in the Meerut District and the prices in the Rampur State were pushed up in a few cases to as high as As. 8 per maund at the end of the season. In 1936-37 owing to the glut of cane in the east of the United Provinces, the United Provinces permitted a reduction from the minimum price and the factories reduced their prices, accordingly even though there was little excess of cane in Rampur.

19. It will only be feasible to introduce a system of bonus payments when factories contract direct with the grower for the supply of cane. Once this principle is established, there should be little difficulty in introducing such a system.

20. Owing to the poverty of the tenantry in general and to the shortage of cattle in the State, the average cost of transport of cane by carts is not less than one pie per maund per mile and may be as high as 3 pies per maund per mile over short distances.

21. Cane-growers employ their own carts when available; otherwise they hire from other tenants. The average cost of hiring is as in the answer to question 20.

22. Rail, road and tramway facilities for transport of cane in the State are adequate. The State has subsidised the factories in developing a feeder Light Railway.

23. The State Industries Department has been recently established and has so far given no assistance to sugar factories.

24. The total amount of State capital invested in the Raza and in the Bulund factories is more than Rs. 5,00,000. Concessions to the sugar factories include provision of site free of rent, exemption from local taxation for a period of years and an undertaking not to permit any other sugar factory to be established for a period of 20 years.

25. There are no Co-operative sugar factories in the State.

26. The conditions of labour in the factories are fairly satisfactory.

27. Figures not available.

28. No figures available.

29. The approximate normal consumption of sugar per annum in the State is about 20,000 maunds. The possibility of increasing the consumption is not very great, although it may rise slightly if the price of factory sugar is favourably compared with the price of Khandsari sugar.

30. No detailed information available.

31. No such position exists in the State, although the State would be interested in the development of a zone system in the United Provinces and would be prepared to respect zones of other factories provided that a zone be accorded to the State factories and respected by British Indian Factories.

32. There appears to be scope for starting subsidiary industries such as manufactures of sweets and syrups, fruit preservation and canning, etc., in the State.

33. The approximate production of gur from sugarcane during the last seven years was:—

Year.	Mds.	Year.	Mds.
1930-31	137,674	1934-35	81,320
1931-32	127,311	1935-36	79,245
1932-33	119,467		
1933-34	103,300	1936-37	14,000

34. Gur in our State is produced only from cane.

35. The prices of gur for the last seven years are:—

Year.	Seers a rupee.	Year.	Seers a rupee.
1930-31 . . .	6	1934-35 . . .	10
1931-32 . . .	7	1935-36 . . .	12
1932-33 . . .	8		
1933-34 . . .	8	1936-37 . . .	15

36. No reliable information is available as to the reason for the fall in price.

37. Not ascertainable. There is little import.

38. During the last seven years gur was exported from the State to Bareilly and Chandusi, etc.

39-40. Not ascertainable.

41. No research work has been undertaken towards improvement in the methods of manufacture of gur.

42. Open pan factories and Khandsars in the State are 116 and the gur manufactories are 593. Approximate out-turn of sugar, gur and molasses are 34,850, 71,669 and 56,673 maunds respectively.

43. The cost of manufacture of sugar in open pan factories and khandsars is estimated at from Rs. 6 to Rs. 9 a maund.

44. Approximately 559 open pan factories and khandsars have been closed during the last seven years.

45. As far as the State is concerned, the construction of two sugar factories during the last 4 years has resulted in the restriction of the open pan system, to outlying tracts from which the factories are inaccessible. In my opinion there is no future for the khandsari industry nor only because by the open pan process the yield of sugar is low and the product inferior; but also because the khandsari generally obtains a strangle-hold on the tenant by a system of advances, which greatly reduces the actual return to the tenant. The khandsari system should be allowed to die a natural death and the manufacture of gur encouraged and improved as an outlet for surplus cane.

46. No research work has been undertaken in the State to improve the open pan system and the manufacture of rab.

47. (*a*) The sugar excise duty of 1934 has not effected the cane-grower, but the additional duty imposed in 1937 has been partly passed on to the grower by the deductions permitted by the United Provinces Government from the minimum price.

(*b*) The local manufacturers were able easily to pay excise duty of 1934 and should also be able, when the price of sugar settles down, without serious financial difficulty to pay the additional duty imposed in 1937.

(*c*) & (*d*) No information is available.

48 & 49. No information is available.

50. The statistics included in these replies except those relating to acreage, are collected by enquiries from State officials. Acreage figures may be taken as accurate but in other figures, the margin of error may be considerable.

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(10) *Letter dated the 5th August, 1937, from the Special Officer of Industries, Rampur State, Rampur.*

With reference to your No. 303, dated the 18th June, 1937, I have the honour to send herewith a statement showing the number of distilleries, total quantity and price of molasses There are no concerns other than distilleries manufacturing rectified and denatured spirit in the State.

Statement showing the number of Distilleries, total quantity and price of molasses, etc.

No.	Year.	No. of Distilleries.	Quantity of molasses consumed.	Sources of supply.	Price paid for molasses.	Remarks.
			Mds.		Rs. A.	
1	1934-35 . .	1	1,847	Purchased from different places.	1,385 4	
2	1935-36 . .	1	1,698	Do. .	1,273 8	
3	1936-37 . .	1	1,797	Do. .	1,347 12	

(11) *Letter dated the 16th September, 1937, from the Assistant Resident in Kashmir, Kashmir Residency Department, Srinagar.*

Copy of note prepared by Inspector of Customs and Excise, Kashmir Province, containing replies to the questionnaire for gur/jaggery merchants, so far as Kashmir Province is concerned, is enclosed herewith for information and favour of necessary action. Kashmir Government intimate that replies to other questionnaire are awaited from certain officer and will be forwarded as soon as they are received and that information about Jammu Province could not be collected within so short a period.

1. Jaggery is not being imported but gur only is imported. The principal gur marketting centres are Peshawar, Amritsar, Rawalpindi, Muzaffarnagar and Meerut.

2. There are two kinds of gur, Peshawari gur used for eating purposes and rab used in the manufacturing of tobbacco, etc.

3. The chief centres have been given in (1) above. Figures are not available by centres and it will take at least one month if such figures are supplied as each and every entry shall have to be seen. The figures of imports made in this Province are given in the enclosed statement.

4. The quantity of Peshawar gur has deteriorated and cannot be stocked for long. It is possibly due to seed used in that district or Soda-Bicarb which is used in manufacture.

5. The figures of various kinds of gur from 1987 to 1991 range between Rs. 13 and Rs. 11.

The prices during the period between 1991-1993 ranged between Rs. 11 and Rs. 8 per month. They now range between Rs. 8 to Rs. 4½. The following represents the variation in prices pertaining to inferior gur which is mostly used in the manufacturing of smoking tobacco.

Year.	Per month.
	Rs. Rs. A.
1987-91	9 to 7 0
1991-93	7 to 5 0
1993-93	5 to 3 12

6. The rise and fall in the prices of gur and sugar go side by side.

7. Sugar is replacing gur to a limited extent.

8. Gur should remain in good condition for one year but the present qualities obtaining in the market do not stand for so long.

(Sd.) Lachmi Narain Channa.
Inspector Customs and Excise,
Kashmir Province, Srinagar.

Statement showing the quantity and value figures of gur for the last seven years.

Year.	Gur.	
	Quantity.	Value.
	Mds.	Rs.
1986-87	19,775	1,79,886
1987-88	22,510	2,14,877
1988-89	25,804	2,28,657
1989-90	22,423	1,49,324
1990-91	20,831	1,54,018
1991-92	17,319	87,560
1992-93	26,666	1,40,654

(Sd.) Lachmi Narain.
Inspector Customs and Excise, Kashmir.

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(12) *Letter dated the 25th November, 1937, from the Assistant to the Resident in Kashmir, Srinagar.*

In continuation of express letter from this Residency, dated the 16th September, 1937, I am directed to inform you that the Kashmir Government have intimated that the questionnaire refers almost wholly to sugar producers in British India and that they are not therefore concerned with any question either directly or indirectly as there is no sugar factory in the State.

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(13) *Letter dated the 30th July, 1937, from the Minister of the Baroda State, Baroda, to the Resident for Baroda, Baroda.*

With reference to your endorsement No. 12063, dated the 22nd May, 1937, I have the honour to enclose a note containing the views of His Highness' Government on the various points raised in the questionnaire for local Governments.

2. The Baroda Government do not wish to offer remarks as regards the remaining questionnaires which are mainly intended for replies by private individuals. The forms received with your endosement No. 13111, dated the 3rd June, 1937, are enclosed duly filled in by the Manager of the Gandevi Sugar factory.

No. 19094 of 1937.

Dated Baroda, the 5th August, 1937.

Copy with enclosures forwarded to the Secretary Tariff Board, Ootacamund for information with reference to his letter, dated the 11th May, 1937.

REPLIES TO QUESTIONNAIRE FROM THE TARIFF BOARD.

1. The area under sugarcane is given below:—

Year.	Acres.	Year.	Acres.
1930-31 . . .	1,848	1934-35 . . .	2,278
1931-32 . . .	2,247	1935-36 . . .	3,429
1932-33 . . .	2,660		
1933-34 . . .	2,432	1936-37 . . .	3,900

Co. 213 is common in the Baroda district where cane is comparatively a recent introduction, and one which is not likely to be maintained. P.O.J. 2728 is the variety which is finding the largest amount of favour in the main cane growing areas of Kathiawar. Departmental attention to cane has been very recent and we are more in a position of demonstrating the value of new varieties than in the possession of any considerable acreages.

2. All cane is irrigated, all but about 200 acres from wells. The two main cane tracts are Navsari, where the climate is comparatively moist and rainfall high and Kathiawar where we have a climate which is like that of the Deccan and the rainfall is relatively low. Tillage and manuring are on the whole well looked after. There is a general tendency to plant too closely. In Navsari, a good deal of the cane is planted whole, in Kathiawar it is usually in sets. Kathiawar also includes the practice of growing a catch crop of fodder in between lines of cane in the early stages of cultivation. Almost all the cane is sown in flat beds. Irrigation is given in small quantities and frequently. On account of water shortage in wells, specially in Baroda where the recent spread of cane has been excessive there is a tendency to stint water supply.

3. Irrigation rates are on the bigha (1,089 Bighas: 640 acres) basis where they apply approximately Rs. 34 per acre.

4. The cost of cultivation of cane varies between Rs. 250 to Rs. 300 in Navsari and Rs. 325 to Rs. 350 in Amreli (Kathiawar). There has been some tendency recently to reduce the cost of cultivation by reducing the amount of manuring applied. The average yields are in the neighbourhood of about 650 to 700 maunds per acre.

5. As. 5-6.

6. The cane area in Amreli has rather more than doubled in the last 7 years, that in Navsari has increased about 20 per cent., in Baroda there has been a very big jump from the neighbourhood of about 80 acres up to 1934-35 to 600 acres in 1936-37. In the last case the cause has undoubtedly been climatic. The area which has recently taken to cane is essentially our tobacco area and tobacco has most frequently been hit by frost prior to change over mentioned above. It is almost certain to decline. The increase in Amreli may be attributed primarily to prices being unobtainable for alternative cash crop though to some extent prices ruling for gur 2 to 3 years ago in Kathiawar may have had some influence.

7. Only in the Baroda district. No restriction is necessary because the marked increase in acreage is due to temporary causes.

8. In the Navsari tracts the alternative crops are vegetables like onions and bringals, to some extent ginger and in other areas cotton and paddy. The net return under the first would be about Rs. 60 under cotton and paddy about Rs. 30 each. In the Baroda district, as mentioned, the alternative crop is tobacco. The profit is Rs. 150 provided if undamaged by frost. It is difficult to suggest alternative crops in as far as Kathiawar is concerned.

9. Covering the establishment of the small farm for cane and demonstration of better types, methods, of growth and extraction approximately Rs. 28,000 in five years.

10. *Nil.*

11. (i) Hitherto *nil.* Have recently started sugarcane testing station.

(ii) This is all being done by process of small demonstration plots comparing new varieties and new methods with the old and it has only come into existence during the last year or two.

12. (i) A small grant over a period of 5 years beginning from December 1936 of Rs. 11,300 is sanctioned by the I. C. A. R. for the testing of sugarcane for Gujerat.

(ii) Suitable varieties obtained for testing. Could be increased with advantage.

(iii) No aid is received from the Imperial Institute of Sugar Technology.

13. There is only one factory and that too an old one. Considerable new machinery had to be installed. It has not been working sufficiently long to enable it to pay attention to the improvement of sugarcane varieties and their cultivation, in the district.

14. (*a*) 285,899 maunds.

(*b*) Practically speaking *nil*.

(*c*) 80 to 75 per cent.

(*d*) 15 to 20 per cent.

15. Scarcely arises as the factory only operated for a small portion of the last season. The chief difficulty to the cane-grower is probably the matter of water.

16. No action has been taken. However, efforts are being made by the Co-operative Department, the District Co-operative Bank and the District Agricultural Improvement Committee to form such a society.

17. No.

18. No competition.

19. Hardly arises at present but will probably have to be considered if the factory is going to keep running full crushing season.

20. Hardly arises. Half an anna per mile.

21. Where there has been carting, the cultivators generally employ their own carts and as they hire bullocks for crushing, these are used to do carting work, costing about As. 12-0 a pair per day.

22. In so far as the one factory is concerned, probably adequate.

23. As enumerated below.

24. (1) Capital is not provided by Government.

(2) Exemption from the levy of Municipal octroi and toll is granted in exchange for a lump sum payment.

(3) If the factory owner undertakes cane-growing he will be allowed to take water either from the river or Government well at reduced rates.

25. *Nil*.

26. Yes.

27. The wholesale and retail prices of sugar per maund during the last seven years in the city of Baroda area as under:—

Year.	Wholesale price per 40 lbs.	Retail price per 40 lbs.
1	2	3
	Rs. A.	Rs. A.
1930	4 12	5 2
1931	5 2	5 6
1932	6 6	6 12
1933	6 2	6 8
1934	5 10	5 14
1935	5 2	5 8
1936	4 6	4 10

28. The variations are shown above. The reasons for these fluctuations are to be found in the protection given to the Industry and subsequent rise in internal production and therefore internal competition.

29. This subject has not received as yet the attention of the Assistant Marketing Officers as this does not appear among the crops under survey. Some tentative inquiries made show that the consumption of sugar *per capita* in 1935-36 was estimated at lbs. 55·90 per annum in Baroda City.

30. There are none in the State.

31. *Nil.*

32. Experimental canning of fruits and syrups are just being undertaken by the Department of Agriculture. On the whole there may be some small opportunities in this direction for the use of sugar.

33. This was allowing for use in chewing, about 55,000 maunds in 1930-31 and at the present day about 110,000 maunds.

34. Nothing.

35. The prices of jaggery in the earlier years ranged from about Rs. 6 to Rs. 8 a maund. At the present time range between Rs. 3 to Rs. 4 the change is primarily due to increasing acreage all over India and the incoming of gur from other areas.

36. The total consumption of gur/jaggery in the State was as under.

Year.	Consumption in B Mds.	Year.	Consumption in B Mds.
1929-30 . . .	410,919	1933-34 . . .	583,855
1930-31 . . .	450,683	1934-35 . . .	593,990
1931-32 . . .	571,603		
1932-33 . . .	559,327	1935-36 . . .	644,789

37. The United Provinces and the Deccan.

38. Most of our Jaggery in the Navsari district goes in the Bombay Presidency while there is a good deal of export of gur from Amreli district of Baroda State, in Kathiawar into other Kathiawar States. It is probable that this demand keeps the cane industry going in Amreli district.

39. Probably yes, as the fall in prices of sugar has affected the price of gur.

40. Exact data are not available.

41. *Nil.*

42. Practically *nil.* One or two demonstrations of the Hadi process have been carried out.

43-45. Does not arise.

46. *Nil.*

47. After the sugar industry protection came into existence the sugar factory at Gandevi was taken up by a new industrialist who started it working. As he took over the factories in 1935 he could not obtain advantage of the favourable prices as other factories in British India. A large scale production by the factory would have stimulated cane growing. The dealers and consumers have been affected in the same manner as in British India and more particularly owing to the fluctuations in rates as shown in item No. 27 above.

48. Included in the above. Reference is invited to prices mentioned in item No. 27 above.

49. No.

50. Statistics of acreage are secured by direct report received from the Vahivatdars of each taluka. The gur statistics are based on 10 per cent. of the estimated yields of cane. The actual yields of either the gur or

cane are somewhat of the nature of guess work. There has been, as far as is known, no exact crop cuttings of cane or exact gur boiling of such cut cane.

51. *Nil.*

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(14) *Letter dated the 26th July, 1937, from the Government of Baroda, Baroda.*

Please refer to your letter No. 303, dated the 18th June, 1937.

In the State there are two distilleries and one concern manufacturing spirit. Mahura flowers are used by them for the manufacture of spirit.

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(15) *Letter dated the 29th August, 1937, from the Tariff Board to the Hon'ble the Resident, Central India States, Gwalior.*

I am directed to refer to the Government of India, Department of Commerce, Resolution No. 127-T(1)/37 of the 27th March, 1937, referring to the Tariff Board the question of the extent of protection that should be enjoyed by the Indian Sugar Industry during the period from 31st March, 1938 to 31st March, 1939. In that connection the Tariff Board issued certain questionnaires and I am to enclose two copies of the general questionnaire and the questionnaire for the Local Government. It has been brought to the notice of the Board that in Jaora State there is a sugar factory and the conditions under which Indian or foreign sugar can be imported into the State or exported from it are somewhat different from those in British India. I am to request that any information available regarding Jaora State on the points raised in the questionnaires may kindly be furnished to me at 1, Council House Street, Calcutta, by the 20th September, 1937.

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(16) *Letter dated the 13th September, 1937, from the Secretary to the Resident for Central India, Indore.*

I am directed to refer to your letter dated the 29th August, 1937.

2. The sugar factory in the Jaora State was opened in November, 1934. The area under cane cultivation was then 1,620 bighas of which about 700 bighas lay within an average radius of seven miles from the factory premises and the remaining area at a distance varying from 20 to 50 miles. The total production of cane was estimated at 53,900 maunds after allowing for loss due to insect pests, failure of wells and other causes. In order to keep the factory working for 100 days the quantity of sugarcane required was estimated at 700,000 maunds and it was proposed to import 161,000 maunds at considerable extra expense from neighbouring territories. The cost of sugar was estimated at Rs. 9-8-9 per maund. All sugar produced at the factory in the State is subjected to excise duty at British Indian rates.

3. There is hardly time to supplement the above information by enquiry from Jaora before the 20th September but supplementary enquiries will gladly be made now if the Board so desire.

4. A large sugar factory is now being erected at Sehore in the Bhopal State and it is understood that it is hoped to start production there early in 1938.

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(17) *Letter dated the 22nd September, 1937, from the Tariff Board, to the Secretary to the Resident, Central India States, Indore.*

With reference to the last sentence of paragraph 2 of your letter dated the 13th September, 1937, I am to enquire whether any import or export duty is levied on Indian or foreign sugar entering or leaving the Jaora State and, if so, the amount of the duty.

(18) *Letter dated the 15th January, 1938, from the Secretary to the Resident for Central India, Indore.*

With reference to your letter dated the 22nd September, 1937 [Not printed], I am directed to forward herewith a copy of letter No. 2015, dated the 2nd January, 1938, from the Chief Minister and Vice-President, State Council, Jaora, with its enclosure.

Extracts from letter No. 2015, dated the 28th December, 1937/2nd January, 1938, from the Chief Minister and Vice-President, State Council, Jaora, to the Political Agent in Malwa, Indore.

The Jaora Durbar levy duty on foreign sugar entering the State territory at the rate of Re. 1 per maund. The sugar manufactured at the sugar factory, Jaora, is charged at As. 8 per maund when it leaves the factory premises for this State territory. The amount of the import duty for the year 1936-37 was Rs. 6,256-3. An excise duty of Rs. 2 per cwt. is also imposed by the Darbar on all sugar manufactured and exported from the Sugar Factory, Jaora, to British India. The Durbar have recently notified that all sugar leaving the factory premises, whether imported within the State territory or exported to other foreign parts, would be subject to an excise duty at the rate of Rs. 2 per cwt.

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(19) *Letter dated the 1st July, 1937, from Dewan Phaltan State, Phaltan.*

I have the honour to enclose herewith the replies to the questionnaire for the Local Governments, with six spare copies. The views of the Phaltan Durbar on some of the points before the Board also accompany herewith.

2. As for the general questionnaire to be replied by Sugar Factories, the Phaltan Sugar Works, Limited, which owns the Sugar Factory in this State, has stated that along with other sugar factories in the Deccan, it purposes jointly to represent matters to the Tariff Board through a joint representative and that therefore it does not propose to send its replies to that questionnaire.

3. There are no open pan factories or khandsaris or gur refineries in the State and hence the questionnaire relating to them have not been answered.

4. Replies to questionnaire for gur merchants accompany herewith.

REPLIES OF THE PHALTAN DURBAR TO THE QUESTIONNAIRE FOR THE LOCAL GOVERNMENTS, ISSUED BY THE TARIFF BOARD.

1. The approximate area under sugarcane in this State during the last seven years was as under:—

	Gunthas.		Gunthas.
1930-31 . . .	323 20	1934-35 . . .	1,985 0
1931-32 . . .	416 20	1935-36 . . .	3,290 20
1932-33 . . .	829 0	1936-37 . . .	3,541 0
1933-34 . . .	1,021 0		

The improved varieties of sugarcane grown in this State with their approximate acreage are as under:—

	E. K. 28.	P. O. J. 2878,2883.
1934-35	1,123 0	282 0
1935-36	1,038 10	107 0
1936-37	744 10	408 23

	H. M.	C. O. 360, 413, 418.
1934-35	25 20	...
1935-36	...	...
1936-37	...	53 25

	C. O. 290.	E. K. C. O.	Pundya.
1934-35 . . .	362 0	16 30	30 30
1935-36 . . .	739 10	16 30	7 0
1936-37 . . .	1,078 9	3 3	12 30

2. The climatic conditions and the methods of cultivation of sugarcane do not vary in the different parts of the State.

Almost all cane in the State is grown in the Canal area and is irrigated by the Canal.

3. The irrigation rates are, Rs. 3, Rs. 5 and Rs. 7 per acre for Kharif, Rabi and hot weather season respectively. The Sugar Factory is charged Rs. 45 as water rate and Rs. 15 as drainage deposit per acre of cane per annum. The drainage deposit was recovered from the sugar factory once only.

Ordinary irrigators growing cane in the factory area are charged Rs. 60 per acre of cane per annum.

Outside the factory area, block system prevails and irrigators are charged Rs. 60 per annum for a block of 3 or 4 acres out of which there can be only one acre of cane. For other crops in the remaining area of the block no water rates are charged.

4. The cost of cane cultivation per acre is practically the same in all parts of the State.

There is very little cane cultivation under well irrigation. Almost all cane is grown under Canal Irrigation. The cost per acre is approximately Rs. 392-8.

From 1930 to 1935 the cost of cane cultivation per acre did not vary much. But within the last two years it has increased by about Rs. 30 per acre on account of increase in the price of oil cake.

The average yield per acre is 35 to 40 tons under ordinarily prevailing methods of cultivation for an expenditure of Rs. 392-8.

The average sucrose contents is 11 per cent.

5. So far as this State is concerned, the price of cane per ton as between the cane-growers and the Phaltan Sugar Works, Ltd., has been fixed at $1\frac{1}{4}$ times the price of one maund of sugar of the first quality, as a result of the agreement between the cane-growers and the Company. The Durbar therefore considers this as a fair price.

6. There has been a marked increase in sugarcane cultivation in the area allotted to the sugar factory of the Phaltan Sugar Works, Ltd., during the past three years. The only cause of this increase is the establishment of the sugar factory. The increase is not due to (i), (ii), (iii) or (iv). The sugar factory has its own cane plantation and it has been increasing for the last three years.

7. There was no over-production of sugarcane in this State in the year 1936-37.

8. Cotton is the only other cash crop in this State; but it does not form an alternative of equal value to sugarcane.

The price of a good cotton crop per acre on an average within the last five years has been Rs. 80 to Rs. 100.

9. About three lakhs of rupees has been spent in extending cane cultivation. It is assumed that on an average Rs. 30 per acre has been spent in making land fit for cane cultivation.

10. The question applies to British India Provinces only and does not arise in the case of an Indian State.

11. (i) No research work has been undertaken by the State in regard to sugarcane and control of disease but the Sugarcane Research Scheme for the Deccan established at Padegaon which is financed by the Government of Bombay and by the Imperial Council of Agricultural Research in India has maintained a research farm at Padegaon in this State for the benefit of cane-growers in the Deccan.

(ii) Cane-growers in the State are closely watching the improved methods of cane-growing adopted by the Phaltan Sugar Works, Ltd., in the matter of introduction of suitable varieties of cane, use of manures, etc., during the last four years and it seems that they have much profited by their observation.

12. (i-iii) No assistance has been so far received; it may be found possible in future to establish contact between these institutions and the Agricultural Department of the State.

The State is not in a position to undertake research work—agricultural and technological.

13. The State Agricultural Department does not do any cane-growing for experimental purposes and so this question does not arise.

14. (*a*) Sugarcane grown in about 2,000 to 2,100 acres is crushed in the sugar factory.

(*b*) No cane is crushed in open pan factory, etc.

(*c*) Sugarcane in about 980 acres is turned into gur.

(*d*) About 20 acres of cane is used for chewing purposes and 350 acres of cane for seed.

15. The sugar factory in this State has got its own cane plantation almost sufficient for its requirements and so it does not purchase much cane from cane cultivators. Therefore, the question of growing cane and delivering it to the sugar factory is not of material importance in this State.

16. The Co-operative Department advances loans (through Co-operative Societies) to cane-growers. There are 49 Agricultural Co-operative Credit Societies in the State.

The cane-growers are not organized. There are no cane-growing and cane supplying societies in the State.

17. The price of sugarcane has been fixed by an agreement between the cane-growers and the Phaltan Sugar Works, Ltd., brought about by the Durbar.

The Sugarcane Act XV of 1934 has not been made applicable to the State.

The price of sugarcane per ton is 1¼ times the price of 1 maund of sugar of the 1st quality obtained by the Phaltan Sugar Works, Ltd., so that assuming the price of 1 maund of sugar is Rs. 7-8, the price of one ton of sugarcane would be Rs. 10, *i.e.*, Rs. 7-8 *plus* Rs. 2-8.

18. Competition among various sugar factories does not affect the price of sugarcane in this State as the Phaltan Sugar Works, Ltd., is the only sugar Company operating in the State. As the other sugar Companies in British India are a considerable distance away from the above factory the question of competition among the sugar factories does not arise.

19. In view of the reply given to question 17, this question does not arise in this State. The sugar factory in this State has its own cane plantation on a very large scale and so the Company does not desire to purchase a large quantity of cane from cane-growers. Under these circumstances the system of bonuses would not be feasible here.

20. The sugar company in this State has got a trolley line of its own for transport of cane, etc.; and so the cane has only to be transported from the field up to the trolley line or the factory gates as would be more

convenient to the cane-growers. The cost of transport of one maund of cane per mile by carts is about three pies.

21. Cane-growers generally employ their own carts. If carts have to be hired, the average rate per day is Re. 1 to Rs. 1-4 and the daily round mileage done by these carts is about 12; but the effective mileage is 6 only.

22. Tramway facilities in the State for transport of cane are adequate. There are feeder roads but more of them are required and they are under contemplation.

The trolley line is owned by the Company and the feeder roads belong to the State.

23. The Durbar have given some concessions to the Sugar Company (the Phaltan Sugar Works, Ltd.). Some of them are:—Total exemption from Income-tax for ten years and then a special flat rate of only one anna in a rupee, procuring land for the Company for its own cane plantation at a cheap rent, procuring sugarcane for the Company at a reasonable rate, permission to demolish survey marks, etc., of lands, construction of some feeder roads by the Durbar in the factory area, exemption from non-agricultural assessment for non-agricultural use of land and exemption from export and import duties.

24. No separate reply is necessary to this question in view of the reply to the question 23.

25. There are no Co-operative Sugar Factories in the State.

26. Yes. The conditions of labour in the sugar factory in the State are satisfactory.

27. The following were the prices of sugar, wholesale and retail at Phaltan during the last seven years.

	Wholesale per maund.	Retail Per maund.
	Rs. A. P.	Rs. A. P.
1930-31	10 14 6	11 4 9
1931-32	9 11 3	10 1 6
1932-33	9 11 3	10 1 6
1933-34	10 1 9	10 8 0
1934-35	9 11 3	10 1 6
1935-36	8 14 3	9 4 6
1936-37	7 5 6	7 11 9

28. There is no considerable variation between the wholesale and retail prices.

29. The normal consumption of sugar per head in this State is about 7 lbs. a year. As the price of sugar is going down there is a possibility of the consumption being increased.

The consumption of sugar is bound to increase in the course of time.

30. Indian sweetmeats such as pedhas, barphi are the only sorts of confectionery in this State and sugar is used in its preparation. In the making of some inferior confectionery, sometimes gur is used.

31. (i) There is scope for another sugar factory in the eastern part of the State. Even if it comes into existence probably there would be no necessity of introducing the zone system.

(ii) No.

(iii) (*a*) & (*b*) Yes.

32. There is no immediate possibility of starting a subsidiary industry of the kinds referred to in the question.

33. The production of gur from sugarcane within the last seven years has been as under:—

	Mds.		Mds.
1930-31 . . .	25,700	1934-35 . . .	83,600
1931-32 . . .	34,636	1935-36 . . .	83,600
1932-33 . . .	68,250	1936-37 . . .	83,600
1933-34 . . .	83,600		

34. Gur is not produced from any other material in this State except from cane.

35. The following are the prices of various kinds of gur per maund during the last seven years:—

	Superior Quality.	Inferior Quality.
	Rs. A. P. Rs. A. P.	Rs. A. P. Rs. A. P.
1930-31 . .	5 8 6 to 4 6 0	4 12 0 to 3 9 0
1931-32 . .	4 12 0 to 3 15 3	3 15 3 to 3 9 0
1932-33 . .	3 2 6 to 2 12 3	2 6 0 to 2 6 0
1933-34 . .	3 9 0 to 5 2 3	4 6 0 to 2 12 3
1934-35 . .	5 15 0 to 3 2 6	5 2 3 to 2 6 0
1935-36 . .	3 9 0 to 2 12 3	3 2 6 to 2 6 0
1936-37 .	3 2 6 to 2 6 0	2 6 0 to 1 9 3

The fall in the price of jaggery is mainly due to the general slump in prices of all agricultural produce and slightly due to the competition of Indian factory sugar.

36. These figures are not available. The *per capita* consumption of gur in this State is not less than the average *per capita* consumption for the whole of India.

37. The net import of gur into the State is not large as it is produced in sufficient quantities here.

38. Gur is exported to the Satara, Poona and Sholapur Districts from this State.

The approximate figures of export for the last seven years are as under:—

	Mds.		Mds.
1930-31 . . .	7,471	1934-35 . . .	65,371
1931-32 . . .	16,447	1935-36 . . .	61,725
1932-33 . . .	49,921	1936-37 . . .	61,725
1933-34 . . .	65,371		

39. There is no vital relation between the price of gur and Indian factory sugar; these two vary independently of each other as there is a specific demand for gur for certain purposes.

40. The Indian factory sugar is not replacing gur in this State to any appreciable extent. The consumption of both is increasing.

41. Multiple furnaces and power crushers have been the important improvements in the methods of gur making, introduced during recent years.

42. There are no open pan factories and Khandsaries in this State.

43. In view of the reply to question 42, this does not arise.

44 & 45. Does not arise.

46. In view of the reply to question 42, this question does not arise.

47. (*a*) The Sugar Excise Duty of 1934 and of 1937 has affected the cane-growers inasmuch as the sugar factories offer smaller prices for cane.

(*b*) The profits of the manufacturer have lessened to a certain extent.

(*c*) The dealer is not in any way affected.

(*d*) The consumer has not been adversely affected.

48. In spite of the protective duty, the consumer has not got to pay a higher price for sugar. On the contrary, the price of sugar to the consumer is lower than what it was before the introduction of the tariff duty.

49. No, as there are no such industries.

50. These statistics as regards acreage and production are prepared by the Revenue and Agricultural Department of the State and they are fairly correct. The prices of sugar and gur are obtained from merchants and dealers and the information cannot be said to be far from accurate.

REPLIES TO QUESTIONNAIRE FOR GUR/JAGGERY MERCHANTS COMPILED FROM THE INFORMATION OBTAINED FROM THESE MERCHANTS.

1. Phaltan town is the only marketing centre in which the gur merchants deal.

2. Two kinds of gur are marketed—

(i) Superior quality yellowish colour.

(ii) Inferior quality blackish colour.

3. The chief centres for obtaining supply of gur are the villages in the Northern and Eastern part of the Phaltan State and the quantity obtained in recent years is as under:—

	Mds.		Mds.
1930-31 . . .	16,020	1934-35 . . .	30,232
1931-32 . . .	21,096	1935-36 . . .	39,245
1932-33 . . .	23,261	1936-37 . . .	38,193
1933-34 . . .	20,658		

The increase in the supply is due to increased acreage under sugarcane for gur making.

4. No.

5. The following are the prices of various kinds of gur per maund during the last seven years:—

	Superior Quality.	Inferior Quality.
	Rs. A. P. Rs. A. P.	Rs. A. P. Rs. A. P.
1930-31 . .	5 8 6 to 4 6 0	4 12 0 to 3 9 0
1931-32 . .	4 12 0 to 3 15 3	3 15 3 to 3 9 0
1932-33 . .	3 2 6 to 2 12 3	2 6 0 to 2 6 0
1933-34 . .	3 9 0 to 5 2 3	4 6 0 to 2 12 3
1934-35 . .	5 15 0 to 3 2 6	5 2 3 to 2 6 0
1935-36 . .	3 9 0 to 2 12 3	3 2 6 to 2 6 0
1936-37 . .	3 2 6 to 2 6 0	2 6 0 to 1 9 3

The fall in the price of jaggery is mainly due to the general slump in prices of all agricultural produce and slightly due to the competition of Indian factory sugar.

6. There is no vital relation between the prices of gur and sugar. They vary independently.

7. There is no competition between gur and Indian factory sugar or Khandsari sugar in this State. Sugar is not replacing gur in our market.

8. Good quality gur will keep well for about six months. Inferior quality gur will keep its quality for two or three months.

Views of the Phalton Durbar, on some of the points raised in the questionnaire for the Local Governments, issued by the Tariff Board.

47. The effect of Sugar Excise Duty of 1934 and the additional duty imposed in 1937 is in the opinion of the Durbar as follows:—

(*a*) So far as this State is concerned, no considerable class of independent cane-growers supplying sugarcane to the sugar factory exists here. The sugar factory in this State and the sugar factories of Mahrashtra generally have their own sugarcane estates, and they grow their own cane. The Phaltan Sugar Works, Ltd., purchases some sugarcane to supplement its own produce, under a system of rate-fixation described in answer to Question No. 5.

The effect of Excise Duty on sugar should have been, if at all, to increase the price of sugar and consequently of sugarcane supplied to sugar factories, as by legislation in Northern India it is made to depend on prices of sugar. But as a matter of fact, in spite of the excise duty, the price of sugar has been going down and consequently of the sugarcane. This fall in the price of sugar is mainly due to the rapid expansion of the sugar industry in the country and the internal competition among sugar manufacturers and as a result of these factors, it is thought that even if there had been no excise duty, the fall in sugar prices would have been even more marked; and consequently the cane-grower would have realized lower prices than at present for cane. Thus the excise duty has tended to help the cane-grower to realize higher prices than he could have, without the excise duty. It need not be added that regard being had to the present prices of gur it is wholly uneconomic to turn sugarcane into gur.

(*b*) On account of internal competition among manufacturers, the rapidly expanding production and consequently declining prices of Indian sugar, the burden of excise duty tends to be shifted to the manufacturer. The present price of 1st grade Cawnpore sugar is unexpectedly low (Rs. 6-2 per maund on 26th June, 1937) when compared with the fair selling price at the end of the period of protection, as calculated by the Tariff Board; that price is Rs. 7-12-9 per maund after deducting As. 6-9 for the value of molasses and did not of course allow for the excise duty. To what extent, therefore, the excise duty cuts into the normal rate of dividend, the provision for depreciation and other overhead charges is a matter for the Tariff Board to investigate.

(*c*) The dealer is not affected one way or the other.

(*d*) The consumer has not been adversely affected. He is getting sugar at a cheap price as a result of the keen competition.

48. The protective duty has brought about such a rapid expansion of the Indian Sugar Industry that the burden on the consumer has been neither prolonged nor heavy. Since the adoption of protective duties, the price of Indian sugar reached, only for a while, the limit placed by the Tariff Board, *viz.*, the landed price of Java sugar *plus* the basic protective duty and surcharge. They have generrally been even on a lower level than the fair selling price of Rs. 9-5-9 per maund, worked out by the Tariff Board, for the first part of the period of protection. These prices also compare favourably with the pre-war prices and it may be now safely assumed that India is for all time insured against prices of the order of Rs. 20 per maund and above, that had to be paid for some years. For a country of a continental size and population like India, to depend for her sugar on the produce of a small island was a precarious position and it is a distinct national gain that it has been ended. It goes without saying that every

endeavour must be made and steadily continued to increase the efficiency of cane production and sugar manufacture so as to bring the price of Indian sugar as near as possible to sugar prices in the world's open markets. It may be said, however, that on the whole the Indian consumer had to make only a reasonable and moderate sacrifice for establishing an industry of such great national importance.

The views of the Phaltan Durbar on some questions of general interest to the Sugar Industry.

Protection.—The rate of the protective duty for the period between 1938 and 1946, is the most important question before the present Tariff Board. The Durbar's view in this matter is that the scheme of protection as recommended by the previous Tariff Board should be adhered to, and a basic protective duty of Rs. 6-4 per cwt. with such addition by way of a deferred duty as may be found necessary, should be maintained. There is no case for increasing the present measure of protection. The manufacturers must increase their efficiency and thus try to adjust themselves to a lower level of protection in course of time. Similarly a duty of less than Rs. 6-4 per cwt. would be premature as the total cost of sugar production cannot be safely held to have gone down by more than a rupee per cwt.

Research.—The Durbar wishes to emphasize the paramount importance of Research in respect of methods of cane-growing as well as of the process of sugar manufacture. The Padegaon Research Scheme for the Deccan ought to be extended in scope. Profitable utilization of molasses is another urgent problem of Indian sugar industry, and it ought to be tackled with every resource at command in order to strengthen the position of the industry. In fact, Research, resulting in the better outturn of crop and sugar and greater economy in productive operations, the utilization of bye-products, is the one hope of Indian sugar industry in the long run. India has to overcome certain disadvantages of natural environments *vis-a-vis* other sugar producing countries, and properly directed research alone will enable her to do so. The great work of Coimbatore Research Station conclusively demonstrates the value of research work.

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(20) *Letter dated the 1st July, 1937, from the Dewan Phaltan State, Phaltan.*

Subject:—INFORMATION ABOUT MOLASSES IN THE PHALTAN STATE.

With reference to your letter No. 303, dated the 18th June, 1937, I have the honour to state as under:—

A. (1) There are no distilleries in this State.

(2) Molasses are not put to any use and hence no question of paying any price arises.

At present they are waste product.

(3) The question does not arise.

B. (1) There are no concerns manufacturing rectified or denatured spirit.

(2) & (3) Questions do not arise.

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(21) *Letter dated the 11th January, 1938, from the Foreign and Political Department, Bikaner State, Bikaner.*

PROTECTION TO THE INDIAN SUGAR INDUSTRY.

With reference to your letter No. 171, dated the 11th May, 1937, received through the Secretary to the Honourable the Resident for Rajputana under cover of his letter No. 542-P./37, dated the 2nd August, 1937, I am directed to forward herewith a statement giving replies to the points set out in the questionnaire meant for the Local Governments. The delay in sending the statement is regretted.

QUESTIONNAIRE FOR LOCAL GOVERNMENTS.

Re SUGARCANE AND SUGAR FACTORIES.

Reply by Bikaner Government.

1. The statement below will show the area under sugarcane in the Bikaner State during the last 6 years (in Bighas). (Bigha = ⅝ acre):—

Name of Fasal.	Anupgarh.		Remaining four Tehsils.		Whole Gang Canal Colony.	
	Area matured.	Total area sown.	Area matured.	Total area sown.	Area matured.	Total area sown.
Khariff 1931 .	685 4	820 18	6,885 11	8,050 4	7,570 15	8,871 2
„ 1932 .	716 8	1,158 11	4,567 12	9,537 7	5,284 0	10,696 18
„ 1933 .	824 4	1,053 6	4,649 7	5,260 9	5,473 11	6,313 15
„ 1934 .	760 3	1,202 17	5,401 2	6,843 4	6,161 5	8,046 1
„ 1935 .	936 14	1,386 1	8,093 1	9,850 11	9,029 15	11,236 12
„ 1936 .	1,586 8	2,115 10	10,890 2	13,016 0	12,476 10	15,131 10

Some of the improved Coimbatore varieties of cane—Co. 223, Co. 285, Co. 213, Co. 290, are grown in the Colony, but there is no record to show the acreage under each.

2. In the Gang Canal Colony, there are two typical kinds of soil; one sandy loam comprising the Tehsils of Sri Ganganagar, Sri Karanpur, Raisinghnagar and Padampur, and the other heavy soil in the bed of the old river Ghaggar.

Climatic conditions and the methods of cultivation are same throughout the colony.

Climate.—Extremes of dry climate in both summer and winter with dust or sand storms from April to middle of July.

Method of cultivation.—The common Punjab practice of putting cane setts behind the plough in a broad and somewhat deep furrow, followed by a sohaga, is the usual method used in this Colony.

All the cane crop is irrigated as it is not possible to grow cane under unirrigated conditions on account of scanty rainfall.

3. Irrigation rate for sugar cane:—

	Water rate.	Crop rate.	Total.	
	Rs. A.	Rs. A.	Rs. A.	
1928	6 0	3 0	9 0	per bigha = ⅝ Acre.
From Rabi 1934 . .	5 8	2 12	8 4	Ditto.

The rates were fixed at half net asset system.

The rates were reduced in 1934 for 4 years due to low prices.

4. The approximate cost of cultivation of cane to the cultivator in the irrigated area is about As. 2-9 per maund of cane.

There has practically been little variation in the cost during the last seven years, except that in 1930, it must have been slightly more than the figure given above. The average yield of cane is about 500 maunds per acre, and the average sucrose content is about 6 per cent.

5. In Binkaner State the price of sugarcane has been fixed at As. 6 at the factory if the rate of sugar is Rs. 10 per maund.

6. No variation. In 1937 cane cultivation is less because price of gur was much below the average.

7. No.

8. The other cash crops in this colony besides sugarcane are cotton, toria or other oilseeds. Every one of these crops has its own place and none can be a substitute for the other. There is a limit to the cultivation of cane as it requires a lot of manure and irrigation. Similarly other crops have their own limitations. Cotton for example, on account of its picking expenses, cannot be grown on a large scale. Toria is susceptible to cold, which crop when affected is greatly reduced in yield. Gram too is affected somewhat badly by thunder storms and hails in March.

Estimate of return per acre (gross income) for these crops is given below:—

	Rs.
Sugarcane	150
Wheat	50
Toria	35
Cotton	30
Gram	20

9. No.

10. None.

11. Small growth variety trials have been conducted during the past 7 years on several improved varieties of sugarcane, besides some agronomic tests.

The following Coimbatore or other varieties (where it is so stated) have or are still under trial at the Experimental Farm:—

1. 205.	12. 313.	23. 301.
2. 210.	13. 331.	24. 302.
3. 213.	14. 355.	25. 303.
4. 223.	15. 432.	26. 312.
5. 244.	16. 434.	27. 413.
6. 285.	17. 412.	28. 421.
7. 290.	18. 416.	29. 353.
8. 281.	19. 419.	30. 356.
9. 237.	20. 408.	31. 357.
10. 243.	21. 433.	32. Shahjahanpur 48.
11. 214.	22. 421.	33. E.K. 28.

These trials have been conducted, with compost only and with Ammonium Sulphate with compost, in different doses.

The varieties which have been more successful are—

Co. 213.	Co. 244.
Co. 285.	Co. 223.
Co. 290.	Co. 313 is another promising variety under trial.

The improved Java method of growing cane in trenches to be later turned into ridges, was tried here for the first two years, but was not found to compare favourably with the local practice of growing cane on flat, on account of the scanty rainfall and loose sandy nature of the soil, which buried the young sprouting cane setts grown in trenches, every time it was irrigated.

12. Except that a few canes of the required cane varieties were obtained once or twice from the Coimbatore Sugarcane Research Station, no other assistance was taken from any of the three Institutions.

13. It is hoped that the factory will start work in January, 1938.

14. The factory has not yet started work and so far leaving 20 per cent. for chewing and seed purposes gur is being made out of the balance of cane grown. The figures will be available after the factory has started its work.

15. The factory will start next year.

16. None.

17. Yes. The bases are the price of sugar in the local market. It is yet to be seen how this system will work.

18. There is no competition here.

19. The factory has not started work and this question can be answered only after some experience is gained.

20. 2 to 3 annas per maund.

21. The cane-growers have their own carts; but if there is none with any body he pays from 2 to 3 annas per maund variable according to distance.

22. Yes. There are no tramway facilities but facilities of a ramified railway system and roads do exist.

23. Not yet.

24 & 25. None.

26. The factory is in construction. Condition of labour is satisfactory.

27. The statement showing the wholesale and retail prices of sugar in the important markets for the last seven years is given below:—

——	1931.	1932.	1933.	1934.	1935.	1936.	1937.
	Rs. A.	Rs. A.	Rs. A.	Rs. A.	Rs. A.	Rs. A.	Rs. A.
Wholesale prices per Maund.	14 8	14 8	14 0	12 8	12 0	11 8	11 4
Retail prices per Maund.	15 0	15 0	14 8	13 0	12 8	12 0	11 12

28. Not much.

29. 125,000 maunds approximately. After the sugar factory has started operation it is hoped that the consumption will increase by nearly 50 per cent.

30. Sweets.

31. There is only open pan sugar factory.

32. The factory has not yet started its work, therefore, it is not possible for the present to answer the query.

33. 100 maunds of sugarcane will give about 10 maunds of gur.

34. None.

35. The statement is given below:—

———	1931.	1932.	1933.	1934.	1935.	1936.	1937.
	Rs. A.	Rs. A.	Rs. A.	Rs. A.	Rs. A.	Rs. A.	Rs. A.
Wholesale prices per Maund—							
(1) Gur . .	5 0	4 12	5 8	4 12	4 0	3 11	3 0
(2) Jaggery (Shakar).	4 12	5 4	6 4	5 4	4 8	4 0	3 12

Variation is due to the fluctuating rates due to depression of trade.

36. The average consumption of gur/jaggery for the last seven years is 372,000 maunds.

37. Gur/jaggery is imported from Meerut and Hissar. The import figures of 7 years are given below:—

	Mds.		Mds.
1930-31 . . .	146,940	1934-35 . . .	104,467
1931-32 . . .	128,138	1935-36 . . .	119,619
1932-33 . . .	96,470	1936-37 . . .	96,107
1933-34 . . .	108,151		

38. Noneexported as cost of production is high.

39 & 40. Cannot say yet *on account of absence of data.*

41. No research work has so far been undertaken as the Colony is only in its infant stage yet.

42. There is one open pan factory and the outturn is about 2,000 maunds.

43. No information available.

44. No such competition.

45. Cannot answer as actual working has not yet started.

46. None.

47-49. As regards (*a*) and (*b*) of question 47, *i.e.*, the cane-grower and the manufacture of sugar, the question cannot be answered till the vacuum pan factory starts working.

As regards (*c*) and (*d*) regarding the dealer in sugar and consumer of sugar and sugar products—they are affected by the levy of excise duty because they use sugar on which this extra duty has been paid and therefore in some cases there has been shrinkage in the normal expansion of consumption expected as a result of improvement in the standard of life of the people.

50. Through district agency.

51. No.

(22) *Letter dated 21st July, 1937, from the Foreign Minister to His Highness the Maharaja of Kapurthala, Kapurthala.*

With reference to your letter No. 171, dated the 11th May, 1937, I have the honour to forward herewith the answers to the following set of questionnaire and forms duly completed:—

1. Questionnaire for sugar/gur refineries.
2. Questionnaire for manufacturers of sugar by open pan system and khandsaris.
3. Questionnaire for gur/jaggery merchants.
4. Questionnaire for Local Governments.

I may add that replies to the questionnaire for gur refineries could not be furnished as there does not exist such a refinery in the State.

Answers to questionnaire for manufacturers of sugar by the open pan system and khandsaris.

NOTE.—There is no open pan factory in the Kapurthala State no one such factory was started near Kapurthala proper years ago under the management of a limited company floated locally. The factory did not prosper because it could not compete with the big factory at Phagwara. It was closed down after a year and the company was brought under liquidation.

Sometimes khandsari sugar was manufactured in large quantities in Tahsil Phagwara, Kapurthala State by the time-honoured method of Khandsars. Since the opening of vacuum pan factories in the United Provinces and especially the big vacuum pan factory at Phagwara, this indigenous industry has lost ground so much so that very few khandsars are seen in the whole Tahsil. Therefore whatever figures and facts are secured with great difficulty are given below:—

1. Khandsari sugar is manufactured from "rab" which is obtained from growers.

Process of manufacture.—"Rab" is put into big earthen vessel called "mattis". The vessel is then kept at some place without moving or shaking for 2-3 months. When it is found that sugar has separated from molasses in the form of crystals, the contents are poured on to a "pucca" tank prepared for the purpose after sifting through its top of thatched roof which is covered by a thick coat of river weed called "Jala". The molasses filters through the "Jala" and the roof while sugar is left on the roof, rubbed with hands and feet and kept in the sun for drying. This is finished product of khandsari sugar.

2. Rab is obtained directly from the cane-growers. The grower prepares rab in the presence of buyer who is sugar manufacturer. The price is fixed beforehand in terms of gur which can be obtained from a certain quantity of juice.

3. The average prices of "rab" purchased from the cane-grower by the khandsari sugar manufacturer (Rabia) are given below in a statement:—

Year.	1930-31.	1931-32.	1932-33.	1933-34.	1934-35.	1935-36.	1936-37.
	Rs. A.	Rs. A.	Rs. A.	Rs. A.	Rs. A.	Rs. A.	Rs. A.
Price in Rs. per Md. of Rab.	5 8	5 0	5 0	4 8	3 12	3 0	2 4

4. (*a*) There is insignificant quantity of khandsari sugar manufactured in the State, therefore, there is no comparison between price of "rab"

purchased by the Rabia and the price obtained for cane supplied to vacuum pan factory at Phagwara. The latter does not affect the former in any way now.

(*b*) The same as for (*a*).

5. The data required is as follows:—

(i) Juice is 52 per cent. of the cane.

(ii) Rab is 25 per cent. of juice.

(iii) Sugar is 50-60 per cent. of rab.

6. Two qualities of sugar manufactured (i) white khandsari sugar, (ii) redish white sugar called "Talauncha".

The output for last seven years is given below in maunds:—

Year.	1930-31.	1931-32.	1932-33.	1933-34.	1934-35.	1935-36.	1936-37.
	mds.	mds.	mds.	mds.	mds.	mds.	mds.
White Khandsari sugar.	1,000	600	400	200	100	60	40
Red Khandsari sugar (Talauncha).	500	200	100	100	50	30	15

7. The cost of manufacture of khandsari sugar has been Re. 1 to Rs. 1-8 for the last 7 years besides the price of "rab" given in the answer to Question No. 3 of this questionnaire.

8. Sometimes it was sent to Gujranwala, Gujrat, Sialkot, Multan and other districts of the Punjab. Now whatever is produced is consumed locally.

9. The prices obtained for the classes of sugar manufactured in the State are given below:—

Year.	1930-31.	1931-32.	1932-33.	1933-34.	1934-35.	1935-36.	1936-37.
	Rs. A.	Rs. A.	Rs. A.	Rs. A.	Rs. A.	Rs. A.	Rs. A.
White Khandsari sugar.	11 2	10 8	10 4	9 12	9 10	8 0	7 0
Red Khandsari sugar (Talauncha).	9 0	8 8	8 6	7 0	6 8	6 0	6 0

10. Gur is mostly used by the villagers. Khandsari sugar was preferred to "gur" for certain occasions. Now the case is quite different. Indian factory sugar is mostly used. However there is a class of conservative Hindus who persist in the use of khandsari sugar due to its alleged purity on religious grounds.

11. Indian factory sugar has almost taken the place of khandsari sugar which is now used to the extent of 2 per cent. only of the total consumption of white sugar.

12. There is now no open pan factory in the State and very few khandsars left as is shown in the answer to Question No. 6 of this questionnaire. This is only due to competition with factory sugar.

13. No effect is noticeable of (i) Sugar Excise Duty of 1934, (ii) additional Duty of 1937, on khandsari sugar.

14. Khandsars cannot compete with Indian sugar factory as long as the price of sugar is so low because the cost of manufacture by the indigenous method is greater and the recovery is less. If the price of sugar be raised, there is a chance of the revival of the indigenous industry.

Information supplied by the "gur" merchants at Sultanpur, Kapurthala State regarding the questionnaire for "gur"/Jaggery merchants.

1. The principal "gur" marketing centre is at Sultanpur Lodi in the State.

2. The different kinds of "gur" marketed at Sultanpur market are "Bheli", "shakkar", "Tikki" and "Chaqu".

3. They get the supply of "gur" from different villages of the Tahsil Sultanpur, Kapurthala State and "Chaqu" gur from Muzaffarnagar in the United Provinces.

The quantities obtained during the last 7 years are as given below:—

	'Gur' local.	Chaqu.
	Mds.	Mds.
(1) 1930-31	3,000	150
(2) 1931-32	4,000	130
(3) 1932-33	3,000	140
(4) 1933-34	2,500	125
(5) 1934-35	3,000	110
(6) 1935-36	3,000	100
(7) 1936-37	2,500	40

The variations in the quantities of "gur" marketed during the last seven years are due to—

(*a*) the demand of gur outside.

(*b*) the climatic conditions, and

(*c*) acreage under cane.

4. In 1933-34 the quality of "gur" was bad due to attack of pyrilla. Generally the variation in the quality of "gur" takes place from year to year and is due to—

(*a*) the crop being damaged by flood,

(*b*) too much frosting, and

(*c*) attack of insects and rats.

5. The prices of various kinds of "gur" per maund for the last 7 years are given in the statement below:—

Year.	Bheli.	Shakkar.	Tikki.	Chaqu.
	Rs. A.	Rs. A.	Rs. A.	Rs. A.
1930-31 . .	5 11	6 1	5 13	6 11
1931-32 . .	3 13	4 3	4 3	3 15
1932-33 . .	3 10	4 0	3 12	4 10
1933-34 . .	2 14	3 4	3 0	3 14
1934-35 . .	4 7	4 13	3 9	6 7
1935-36 . .	4 0	4 6	4 2	5 0
1936-37 . .	2 7	2 13	2 9	3 7

The variations in the prices of "gur" are due to—

(*a*) The demand of "gur" in the markets outside the State territory.

(*b*) Heavy or poor crop in the "Illaqa", and

(*c*) Good or bad quality of "gur" made during the season.

6. Comparison of sugar and "gur" prices showing their relation during the last seven years as given below:—

Year.	Wholesale price of sugar per md. at Sultanpur.	Wholesale price of 'Gur' (Bheli) per md. at Sultanpur.
	Rs. A.	Rs. A.
1930-31	10 10	5 11
1931-32	12 0	3 13
1932-33	10 5	3 10
1933-34	10 0	2 14
1934-35	8 0	4 7
1935-36	9 0	4 0
1936-37	7 0	2 7

7. Indian factory sugar is taking the place of "gur" (Shakkar) even in villages. Those villagers who used "Shakkar" or khandsari sugar on the occasion of marriages or other ceremonies have discarded it partially. The cheapness of white sugar is responsible for its popularity amongst the masses. White sugar is neat and clean, while khandsari sugar being not so white looks unclean, and hence people dislike it. Only 2 per cent. of total consumption of sugar used is khandsari sugar.

Yes, factory sugar is by and by replacing gur and khandsari sugar.

8. Gur remains in good condition for a year generally. If it is stored properly it can be kept in good condition longer. Chaqu and Shakkar can be kept longer as compared with "Tikki" and "Bheli". The keeping quality of "Gur" depends a great deal on the variety of cane, method of its manufacture and climatic conditions also.

Information supplied by the "gur" merchants at Kapurthala regarding the questionnaire for gur/jaggery merchants.

1. Gur market at Kapurthala, capital of the State.

2 & 3. The same as for Sultanpur market.

The quantities obtained during the last seven years are as given below:—

	'Gur' local.	'Chaqu.'
	Mds.	Mds.
(i) 1930-31	9,000	300
(ii) 1931-32	9,800	250
(iii) 1932-33	9,600	200
(iv) 1933-34	8,000	250
(v) 1934-35	9,000	200
(vi) 1935-36	10,000	200
(vii) 1936-37	9,000	200

The causes of variations in the quantities of "gur" are the same as given for Sultanpur market.

4. The reasons of variation in the quality of "gur" in the recent years have been the the same as for Sultanpur market.

5. The prices of various kinds of gur for the last 7 years are given in the statement below:—

Year.	Bheli per md.	Shakkar per md.	Tikki per md.	Chaqu per md.
	Rs. A.	Rs. A.	Rs. A.	Rs. A.
1930-31 . .	5 8	5 14	5 10	6 8
1931-32 . .	4 0	4 6	4 2	5 0
1932-33 . .	4 0	4 6	4 2	5 0
1933-34 . .	2 12	3 2	2 14	3 12
1934-35 . .	4 0	4 6	4 2	5 0
1935-36 . .	3 12	4 2	3 14	4 12
1936-37 . .	2 8	2 14	2 10	3 8

The variations in the prices of "gur" are due to the same causes as given for Sultanpur market.

6. Comparison of sugar and "gur" prices showing their relation during the last seven years is shown in the form of a statement below:—

Year.	Wholesale price of sugar per md. at Kapurthala.	Price of 'Gur' (Bheli) per md. at Kapurthala.
	Rs. A.	Rs. A.
1930-31	10 10	5 8
1931-32	12 0	4 0
1932-33	10 4	4 0
1933-34	10 0	2 12
1934-35	8 0	4 0
1935-36	8 15	3 12
1936-37	7 0	2 8

7. The answer to this question is the same as for Sultanpur market.

8. The same as for Sultanpur market.

Information supplied by the "gur" merchants at Phagwara regarding the questionnaire for gur/jaggery marchants.

1. Gur market at Phagwara, Tehsil headquarters in the State.

2 & 3. The same as for Sultanpur market.

The quantities obtained during the last seven years are as given below:—

Year.	'Gur' local.	'Chaqu'.
	Mds.	Mds.
1930-31	50,000	800
1931-32	55,000	350
1932-33	60,000	200
1933-34	40,000	500
1934-35	70,000	150
1935-36	75,000	150
1936-37	80,000	150

The causes of variations in the quantities of gur are the same as given for Sultanpur market.

4. The reasons of variation in the quality of "gur" have been the same as given for Sultanpur market.

5. The prices of various kinds of "gur" for the last 7 years are given in the statement below:—

Year.	Bheli per md.	Shakkar per md.	Tikki per md.	Chaqu per md.
	Rs. A.	Rs. A.	Rs. A.	Rs. A.
1930-31 . .	5 14	6 2	6 0	6 14
1931-32 . .	4 0	4 6	4 2	5 0
1932-33 . .	3 15	4 6	4 1	4 15
1933-34 . .	3 0	3 6	3 2	4 0
1934-35 . .	4 12	5 2	4 14	5 12
1935-36 . .	4 8	4 14	4 10	5 8
1936-37 . .	2 12	3 2	2 14	3 12

The variations in the prices of "gur" are due to the causes as given for Sultanpur market.

After the Great War the price of "gur" has fallen along with the prices of other commodities.

6. Comparison of sugar and "gur" prices showing their relation during the last seven years is given in the form of a statement below:—

Year.	Wholesale price of sugar per md. at Phagwara.	Price of (Bheli) 'Gur' per md. at Phagwara.
	Rs. A. P.	Rs. A.
1930-31	10 8 0	5 14
1931-32	11 13 0	4 0
1932-33	10 1 0	3 15
1933-34	9 15 0	3 0
1934-35	7 14 0	4 12
1935-36	8 13 6	4 8
1936-37	7 0 0	2 12

7. The answer to this question is the same as for Sultanpur market.

8. The same as for Sultanpur market.

Information regarding the questionnaire for Local Government.

1. The answer to this question is given below in the form of a statement. The improved varieties grown in the State are those of coimbatore introduced by the Department of Agriculture. The most popular are Co. 285, Co. 312, Co. 313 and Co. 331 of which Co. 285 is extensively grown. The area under sugarcane is given in acres:—

Year.	Local.			Improved varieties of cane.			Irri-gated.	Unirri-gated.	Total.	Remarks.
	Irri-gated.	Unirri-gated.	Total.	Irri-gated.	Unirri-gated.	Total.				
1930-31	7,123	301	7,424	942	2,630	3,579	8,065	2,931	10,996	(a) In 1932-33 heavy frost set in during winter and damaged the crop. Therefore there was decrease in area under sugarcane for 1933-34 as the seed was not available.
1931-32	8,865	108	8,973	3,113	1,046	4,159	11,978	1,154	13,132	
1932-33	9,871	194	10,065	2,812	2,124	4,936	12,683	2,318	15,001	
1933-34	8,404	188	8,592	3,901	641	4,542	12,305	829	13,134	(b) There was scarcity of rainfall during 1934-35. This affected the sowing in 1935-36.
1934-35	8,078	1,348	9,426	3,961	1,074	5,035	12,039	2,422	14,461	
1935-36	7,881	785	8,666	4,900	617	5,517	12,781	1,402	14,183	
1936-37	7,442	753	8,195	6,587	303	6,890	14,029	1,056	15,085	

2. There are three tracts of land in the State distinguishable from one another in respect of differences in structure of soil, climatic conditions and situation. The sugarcane crop (irrigated and unirrigated) in tracts is given below in a statement.

This area is given in acres:—

Cane crop in 1936-37.	(a) Bet area. Irrigated.	(a) Bet area. Unirrigated.	(b) Dona area Irrigated.
Tehsil Sultanpur . .	3,293	116	452
Tehsil Bholath . . .	1,678	500	422
Tehsil Kapurthala . .	2,086	221	1,688
Total .	7,057	837	2,562

	(c) Phagwara Tract. Irrigated.	(c) Phagwara Tract. Unirrigated.	Total.
Tehsil Phagwara . .	4,370	23	4,393
Tehsil Bhunga . . .	60	176	236
Total .	4,430	199	4,629

3. There is no canal or tube-well system in the State.

Therefore the question of irrigation rates does not arise.

4. The costs of cultivation of cane per acre to the cultivator in different areas is as under:—

	Rs.
(a) Bet area—	
(i) Irrigated	90
(ii) Unirrigated	71
(b) Dona area—	
(i) Irrigated	95
(c) Phagwara area—	
(i) Irrigated	96
(ii) Unirrigated	71

The cost of cultivation was greater in 1934-35 due to the scarcity of rainfall. The average yield per acre of stripped cane is 350 maunds on an average and the average sucrose content is 10 per cent. (8-12 per cent.) on cane.

5. The fair price of sugarcane to the growers under the present conditions must be not less than annas five per maund of stripped cane.

6. The area under sugarcane has considerably increased in recent years. It has been gradually extended from year to year due to the demand of cane by the factory at Phagwara and price of "gur". These factors together with the fact that no other crop favourably competes with sugarcane under the circumstances have been the causes of this extension, other limiting factors such as climatic conditions, etc., having been eliminated by artificial means.

7. There has been no over-production in the State so far and the factory has played an important part in bringing about increased cultivation. The area under sugarcane in the State may go down in the coming years, if there is no rise in its rates.

8. The other cash crops grown in the State are cotton, tobacco, chillies and melons—

	Rs.
(*a*) Cotton	80
(*b*) Tobacco in rotation with chillies	90
(*c*) Melons in rotation with chillies or maize . .	85

With the exception of cotton the cultivation of such crops is restricted because they have a limited market necessitating a limited cultivation. Even in cotton the margin of profit is very low. In fact they do not compete with sugarcane at present, and hence no crop pays as much as sugarcane.

9. A number of experiments were conducted on the State farms to select suitable ones out of Coimbatore varieties of canes. The propaganda work was organised for the introduction of the desired improved varieties of canes. The State had to spend something like 12,000 rupees on this work alone.

10. The State receives no contribution from the Government of India. It levies an excise duty on sugar manufactured in the factory at Phagwara.

11. (i) Various experiments have been conducted in selecting heavy yielding varieties of Coimbatore canes that are most suited to the soil and climatic conditions here. The methods of controlling insect pests of sugarcane such as sugarcane fly and borers are recommended by actual demonstration of the precautionary and remedial measures in villages.

(ii) Agricultural Associations were formed at different places in the State with responsible and intelligent members from almost every village to serve as intermediaries between the Agricultural Department and the cultivators. It is the duty of the members to grow improved varieties of cane and adopt farm methods in cultivating them. This has proved a great success. An extensive propaganda through printed leaflets and the laying out of demonstration plots of improved cane at some central places have also proved of great help in introducing Coimbatore canes in the villages in so short a time. Ammonium Sulphate as artificial fertilizer after having been tested on the farm as compared to nitrate of soda as more useful to the growth and vitality of plants in general is being recommended for application to the crop. The Imperial Chemical Industries, Limited, have been brought round to start a shop at Kapurthala for the sale of manure. Now it is getting popular with the cane-grower.

12. No assistance has ever been sought or received from outside except that different varieties of Coimbatore canes are obtained from the adjoining Agricultural stations for experimentation on the State Agricultural farms before being finally taken up and distributed among the ryot. Funds for the work described above are adequate.

13. The Jagatjit Sugar Mills Co., Ltd., Phagwara, have distributed Rs. 10,303-8-9 so far as loan to the cane-growers of the State for the purchase of seed, etc. This is a liberal help from the factory and has stimulated the progress of development of the cane.

14. The estimated disposal of the crop 1936-37 is—

(*a*) crushed in sugar factories—4,000 acres,

(*b*) utilised by khandsaris—Negligible,

(*c*) turned into gur—9,000 acres nearly,

(*d*) used for chewing purposes for fodder and for seed—2,000 acres.

15. (*a*) The level of water in wells has gone down and there are wells which have almost dried up. This causes great difficulty in the cultivation of cane where soil and climatic conditions are suitable for it. At some places, the cost of irrigation alone swells up to half the total cost of cultivation of cane.

(*b*) At this stage there is no arrangement for co-operation marketing of cane by the cultivators or systematic arrangement of supply to the factory. Efforts are being by the Administration to remove these difficulties.

16. There are no co-operative sale societies and no cane-growers associations. Such organisations are being contemplated to be started in the near future.

17. The Sugarcane Act XV of 1934 has not been adopted in the State.

18. There is no other factory within the State or outside within a radius of 100 miles. Hence there is no competition as regards the price of cane, etc.

19. This is useful in bringing about improvement in the quality of cane, and increasing the grinding period of the factory by growing early, medium and late varieties of cane systematically if the supply is regulated accordingly.

20 & 21. The cane-growers usually employ their own carts, for transport of cane. Therefore the question of cost of hiring does not arise.

22. There is no tramway. There are two railway lines running through the length and breadth of the State for the transport of cane from economic distance of transportation. The State has spent about one lakh of rupees towards the development of feeder roads and bridges in the interests of the sugar factory at Phagwara. The State is further contemplating the construction of feeder roads and bridges for the transport of cane.

23. None.

24. The assistance rendered to the Jagatjit Sugar Mills Co., Ltd., Phagwara, in the form of concessions by the order of His Highness the Maharaja Sahib Bahadur, dated the 9th February, 1933, is as follows:—

(i) A free grant of valuable piece of land for the mill.

(ii) Free import of machinery, building material, mills stores, etc.

(iii) Free export of manufactures of the Company.

(iv) No Income-tax will be charged for the first 5 years and after this period a flat rate will be assessed.

(v) No mills to be established within 25 miles radius of the present mill at Phagwara.

25. None.

26. The conditions of labour in the factory are satisfactory.

27. The wholesale and retail prices for the last seven years in the different markets of the State are given below in the form of a statement. The prices are given in rupees per maund:—

Year.	Kapurthala.		Phagwara.		Sultanpur.	
	Wholesale.	Retail.	Wholesale.	Retail.	Wholesale	Retail.
	Rs. A. P.	Rs. A.	Rs. A.	Rs. A.	Rs. A.	Rs. A.
1930-31 .	10 10 0	10 12	10 15	11 2	10 10	10 12
1931-32 .	11 15 0	12 2	10 7	10 12	10 0	10 7
1932-33 .	10 5 0	10 7	10 4	10 7	10 5	10 7
1933-34 .	10 0 0	10 4	9 11	10 0	10 0	10 4
1934-35 .	9 1 0	9 7	9 0	9 5	9 2	9 6
1935-36 .	8 1 6	8 4	7 12	8 0	8 0	8 3
1936-37 .	7 1 0	7 2	7 0	7 3	7 0	7 2

28. The answer to the Question No. 27 shows sometimes a difference of more than As. 2 (which is negligible) between the wholesale and retail prices. This depends upon the demand and middle man's profits.

29. The normal consumption of white sugar in the State may be taken as 30,000 maunds. The consumption is increasing steadily year by year

due to the facts that white sugar is getting cheaper, the taste for it is developing and the standard of living of the peasant and labour classes is being raised by the irresistable forces by which the society in general is being effected.

30. There are 75 small manufactories of Indian confectionery in the 4 Municipal towns of the State. The material used is white sugar.

31. There is only one factory in the State. The area under cane cultivation has gone up and there is room for starting another factory in another district of the State.

32. There is no possibility of starting any subsidiary industry in the near future.

33. The estimate of production of "gur" from sugarcane for the last seven years is given below:—

Years.	1930-31.	1931-32.	1932-33.	1933-34.	1934-35.	1935-36.	1936-37.
Gur production in mds.	170,000	180,000	200,000	180,000	190,000	200,000	235,120 nearly.

34. There is no other material but sugarcane from which gur is prepared in the State.

35. The answer to this question has already been supplied in answer No. 5 of the information supplied by the gur/jaggery merchants regarding the questionnaire for gur/jaggery merchants.

The causes of variations are also the same as given by them.

Besides the price of gur has fallen due to its increased production.

36. An estimate of the total annual consumption of gur in the State since 1930 is given as under:—

Year.	1930-31.	1931-32.	1932-33.	1933-34.	1934-35.	1935-36.	1936-37.
Total annual Consumption of Gur in mds.	150,000	160,000	160,000	140,000	140,000	130,000	125,000 up till now.

The variation in consumption is due to good many causes. The chief reason is that people are becoming more and more sugar-minded. Cheap sugar is one of the causes of its increased consumption.

37. Gur is imported in the State territory from Muzaffarnagar (United Provinces). The approximate figures of imports during the last seven years are given below:—

Year.	1930-31.	1931-32.	1932-33.	1933-34.	1934-35.	1935-36.	1936-37.
Imports in mds.	1,300	800	600	900	500	500	400

38. Gur is exported from the State territory to Amritsar, Ferozepore, Kangra Districts of the Punjab.

The approximate figures of exports from the State during the last seven years are as under:—

Year.	1930-31.	1931-32.	1932-33.	1933-34.	1934-35.	1935-36.	1936-37.
Exports in mds.	20,000	25,000	30,000	20,000	30,000	30,000	Nearly 20,000 mds. has been exported so far.

39. The relation between the prices of gur and Indian factory sugar is shown in the answer to question No. 6 of Questionnaire for gur merchants. Please refer to that.

40. Indian factory sugar is taking the place of gur slowly. The consumption of Indian factory sugar has increased by 15 per cent. thereby replacing gur during the last seven years.

41. The improvement in the methods of manufacture of gur has been undertaken by the Department of Agriculture in the form of introducing improved furnace for boiling juice and the improved way of clarifying juice by means of carbon process.

42. There is no open pan factory now in the State. There was one three years back. It could not compete with the vacuum pan factory at Phagwara in the purchase of cane and the recovery of sugar and was closed down. There are a few khandsars now. Their outturn of sugar for the last seven years is given below:—

Year.	1930-31.	1931-32.	1932-33.	1933-34.	1934-35.	1935-36.	1936-37.
Outturn in mds. of Khandsari sugar.	1,500	800	500	300	150	90	55

43. The cost of manufacture of one maund of khandsari sugar has been Re. 1 to Rs. 1-8.

44. This can be judged from the answer to question No. 42 above. This indigenous industry has now dwindled down to insignificance. Next year probably there will be no manufacture of khandsari sugar at all.

45. It is quite obvious from facts and figures given above that the sugar factory at Phagwara has been the cause of the failure of the only open pan factory in the State and also of khandsars. There is no hope of its revival unless conditions change entirely.

46. The work of instructing people to manufacture "rab" is going on.

47. (*a*) The sugar excise duty of 1934 and the additional duty of 1937 have affected the cane-grower adversely. They have lowered the price of cane. The cane was selling at As. 3-6 per maund in (1936-37) as against As. 4-6 in (1935-36).

(*b*) Instead of raising the price of sugar as was expected they have lowered it. The manufacturer has suffered much due to the imposition of these duties.

(c) The trade in sugar has slackened and the dealer gets less profit out of this.

(d) The consumer is in an advantageous position. He gets sugar cheaper.

48. It was expected that after the imposition of the protective duties there will be less import of foreign sugar and consequently the price of sugar will rise. The consumer will be the loser. But contrary has been the case.

49. There is no industry worthy of note other than the State distillery controlled by the Kapurthala Government which depends on the supply of gur or molasses, which could be affected by the protective duties. This is advantageous for distillation as gur is obtained at cheaper rates.

50. There are different sources from which the data regarding acreage, production, and prices has been collected. The acreage has been calculated from the revenue records. The production has been calculated from the averages of production per acre of different areas in the State after actual inquiry and the survey of those areas. The prices of sugar and gur, etc., have been obtained from the account books (Behis) of "Ahratias" (Agents) in different markets of the State. The information is fairly accurate and can be relied upon for the purpose for which it has been collected.

51. The sugar industry in India is passing through a stage at which any unsympathetic measures adopted will kill it in its infancy and create a serious agrarian situation. The position cannot be explained at full length here. A few points are given below which may be taken into consideration before solving this complicated problem:—

(1) There are large stocks of sugar lying unsold.

(2) There is a cut-throat competition between the manufacturers and there is no effort on their part to come to certain mutual agreement between themselves or with the sugar merchants to raise the price of sugar.

(3) The quantity of surplus sugar in stock has not been properly determined nor have any measures been calculated to dispose off this stock, by consumption inside the country or by export outside.

(4) The depreciation in the price of sugar has been brought about the fall in the price of sugarcane to a certain extent and with the additional excise duty on sugar recently imposed in 1937 has still further made the situation worse for the cultivators. This should be avoided in future.

(5) Sugarcane is no doubt a profitable crop under the present agricultural conditions and any restriction on the area under cane will not be desirable as this will adjust itself according to the future agricultural conditions.

(6) The fall in the price of manufactured sugar will in turn hit the cultivator hard.

(7) In conclusion it is considered desirable that extra excise duty recently imposed requires modification in the interests of sugar industry and cane-growers in the country regardless of the protective duty on foreign sugar imported into India especially when sugar industry is in its infancy stages.

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(23) *Letter dated the 13th July, 1937, from the Foreign Minister to His Highness the Maharaja of Kapurthala, Kapurthala.*

With reference to your letter No. 303, dated the 18th June, 1937, I have the honour to say as follows:—

A. (1) There is one distillery in this State.

(2) & (3) Gur is used by the distillery instead of molasses for the manufacture of country liquor.

B. (1) to (3) There is no concern here manufacturing rectified or denatured spirit, hence molasses are not consumed.

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(24) *Replies to Questionnaire for Local Governments furnished by the Prime-Minister, Kolhapur State, Kolhapur.*

1. The area under sugarcane—

	Acres.
1930-31	21,817
1931-32	18,149
1932-33	...
1933-34	68,339
1934-35	23,044
1935-36	...
1936-37	...

Varieties of cane grown—

	Acres
E.K. 28	500
Co. 290	250
P.O.J. 2878	200
H.M. 89	100

2. The area under cane in Kolhapur State can be classified under three heads, *viz.*:—

(1) The area in Konkan tract where rainfall is above 60".

(2) The area round about Kolhapur with a radius of 10 miles, where the rainfall is about 40".

(3) The area in the Desh tract where the rainfall is below 30".

The crop on the whole is irrigated.

3. There is no canal in Kolhapur State. The pumping plants are installed on the banks of rivers for irrigating the cane crop. The pumping charges amount from Rs. 60 to Rs. 75 per acre.

4. The costs of cultivation of cane amount to Rs. 300 on an average.

5. Rs. 12 per ton of cane delivered on the field.

6 & 7. No.

8. Ground-nut, tobacco, cotton and turmeric are the cash crops. But they hardly form an alternative to sugarcane. Only in Desh tract turmeric forms an alternative to sugarcane to some extent.

9 to 10. *Nil.*

11. (i) *Nil.*

(ii) The Agricultural Department distributes sets of improved varieties free to the cane-growers.

12. (i-iii) *Nil.*

13. The Kolhapur sugar factory owns 1,000 acres of cane which consists of improved varieties. The cane is planted by 3½ ft. method.

14. (*a*) 1,800 to 2,000 acres.

(*b*) *Nil.*

(*c*) 18,000 acres.

(*d*) 200 acres.

15. No sufficient finance. Cane-growers are financed by middle-men who do not permit them to sell their cane to the factory. Besides in the absence of good roads carting the cane costs much to the farmer who is handicapped in taking his cane to the factory.

16. *Nil.*

17 & 18. No.

19. It will encourage the cane-grower.

20. As. 2½ to As. 3 per ton per mile.

21. No. The hiring charges come to Rs. 1-12 per day.

22. Yes. No assistance has been given for developing feeder roads, etc.

23. No industry Department here.

24. No particular assistance has been given.

25. *Nil.*

26. No.

27. Statistics not available.

28. No.

29. 130,000 cwts. per year.

30. *Nil.*

31. (i) & (ii) No.

(iii) (A) & (B) No.

32. *Nil.*

33. 102,400,000 lbs.

34 & 36. No other material but sugarcane statistics not available.

37. Gul is not imported in Kolhapur State.

38. Gujarat, Khandesh, Nizam State and Dharwar.

39. No.

40. Gul is hardly replaced by sugar.

41 & 42. (*a*) & (*b*) *Nil.*

43 & 44. No.

45. No khandsari industry here and so nothing can be said.

46. *Nil.*

47. (*a*) The cane-grower gets less price for his cane.

(*b*) He makes up the loss by paying less to the cane-grower and by raising the price of sugar.

(*c*) He increases the price and so he is not affected.

(*d*) The consumer has to pay a bit more price for sugar.

48. So far there is no effect.

49. No.

50. Statistics regarding acreage are worked out by village Kamgar who does not know its importance and so no correct figures are worked out.

Figures of gul production are not recorded.

Figures of sugar production are collected correctly by the officer who collects excise duty.

Prices of sugar and gul are collected by asking the merchants dealing in these stuffs. They are also far from correct.

51. No.

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(25) *Answers to the Questionnaire for gur/jaggery merchants, furnished by the Prime Minister, Kolhapur State, Kolhapur.*

1. The chief jaggery marketing centres are Bombay, Gujarat, Kachha, Karnatak, Khandesh and Bardha.

2. There are four kinds, *viz.* (1) yellow sweet, (2) red and hard, (3) green, (4) black and soft.

3. Chiefly the supply is obtained from Kolhapur State and villages up to 40 miles from Kolhapur Territory. The total arrivals of carts in the market have been recorded and hence no quotations of arrivals from each centre can be given. The total arrivals during last soven years, *i.e.*, from 1930 to 1936 are standard maunds:—745,488, 709,848, 753,048, 782,496, 702,630, 628,884, 612,738, respectively.

4. There is no mentionable variation in recent years.

5. The prices have been recorded since last two years. In 1936 the rate was from Rs. 9 to Rs. 3 per standard maund and in the year 1935 it was from Rs. 10 to Rs. 3.

6. The prices of jaggery and sugar are in no way related to each other.

7. There is no competition between jaggery and sugar. When the price of jaggery goes down people find it beneficial to sell their canes to the sugar factory. Sugar is not replacing jaggery in this market.

8. Normally for 12 months jaggery remains in good condition. Th keeping quality is a hard one.

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(26) *Letter dated the 20th July, 1937, from the Dewan of Travancore, Trivandrum.*

With reference to your letter No. 303, dated the 18th June, 1937, regarding molasses consumed by distilleries and other concerns, I have the honour to furnish below the information required therein.

A. (1) There are 3 distilleries in the State, one at Nagercoil, one at Vycome and the third at Devicolam. Of these, molasses is consumed only by the Negercoil Distillery. Cocoanut toddy alone is used in the Vycome Distillery and jaggery alone is used in the Devicolam Distillery.

(2) & (3) The total quantity of molasses consumed during each of the past 3 years and the price paid for the same are shown below:—

Year.	Quantity consumed candies.	Rate per candy of 500 lbs.	Price paid.
		Rs. A.	Rs.
1934	204	3 8	714
1935	252	8 0	2,016
	12	3 8	42
1936	24	6 8	156

The source of supply of molasses was the Travancore Sugars, Ltd., Thuckalay.

B. There is no concern in this State other than distilleries manufacturing rectified or denatured spirit.

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(27) *Extract from the letter dated the 7th August, 1937, from the Chief Secretary to the Government of H. H. the Maharaja of Travancore, Trivandrum.*

I have the honour to inform you that all that this Government desires in the mattor is that the present rate of protection on cane sugar should be continued and that palmyra sugar also should be protected.

(18) *Letter No. 40-T. (3)/37, dated the 23rd November, 1937, from the Government of India, Department of Commerce, forwarding representation submitted by the Taikoo Sugar Refining Co., Ltd., from G. Corley-Smith, Esq., M.B.E., Assistant Secretary to the Government of India, to Messrs. Butterfield and Swire, General Agents, the Taikoo Sugar Refining Co., Ltd., Hong Kong.*

Subject:—INDIAN CUSTOMS IMPORT DUTY ON REFINED SUGAR.

I am directed to acknowledge the receipt of your letter, dated the 19th October, 1937, on the above subject, and to say that it has been passed on to the Indian Tariff Board.

No. 40-T. (3)/37.

Copy, with the letter referred to above, in original, forwarded to the Secretary to the Tariff Board, 1, Council House Street, Calcutta.

Letter from the Taikoo Sugar Refining Co., Ltd., Hong Kong, to the Secretary to the Government of India, Department of Commerce, New Delhi, dated the 19th October, 1937.

INDIAN CUSTOMS IMPORT DUTY ON REFINED SUGAR.

Our Distributors in Calcutta, Messrs. Blackwood, Bryson & Co., Ltd., 2, Mango Lane, Calcutta, report that recently they have received enquiries from the Customs Authorities regarding the sources of origin of Raw Sugars used by us in the manufacture of the various grades of refined sugar which we export to India. We have supplied all the relevant information to them and to our Travelling Representatives. This has been given by them to the Customs Authorities, who have informed them that the enquiries originated from the Government of India and may possibly be required by the Tariff Commission recently appointed by the Government of India.

We therefore have the honour to address ourselves to you directly.

In certain Colonial territories, notably so far as we are concerned on account of their geographical adjacency, the Federated Malay States, preferential tariff treatment is accorded to sugars of which 25 per cent. of the value is the result of work done or materials produced within the British Empire. Our refined sugars comply with this qualification, both on account of their manufacture by a British Company in a British Colony and because a proportion of the raw sugar from which they are refined is Empire grown. Our supplies of raw sugar which are grown within the Empire are usually drawn from Mauritius or Barbados and those which are not grown within the Empire from Java, Cuba or Peru.

For approximately forty years we have maintained regular trading connections with various parts of India, but we recognise the fact that to a very large extent India now produces her own sugar requirements and that a modern sugar industry has been developed. It would not be reasonable for us to ask for assistance against that industry nor do we desire to encroach upon it or to interfere with it in any way. India does, however, import certain types of sugar which are not produced within her own borders and for which there is a separate demand. It is just those types of sugar which we have supplied and continue to supply and they consist of—

(1) High grade household and table sugars packed in convenient sized proprietary packings under our name "TAIKOO".

(2) High grade crystal sugars and sugar candy.

(3) Certain soft and moist white sugars consumed principally in the Bombay Presidency.

There is much competition from foreign sugars, principally from Japan and also from the Continent of Europe, and if India would accord preferential tariff treatment on similar lines to the F. M. S. it would in no way hurt her own industry but would be of benefit to other parts of the Empire.

If we are correct in our assumption that the present Tariff Commission is investigating the subject of imports of sugar in their relation to the Indian industry, we have the honour to request you to bring the facts set forth in this letter to the notice of that body.

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(19) *Demi-official letter R. Dis. No. 76-C. Exc./37, dated the 20th September, 1937, from the Central Board of Revenue, enclosing copies of correspondence with the Indian Sugar Mills Association, regarding export of sugar outside India.*

SUGAR—EXPORTS FROM BRITISH INDIA—REFUND OF DUTY—PROCEDURE REGARDING.

With reference to our conversation on the above subject, I enclose a copy each of the following papers for your information:—

(1) Letter No. L./9/2067, dated the 12th July, 1937, from the Indian Sugar Mills Association;

(2) Finance Department (Central Revenues) Notification No. 14-Central Excises, dated the 18th September, 1937 (not printed).

(3) Board's letter R. Dis. No. 76-C. Exc./37, dated the 20th September, 1937, to the Indian Sugar Mills Association.

Copy of letter No. L./9/2067, dated the 12th July, 1937, from the Secretary, Indian Sugar Mills Association, 135, Canning Street, Calcutta, to the Secretary, Central Board of Revenue, Simla.

Re EXPORT OF SUGAR OUTSIDE INDIA.

I am directed by the Committee of the Indian Sugar Mills' Association to refer to the Press Communiqué, dated the 3rd May, 1937, issued by the Government of India, Finance Department, Central Revenues, in connection with the export of sugar to Burma. The communiqué stated that sugar so exported may claim exemption from the payment of excise duty in India and that if excise duty has already been paid prior to export a refund of the same was also admissible, on production of satisfactory evidence that the sugar has been so exported and that the excise duty has been paid on it. They have also stated in the communiqué that enquiries as to the details of the evidence required and the procedures to be followed should be addressed to the Collector of the District where the factory from which the sugar was purchased and which paid the excise duty is situated.

It has, however, been brought to the notice of the Committee that there is a diverse opinion amongst the Collectors in different districts as to the evidence required and the procedure to be followed for exemption from or refund of excise duty. The decision as to what would constitute satisfactory evidence having been left to the discretion of the local authorities each of whom may have his own individual ideas, there is naturally a divergence of opinion as to what is proof should consist of. The factories are thus being put to a considerable difficulty and uncertainty as regards the exact procedure to be followed and the evidence required both for exemption and refund. This diversity of orders and the consequent uncertainty have created considerable confusion and are proving a handicap in the way of the export of sugar to Burma. The Committee therefore

consider it of urgent importance that the Government should review the matter immediately and lay down a definite ruling not only with regard to the procedure to be followed both for refund and for exemption but also in regard to the exact documents required as evidence of export. The Committee also suggest that the type of forms, etc., required in this connection should also be prescribed by the Government of India.

The Committee trust that in view of the importance of the matter the Government of India will no longer delay the issue of the necessary and complete instructions on this subject.

Letter dated the 20th September, 1937, from the Central Board of Revenue, to the Indian Sugar Mills' Association, Calcutta.

SUGAR—EXPORTES TO BURMA.

In continuation of my letter C. No. 76-C. Exc./37, dated the 9th September, 1937, I am directed to enclose a copy of the Finance Department (Central Revenues) Notification No. 14-Central Excises, dated the 18th September, 1937, for information. It will be observed that it has been provided in the rules that the refund to the exporter may also be made by the Collector of Customs at the port of export on production of clear documentary evidence that the sugar was liable to excise duty under the Sugar (Excise Duty) Act, 1934, and at what rate.