

DEPARTMENT OF REVENUE SETTLEMENT
AND AGRICULTURE
MADRAS, 15th September 1885

No. 2698A.

From

J. F. PRICE, Esq.,
Acting Director of Revenue Settlement and Agriculture,
Madras,

To

THE HON. W. WILSON,
Ag. Secretary to Government, Revenue Department,
through the Board of Revenue.

SIR,

I have the honor to submit the report, for the past official year, on the administration of the departments under my control.

2. The operations of the Settlement and Inam Departments have been separately dealt with, and the report on the Irrigation Accounts will be submitted at an early date. It is therefore only necessary to, here, refer to these subjects as briefly as possible.

3. SETTLEMENT DEPARTMENT.—The work of this department was, as in the previous year, conducted in four districts, viz., North Arcot, Madura, South Arcot and the Nilgiris. The settlement of the Palmanér and Pólúr Taluks and of all but sixteen villages of the Wandiwash Taluk was completed. A revised scheme for the settlement of the Madura District was submitted to Government in November last. Proposals for the settlement of the South Arcot District were received from the Deputy Director in charge No. V Party, but have been returned for revision with reference to the recent orders of Government, altering the period upon which the commutation rate is to be calculated to the 20 years immediately preceding each settlement, famine years being excluded.

The settlement of the Nilgiri District was completed on the 30th September 1884, and a separate report with regard to it was submitted to Government. This was reviewed in G.O., Revenue Department, No. 449, dated 20th April last. The inquiry into janm titles in the Nilgiri-Wynaad and in the Ganapativattam, Putati and Kuppattod Amshoms of the Malabar-Wynaad was completed during the year.

4. During the term of 27 years that the department has been at work, it has dealt with 12,963,541 acres. The cost of the survey (Rs. 1,03,14,774) and settlement (Rs. 66,37,316) operations, up to 31st March last, was Rs. 1,69,52,090. The increase of assessment due to resettlement was Rs. 16,93,994, being a return of nearly 10 per cent. on the outlay. In the year under report, the expenditure was Rs. 2,89,760, or Rs. 10,071 more than in that preceding it. The area dealt with was 30,048 acres, or about 47 square miles. The cost of survey operations during the year was Rs. 7,52,072, and the outturn of work was 1,691 square miles of Revenue and 3,037 square miles of Topographical Survey.

5. INAM DEPARTMENT.—During the year, 20,852 acres of inam land, the full assessment of which was Rs. 59,678, were enfranchised on a quit-rent of Rs. 36,340. The number of title-deeds issued was 3,891, of which 3,442 were for village service inams, 260 for religious and charitable institutions, and 189 for personal and other grants.

6. The Special Deputy Collector attached to the department conducted inquiries in the Gudiyatam, Chandragiri and Chittoor Taluks of the North Arcot District and in the Hospet and Kúdligi Taluks of the Bellary District.

7. Since the constitution of this department, 25 years ago, it has dealt with 6,773,655 acres, the full assessment of which was Rs. 1,07,33,572. The financial results of its operations, up to 31st March last, were, including the assessment of inams that were resumed and fully assessed, an addition of Rs. 18,57,221 to the public revenue. These were obtained at a cost of Rs. 14,08,941—a sum which is less by Rs. 4,48,280 than one year's income due to the department.

8. IRRIGATION ACCOUNTS.—The details of the irrigation of the year from all sources in the Presidency will be reviewed in a separate report, which will be submitted in a few weeks. The Revenue Accounts of all work for which Capital and Revenue Accounts are kept, have already been forwarded to Government.

9. Matters are dealt with in this report in the manner laid down in the Resolution of the Government of India, No. 54-A, dated 28th April 1884.

10. DEPARTMENT OF AGRICULTURE.—I. *Organization and Maintenance of Village Records*.—During the year, Government were pleased to lay down that, from April 1885, all candidates for appointment as Revenue Inspectors and all officers of that grade, then in employment and aspiring to promotion, must pass the Revenue Test Lower Grade, and that from and after April 1888 they must, in addition, pass a Special Test in surveying.

11. A Special Committee, appointed by Government for the revision of the village and taluk manuals and accounts, has completed its task and its report is now in the press.

12. II. *Analysis of Districts with reference to security from Famine*.—An analysis of the Kurnool District, as far as one could be made from the records available, was compiled and is now before Government. Proposals for completing the work as regards Kurnool and for drawing up similar analyses for other districts have also been submitted. These involve the entertainment of a small extra establishment, without the aid of which the work is not likely to progress so expeditiously or satisfactorily as is desirable. The agricultural analyses of districts is a task which is clearly by no means a light one and which must be dealt with by an expert. It is impossible for Mr. Benson, who is now engaged upon that of Kurnool, to get through it in any reasonable time, singlehanded. Aid in the way of Agricultural Inspectors will, if anything worth reading is to be turned out, be indispensable.

13. III. *System of Collection of Revenue and Rental in precarious Tracts*.—The subject of the kistbandy, or land-revenue instalments, was recently under the consideration of Government, who recognized the principle that the demand for land revenue should be made only after the ryot has harvested his crop. As this date varies in different localities and as, therefore, it would be impossible to frame a scale of instalments which could be applied to all parts of the Presidency, they proposed one, based on certain broad principles, which had reference to the agricultural practices and conditions of the several districts, and requested the Board of Revenue to report on the practicability or otherwise of the scheme. This matter has not been finally disposed of.

14. In connection with this subject, certain inhabitants of the Nellore District prayed that no interest should be charged on arrears of land revenue before the end of the fasli year. The levy of interest on current instalments afforded, to the village officers, so it was alleged, opportunities for oppression and exaction, while the amount collected under this head was never considerable. Government therefore directed that except in the case of zemindaries and whole inam villages, interest on arrears, excepting in special cases where the Collector or the Divisional officer might consider it necessary, should not be charged until the end of the revenue year.

15. Other measures calculated to afford relief to the ryots, impoverished by the disastrous famine of 1876-78, were, in recent years, sanctioned by Government. These were not adverted to in previous reports of this department. The principal of them were the remission of the arrears of land revenue, which had accrued during the period of scarcity and in subsequent years, in all cases where they could not be

collected without undue pressure and the restoration of land to ryots, who had lost them during the famine, either owing to relinquishment on their parts, or through sale and purchase by Government for the arrears of revenue which then accrued.

16. *Suspension of Collection of Revenue.*—Owing to the losses sustained by the agricultural population through the floods arising from the extraordinary heavy rains which fell at the close of 1884, the collection of the instalments of land revenue and the issue of coercive processes for the recovery of the same were, under the orders of Government, suspended at the discretion of the Collectors concerned.

17. IV. *Measures of Protection—Fodder Reserves and Arboriculture.*—From the Forest Administration Report for the year under report, it appears that the area of reserved forests and reserved lands in the Presidency, at the end of the year, was 9,020 square miles. Of this area, 4,136 square miles were reserved forests, and 4,884 square miles were reserved lands. The area of forests reserved during the year under report was 1,267 square miles. Information regarding the total length of road avenues is not available. It is suggested that Local Boards should be instructed to give this in their administration reports. The area of topes and orchards, excluding palmyra and cocoanuts, was, in Fash 1293 (1883-84), 356,000 acres. Information for Fash 1294 (1884-85) is not available.

18. *Reclamation of Sandy Waste.*—Seeds of *Atriplex nummularia*, or the Australian Salt-Bush, were procured from Sarhanpore and sent to the Saidápet Farm and the Bellary District. None of the seeds sent to the latter mentioned locality germinated. The Agricultural Reporter does not mention anything touching those forwarded to the farm.

19. Nothing has been heard from Collectors or officers of the Salt Department regarding the efforts which it was suggested should be made to discover indigenous salt-feeders.

20. *Edible Cactus.*—Dr. Bonavia, Civil Surgeon of Etawah, North-West Provinces, suggested, during the year, the desirability of converting the common prickly-pear of the country from a noxious weed into a wholesome fruit bearer, by grafting on it the edible cacti of Southern Europe. A supply of leaves of the best fruited varieties to be found in Malta and Cyprus was, through the courtesy of Colonel H. McLeod, R.A., obtained and distributed to certain gentlemen for experiment. Their reports on the results obtained have not yet reached this office, but I may state that I have personally ascertained that a few plants have grown. Those which I myself received all died. They were in such a state when they reached me that it was evident that the chances were very much against their striking.

21. *Olive and Chestnut trees.*—Referring to paragraph 19 of the report for 1882-83, I would mention that as no seeds of these trees could be had at the Khundeish Farm, it was not possible to make any experiments in this direction. From a recent communication received from the Superintendent of the Farm, however, it appears that neither of these trees promises to be a success.

22. *Agricultural Banks.*—In the beginning of 1884 certain inhabitants of Cuddalore addressed a memorial to the Government of India praying for the grant of concessions on behalf of an agricultural bank, which they proposed to establish. These were, however, of such a nature that they did not meet with the approval of the Local Government, who, moreover, considered that the condition of the farming population of this Presidency was not such as to call for the establishment of an agricultural bank, with exceptional concessions, some of which were of a nature such as to demand special legislation.

23. *Extension of Communications.*—Two important lines of railway were under construction in 1884-85. One, the Cuddapah-Nellore line, is expected to be completed within three years. Work on the other, the Bellary-Kistna State Railway, was commenced. An extension of the former line, from Tirupati to Madanapalle and thence via Kadi, to join the Hindupur extension at Dharmavaram, was under consideration and a survey was in progress.

24. *Irrigation.*—No new important projects were, so far as this department has been made aware, sanctioned in the year under report.

25. *Minor Irrigation Works.*—The year's allotment for the up-keep of minor irrigation works in the Presidency was Rs. 4,20,000. The actual expenditure was Rs. 4,04,552 or 96 per cent.

26. *Wet Cultivation.*—Allusion was made, in paragraphs 26 and 27 of the last report, to the question then under the consideration of the Government, of the propriety or otherwise, of charging extra assessment on lands cultivated with water obtained from wells sunk in irrigated lands, when lands, drawing their supply from wells sunk in dry lands, were free from such extra taxation. The Government have since passed orders on the subject and have directed the exemption experimentally, for three years, of all wells constructed on land which is private property, subject to the condition that the concession should be restricted to cases where there is, at the time that the crop is on the ground, no supply of water in the irrigation work under which the well lies.

27. Further, with a view to encourage the construction of wells and thereby to enable ryots to tide over the effects of a failure of the ordinary rains, the Government have, in the rules which they have recommended to be made under the Land Improvement Loans' Act, proposed the grant on liberal terms of advances, not more than Rs. 750, for the construction of wells for irrigation, these loans to be repaid within stipulated periods, not exceeding 35 years, by a special annual charge in addition to the land assessment. They have also ordered that the ryots taking advances for the construction of wells may, for a small payment, and if they desire it, have the existence of water in the sites selected by them tested by borings made by trained workmen under the direction of Government officers.

28. The rules proposed by Government, under the Land Improvement Loans' Act, are considerably more liberal than those which, at present, exist. The rate of interest has been reduced from $6\frac{1}{4}$ per cent. to 5 per cent., while the period for repayment has been extended to a maximum of 35 years.

29. Rules, under the Agriculturists' Loans Act, have also been proposed by the Local Government for the sanction of the Government of India. These provide for the grant of loans, on liberal terms, to agriculturists for the purchase of seed-grain and ploughing stock, the construction of wells for domestic purposes and for the reconstruction of houses destroyed by flood or fire. Loans granted under these rules are not to exceed Rs. 1,000, and are to be repaid within a maximum period of 3 years. Provision has also been made for the grant, during periods of distress, of loans not exceeding Rs. 200, without interest, to ryots of small means, to enable them to subsist until the next harvest.

30. *Diversity of Occupation.*—The Famine Commission remarked that much of the poverty of the people of India and of the distress to which they are exposed, in seasons of drought, was due to the circumstance that agriculture forms almost their sole occupation. They therefore recommended that the State should encourage the introduction of a diversity of occupation, whereby the surplus population could be drawn from agriculture and induced to find a livelihood by manufactures and similar pursuits. In view to opening up the resources of the country other than agriculture, and to collecting and publishing more accurate information than is now available as regards mineralogical matters, the Government, during the year under report, appointed a Mineralogist who took charge of his office in April last and who has, hitherto, been chiefly engaged in making a partial examination of a portion of the Nilgiri Hills. It is proposed that he shall hereafter take up and examine the district of Cuddapah, in which it is believed that considerable mineral wealth exists.

31. As regards native arts and manufactures, Mr. Havell, the Superintendent of the School of Arts, made a tour in several districts and examined what was to be seen in this direction. The result has been that many of the industries connected with native art have been found to be in a failing condition and that others have, it has been ascertained, almost died out. Mr. Havell will make another tour during the ensuing cold weather and proposals with regard to this are being prepared. What has been already done has been reviewed by Government (Vide G.O., No. 485, Revenue Department, dated 24th April 1885).

32. *V. Agricultural Experiments including Farms*.—The Government, *Farm at Saidápet*.—Allusion was made, in paragraph 28 of the last report, to the separation of the Farm and the School of Agriculture and to the severance of all connection between them. The unsuitability of the soil of the farm for any experiments in farming, or stock-breeding, having since been prominently brought to the notice of Government, they directed the abolition of the farm from the 1st of the current month. No new farms will be established, but agricultural experiments will, under existing orders, not, on that account, be entirely abandoned. Arrangements will be made to carry them out, whenever necessary, through the agency of private individuals who will be secured against any loss. Meanwhile, Mr. Benson will carefully study the indigenous systems of agriculture and will proceed with the agricultural analyses of districts. This course, it is hoped, will best enable us to ascertain the wants of the existing system of native farming and to form something like a correct idea of the remedies to be employed and the improvements which may be possible.

33. *Private Experimental Farms*.—Mention was made, in the last year's report, of the establishment of farms at Chittoor, Madura and Karúr. In the case of the last two, the Government have agreed to pay the salary of the Superintendents for three years on certain conditions, and to grant some live-stock from the Saidápet Farm. It is to be regretted that the Chittoor Farm, inaugurated under the auspices of the late Collector, Mr. A. J. Stuart, has collapsed. A proposal that it should be taken over and managed by this department was, on the recommendation of the Director, negatived by Government. The live-stock presented to the farm has been withdrawn, with the exception of two rams, which were placed with a respectable ryot of Kulkatur, in the Palmanér Taluk.

34. An agri-horticultural society has recently been started at Narsápur, in the Godávári District, by sundry native gentlemen. The Government have sanctioned the grant, free of assessment, of two acres of land to this institution on the condition that it will be resumed if not appropriated to the purpose for which it was allotted.

35. The Collector of the Nilgiris consulted the Director, in August 1884, regarding the desirability of reviving the agricultural association, which formerly existed in that district, or of establishing a new one, and asked for copies of rules and regulations of similar bodies elsewhere. The then Director forwarded a copy of those of the Madras Agri-Horticultural Society and observed that that association was the model which he would suggest to the Collector for imitation. He also remarked that the existing Planters' Associations might form the nucleus of a society such as that contemplated. The proposal has, however, fallen through, owing to the present depressed condition of planting affairs on the Hills.

36. *Agricultural Reporter's Tours*.—Mr. Benson was present at the Travancore Agricultural Exhibition held in April 1884, the Poona Agricultural Show held in December last, and at the Rajahmundry Agricultural Show held in February of this year. He also visited Mr. Kristnasawmi Mudalyar's estate at Shiyáli, Mr. Shanmugaraya Mudalyar's estate near Sadras, and the Central Provinces Government Farm at Nagpur. Mr. Benson's report on Mr. Kristnasawmi Mudalyar's estate and the latter gentleman's own account of his attempts to improve the native system of agriculture, possessed much interest and the latter has been, under the orders of Government, published in English and Vernacular in all District Gazettes. The Government in addition awarded a gold medal to Mr. Kristnasawmi Mudalyar for his enterprise and public spirit. Mr. Benson also visited Hosúr to ascertain the capabilities of that locality as a stock-breeding farm. He further made a tour in portions of Kurnool in view to making investigations preliminary to the preparation of the agricultural analysis of that district. These he was, however, unable to complete, in consequence of the charge of the farm necessitating his return to Saidápet and his having, subsequently, to attend the Agricultural Show at Rajahmundry.

37. *Ploughing Matches*.—A ploughing match was held as usual at Madras in January last. These matches were originally intended for the farm servants and were conducted under the direction of the Superintendent. Last year, however, it was decided to place them, in future, under the management of a committee of gentlemen, official and non-official, and that held in January last was under the new direction. The chief features of the competition were the continued and increasing interest taken

in the subject by private firms, who are themselves manufacturers, or are agents for manufacturers of agricultural implements. An attempt was made to give prizes, not only for the best ploughing, but also for the most suitable plough.

38. Ploughing demonstrations were held in parts of the Bellary and Kurnool Districts—in the latter when Mr. Benson was on the spot. One also took place at Kaiti in the Nilgiri District, one of the results of which was that a Badagu purchased an improved plough for use on his farm.

39. With reference to the suggestion of the Committee, in paragraph 14 of their letter recorded in G.O., 20th February last, No. 220, that ploughing matches should be periodically held in district, my predecessor in office issued a circular to all Collectors inviting an expression of their views. Replies have not yet been received in full; but from those which have reached me, it appears very probable that, in several districts, the proposal to hold local ploughing matches will meet with support. The want of funds, consequent upon the existing financial pressure, renders it unlikely, however, that, for some time, anything can be done in this line.

40. *Agricultural Exhibition.*—It was decided in 1883 that a quinquennial Agricultural Exhibition should be held in Madras and annual exhibitions at Erode and Madura, alternately, for the Southern and at Gooty for the Northern Districts of the Presidency. An exhibition accordingly took place at Madras in February of that year, but none could subsequently be held elsewhere, owing to the unfavorable character of the season both in 1884 and at the beginning of this calendar year.

41. Local Agricultural Exhibitions have, however, been held at Madura and Rajahmundry under the auspices of the agricultural associations at those stations. The Government contributed a grant-in-aid of a moiety of the expenditure. The exhibition at Rajahmundry was fairly successful. I have heard that that at Madura was so also, but although I wrote to the Collector some time since for information regarding it, I have, as yet, not received a reply.

42. *Work on the Saidapet Farm.*—There is little to record under this head. The year was one of extraordinarily heavy rainfall, and was most unfavorable to farming operations. Mr. Benson's report shows that every effort was made to contend against the season, and to make the most of it, but that the results of the operations of the year were poor. No new experiments in manures, rotation of crops, or fodders were made; had they been, it is more than probable that, owing to the very heavy rains, they would have proved failures.

43. In paragraph 38 of his report, Mr. Benson again reverts to the question of experiments as regards irrigation. He maintains that the supply of water is not made full use of, and that there is great waste of water in the ordinary practices of irrigation and in the growth of paddy. He thinks, therefore, that it is most desirable that experiments should be organized and carried out, in view to determining whether a better and more extended use of the available supply cannot be made. The order directing the abolition of the farm has, it is stated by him, precluded a beginning being made in this direction at that institution. With reference to these remarks, it may be observed, in the first place, that, although it is pretty generally believed that the ryots do waste the water supplied to them, the position has yet to be established by actual experiments showing what quantity of water is required to bring a crop to maturity. In the second place, the farm has been in existence for many years and as, on Mr. Benson's own showing, the Government have, since 1871, been directing such experiments to be undertaken, the officers of the farm have had ample time to carry them out. It seems a somewhat unreasonable position to assign to the abolition of the farm in 1885, the failure, on the part of the officers in charge of it, to undertake the experiments, which they were in 1871 directed to organize.

44. In paragraph 39, Mr. Benson suggests that, if careful local inquiries were made, by competent officers, in Italy, Spain, the United States and elsewhere, much information might be gathered which would be of use in enabling us to determine the quantity of water required to raise a remunerative paddy crop and to settle the question whether the more or less complete substitution of other crops for paddy would not allow of an extension of the area irrigated, and whether this would not, in other ways, be beneficial. The expediency of such investigations appears to me to be of doubtful

utility, and I can hardly think that the results would be at all commensurate with the large expenditure which they would involve. What we have to deal with first, as regards this point, is India itself and this has yet to be done.

45. I cannot agree with Mr. Benson in the view expressed by him in paragraph 42 of his report. I do not consider that the falling off in correspondence on agricultural matters with natives is, in the remotest degree, attributable to the cause which he assigns. The real reason for the decline mentioned is, in my opinion, to be found in the fact that the subject of agriculture has as yet been taken up by but a small number of native gentlemen that they have asked the questions on which they required information and have had their replies, and that for the present there is nothing more to write about. The fact that Government have been pleased to vest in the same officer the direction of two entirely separate departments has not, and will not, in one whit affect correspondence upon agricultural subjects.

46. As regards the subject adverted to in paragraph 44 of the farm report, the matter is under the consideration of the Government and I have no doubt that in due course satisfactory arrangements will be made.

47. *Salt as Manure.*—Mr. McKenzie, one of the planting community on the Hills, inquired during the year under report, whether there was any deposit or scum from salt-pans, which could be made available as a manure for tea. The Commissioner of Salt and Abkari Revenue suggested the utilization of the residual brine available in fish-curing yards and the impure salt educed in saltpetre refineries. Arrangements have been made to supply the gentleman, alluded to above, with a quantity of both. From what he has written, this class of manure would seem to be likely to be very beneficial to tea, but the correctness of his views on the subject has yet to be tested by experiment.

48. *Miscellaneous*—(1) *Distribution of Seed and Plants.*—The statement annexed to paragraph 24 of Mr. Benson's report shows the quantity and varieties of seeds distributed by this department, and in paragraphs 25—32 are given the results of the experiments made by district officers with the seeds so distributed. These in almost every case were unsatisfactory and are reported to be due to bad quality of the seed supplied or to want of rain, or to an excess of it, or to the injury caused by insects. Mr. Benson questions the utility of distributing seeds for experimental cultivation, without a special local agency capable of looking after the experiments made. It is not at all likely, however, that a special local agency of the kind required can at any time be made available, in each taluk of the Presidency, and all attempts to introduce useful crops should be given up if the existence of such an arrangement is to be considered an indispensable condition attaching to them. Nevertheless, I cannot avoid thinking that the failures adverted to above are the result of want of interest in the experiments and lack of knowledge of the proper modes of cultivating the products dealt with. One can hardly blame Collectors for this, as they have their hands full of work and it is practically impossible for them to effectually supervise operations. The consequence is that matters are, in most cases, handed on to some one else who is equally busy and that, finally, the real experimenter is the ryot who, if he can be persuaded to do anything at all, knows nothing of what he is dealing with and cares still less whether it turns out a success or the reverse.

49. *Rhus Vernicifera or Japanese Lacquer tree.*—Seeds of this were sent to Collectors, the Conservators of Forests, the Agri-Horticultural Society, Madras, the several Planters' Associations and Dr. Shortt. The Agri-Horticultural Society did not sow the seeds. The reports from other recipients go to show that the experiment was a failure, the seeds having germinated in but very few cases and what plants were produced being weakly specimens.

50. *Sorghum saccharatum and Amber Cane.*—Both grow very well in this Presidency. The difficulty has been to extract a marketable sugar from them. The purchase of a set of the Blymyer machinery has been sanctioned by Government, and when this is received, the question of the value of these products, as sugar-producers, will be finally settled.

It may here be mentioned that spirit manufactured from *Sorghum saccharatum* was found, on an analysis by the Chemical Examiner, to be of good quality. It was

very clear and tasted much like rum, but, after being opened for a short time, it deposited a gelatinous looking substance. What this was and what caused it has not yet been ascertained. Messrs. Minchin Brothers, who manufactured it, propose to make further experiments and have promised to communicate the results to me.

51. *Nankin Cotton*.—With reference to G.O., dated 20th January last, No. 89, seeds of this variety of cotton were sent to the cotton districts for experimental cultivation, but the results have been failures either on account of want of rain in some districts or of excessive rain and floods in others.

52. *Sale and Distribution of Agricultural Implements*.—The Government have now altogether ceased to have any connection with the manufacture or sale of agricultural implements, as private enterprise has come forward to supply whatever demand there is. It is a gratifying circumstance that private firms have sent trained men into the interior to work improved ploughs, &c., and to demonstrate to the ryots their superiority over the native implements. Messrs. Massey and Co., and Messrs. Oakes and Co., deal in ploughs, of which 230 were sold during the year, and Messrs. Thomson and Mylne, through their agents in Madras and Cocanada, supply sugar mills. Messrs. Rowlandson and Co., of Calcutta, as agents for Patent portable oil mills, requested the Director during the year under report to give wide publicity to their circulars regarding these articles. These mills are constructed to extract oil from all but the castor seed, which is in this Presidency the most cultivated of all the classes of oil-seeds. Messrs. Rowlandson and Co. wrote in September 1884 to say that they were then designing a press which would answer their purpose also. It is not known whether they have succeeded in their efforts. I shall address them on the subject.

53. *Bechea Sugar Mills*.—Some ryots of the Bellary district having complained that the oil, applied to the machinery of these mills, reached the juice and thereby affected the quality of the outturn, samples of the jaggery so manufactured were sent to the Chemical Examiner, who, after analysis, found them to be free from oil. I have been unable to ascertain how many mills were sold during the year. Messrs. Oakes and Co., on my application to them for information, stated that they kept no record of the sales.

54. *Training of Ploughmen*.—On the recommendation of the Collector of Madura, the Court of Wards sanctioned the deputation of six ploughmen from the Ranning estate for training at the Saidápet farm. These men were duly instructed and have returned to the districts.

55. *Training of Village Blacksmiths*.—The Board of Revenue approved of a proposal to send village blacksmiths from districts in order that they might be taught at Messrs. Massey and Co.'s workshop in Madras and might learn the mode of repairing improved ploughs, &c. Up to date, however, none have attended for instruction.

56. *Fibres*.—The endeavours made to collect and prepare fibres of various kinds did not result satisfactorily. The way in which the fibres were worked up was undoubtedly defective and, when valuations came to be made, they either only just covered the charges, or else there was an actual loss. Though this was the case, I feel assured that as time goes on and extracting machinery is perfected, the fibres of this Presidency will be found to be a source of great profit to those who take them up.

A small consignment of fibre prepared at the Saidápet Farm, under the direction of the Agricultural Reporter, from the Manilla hemp (*Musa textilis*) has recently been sent to the India Office in view to valuation.

57. Samples of fibres prepared with the aid of Death and Elwood's machine, from the Manilla hemp (*Musa textilis*) and the ordinary plantain (*Musa sapientum*), grown in the Wynaad, were sent home by certain private gentlemen. The valuation was very low, and it is evident that, unless very considerable improvement takes place in the process of preparation, the production of fibre from these plants is not likely to prove remunerative.

58. It was hoped that Messrs. Harvey and Co., of Pápanásam, in the Tinnevely District, would be able to test the wild plantain (*Musa superba*) as a substance for the manufacture of paper. They have, however, recently intimated that they have given up the idea, as it is difficult to procure a sufficient supply of the raw material.

59. *Aloes (Agave Americana)*.—The experiment of cultivating this plant in the Tanjore District, alluded to in paragraph 48 of the report for 1883-84, proved a complete failure. This seems to have been owing to the officer entrusted with the experiment having put the plants down in something the same way as one would celery, instead of growing it on a raised bank.

60. Nothing was done with regard to the "*Fourcroya Gigantea*," which is far superior to the ordinary aloe and which deserves attention.

61: The specimens of the "*Casse tête*" and "*Gratteuse*," alluded to in the paragraph quoted above, have not yet been received.

62. *Silk-worms*.—At the instance of M. Deschamps, of Deschamps and Co., who thought that a new industry could easily be established in this country, by encouraging the rearing of Tussar silk-worms in suitable tracts and who suggested the undertaking of experiments, the co-operation of the Forest Department and of certain officers and private gentlemen was solicited by the Director. The Forest Department have expressed their inability to afford any material help in the matter on account of pressure of their own work. Dr. Shortt has promised his cordial support. Nothing further, however, was done during the year; but I may mention that since its close I had a long interview with M. Deschamps and talked over matters with him. He promised to, after consulting the missionaries of his church, who are settled in Coimbatore, furnish me with a scheme and an estimate of the probable cost of giving effect to it. I have not since heard from him, very possibly, I think, because he has found that Tussar cocoons cannot be, for some time to come, turned out at prices which would pay, that whoever takes the matter up must at first lose money and may perhaps never make any, in fact that the speculation would be a very risky one. This is what I had feared.

63. *Wheat*.—A sample, consisting of 20 lb. of wheat grown in the Joypore hill tracts of Vizagapatam District, was received from the Collector in August last year. The grain was small, but well formed and filled; it was found, however, that it would not yield a high class flour. The Superintendent, Government Bakery, Madras, estimated its value at Rs. 2 per bushel in Madras. Mr. Benson did not think it worth while sending it home for valuation. This is perhaps to be regretted, as the particular excellence of Indian wheats appears to be in a marked superiority for mixing with those from other countries.

64. *Babul (Acacia Arabica) Bark and Pods*.—This subject had attention during the year and it was ascertained that, if a good market could be found for babul bark and pods, there is a considerable supply to be obtained in the various districts of this Presidency. A trial sample of pods, of sufficient quantity to really test the value of the article, has recently been sent to England. If the results are anything as favorable as we have been led to believe, the production of babul pods will, in all probability, prove very remunerative. The bark is decidedly not so valuable as the pods, but still might be made to pay. It is advisable, however, to see, first, what the trade have to say to the latter. Statistics of outturns, more complete than those at present available, are in course of collection.

65. *Bee-keeping*.—The question of the introduction of bee-keeping into this country was considered by the Government of India, in 1882-83, and was abandoned as impracticable. Mr. R. H. Morris, of Kótagiri, however, represented to the Local Government that one of the commonest of bees in the hill tracts of India (*Apis Indica*), was extremely well adapted for domestication, and that he had himself succeeded in having a swarm of these insects in a rough hive of his own making. He requested that he might be furnished with a proper European bee-hive and a copy of the "British Bee-keeper's Guide Book." Three hives and a few copies of the work, alluded to above, were, accordingly, obtained from England and distributed to Mr. Morris, Dr. Shortt and Mr. A. G. Nicholson of Yercaud. Their experiments have, however, so far not been successful. Mr. Morris thinks that the English bee-hive is unsuited to the diminutive Indian bee, but both he and Dr. Shortt propose to make further trials and have promised to communicate the results.

66. *Diseases and Insects affecting Crops*.—Inquiries were continued as to the several varieties of the diseases and insects affecting crops and as to the remedial measures adopted by the agricultural population. It has not been possible to obtain

definite information regarding the former; but specimens of insects and of the plants affected by them were obtained and sent to Dr. Bidie for identification. On account, however, of the undeveloped condition of the insects and, in some cases, of the state of decomposition in which they reached him, Dr. Bidie was not able to distinctly identify much.

67. *Coffee Leaf Disease*.—A Java correspondent of the "Weekly Ceylon Observer" remarked that the planting for shade of *Erythrina Indica* (*Dadap* or Indian coral tree) induced coffee leaf disease. Inquiry was made of gentlemen who, by reason of their practical knowledge, were qualified to speak with authority on the subject. Their unanimous opinion was that there was no connection between the *Dadap* tree and coffee leaf disease, and that in their experience the effect of planting *Erythrina Indica* has been distinctly beneficial.

68. *VI. Cattle-breeding and Veterinary Establishments*.—A portion of the Aden cattle obtained in 1883-84 were distributed for breeding purposes and some rams were also sent out. As far as can, at present, be ascertained, the results have been, on the whole, satisfactory. The Amrat Mahal cattle, which were under the care of the late Sir Henry Vere Levinge, were, after his death, distributed to the farms at Madura and Karur and orders to make over the remainder to certain substantial landholders of the Madura District were issued. These, however, have been held in abeyance, pending decision of the question of opening a stock-breeding farm or farms and the cattle remain in the charge of the Collector.

69. *Stock-breeding*.—Inquiries are being made as to whether blocks of Government waste land suitable for stock-breeding are available in any of the districts of this Presidency. Replies have not been received from all Collectors, but there is sufficient reason to believe that some suitable localities will be found to be available. It is not necessary to here express any opinion as to whether the State should enter upon stock-breeding or whether it should be left partially, or entirely, to private enterprise. As a step towards encouraging the production of good stock, Government have, recently, approved of the proposal of the permanent Director to, in lieu of a portion of the money prizes awarded at past agricultural exhibitions, give, for the best exhibits of live and dead stock, presentations of selected breeding animals. It will require time to form any decisive opinion upon the efficacy of this measure, but it promises well.

70. *Horse-breeding*.—An Arab stallion was, during the year, purchased by Government and forwarded to the Madura District for breeding purposes; but unfortunately the animal was found to be suffering from an incurable disease and had to be destroyed. Two more Arab stallions were, recently, purchased in Bombay, and sent for breeding purposes to the Coimbatore District which was once noted for its ponies. One of the stallions is in charge of a substantial private landholder and the other accompanies the Collector on his tours in the district. From the report of the Inspector of Cattle-diseases, it appears that the number of mares, brought to be covered, has not been large and the hesitation on the part of the people in making use of the stallions is attributed, by Mr. Mills, to the fees (Rs. 2-8-0) levied for service. On this subject a separate communication will, after consulting the Collector, be submitted to Government. I may, however, mention that Mr. Mills has very lately visited the Coimbatore District and that he has, personally, given me a very encouraging account of the experiment which will, when put into writing, be duly submitted.

71. The Collector of the Godavari District recommended the purchase of six pony stallions for the improvement of the local breed of ponies, but, as the Government had, on a similar application from another district, declined to sanction the purchase of any more stallions until they were in possession of the results obtained in the Coimbatore District the Board of Revenue declined to, for the present, move in the matter.

72. *Ensilage*.—Both Messrs. Robertson and Benson have expressed the opinion that it would be a waste of public money to make any experiments with ensilage in this Presidency. Nothing in the way of experiment was, therefore, attempted. That the gentlemen referred to are altogether correct in their views seems to me, in the face of what has been achieved elsewhere, somewhat open to question.

73. *Inspection of Cattle-disease and Veterinary Hospitals.*—The cattle-disease inspection establishment consisted of an Inspector, a Deputy Inspector, fourteen local Cattle-disease Inspectors and four Probationers.

The report of the Inspector, Mr. Mills, is submitted herewith, from which it will be seen that useful work has been continued. The department is yet in its infancy, and there are manifold difficulties to contend with. These, it is hoped, will gradually be met and matters be put on a footing, which will increase the utility of an undoubtedly desirable department.

74. The Veterinary Hospital at Sandápet continued to be of great use to the probationers under instruction by the Inspector and also to the students of the School of Agriculture. One hundred and seventy-five cases were admitted against 160 in the previous year; of these 126 or 72 per cent. were discharged as "cured" or "relieved" and 11 as "incurable." Only 16 of the animals died. Mr. Mills mentions that a larger quantity of medicines was sent out to districts, during the year under report, than in that preceding it, but he has not given the figures. The question of moving the hospital to another site, or of extending and improving existing buildings, is under the consideration of Government.

75. Mr. Mills made further experiments in protective inoculation according to M. Pasteur's method. The results have, so he states, confirmed his opinion regarding the efficacy of inoculation, but he thinks that the present arrangements for obtaining the anthracine are expensive and uncertain, and that they must preclude its general adoption, until the protective fluid can be manufactured in India. The people, moreover, are unwilling to allow their animals to be inoculated, but this is, perhaps, not a matter for much surprise, for even authorities on the Veterinary art are not quite unanimous as to the efficacy of the operation in preventing anthrax.

76. Mr. Mills also conducted some experiments in trench cremation. He is of opinion, however, that, although burning is the only safe mode of disposing of the carcasses of animals dying of anthrax and rinderpest, the dearth of fuel and consequent expense preclude the adoption in this Presidency of the system.

77. Mr. Mills found, by experiment, that common salt is an efficient remedy for rot (flake disease).

78. The Madras Municipality having made other arrangements for the inspection of slaughter-houses in the town, Mr. Mills' visits to them ceased.

79. The statistics of cattle-disease for the Presidency show that epizootic apthia, anthrax and rinderpest were the most prevalent diseases during the year. The deaths from all diseases were 43,788, of which 11,226 were due to anthrax, 12,057 to rinderpest and 3,612 to epizootic apthia. The returns, which in my opinion and in that of the Inspector of Cattle-diseases are utterly unreliable, show that 44 per cent. of the cattle suffered from disease, that 24 per cent. died, and that the proportion of deaths to attacks was 55·45.

There cannot be any doubt that the whole of the cattle statistics of the Presidency do not, even to a moderate degree, approach correctness. The subject has of late had closer attention than heretofore, and every effort to obtain improvement is being made.

80. The remarks offered by Mr. Mills on the subject of cattle-poisoning in the Bellary District, merit notice. It has long been known that this kind of thing goes on, or did so, recently, to a large extent in other parts of this Presidency. It is very often difficult to hunt down the culprits, and the owners themselves are often unwilling to prosecute. Stirring matters up through the agency of this department will no doubt be productive of good. Steps to do this will be taken. Local Cattle-disease Inspector K. Padmanabiah deserves considerable credit for the manner in which he has taken up and brought forward the subject of cattle-poisoning in the district in which he is employed.

81. *VII. Agricultural and Fiscal Statistics.*—It has been decided, with the approval of the Board of Revenue and Government, to publish, in the course of each

year, four forecasts and four condition and outturn reports regarding the crops noted in

I. Food-grains.

- | | |
|-------------|------------|
| (1) Paddy. | (3) Cumbu. |
| (2) Cholum. | (4) Ragi. |

II. Special and Industrial Crops.

- | | |
|-----------------|-------------------------|
| (1) Cotton. | (4) Castor and lamp-oil |
| (2) Indigo | seeds. |
| (3) Sugar-cane. | (5) Gingelly-oil seeds. |
| | (6) Tobacco. |

the margin. The former will be published as early as possible after the first day of September, December, March and April and the latter as early as possible after the first day of October, January, April and June. The last will be a final report on the harvest of the year for all crops. The forecasts will deal with crops sown as compared with the normal area under each crop, this latter being taken to

be the average of the previous five years' sowings; and the condition and outturn reports will exhibit the estimated outturn of crops, valued in annas. For this purpose a table of standard production has been prepared, based, in the case of each settled district on the outturn adopted by the Settlement Department for that particular district and, in the case of unsettled districts, on the average outturn of settled districts. This table will be verified and corrected, from time to time, with reference to the results of the experiments which are now being made by Collectors through their taluk officers. By means of the standards, prepared as explained above and from the statements of sowings and estimates of outturn in annas, to be furnished by Collectors, quantitative forecasts and reports will be published by this office.

82. *VIII. Trade and Trade Statistics.*—According to information obtained from the office of the Board of Revenue, the total foreign or external trade of the Presidency, including exports to, and imports from, other Indian provinces and transactions in treasure and Government stores, amounted to Rs. 20,65,20,761, of which Rupees 11,83,84,272 represented the value of the export trade, and Rs. 8,81,36,489 the value of the import trade. The chief articles of export were hides and skins, cotton (raw), coffee, indigo, seeds, grain and pulse, spices, sugar, oils, cotton piece goods, cocoanut kernel, cocoanuts, coir yarn and rope, tobacco and timber and wood. The chief articles of import were cotton piece goods, twist and yarn, grain and pulses, metals, apparel, liquors, timber and wood and railway materials. The interportal trade of the Presidency amounted to Rs. 4,16,22,369.

The value of the total land trade was Rs. 6,95,08,524, of which Rs. 3,67,57,508 represented the value of the export trade and Rs. 3,27,51,016 that of the import trade. The chief articles of export were Indian and European piece-goods, rice and paddy, seeds, liquors, metals and spices. The chief articles of import were spices, seeds, coffee, living animals, grain and pulses, sugar, hides and skins, provisions and raw cotton.

83. *Conclusion.*—I regret the delay in the submission of this report, which has in a very great measure arisen from the non-receipt, until the 18th ultimo, of Mr. Benson's report which was behindhand, owing to that officer having been absent on privilege leave. Added to this, the officer who has hitherto collected the information necessary for the administration report was moved to an appointment elsewhere, and his successor was new to this particular work and could consequently not get through it as rapidly as he would have, had he been longer in the office.

84. I would observe that this report is due in the Board's office on the 1st July and in that of Government on the 1st September. I beg to suggest that the former date may be altered to the 1st August, which would give us more time here and still allow a month for review by the Board and printing.

I have the honor to be,

Sir,

Your most obedient servant,

J. F. PRICE,

Ag. Dir. of Rev. Settl. and Agr.

ANNUAL REPORT

OF THE

AGRICULTURAL REPORTER TO GOVERNMENT FOR THE YEAR ENDING MARCH 31ST, 1885.

I have the honor to submit the annual report of the Agricultural Reporter to Government and Superintendent, Government Farms, for the year ending 31st March 1885, charge of which offices I received on 1st of April 1884 from Mr. W. R. Robertson, M.R.A.C., on their separation from that of the Principal of the Agricultural College. I have divided this report into the following sections:—

- A. General operations and remarks.
- B. Direct farming operations of Government.
- C. Miscellaneous.

The preparation of the report has been unavoidably delayed owing to my absence on privilege leave.

A. GENERAL OPERATIONS.

I. AGRICULTURAL TOURS.

2. These have now become the chief work of the Agricultural Reporter. The first tour of the year was on deputation to the Travancore Agricultural Exhibition at Trivandrum in April, for which the Agricultural Reporter left head-quarters on the 11th April and returned on the 22nd idem, having assisted as a judge at the show. The show was a good one, except as regards stock which do not flourish in Travancore. The Department was represented by a collection of exhibits sent from the Saidápet Farm, which received the following prizes:—

Iron harrow	1st prize.	Cholum fodder	1st prize.
Grubber	2nd „	Gram fodder	2nd „
Wood drag harrow	2nd „	Planters' Friend seed	1st „
Water lift (model of double mhoite)	2nd „	White cholum	2nd „
Collection of oil seeds	1st „	Ground-nuts	2nd „

3. The Agricultural Reporter next left head-quarters on June 17th for a general tour to examine and report on the agricultural condition and systems of the Kurnool district, which aim, however, was only partially carried out owing to causes noted below. The tour lasted till August 2nd and during the time the following places were visited:—

Taluk.	Places.	Taluk.	Places.
Pattikonda	Pyápali.	Nandikótkur	Álúr.
	Rátana.		Nandikótkur.
	Pattikonda.		Muchumari.
	Jounagiri.		Nágatur.
	Maddikerra.		Jopádu.
Rámallakót	Dhone.	Nandyál	Átmakúr.
	Veldurti.		Velapanur.
	Tékur.		Rámapuram.
	Kurnool.		Nandyál.
	Nannur.		Ayalur.
		Sirvel	Yerraguntla.
			Chintakunta.
			Chayagalamari.

4. In the time available, it was not possible to visit the Koilkuntla, Cumbum and Márápur taluks, and as the tour was incomplete, no report on the district was

prepared. It was, however, noted that the district should be divided, for purposes of agricultural study, into the following sections :—

- (1) The parts of the Pattikonda and Rámallakót taluks overlain with black cotton soil, where the practices are very similar to those pursued in the Ádóni and Álúr taluks of Bellary reported on in 1879, with which this tract is conterminous.
- (2) The hilly and rocky parts of the same taluks where the soils are light and stony, and the agricultural system is similar to that pursued near Gooty, reported on in the same year.
- (3) The northern parts of the Nandikótkur taluk, chiefly the valley drained by the Bhavanássi, where the agricultural conditions are favorable.
- (4) The black cotton soil tract lying south of the above, which extends into the Cuddapah district.
- (5) The tract of light soils lying east of the last, along the foot of the Nallamallies.
- (6) The Cumbum and Márkápúr taluks not visited.

5. A good deal of information was obtained, and when a staff of agricultural inspectors is provided, they can be set to work on the different sections of the district at once.

6. As in Bellary, one of the most striking points observed is the extremely shallow cultivation generally pursued. No specially interesting practices were remarked, but the district is undoubtedly one capable of great development. There is also a great area of land under the Madras Irrigation Company's canal suitable for irrigation, although the canal undoubtedly passes through much land that is utterly unsuitable.

7. Return from this tour was considered necessary in August, as the Agricultural Reporter is also Superintendent of Government Farms, and the Saidápet Farm was then in charge of a Deputy Superintendent who had never before been left for so long a period to his own devices. It was not possible to return to the district again at once, as had been intended, as the Deputy Superintendent was granted a month's privilege leave, from the 17th August, after nearly three years' service in the department, and the Agricultural Reporter remained in charge of the Farm at Saidápet.

8. In October, the Deputy Superintendent having returned to duty, the Agricultural Reporter proceeded to Shiyáli to visit Mr. Kistnasawmy Moodelliar; to Madura, to see the farm of the Madura Farmer's Club; to Karúr, to inspect the site for the farm proposed by the Reverend Mr. Little, all of which visits were reported on; and also to Coimbatore, to see the Collector regarding the proposed exhibition at Erode. After his return, the then Deputy Superintendent, Mr. C. K. Subba Row, having been transferred to the Educational Department, the Agricultural Reporter was unable to leave head-quarters again for a considerable period. A new Deputy Superintendent was only appointed on the 19th of November 1884, and he was fresh to the work, inexperienced, and could not be left alone.

9. On December 14th, the Agricultural Reporter proceeded on deputation to the Poona Agricultural Show and to visit the Nagpur Experimental Farm, which tour has been reported on and from which he returned on December 31st so as to be present at the Annual Ploughing Match on January 2nd.

10. It might have been possible during the remaining months of the year to have returned to the Kurnool district and to have completed a preliminary examination of it, but the course of action actually adopted was preferred by the Director of Agriculture, especially as, for the purposes now held in view, a simple tour through a district will not suffice for drawing up a report on it.

11. Early in January, the Chittoor Farm was inspected, and it was decided to withdraw the Government stock from it. After that, a visit was paid to the estate of M.R.Ry. Shunmugaraya Moodelliar Avergal, near Sadras, where that Zemindar has been introducing agricultural improvements. Advantage was also taken of being in the neighbourhood of the salt swamps of the coast to make inquiries regarding the supply of salt plants for the manufacture of Barilla, experiments in which had been ordered by Government.

12. Whilst absent on this trip, an intimation was received which necessitated early return to Saidápet in order to proceed to Rajahmundry to be present at the

agricultural show held there in February. This tour lasted from 28th January to 20th February and during it, besides attending the show, inquiries were made regarding the tobacco parasite *bôdu* (*Orobancha nicotiana*) and the condition and prospects of the sugar industry in the Godavari district. Reports were submitted on these subjects.

13. The greater part of the year had thus been taken up and the only other tour made was a visit to Hosur to see whether that neighbourhood presented special advantages for a stock farm.

14. This branch of my work, during the year under report, has not been very satisfactory to me, but I believe that the want of definite results was unavoidable under the conditions met with. Under the arrangements lately resolved on by Government, it will be possible to take up the examination of the country systematically, and, though such a work in the hands of one individual can only be very slowly disposed of, still it will be possible to report on definite tracts in the Presidency, I hope, annually. If it is desired to get the "Agricultural Survey" completed in a reasonable time, the department must be greatly strengthened and competent assistance given. If the Agricultural Reporter is to devote his chief attention to this work he must not be burdened with the executive details of the management of farms. As regards the latter, he should be chiefly an advising and inspecting officer. Government has resolved on a policy of agricultural inquiry but it must be remembered that such inquiry can never be complete or decisive without experiment. Agricultural inquiry includes, properly speaking, experimental research, and without it can never be really fruitful. Our general knowledge may lead us to believe that the methods, systems, or practices now pursued should be, and are capable of being, improved upon, but experiment alone can prove the truth or otherwise of our reasoning. It will only be doing the work in a partial manner if we simply inquire into the agricultural condition of the country. The field is already cleared by our present knowledge for agricultural inquiry in its widest sense.

II. EXHIBITIONS.

15. Again, no Government Exhibitions were held in the Presidency during the year. Preparations were being made for holding one at Gooty and one at Erode, but the unfavorable character of the season in the Ceded Districts and Coimbatore rendered it advisable to postpone them. A draft standard prize list has been prepared and is under discussion, and it has been suggested that Government should reserve the offer of prizes to a few general and special breeds and products and leave to local enterprise the offer of prizes for local and minor produce or stock. Local Fund Boards and the Municipalities of places where Agricultural exhibitions are held are all interested in the development of the agricultural resources of the country and may well grant funds to promote this object.

16. A local Agri-Horticultural show was organized by private enterprise at Rajahmundry and opened on February 5th with a fair amount of success. It was visited by the Agricultural Reporter and a special report submitted, in which it was suggested that Government should endeavour to develop this into a permanent and more general show for the Northern Circars. In connection with this show a small ploughing exhibition was held under rather unfavorable circumstances owing to the time of year, but it led to the sale on the spot of several ploughs exhibited by Messrs. Massey and Co., and to orders being given for several more.

17. The management of the Annual Ploughing Matches in Madras was handed over to a committee, which decided to offer prizes both for the best ploughing and the best ploughs. It also resolved to exclude from competition all persons competing with Government equipment. This is simply a development to what began the year before, and was referred to in paragraph 7 of the last report. The matches were held on January 2nd when the following competitors appeared:—

In Class	I—for ordinary work	...	...	...	6	competitors.
"	II—for deep work	..	...	...	6	do.
"	III—for work in irrigated land	..	...	...	3	do.
"	IV—for work with the native plough on unirrigated land	...	...	...	22	do.
"	V—for work with the native plough in irrigated land	...	...	...	8	do.

In submitting their report, the committee made the following suggestions which have been accepted by Government, and the best manner of carrying them out is now under discussion :—

- (1) That there should be a separate class for competitors working with native ploughs only.
- (2) That the competitions should be continued annually in Madras, and that, in future, they should take place in August or September instead of December.
- (3) That similar competitions should be arranged for in different parts of the Presidency, so as to bring to the knowledge of the people the utility and value of implements superior to their simple and inefficient ones.

III. INTRODUCTION AND DISTRIBUTION OF IMPLEMENTS.

18. Whilst on tour in Kurnool, the Agricultural Reporter carried with him and exhibited a number of ploughs at work in many villages, and when the utility of such implements can be kept continually before the ryot, there is great hope that real ploughs will become a part of the regular farm equipment throughout the country. It is only by persistently keeping this novelty (to the ryot) perpetually before his eyes that we can hope to break down the ryot's prejudices against it. The following quotation from a report of a visit to an enterprising and hard-headed farmer in the Kurnool district will illustrate the difficulty of introducing real ploughs :—

"However, as an instance of the difficulties which attend on the introduction of an improved plough, I may mention the fact that I found a well-to-do ryot working within a quarter of a mile of the field where Venkata Reddy's ploughs were at work with the ordinary native plough, and until I went to him and asked him, he never seemed to have paid any particular attention to the superiority of the ploughs he must have seen the Reddy using. His plea was that the Reddy was a man apart from all other ryots and could get the assistance of all Government officials in his experiments."

19. The department has now altogether withdrawn from the sale of ploughs, excepting as regards the few * that remain in stock still, and information is not available in this office as to the number sold by different manufacturers and agents during the year. In a report received during the year, one Mirasidar in Tanjore, however, reported that he had 107 ploughs working on his own estate, and that he had sold some to his neighbours. He had set up a smith's shop on his estate and was making ploughs himself. Gradually, doubtless, local makers will spring up for the simpler descriptions of ploughs, whilst for the better classes there are already makers at work in Madras.

20. A trial was held during July in Kurnool of several sorts of ploughs designed for breaking up and reclaiming "black cotton" soil, on which a report was submitted, pointing out that one of the patterns tried seemed to be well adapted to the purpose. The same plough was tried last Christmas at Poona and gave general satisfaction there. Such a plough, or soil breaker, has been long wanted, for the implement ordinarily used by the ryot for the purpose is clumsy, inefficient, and very expensive as regards the work done.

21. Trained ploughmen were sent out from the Saidápet Farm during the year to exhibit the working of improved ploughs as shown in the following table :—

District.	Number.	Started.	Returned.	Remarks.
North Arcot ...	1	26th Feb. 1885 ...	28th March 1885.	
Kurnool ...	* 2	16th June 1884 ...	{ 1-2nd Aug. 1884. 1-12th do. "	* Working with the Agricultural Reporter while on tour in the district.

A number of men were sent to the Saidápet Farm to undergo training in ploughing, particulars of which appear in the following table :—

District from which sent.	Number of men sent.	TIME SPENT AT SAIDÁPÉT.	
		Arrived.	Left.
Madura	3	10th June 1884 ...	} 21st September 1884.
Tanjore	2	17th " " ...	
	2	28th May " ...	2nd August 1884.

22. Regarding the Bihia Sugar Mill, no information is available as to the sale made generally in the Presidency, but during the Agricultural Reporter's visit to the Godávári district his attention was drawn to their sale there, and he learnt from the local Agents to the manufacturers that they had sold the following mills :—

	NO.
In the season of 1882-83	48
Do. do. 1883-84	169
Do. do. 1884-85 about	160

The depressed state of the sugar trade, however, seems likely both to restrict the area put under the crop and to check enterprise on the part of the ryot, although depressed times are really those when superior machinery is most valuable.

23. *Bamboo seed drills.*—Nine of these drills were constructed on the Farm after the fashion of the Bellary three-rowed drill and distributed to the following districts for experimental working :—Ganjam, Vizagapatam, Tanjore (2), Trichinopoly (3), Tinnevely and Malabar. These drills cost about Rs. 7-8-0 each to make up at Saidápet, but it will easily be seen from the following figures that to the ryot the cost would be less.

	RS.	A.	P.
1 Hopper	1	12	0
3 Pieces of bamboo	0	1	0
2 Shafts	0	8	0
3 Tines	0	6	0
1 Log	0	8	0
3 Carpenters	1	8	0
2 Smiths	1	0	0
2 Coolies	0	6	0
Iron	0	12	0
Coal	0	3	0
Rope	0	8	0
Total	7	8	0

It is very desirable that continued efforts should be made to introduce this drill to the notice of the ryots of our southern districts. It can certainly in no sense be called efficient, but still it is better than nothing, and the advantages of drill-sowing over broad-casting are incontrovertible. The extraordinary thing to be noticed regarding this drill is that its use has been so long confined to a part of our Telugu districts. If the ryot were ready to seize on any improvement, as soon as he saw it, this would have been impossible. The ryot is naturally conservative in the extreme; and if generations have not sufficed to extend the use of the drill all over the Presidency, how long may it not take to introduce real ploughs and other improvements which we may indicate?

IV. SEED DISTRIBUTION AND EXPERIMENTS.

24. The following table shows the amounts of various seeds distributed gratis by the department during the year :—

Districts.	Maize.	Wheat.	Barley.	New Orleans Cotton.	Nankin Cotton.	Sugar Sorghums.	Castor Beans.	Cholum.	Broom Millet.	Paddy of sorts.
1	2	3	4	5	6	7	8	9	10	11
	LB.	LB.	LB.	LB.	LB.	LB.	LB.	LB.	LB.	LB.
Ganjam	49	85	..	3	..	168	..	..	13	..
Vizagapatam	50	140	20	..	6	20	..	..	..	..
Godavari	90	40	..	50	5	9	..	..	..	..
Kistna	250	..	60	50	25	90	..	..	160	..
Nellore	200	30	..	50	47½	115	..	..	25	..
Cuddapah	30	110	10	20	62½	..	..	..	10	..
Bollary	37½	300	..	..	100	..	..	..	..	..
Anantapur .. .. .	..	70	25	..	25	..	..	..	..	..
Kurnool	100	80	..	270	25	102	136	..	..	..
Madras	½	20	..	..	500	1	20	1	..	..
Chingloput	59½	76	..	71½	100	50½	143	167	2	1½
North Arcot	200	160	60	..	..	56	..	..	..	..
South Arcot	55½	40	..	56½	12½	12½	24	..	12½	..
Tanjore	167	40	..	50	..	100	..	..	95	..
Trichinopoly	10	..	..	10	..	5	5	6	..	..
Madura	120	..	75	72	50	40	30	319	..	..
Tinnevely	12	..	..	10	25	2	2	1	..	..
Coimbatore	130	120	..	30	30	86	..	..	..	6
Nilgiris .. .. .	..	520	300	..	..	..	..	..	10	..
Salem	171	200	125	50	150	209	145	..	10	..
South Canara	3	130	..	12	..	7	..	..	1	60
Malabar	38	320	..	..	..	4	..	..	3	..
Outside the Presidency	40	..	..	..	..	427	10	11½	5	..
Total ..	1,812½	2,481	665	804½	1,163½	1,504½	516	445½	336½	76

Districts.	Tree seeds.	Oats.	Guinea Grass roots.	Divi Divi.	Tobacco.	Ground nuts.	Manilla Hemp Shoots.	Rheea cuttings.	Bastard Cedar cuttings.	Cyperus Cactus leaves.	Miscellaneous.
	12	13	14	15	16	17	18	19	20	21	22
	LB.	LB.	BDS.	LB. OZ.	LB. OZ.	LB.	NO.	NO.	BDS.	NO.	27
Ganjam .. .. .	..	..	..	..	2 1½	..	..	150	..	..	..
Vizagapatam .. .. .	..	..	..	..	..	103	50	..	..	..	..
Godavari .. .. .	..	..	..	2 0	0 5½	135	..	..	..	..	..
Kistna .. .. .	..	..	..	..	1 10½	..	..	..	..	..	..
Nellore .. .. .	..	..	..	..	0 2	..	..	..	..	..	..
Cuddapah	2	..	..	..	0 2½	..	50	..	..	..	..
Bollary .. .. .	..	..	..	..	..	30	..	..	..	12	..
Anantapur .. .. .	..	..	..	5 0	7 0	20	..	..	..	12	..
Kurnool .. .. .	..	..	..	..	0 1½	..	..	..	..	..	..
Madras	20	..	..	..	..	22	..	..	..	24	2
Chingloput	52	..	1	..	0 2½	..	8	..	..	12	..
North Arcot .. .. .	..	..	..	..	..	10	..	..	..	..	..
South Arcot .. .. .	..	..	..	..	0 2½	63	..	..	..	..	..
Tanjore	10	..	..	..	0 4½	..	..	..	..	..	..
Trichinopoly .. .. .	..	..	..	..	0 4½	..	..	..	..	..	5
Madura	36	..	1	0 2	0 3½	30	150	..	..	12	..
Tinnevely	2	..	..	1 0	0 1½	..	..	..	..	..	1
Coimbatore .. .. .	..	..	..	..	0 4½	125	..	1	..	12	..
Nilgiris .. .. .	..	30	..	..	..	..	..	..	..	6	..
Salem	5	..	2	..	0 1½	30	..	..	..	6	20
South Canara .. .. .	..	..	..	0 4	0 1½	15	..	..	..	..	11½
Malabar .. .. .	..	..	..	..	0 6½	24	..	..	..	..	1
Outside the Presidency	5	..	2	..	0 0½	12½	68	..	..	..	21
Total ..	132	80	6	8 6	13 5½	265½	520	300	1	86	51½

25. A file of the reports received is attached in manuscript, but the results recorded are in almost all cases unsatisfactory and it is questionable whether any good results can be hoped for from the distribution of seeds for experimental cultivation

until we have a local agency capable of looking after the experiments made. Unless in particular cases where special interest and sufficient knowledge can be secured, it appears undesirable to continue the practice of distributing the seed of new crops for experimental cultivation. Such seeds will be more unlikely than ever to succeed in the future as we shall be unable to raise and furnish even partially acclimatized seed.

26. *Wheat*.—Reports have been received from Madura, Coimbatore, Salem, Nilgiris, Malabar, South Canara, and the Godavari, and in almost every case the result was a total failure. In some few of these districts better results might have been hoped for, but the season was a very bad one generally. The seed in several cases is also said to have been bad, but this was not the case when it was despatched from Saidápet. The seed distributed early in the year showed a vitality of 92 per cent. and that sent out later, of 90 per cent. Barley met the same fate as wheat.

27. *Maize*.—The reports almost entirely record failures, but there is nothing to show that the seed had a fair trial. The cause of failure is generally said to have been a bad season or the ravages of insects; in some cases the seed is said to have been bad.

28. *Cotton*.—The seeds distributed were New Orleans raised on the Saidápet Farm, and Nankin obtained from the Cawnpore Farm. The results as regards the former are as bad as those with maize, and as regards the latter, the reports available are incomplete. Messrs. Binny and Co., however, who received the greater part of the Nankin Cotton seed, furnish three reports, neither of which is complete, and also a report on the growth of Red Cotton obtained from Rajahmundry which, though incomplete, is tolerably favorable.

29. *Sorghums*.—These are the sugar Sorghums, Chinese sugar-cane and Planters' Friend. The South Canara Collector submitted a special report during the year on experiments with this plant and his results were to the effect that it would grow on even the poorer soils of his district, but that there is no market as yet for the saccharine product. The other results reported are as unsatisfactory as they can be, and are ascribed to a bad season, or damage done to the crop by insects, &c.

30. The Castor beans distributed were of ordinary sorts, and it is not necessary to notice the experiments. The success of the South Canara experiment with Sunn hemp is notable, as also is the encouraging report for the same district as regards ground-nuts. It is too early to expect results from the Manilla hemp plants sent out, but they appear to be thriving at Pálghat, Coimbatore, and Bellary. Major Johnson reports also very favorably from Kullar up to the present time. Regarding the growth of Rhea, the following extract from Mr. M. E. M. Breithaupt of Ammutty, Coorg, is interesting:—

“The remaining ninety cuttings, which were cut in two parts before planting, were planted in nurseries, and cuttings and shoots as they appeared were taken off and planted in turn; and I reckon I have now nearly 2,000 plants of Rhea, including cuttings, shoots and rootlets I have just planted in nurseries taken from the old stock. The soil of the field where the Rhea plants are planted is an ordinary red loam. The soil of the nurseries—black with a very large mixture of sand and clay. The Rhea does equally well in both soils. Some of the plants from the first lot of cuttings have been flowering for the past three weeks. The old and young plants are extremely healthy and show no signs of any disease whatever. Our rainfall averages 65 inches per annum.”

31. *The Tobacco seed distributed was of several sorts as follows:—*

Havana.	|	Chinese (large-leaved giant).
Brazil	|	Manilla.

The reports are generally incomplete. From the Godavari and Trichinopoly they are those of failures; from Salem the same, the reasons given being generally want of rain or insect attacks; from Coimbatore, the only result reported is of a failure, but a further report may be expected; from the Madura Farm, the result is not complete as the leaves were not cured; from the Kistna, an outturn of four candies from two acres is reported in one experiment, but these figures do not suffice to enable any opinion to be formed on the result, otherwise the results were failures or are incomplete; and finally, from the Nilgiris and South Canara the reports are incomplete, but further details are promised.

32. The *Eucalyptus* seed sent out was of the following varieties and quantities :—

		LB.	OZ.			LB.	OZ.
<i>Eucalyptus</i>	<i>Terticormis</i> ..	...	1 1½	<i>Eucalyptus</i>	<i>Globulus</i> ..	...	1 1½
"	<i>Resinifera</i> ..	...	0 12½	"	<i>Citriodora</i> ..	...	0 3½
"	<i>Rostrata</i> ..	...	1 1½	"	(Yellow Mahogany)...	...	0 10½
"	<i>Bicolor</i> ..	...	1 1½	"	<i>Baileyana</i> ..	...	0 2½
"	<i>Goniocalyx</i> ..	...	1 1½	"	<i>Planchoniana</i> ..	...	0 7½
"	<i>Sideropholia</i> ..	...	1 1½	"	<i>Microcorys</i> ..	...	0 5½
"	<i>Paniculata</i> ..	...	1 2½				

Of these, all, except the last three sorts, were purchased in Sydney, the others having been received from the Queensland Acclimatization Society, in reference to a request for assistance in obtaining them, as they seemed likely to be suitable for growth in Southern India. It is too early to report any definite results as to the possibility of growing this species of tree in the plains, but the reports so far are as follow :—

Goddar—failure ; seed did not germinate.

Coimbatore—most of the seed failed, but some has germinated, and some has yet to be sown.

South Canara—failed to germinate.

Malabar—only a portion of the seed has been sown, and only two species have germinated.

Cuddapah—plants of seven species have been raised on Horsleykonda, but the results of the sowing were poor.

The following officers also received supplies of the seeds, but no reports have yet been received from them.—

Collector of Salem	Collector of Kurnool.	Conservator of Forests—
" Ganjam.	" Chingleput.	Northern Division.
" Vizagapatam.	" South Arcot.	Southern Division.
" North Arcot.	" Tinnevely.	The Honorary Secretary, Agri-
" Madura		Horticultural Society,
		Madras.

Some of the seed of each variety was sown at Saidápet, and seedlings of each have been raised, there now being about 400 of them available and many of them 2-3 feet high.

V. IMPROVEMENT AND DISTRIBUTION OF LIVE STOCK.

33. That to a very great extent the improvement and development of agriculture in this country must depend in the first place on the live stock must be universally admitted. That most careful and close attention should be given to this branch of agriculture necessarily follows, and it must always be one of the most important duties of the Agricultural adviser of Government to study it in addition to what is too frequently and erroneously looked upon as his peculiar work, namely, husbandry. Stock farming and husbandry or arable farming are the two great branches of agriculture, and it is difficult to say, in the present condition of South Indian farming, which needs most attention. In all that relates to the breeding, rearing, feeding and management of live stock, the closest attention of the Agricultural officers of Government is required, just as in the prevention and treatment of diseases the assistance of the Veterinary branch of the department is to be looked for. But it may be remarked that, by careful attention to the best practices of stock-breeders, the necessity for that assistance will, to a great extent, disappear.

34. No steps could be taken during the year towards the development of what is now acknowledged as necessary, viz., the distribution of good breeding sires on an adequate scale. Inquiry and discussion on the subject have begun and in time a move may be made. It must cost a considerable sum to do any good and results must not be looked for under a considerable number of years. If anything real is to be effected, the operation must be started on a solid basis. We have a nucleus at Saidápet round which to form a good breeding herd and flock, and when placed in a suitable locality with an adequate area of land for a run and under competent superintendence, this herd and flock should, if well selected and organized, be able to furnish bulls and

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rams in as great a number as can be satisfactorily placed. After the animals are placed, we must have a local staff able to see that they are properly cared for and made use of.

35. The Aden bull sent to North Arcot last year has been recalled, as it had been greatly neglected by the Society to which it was entrusted.

36. Of the young bulls imported from Aden last year, only three were considered fit for distribution and sent out during the year—one to Malabar, one to the Sheveroy's, and one to a Zemindar in the Chingleput district. Besides these, a young bull of the same breed and three of the cows imported from Aden last year, with a calf, were sent to the Madura Farm. An Aden cow was also sent to the Sheveroy's for breeding purposes.

37. The rams were also sent out as follows —

Coimbatore Municipality	...	...	1
Karúr (Rev. Mr. Henry Little)		..	2*
Erpde	...	...	2
Ruthnasabapathy Moodelliar of Chingleput			1

* One died and the second replaced it

VI. THE USE AND ABUSE OF IRRIGATION WATER

38. In the last few reports of the Saidápet Farm attention has been drawn to this subject and the remarks made last year on the subject being in a great measure misunderstood, elicited a considerable amount of discussion. The Agricultural advisers of Government have persistently held the opinion that our supply of irrigation water is not made full use of. Elementary experiments on a small scale have borne this out, although perhaps the figures recorded have not, to those unacquainted with the details of agricultural practice, been entirely free from doubt on this point. The subject is one of those most pressing in connection with South Indian agriculture. If, as is generally believed, there is a great waste of water in the ordinary practices of irrigation and in the growth of paddy as almost the only crop on irrigated land, it is most desirable that experiments should be organized and carried through to determine whether a better and more extended use of the water available for irrigation cannot be made. Ever since 1871 it has been desired that the Agricultural Department should conduct experiments in the use of irrigation water for paddy, and it is surely time that something should be done in this respect. It was intended to make a beginning in the work on the Saidápet Farm in the coming season, but the closing of that institution has put an end to this idea. We require a large series of experiments under numerous and varied conditions to determine what is the least quantity of water required to raise a remunerative crop of paddy. Experiments are also required to determine whether, under many of the conditions met with under irrigation works, the more or less complete substitution of other crops for paddy would not allow of a great extension of the area practically protected from the vicissitudes of season, and whether this practice would not be beneficial in other ways.

39. It seems likely that much assistance might be obtained in these respects by careful local inquiry in Italy, Spain, the United States, and perhaps elsewhere, and it appears most desirable that such inquiry should be made by competent persons at an early date.

VII. CORRESPONDENCE, REPORTS, &c.

40. During the year, special reports were drawn up by the Agricultural Reporter on the following subjects :—

* Trial of Messrs Massey and Co.'s cotton soil ploughs in Ceded Districts.
 * Visit to Nannur where Swedish ploughs are in regular use
 Value of certain salts as manure
 Experiments made with seeds distributed in 1883.
 * Ensilage.
 * Manufacture of sugar from Sorghum.
 Sample of wheat from Vizagapatam.
 Experiments with Avery's Hindustan plough,
 Massey's C. P. plough and native plough
 Scheme for plough trials

* Cane crushing and manufacture of jaggery in the Godávári district.
 Bihna Mills in the Godávári district.
 Stacking and storing hay and fodder in the Presidency.
 Visits to the Poona Exhibition and Nagpur Farm.
 Visit to Karúr Farm.
 * Visits to Mr. Kistnasawmy Moodelliar's estate at Shiyáhi.
 Visit to the Rajahmundry Show.
 * Practical utility of the Saidápet Farm.
 * Note on the work of an Agricultural Department.

It would be decidedly advantageous if those marked * could be reprinted in an appendix to this report. When printed as Government Proceedings they are seldom of any use to the public, and by combining them with the annual report its value would be increased.

41. The annual reports for the years 1882-83 and 1883-84 were distributed during the year.

42. Again is it necessary for me to draw attention to the falling off of the correspondence of this office with the native public. Last year this was recorded, but not remarked upon by either the Director, the Board, or Government. It is a most serious matter and needs attentive consideration. It began in 1883, after the combination of the work of Revenue Settlement, *i.e.*, rent assessment, with agricultural development. It is to be feared that the people do not yet understand or appreciate the real aims of Government as regards the latter work and hold back from a department which, in its main title, is too often looked upon as a threatening of exaction. Unless we can get the people to work with us, it will be an almost hopeless task to try to introduce agricultural improvements. A brisk and frequent interchange of ideas on agricultural subjects with the native public is one of the best signs of such interest as it should be our object to promote. The record shows that this interest is dwindling.

43. "The Saidápet Farm Records" were all in the press at the end of the year and will soon be published. This work has been greatly delayed by want of clerical assistance, but it appears at a fitting time when the connection of the Farm with the Agricultural Department ceases.

44. As Editor of the Agricultural sheets of the District Gazettes, the Agricultural Reporter prepared slips for five issues. Difficulties have arisen regarding the translation of the matter, but it is hoped that during the coming year satisfactory arrangements may be made for a regular issue of the sheets.

45. During the year, the Agricultural authorities of the following States in America agreed to make an exchange of publications with this department and a large number of valuable reports were received from them :—

California.	Vermont.	Iowa.
Missouri.	Indiana.	Wisconsin.
Michigan.	Virginia.	Illinois.
New Jersey.	South Carolina.	
Georgia.	Connecticut.	

The usual exchanges were also received and deposited as heretofore in the Library of the Agricultural College, it being considered advisable to make one good agricultural library in the Presidency, instead of two weak ones.

B. DIRECT FARMING OPERATIONS.

46. As in the previous year, these have been confined to the Saidápet Experimental Farm. Government resolved during the year to abandon that Farm as far as the Agricultural Department is concerned, and also to abstain from any further direct operations.

47. The farm suffered much during the year from the changes made in the officers in charge, and the other duties of the Agricultural Reporter; whilst the latter officer's residence at a distance from it when at head-quarters prevented his doing what otherwise he might for it. As proposed in June last, operations on the farm have been chiefly controlled with a view to the support of the live-stock on it. No experimental work has been undertaken in rotations, manures or fodders. Ensilage has been left alone, as unsuited to the conditions met with. The season has prevented much being done in raising seeds for distribution and few new implements have come under notice for trial. Preparations for a regular and definite course of experiments in the use of irrigation water were made, but now will have to be abandoned under the new aspect of affairs.

48. The whole year was an unfavorable one, but nevertheless the chief objects held in view on the farm were fairly accomplished. A very large stock of cattle was maintained on the farm. It was almost double the average of former years; see paragraph 100 below.

I.—SEASON.

49. Dividing the year into periods according to the general nature of the weather, it will be seen that in the first period—*April and May*—the total fall of rain was 2·28 inches, and the number of wet days 2, against an average of 3·55 inches on 2·22 wet days during the corresponding period in the previous 14 years. In April, however, the fall was 1·71 inches, precipitated in a single thunder-shower of about two hours duration. This fall was very beneficial to the crops then standing and to casuarina trees, and advantage was taken of it to sow a large area with fodder crops. Fields Nos. 12, 33, 15 experimental plots, and a part of No. 23 were sown with horse-gram, and Nos. 16 and 22 were also ploughed and fallowed. In May, the rainfall was much below the average, but the single shower of ·57 inch was very beneficial to the growth of the young fodder crops sown in the previous month.

50. In the second period—*June to September*—the rainfall was also considerably short of the average; only 11·36 inches of rain falling on 31 wet days, against an average of 17·10 inches on 32·53 wet days. The figures given in the table below show that rain may be expected at any time after beginning of June, but generally it does not come till the middle of that month, or even later. During the year under report there was a slight fall on the 17th, followed by a little more on the 18th and as much as ·81 inch on the 20th, but no more fell during the month nor till the 6th of July. The total fall during June was only 49 per cent. of the average as shown by the following table:—

		WEEKS				
		10	11	12	13	Total
Average of 14 years . .	{ Rainfall, inches . .	·60	·97	·21	·51	2·29
	{ Wet days, number . .	1·07	1·49	1·22	1·78	5·56
1884	{ Rainfall, inches . . .	...	...	1·16	...	1·16
	{ Wet days, number . .	...	...	3	.	3

In July the rainfall and wet days registered were only 69 and 66 per cent. respectively of the average. There was a slight shower on the 6th, followed by another of 1.48 inches on the 8th. The next fall was on the 13th, when .23 inch were registered. A fortnight's dry weather then succeeded and, although frequent showers fell towards the close of the month and in the early part of August, no satisfactory fall was registered until the 14th of the latter month, when 1.41 inches of rain fell and again .45 inch on the 15th. The latter half of August and the first fortnight of September were extremely dry and the state of the weather brought all cultivation to a standstill till September 16th, or up to the end of the 24th week. Although the number of wet days in August was nearly equal to, and in September considerably in excess of, the average, the rainfall was deficient, being in each month at the rate of only .34 inch per wet day, against an average of .49 and .76 inch per wet day during these months respectively in the previous 14 years. During the latter half of September, namely, in the 25th and 26th weeks, there were light but frequent showers, and this period was favorable for farming operations.

51. Third period—*October to December*.—The rainfall in the early part of October, that is in the 27th and 28th weeks, was very small; but .20 inch of rain falling in the 27th week, and not more than .05 in the 28th week, against an average of 2.37 and 2 inches respectively. Tillage operations commenced in the latter part of September, were continued without much interruption. The work done, however, was not very good. The crops, for the most part, looked fairly well. The monsoon rains set in quietly about the 15th October, although some showers had fallen before and the wind had changed about the 9th or 10th. In the 29th week 10.38 inches of rain were registered on 7 days—a very heavy fall and much heavier than has ever been recorded so early in a single week during the past 15 years. The average for the week in the previous 14 years is only 2.67 inches. During the succeeding week the rain was also very heavy and about double the average. Such a heavy and continuous downpour retards farm work seriously and proves very injurious to the cold-weather crops, which, about this time, are generally in a young and delicate state. The 31st week formed a pleasant and very useful break, but this was not quite long enough to get all the work then necessary finished. The total rainfall during October amounted to 18.16 inches and the number of wet days to 16, whereas the average for the previous 14 years is 11.54 inches of rain on 11.07 wet days. Thus the month was very wet and not of much use for sowing, the first half being too dry and the second too wet. This month was one of the wettest Octobers experienced during the last 15 years. It was no doubt surpassed in point of rainfall by the October of 1875, as well as by that of 1883, but from an agricultural point of view, it was worse than either of these two. For in 1875, there having been sufficient rain in September, all the tillage operations and sowing were done during that month, so that the crops were sufficiently advanced in growth to stand the heavy rains of October; and in October 1883, the rainfall was more equally distributed.

52. With the close of the 31st week, a spell of unprecedented rain began, and in the 32nd week, 27.39 inches fell on 7 days, deluging the country, causing heavy floods and breaching the Mylapore tank and thereby washing away a bridge on the farm. A good deal of crop also was damaged, and some entirely destroyed by inundation from the Adyar. Work in the fields was put a stop to for 10 days or more. In the succeeding week the rainfall was below the average, and the weather was, for the most part, bright and clear, but it was not till the end of it that work in the fields was at all possible. The early part of the 34th week was fine and clear and advantage was taken of this in the assiduous performance of such field operations as were deemed important. Field No. 37 on which the crop had been ruined by the flood was ploughed up and re-sown with paddy. No. 31 and a nursery in No. 23 were also sown with paddy. Fields Nos. 19 and 16 were sown with indigo, and No. 11 with cholum. Several crops were bullock-hoed. This very satisfactory progress was sadly interrupted by a cyclone which began on the night of the 20th November and lasted till about 10 A.M. on the 21st, when it gradually lulled. It did considerable damage to the Manila hemp and plantain tops; in the former about 180 trees were broken down and in the latter not less than 300. All these damaged trees were buried in pits dug

for the purpose between the rows and were thus made a source of organic manure to the soil. Many other crops, such as maize, cholom, planter's friend, were also injured by being laid. The storm fortunately was of brief duration. The 35th week was comparatively fine and clear, and in the latter part of it, farm work could be resumed. The total rainfall for November was 34.90 inches on 18 wet days, whereas the average for the month is 14.97 inches on 12.58 wet days. This record was far the highest for any November during the last 15 years.

53. The weather during the two succeeding weeks, namely, the 36th and 37th, was bright and dry and allowed free scope for field work. In the 38th week another remarkable phase of the season was recorded. Incessant and heavy rain was precipitated on six days of the week, amounting to a total of 13.47 inches. The result was an inundation of a more destructive nature than that experienced in November. The Adyar rose higher and overflowed a larger portion of the farm than previously, and nearly all the paddy crops were submerged again. No. 13 and No. 37 which had been sown a second time after the cessation of the rains in November were once more denuded of their crops. The surface soil of some of the fields was washed clean off, while enormous quantities of silt and sand were deposited on the parts of the farm bordering on the river. No more rain fell during December except .54 inch on the first day of the 39th week. The total rainfall for December was 14.90 inches, and the number of wet days 12, the average being 4.49 inches on 5.21 wet days. Such heavy rain-fall for the month of December is unparalleled on the record of the past 15 years.

54. The total rainfall for this period was 67.96 inches on 46 wet days and is more than double of the average. What is more notable is that out of the whole fall, 57.91 inches, or about 85 per cent., fell in 4 weeks, namely, the 29th, 30th, 32nd and 38th; whereas the average weekly falls in the previous 14 years do not differ widely for nearly the whole period as will be seen from the following comparative statement:—

Week	27th	28th	29th	30th	31st	32nd	33rd	34th	35th	36th	37th	38th	39th
Rainfall in 1884	20	05	10.38	6.67	1.26	27.39	2.39	2.90	1.82	.59	.30	13.47	.54
Average of 14 years	2.37	2.00	2.67	3.32	2.53	3.07	3.73	4.08	3.59	1.19	1.44	.46	.11

55. In the fourth period—*January to March*—there were but two wet days with a rainfall of .63 inch; 1.56 inches of rain on 2.34 wet days being the average for the period. Of the above rainfall .57 inch fell in a single shower of a short duration on the 23rd March. The shower was remarkable; it commenced at about 4 P.M., with a storm of wind, thunder and lightning. It blew up from the north-west and was accompanied by a heavy fall of hail—a most uncommon occurrence at Saidápet. The wind was very destructive, and, although it lasted but a few minutes, did considerable havoc on the farm. In No. 4, Munilla hemp tope, 83 trees were broken and in No. 35, plantain tope, about a hundred. Many other trees were blown down. The fruit trees such as tamarind, mango, guava, wood-apple, cashewnut, blue-plum, &c., most of which were just flowering, were stripped of a great part of their flowers and green fruits, and even such short crops as horse-gram were much knocked about both by the wind and hail.

56. *Summary.*—The year under report was characterized by an extraordinarily heavy rainfall of 82.23 inches on 81 wet days, against 53.21 inches on 65.99 wet days which constitutes the average of a year in the previous 14 years. This is an illustration of the fact that a heavy rainfall does not necessarily betoken a good season. The most singular feature connected with the rainfall of the year is that the fall was below the average in almost every week except the 29th, 30th, 32nd and 38th. In these four weeks alone, 57.91 inches fell, which amount exceeds the average for a whole year in ordinary years. Work in the fields was much interfered with at times when it was most necessary, and the little that could be done after the

cessation of each spell of drenching rains was undone by the next. Some of the fields had thus to be sown thrice over. The season was a bad one and farm work was carried on under great difficulties. The cold-weather crops suffered severely. Most of the paddy crops were twice submerged by inundation from the river. Amber sugar-cane, sorghum and planter's friend yielded the lowest returns ever obtained. Maize proved almost a failure. The cotton crops were sickly and stunted in growth. Manure applied to these crops had no effect and was apparently lost by the excessive wash and the drainage of such large quantities of water through the porous farm soils. Had manuring experiments been attempted they would have been useless under such conditions.

II—CROPPING.

57. The arable area at the beginning of the year was $70\frac{1}{2}$ acres. Of this 5.03 acres were planted out with casuarinas during the year, and .27 acre given over to the Public Works Department, so that the arable area was 65.2 acres at the close of the year. The cropping of the year may be summarized as follows:—

	Arable Area.	CROPS STANDING.		CROPS HARVESTED.		
		Grass.	Other Crops.	First.	Second.	Third.
	ACRES.	ACRES.	ACRES.	ACRES.	ACRES.	ACRES.
1st April 1884	70.50	10.50	27.04	...	...	...
During the year ... ..	...	...	...	65.93	34.19	6.90
31st March 1885	65.20	4.66	48.83	...	...	...

58. *Fodder crops.*—The total area of these crops raised was 86.91 acres, of which 11.20 acres were standing at the commencement of the year. There were also at the beginning of the year $10\frac{1}{2}$ acres under Guinea grass, of which, during the course of the year, 2.99 acres were planted with casuarinas, and 2.85 acres replaced by other crops, so that only 4.66 acres of this grass were left at the close of the year. There were 30.66 acres of other fodder crops standing at the end of the year. The area of the permanent grass land used for grazing purposes was increased by 1.78 acres during the year, and is now $7\frac{1}{4}$ acres. There are also about 7.11 acres under Guinea grass, growing between the rows of casuarina trees in the topes.

59. The total outturn of fodder from the 55.25 acres harvested during the year was 161,913 lb., which averages 2,930 lb. per acre, and is a lower yield than that of any of the three preceding years. The diminution of the outturn is owing to the unfavorable character of the season and to the fact that many of the crops were grazed by live-stock. Some of the Guinea-grass crops were removed altogether, and only the first cuttings of cholom from Nos. 4 and 11 fields have been included in the table. Of the fodder crops standing at the close of the year, many were full grown and almost ready for use. Details are given in the table in appendix II-A.

60. Red cholom sown in No. 13 yielded very well, 10,540 lb. of straw per acre having been obtained in 81 days, which equals 130 lb. per day of growth. The seed of this crop was originally received from Aden, having been sent over with the cattle imported last year for their food during the journey. The crop was grown in the hot weather under occasional irrigation. A very satisfactory outturn was also obtained from the Planter's friend in No. 12; yield per acre in 59 days' growth having been 7,298 lb. which is at the rate of 123 lb. per day. The horse-grass crop in No. 34-B also yielded fairly. In 54 days, 6,926 lb. per acre was obtained. The following is a summary of some of the best results obtained during the year:—

Field.	Crop.	Yield per Acre.	Duration of Growth.	Growth per Acre per day.
		LB.	DAYS.	LB.
No. 13 ...	Red cholam	10,540	81	130
„ 12 ...	Planter's friend	7,298	59	123
„ 34-B.	Horse-gram	6,926	84	82
„ 37-A.	Do.	4,737	70	67

61. The growth of horse-gram on paddy-land was referred to last year; in 1884, about 11 acres were sown with this crop after harvesting the cold-weather paddy. The following statement shows the details:—

Field No.	Area.	Date of Sowing.	Date of Harvest.	Duration of growth of Crop.	Outturn.	Rainfall.
	ACRES.				LB.	INCHES.
22	75	1st April 1884 ..	18th June 1884 ..	78	2,236	2.63
22	87	23rd „ „ ..	9th July „ ..	77	840	3.48
29-A	80	3rd „ „ ..	13th June „ ..	71	1,764	2.28
29-B-3	41	8th May „ ..	4th August „ ..	88	120	4.91
30-A	2.05	24th March „ ..	26th June „ ..	94	8,080	3.44
31	1.58	20th „ „ ..	9th May „ ..	50	2,268	2.28
31	1.58	10th May „ ..	19th July „ ..	70	520	3.14
34-B	19	29th March „ ..	21st June „ ..	84	1,316	3.44
34-B	58	8th May „ ..	17th July „ ..	70	872	3.71
37-A	45	5th „ „ ..	14th „ „ ..	70	2,132	3.71
37-B, C and D	1.80	27th March „ ..	12th May „ ..	46	3,228	2.28

The outturn is equal to 2113.56 lb. per acre against 1394.27 lb. per acre obtained in the previous year. The increase is chiefly due to some rain having fallen during the growth of the crops, whereas in the previous year there was no rain whatever when similar crops were grown.

62. *Unirrigated Corn Crops*—were raised on 20.1 acres. The detailed statement as to the outturn is given in Appendix II-B. The yield from the crops was almost invariably below average, which is not surprising when the adverse conditions of the season under which these crops grew are considered. Many of them were, during the most important stages of their growth, exposed to three destructively heavy falls of rain, one when they had just appeared above ground, another when they were flowering, and a third when they were nearly mature. The cyclone which burst on the 21st of November caused additional injury. The crops having been thus enfeebled, rust had a stronger hold of them than usual.

63. *Maize*.—This was grown in alternate rows with cotton in field No. 15; the crops having together occupied 2.35 acres. It was manured with box manure at the rate of 30 cart-loads, or 10 tons per acre. It was sown on the 19th of September and made very satisfactory progress during the early stage of its growth. It commenced flowering towards the beginning of November, but, unfortunately, the abnormally heavy rains which fell during the 32nd week greatly interfered with the fertilization of flowers and the formation of good grain. A good many plants were broken down by

the subsequent storm. Maize is a crop which suffers much from high wind. It was interesting to note that both the maize and cotton plants situated in the northern part of the field, which is higher and better drained than the rest of the field, were much the healthiest in appearance and best developed. About the middle of December the maize was fit for harvest, but before the cobs could be gathered, the heavy rains of the 33rd week set in and further injured the crop and grain. The total outturn of grain was 193.5 lb., which is equal to only 164 lb. per acre, after excluding half the area of the field as occupied by cotton. The cobs were very small, which will be apparent from the fact that, on an average, about 11 of them weighed only one pound. The yield of grain was thus very low and much poorer than that of last year, which was looked upon as one of the worst returns ever obtained. The outturn of the straw, however, was fair; it averaged 5,179 lb. per acre or 27 times the weight of the grain, while the usual ratio is about 5 to 1.

64. *Amber Sugar-cane*.—This was sown on the 3rd October together with Nankin cotton on a plot measuring 1.25 acres in field No. 4. For about 10 days after sowing, there was little or no rain, while during the fortnight succeeding, there was a fall of 17.05 inches. Such a sudden change in the weather from one extreme to the other, during the early stage of a crop's growth, is bound to affect it during the whole of its existence. This crop in particular suffered further from the weather later on, and the outturn was naturally very low, being at the rate of 201 lb. of grain and 4,763 lb. of straw per acre.

65. *Sorghum saccharatum*.—This was sown on the 24th September in No. 10-B, on an area of 2.32 acres. It thrived rather better than the last, but suffered greatly late in the season. The outturn was at the rate of 70.2 lb. of grain and 6121.5 lb. of straw per acre.

66. *Sorghum sugar*.—It was intended to make some experiments to determine the cost and value of this product, but the season was such a bad one that the canes available were very poor and limited in quantity. The apparatus also which could be provided on the spot was very crude, only consisting of a copper boiler made in Madras for heating the juice prior to neutralization, and a roughly made open iron sugar pan for evaporation. Some experiments on a small scale were, however, made both with Chinese and Amber sugar-canes, of which the results are given below:—

Kind of Cane used and where grown.	Date.	CRUSHING.		WEIGHT OF		YIELD OF JUICE.		
		Commenced.	Finished.	Tops and ears.	Stripped canes crushed.	Volume.	Weight.	Per 100 lb. of canes.
1	2	3	4	5	6	7	8	9
Chinese Sugar-cane No. 10.	31st December 1884 ..	A.M. 10-35	A.M. 11-55	LB. 158	LB. 200	MADRAS MEASURES 30.75	LB. 123	IM. 61.5
Do. do.	2nd January 1885 ..	11-50	12-30	160	200	25.0	160	50
Do. do.	3rd do. ..	10-10	10-35	144	180	20.3	92	51.1
Do. do.	5th do. ..	10-40	11-15	140	200	24.0	96	48
Do. do.	6th do. ..	10-5	10-50	101	160	22.0	92	51.1
Do. do.	7th do. ..	10-0	10-35	156	180	22.0	85	48.9
Do. do.	8th do. ..	9-30	10-0	124	300	14.0	66	58
Amber Sugar-cane No. 4.	9th February 1885 ..	9-5	9-15	10	33	3.25	13	39.4
Do. do.	10th do. ..	9-35	10-0	17	67	6.6	24	36.8
Do. do.	15th do. ..	10-0	10-20	11	45	4.8	12	40

Kind of Cane used and where grown	Date	DEFEICATION OF JUICE				EVAPORATING			JAGGERY OBTAINED		
		Commenced heating	Cream of lime added		Removed from fire at	Scum removed		Finished at	Weight	Per 100 lb. of Juice.	Per 100 lb. of Canes.
			At	Amount		At	Amount.				
		10	11	12	13	14	15	16	17	18	19
Chinese Sugar-cane No 10	31st December 1884	P M	1 M	OTLOCKR	P M	1 M	1 B	P M	1 B	1 B	1 B
Do. do	2nd January 1885	12	12-30	2	1-15	2-0	8	5-0	10	8 1	5
		12-40	1-25	do	1-50	-00	6½	5-40	8	8	4
Do do	3rd do	A M	A M	do	A M	11-40	12-35	5½	3-15	7	7-6 3 9
Do. do	5th do	11-35	12-0	do	12-50	1-0	4	3-55	7½	7 8	3 75
Do. do	6th do	11-15	11-55	do	12 10	1-15	10	4-0	6½	6 8	3 5
Do. do	7th do	10-55	11-20	To the point of neutralization	11-45	1-0	9	3-15	6½	7 7	3 7
Do. do	8th do	10-20	11-10		11-0	12-20	7	3-0	4½	8 0	2 25
Amber sugar-cane No 4	9th February 1885	9-30	10-15		10 0	A M	11-0	4	1-45	1-0	7 7 3 0
Do. do	10th do	10-21	11-5		11-0	11-55	6	2-30	1-12	7 3	3 0
Do. do	15th do	10-47	11-30		11-13	12-0	5	3-0	1-1	5 9	2 4

67. The canes used were cut from the crops referred to above, and were all very poor and generally much affected by rust. They were crushed in a two-roller Beheea mill and the juice obtained was very impure and small in quantity. The low specific gravity (1.04) of the filtered juice also showed it to be very poor in saccharine matter, canes grown in America being said to produce juice of 1.07 to 1.09 specific gravity. Both the mill and the vessels intended for receiving and heating the juice were scrupulously cleaned and fumigated with sulphur before use. As soon as the required quantity of juice was obtained, it was heated at once to 160° F. and milk of lime was added to neutralize the acids, and the impurities that then rose to the surface were skimmed off. The juice was then heated rapidly to boiling point and the boiler was then removed and set aside to allow the sediment to subside. In the experiments made on the 31st December 1884, and 2nd, 3rd and 5th January 1885, the quantity of lime used was not quite sufficient for complete neutralization of the juice. A certain amount of scum collected on the surface of the juice while it was being boiled and was carefully removed, but, nevertheless, the syrup retained an impure greenish color and hardly any sediment was deposited at the bottom of the boiler after it was removed from the fire. The jaggery obtained had a similar color and an unpleasant bitter taste.

68. In the later experiments, namely, those dated the 6th, 7th and 8th January, lime was added to the juice, after it had been raised to a temperature of about 160°, till it was rendered completely neutral or slightly alkaline, as indicated by test paper. On the juice being then brought to the boiling point, the impurities suddenly coagulated, so that the previous homogenous liquid was filled with suspended flocculi. The boiler being then removed from the fire and kept undisturbed for half an hour, the impurities settled at the bottom of the vessel, leaving a clear transparent liquid above, which was carefully decanted off and transferred to the evaporating pan and boiled down in the usual way for jaggery. The color and taste of the jaggery thus produced was decidedly superior to that obtained in the previous experiments.

69. The general result of all these experiments was the production of a syrup, which could not be concentrated beyond the consistency of treacle without burning and consequently impairing both the taste and color. Neither would the syrup crystallize on cooling as sugar-cane jaggery does. On the contrary, it remained viscid and, if anything, became more liquified the longer it was kept, thus indicating probably the presence of hygroscopic salts. No results were consequently obtained in crystallising out the sugar from this variety.

70. In the experiments with the juice of Amber sugar-canes the same process was followed as that adopted in the later experiments with Chinese sugar-cane, but the

results obtained were equally unsatisfactory. It is believed, however, that the syrup of this variety of sorghum can be got to crystallise with less difficulty than that of the Chinese cane, and the failure in this point in the present instance must, in no small measure, be attributed to the poverty and rusted condition of canes used. They were so much rusted that the juice extracted from them had a dirty reddish color and was very distasteful. The absence of a better evaporator also, no doubt, was a great drawback. One of Cook's automatic evaporators has been ordered from America and is on its way out.

71. *Planter's Friend*—was sown in No. 33 on the 16th August and, although very little rain fell for about a month after sowing, the crop gave better results than others and suffered less from the heavy rainfall of October and November. The outturn was at the rate of 178 lb. of grain and 6,276 lb. of straw per acre. The crop was reaped on the 12th December, and the sheaves were stooked unthrashed on some open ground near the farm yard, to allow the straw to dry. There, from the heavy rains which commenced on the 15th December and continued till the 23rd without intermission, the greater part of the grain sprouted and was thus spoilt. As soon as bright weather returned, the good seed was carefully picked out and rapidly dried. The damaged seed is not included and this accounts for the low outturn of grain noted above. Field No. 32 also was sown with *Planter's Friend* as late as the 4th October, and consequently fared much worse than the preceding crop. The outturn was only 69 lb. of grain and 821 lb. of straw per acre.

72. *Ragi*.—That sown in No. 13 with castor was a failure, although carefully treated. The field was covered by the river floods during December, which washed away a good deal of the soil, laid the roots of the crop bare and damaged it beyond recovery. The crop grown in No. 14 field did not, owing to the field being situated at a higher level than No. 13, suffer so much from excessive rainfall, and considering the season, the outturn of 377 lb. of grain and 1,896 lb. of straw per acre obtained from this crop must be regarded as satisfactory.

73. *Wheat*.—The seed of four varieties of this crop received from Australia and of four varieties received from the Central and North-West Provinces was sown on the 5th December on a plot in No. 4 field measuring 955 square yards. It would have been sown earlier had the weather allowed. The soil is loamy and was liberally manured with box manure. The seed was sown on the ridge and all varieties germinated satisfactorily. The crops were very carefully looked after, and were watered when necessary. During the first month of growth, the Australian wheats made more rapid progress, were more robust and presented a healthier appearance than that raised from Indian seed; but later on, the growth of the exotic plants was apparently brought to a standstill and they subsequently withered away. A few sickly, withered, empty ears were produced when the crop was in a half-dead state and finally it all dried off. The Indian wheat grew well and flowered towards the end of January when the plants were about 2 feet high. It was harvested on the 17th March with the following results:—

Variety.	Area.	OUTTURN.			
		Total.		Per Acre.	
		Grain.	Straw.	Grain.	Straw.
	SQ. FT.	LB.	LB.	LB.	LB.
White Pisi wheat	860	5.25	28.75	266	1,355
Soft white do.	860	5.75	33.25	291	1,384
Red wheat from Central Provinces..	860	.75	19.25	38	975
Red wheat from North-Western Provinces	860	3.75	37.25	164	1,387
Total ...	3,440	18.50	106.50	224.2	1348.5

The outturn is of course low, but is encouraging for further trials. It will be seen from the above table that the white wheats yielded better than the red, whereas contrary results were obtained in the previous year in the Botanical Gardens, where both these varieties were grown and the outturn from the red was higher.

74. *Irrigated Corn Crops.*—The total area of these crops raised during the year was 22.13 acres, of which the first crop harvested occupied 19.52 acres, and 2.61 acres of second crop were standing at the close of the year. For a detailed statement of these crops see Appendix II-C.

The outturn from the 19.52 acres harvested was 19,388½ lb. of grain and 99,350.9 lb. of straw, which is equal to 993.3 lb. of grain and 5089.7 lb. of straw per acre.

75. The varieties of paddy grown during the year were Carolina, Madagascar, kar and several sorts of samba. The crops suffered a good deal from the excessive wetness of the season and some were entirely destroyed by flood, such as those sown in No. 37 and No. 23, but the varieties that suffered most from this cause were the exotics, viz., Carolina and Madagascar, the latter especially being almost a failure. Paddy was sown in nurseries first in the early part of September and again on the 2nd of October. Transplanting commenced in the early part of October. The sowing of the nurseries is usually commenced as early as August, but in this year it was not possible to do so for want of sufficient rain in that month. Some fields were sown with paddy with the drill on the dry system in August, and some others broadcasted on the puddling system in September. Before the Carolina paddy was harvested the indigenous plants mixed with it were carefully picked out, so that a pure supply of Carolina paddy was secured for future propagation and distribution.

76. Notwithstanding the unfavorable character of the season some very good results were obtained; these are the following:—

Crop	Field and Plot	Area	OUTTURN			
			Total		Per Acre	
			Grain	Straw	Grain	Straw
		ACS.	LB.	LB.	LB.	LB.
Gundu samba	30-A	.39	980	3,892	2,512	9,979
Chinna samba	35-B-4	.25	560	1,904	2,240	7,616
Seroomony	30-A	1.66	2,900	12,892	1,746	7,766
60 days' samba	R. F.	1.41	1,611	6,673	1,142	4,732

77. By way of experiment, the average weights of a Madras measure of Carolina and of some varieties of samba paddy were determined, as shown below; care being taken to thoroughly dry the grain before weighing:—

Paddy					Average Weight		Ratio.
					LB.	OZ.	
Seroomoney					2	7	100
Gundu samba					2	6	97.5
Chinna samba					2	5	94.9
Carolina					2	4½	98.6

78. *Industrial Crops and Trees.*—The crops grown and the area sown with these during the year under report were as follow:—

							ACS.
Cotton							3.35
Castor							1.62
Indigo							7.68
Manilla Hemp ... ..							.55
Casuarinas							5.08

Besides the above, 1.85 acres were sown with indigo, but the crop had to be ploughed up, as it was irrecoverably damaged by rain in December. The castor was sown in alternate lines with ragi in No. 13 field. The crop looked very poor till January, but has since greatly improved and is now looking well. The cotton was grown in No. 15 with maize and in No. 4 with Amber sugar-cane. The former was very stunted and unhealthy during the rains, but there has been a change for the better since. That sown in No. 4 is of the Nankin variety and was a poor crop till about February last, but has since greatly improved. The outturn from these crops cannot yet be given.

79. *Cotton*.—The outturn of cotton-in-seed obtained in 1884 from 9.38 acres was 1463.5 lb., or 156 lb. per acre, which yielded 389.66 lb. of lint or 41.5 lb. per acre. Details are given in the table below. This yield is much lower than usual and is due to the unfavorable character of the season of 1883:—

Crop.	Number of Field and Plot.	Area of Plot.	SOWING.			HARVESTING.		
			Date of	Amount sown.	Per Acre.	Up to	Outturn of Cotton-in-seed.	
							Per Plot.	Per Acre.
New Orleans Cotton..	15-A. ..	2.17	1st Oct. 1883.	Lb. 65	Lb. 30	22nd Sept. 1884.	Lb. 331.5	Lb. 152.8
Do. do. ..	10-B. ..	2.47	6th " "	60	24.3	2nd Oct. "	726.5	294.1
Do. do. ..	10-A. ..	1.78	8th " "	49	27.5	12th Aug. "	282	158.4
Do. do. ..	11 ..	2.96	16th Feb. 1884.	34.5	11.6	10th Oct. "	123.5	41.7

The usual detailed information regarding the outturn of lint from the cotton-in-seed obtained in different months of the year is given in Appendix II-D.

80. *Nankin Cotton*.—The crop sown in field No. 4 in 1883 gave during the last bearing season a total of 240½ lb. of cotton-in-seed or 210½ lb. per acre, which yielded 58½ lb. of lint or 51.3 lb. per acre. This variety of cotton grows much taller and gives out a greater number of side branches than the New Orleans, but in outturn does not equal the latter. The plants were cut down in October last to about a foot from the ground. They then made a very rapid start, threw out a number of side branches and attained quite a rich appearance within a brief interval. The crop has, however, yielded only 12 lb. up to date, and the prospects of obtaining any appreciable yield from it hereafter are poor. It has been found by experience that keeping New Orleans cotton crop over a second year is not remunerative. The same remark appears to be applicable to Nankin cotton. The expenses of cleaning and gathering the crop during the second year are nearly equal to what is necessary for raising a fresh one, while the yield during the second linting season is much lower. No special observations have been made regarding the bleaching of the lint of this variety.

81. *Indigo*.—The total outturn from the first cutting of indigo sown in 1883 in No. 16 and in No. 32 was 680 lb. seed, which is equal to 122 lb. per acre. The crop in the latter field was a failure, having yielded at the rate of only 97.8 lb. per acre, but the other gave a somewhat higher outturn, namely, 214 lb. per acre. The lowness of these outturns is explained by the fact that within four days of the sowing (17th December 1883) of the seed in field No. 16, 5.40 inches of rain fell, and when the seedlings were only eighteen days old in field No. 32, there was a downpour in the 36th week of 10.86 inches on six consecutive days. The development and success of an indigo crop depends in great measure upon the kind of weather it goes through while in a young state, as the plant is then very delicate.

82. A quantity of indigo seed was received from the Cawnpore Farm late in the past year, so late that it could only be sown in No. 37, which is one of the irrigable fields, and on which two sowings of paddy had been destroyed by successive floods. The seed was sown on January 1st, and the plants grew remarkably; some of them were more than seven feet high on the 1st of June, and were heavily laden with well-formed seed-pods. It is hoped that a quantity of valuable seed will be obtainable from this crop for distribution.

83. *Manilla Hemp (Musa Textilis)*.—During the year a portion of No. 11, measuring about half an acre, was planted with this crop, so that the total area now occupied by it is about 1.1 acres. Three hundred and fifty-five shoots were distributed during the year and there were about 250 shoots fit for planting out at its close. The storms which broke over the district in November and March last damaged about 190 trees, which were buried in pits dug for the purpose between the rows and thus utilized in supplying organic manure to the soil. The tree now grows very freely, attains a gigantic size and puts forth very large bunches of fruits. Trees were often sold from 3 to 4 annas each on the occasion of weddings, &c. This is a fair price when it is considered that the fruits are not useful as food like those of the ordinary plantain. No experiments in fibre-making were conducted during the year. Experiments having been carried as far as they usefully can be without a proper crushing apparatus. It is a great matter for regret that the huge bunches of fruit produced by these trees cannot be turned to some really useful account.

84. *Casuarinas*.—The area under these trees was augmented during the year by about five acres. Numerous blanks in the topes were also filled up, and the number of the seedlings planted in this way was about 9,000, which, at the rate of 1,800 plants per acre, is equal to about five acres planted. A large nursery of casuarina seedlings was raised during the year and, after planting out as above from it, about 8,000 seedlings were standing in it at the close of the year. A good deal of thinning was done in some of the older topes with fair results. On the whole the condition of the casuarina trees planted on the farm is satisfactory and they now form a valuable property.

85. *Cocoanut Trees*.—At the close of the year they were in all 513 cocoanut trees on the farm, of which 93 were mature. Some losses occurred in the tope in field No. 35 and amongst the trees planted as a road-side avenue; in the former case from excessive wetness of the soil, and in the latter from the ravages of a borer. The trees planted on the saltish soils of fields Nos. 28 and 30 were somewhat injured by the last rains, but are now looking healthy. The trees growing near the well in field No. 11 bear very freely. It was frequently necessary to remove the green nuts from these trees, as the stalks supporting the bunches used to break under their weight.

86. *Divi-Divi (Caesalpinia coriaria)*.—Most of the plants put out during the previous year perished from the heavy rains and floods owing to the low situation of these plantations. The dead plants were all replaced by fresh seedlings raised in the Botanical Gardens, except the plantation in No. 21 field which, having been absolutely annihilated, was converted into one of casuarinas. The number of the seedlings planted in blanks was 375. These are now looking well and are occasionally watered. Some of the plants that remain out of those planted in 1883 have acquired a fine bushy growth and are from 4 to 5 feet in height. A few of them flowered during the year, but did not seed.

87. *American Sumach*—(var. of *Caesalpinia coriaria*).—About 30 seedlings raised from seed obtained from Sicily were planted out on a strip of land to the north of field No. 23 early in December last, but were destroyed by the drenching rains and floods which occurred during that month.

88. *Eucalyptus*.—The seed of several varieties of this tree received from Australia was sown on the farm during the year and a large stock of seedlings raised. There were on the 1st of July, 405 seedlings of different varieties from different sowings in the nursery, besides 147 plants that have been put out. Of the above seedlings, about 240 are fit for planting out and from 2 to 3 feet in height. They belong to the following varieties:—

<i>Eucalyptus Teriticormis.</i>	<i>Eucalyptus Bicolor.</i>
" <i>Citriodora.</i>	" (Yellow Mahogany).
" <i>Paniculata.</i>	" <i>Globulus.</i>
" <i>Resinifera.</i>	" <i>Baileyana.</i>
" <i>Rostrata.</i>	" <i>Planchoniana.</i>
" <i>Goniocalyx.</i>	" <i>Microcorys.</i>
" <i>Sitleropholia.</i>	

The seed of the first ten varieties was obtained by purchase and that of the last three through the kindness of the Queensland Acclimatization Society. The transplanted

trees were 8 months old on the 1st of July and their heights ranged from $3\frac{1}{2}$ feet to $7\frac{1}{2}$ feet, the mean being about 5 feet. The best progress has been made by Yellow Mahogany, *Eucalyptus teriticornis*, *E. paniculata* and *E. bicolor*, but *E. globulus*, *E. rostrata*, *E. gonicalyx* and *E. citriodora* have made comparatively slow growth.

89. The Ceara Rubber and Eucalyptus trees planted on the sides of the eastern and western channels in 1883 were mostly destroyed by the floods, which filled these channels during the last monsoon rains.

90. *Paper Mulberry*—(*Broussonetia papyrifera*).—This shrub is a native of the South Sea Islands as well as of China and Japan, where it is cultivated for its fibrous bark, out of which cloth is made. The Chinese and the Japanese are said to manufacture a kind of paper from the inner bark of this plant. On the 29th July last, 30 cuttings of this shrub were received from the Royal Botanical Gardens, Calcutta. These were planted in a bed in field No 35, under the shade of plantain trees, where 25 took root, but the rest died. During the monsoon rains 10 more plants died. The rest were planted out at the close of December amongst the Manilla hemp trees in field No. 4. There are 13 plants now living and they are in a satisfactory condition and possess a fair amount of side branches. Their average height on the 1st July was $4\frac{1}{2}$ feet.

91. *Japanese Lacquer tree*—(*Rhus vernicifera*).—This tree is a native of Japan where it is valued for timber as well as a useful resinous substance which exudes from it. A small packet of the seed was obtained from the Royal Botanical Gardens, Calcutta. The seed was sown in pots on three occasions, but none germinated.

92. During the year about 500 seedlings, raised in the Botanical Garden from the seed of graft guava trees growing there, were planted in the guava topes on the farm and they are for the most part doing well. A large number of seedlings of the Blue plum (*Syzigium jambolanum*), Margosa (*Azadirachta Indica*), Silk-cotton (*Bombax Malabaricum*), Cashewnut (*Anacardium occidentale*) and wild Cassia (*Albizia Lebbek*) were also put out on different portions of the farm during the year. The soil suits these trees. A considerable portion of the above seedlings were, however, lost during the last rains, but a fair number of them have survived and will prove valuable in the future.

III. MANURING.

93. As proposed at the beginning of the agricultural year, no new experiments were begun in this direction. The Department had nothing to do with the land on which the experiments recorded in paragraphs 85 and 86 of the last report were conducted, and it is believed that they have not been continued. The only experiment conducted was a continuation of that recorded in paragraph 84 of the last report on *green manuring* in No. 15 field. The same plots were used and treated in the same manner as in the previous year. The green crop, horse-gram (*Dolichos uniflorus*), was first sown on April 25th, but as it failed to germinate well and cover the field uniformly, it was ploughed in and the field resown on the 21st June. The crop then raised on plot 1 was grazed by 34 rams from the evening of the 1st to the morning of the 4th September. Plots 1, 2 and 3 were then ploughed, the crop on plot 2 alone being reaped and removed. Plot 5 was grazed by the same rams from the 4th to the 7th September, both days inclusive, and on the following day it and plots 4 and 6 were ploughed up, the crop on plot 4 being ploughed in. The outturn from plots 2 and 6 was 280 lb. and 308 lb. of green plant respectively, that is a total of 588 lb., which is equal to 2,352 lb. per acre. Plots 3 and 4 probably received about the same amount as green manure, and on plots 1 and 5 a similar amount was probably fed off by the sheep. The first ploughing having been found ineffective owing to an insufficiency of moisture, all the plots were ploughed a second time and sown with yellow cholam on the 23rd of September. Heavy rains and rust injured this crop so much that, as far as the yield of grain goes, it was a failure. It was reaped on the 9th January last and the results obtained were the following:—

Plot.	Treatment.	OUTTURN			
		Total.		Per Acre.	
		Grain.	Straw.	Grain.	Straw.
		LB.	LB.	LB.	LB.
1	Grazed	7 $\frac{7}{8}$	504	3 $\frac{1}{2}$	4,032
2	Reaped	2 $\frac{1}{4}$	336	17	2,688
3	Ploughed in	2 $\frac{1}{4}$	308	6	2,464
4	Do.	1 $\frac{1}{4}$	532	10	4,256
5	Grazed	2 $\frac{1}{4}$	504	6	4,032
6	Reaped	2 $\frac{1}{4}$	448	3	3,584

The average of the above results stands as follows :—

Plots.	Treatment.	OUTTURN.			
		Per Plot.		Per Acre.	
		Grain.	Straw.	Grain.	Straw.
1 and 5	Grazed	9 $\frac{1}{2}$ oz.	502	4 $\frac{1}{2}$	4,016
2 and 6	Reaped	1 $\frac{1}{4}$ lb.	392	10	3,136
3 and 4	Ploughed in	1 "	420	8	3,360

As far as the outturn of straw goes, the results are fair and in the order in which they might be expected. The outturn of grain is not worth notice; the season undoubtedly vitiated the results in this respect.

94. There is little to note regarding the manures used generally on the farm; they were the same as usual. A very marked result was noted on a crop of cholum grown for fodder in No. 4 field, to which a mixture of bones and cake that had been fermented together for some time was applied. At the time of application the crop was in a miserable state, but within a fortnight after it displayed great vigor and finally grew rapidly and strongly to maturity.

IV. LIVE-STOCK.

95. *Cattle*.—At the beginning of the year the breeding stock on the farm was as below :—

Cows	...	Aden 10, Kerry 1.
Heifers	...	Aden 4, Kerry 1, (by an Aden bull).
Bulls	...	Aden 18, Punganúr 1.
Bull calves	...	Aden 9.

The births during the year were as follow :—

Bull calves	...	From Aden cows 4 (of which 2 by a Devon bull).
Heifer calves	...	From Aden cows 5, Kerry 1 (by Devon bull), half bred 1 (by Devon bull).

The number and description of stock distributed has been referred to in another part of this report.

96. Of the 15 young bulls imported from Aden last year, 3 were sent out. The remaining 12 bulls are in a very satisfactory condition and are quite fit for breeding with the exception of three, which are still undeveloped. On the 31st March

last, their live weights ranged from 448 to 618 lb., and gave a mean of 527 lb. per head. Adverting to the weights of those bulls noted in the statement given on page 42 of last year's report, it will be seen that their average weight on the 26th May 1884 was 399 lb. The average increase was therefore 128 lb. per head, which is thoroughly satisfactory.

97. The Devon bull referred to in paragraph 94 of last report covered the following farm cows with the results recorded :—

Banu	...	...	...	...	...	...	...	Bull calf.
Rani	...	...	...	...	...	...	...	Bull calf.
Baggium II	...	...	...	...	...	...	...	Heifer calf.
Baggium I	...	...	...	...	...	...	...	Heifer calf.

The calves, except last named, show a strong cast of the Devon type and promise to make valuable crosses.

98. The breeding bull Rajah, out of the cow Rani, referred to in paragraph 95 of last year's report, continues to thrive well and has proved a very successful stock-getter.

99. One hundred and twenty cows from outside were served by the farm bulls during the year, against 94 during the previous year, which shows an appreciation by the public of the advantage of putting their cows to well-bred and selected bulls. To encourage this, no charge whatever is made for bull service on the farm.

100. The system of management pursued during the year did not differ in the main from that of the previous years. The health of the cattle was on the whole very good, and the mortality was exceptionally small, there having been a solitary death of a calf not quite eight days old from dysentery. The usual information regarding the live-stock maintained is furnished by the following statement. For further details *vide* Appendix III.—

	AVERAGE				
	1876-81	1881-82	1882-83	1883-84	1884-85
Live-stock maintained calculated as country cattle ...	123.4	76	111	91.6	95
Stock as country cattle per 100 acres of cultivable land ...	84.5	63.33	105.7	117.4	140.2
Percentage of deaths ...	10.8	4	7.5	4.4	1.68
	A. P.	A. P.	RS. A. P.	A. P.	A. P.
Cost of purchased food a head per monsem. . .	11 7	11 0	1 4 10	13 2	13 4

101. *Working Cattle.*—Although, as pointed out last year, these animals are nearly all of them old and needing replacement, it was not considered advisable, with the future of the farm so uncertain, to purchase new stock. These cattle are now nearly all worn out and will have to be sold off for a trifle. They have had a very heavy season's work on the farm, besides performing a lot of miscellaneous work for the Department.

102. The young breeding bulls are being gradually broken to light work, in order to give them useful exercise and thus keep them in health.

103. *Dairy.*—The following statement shows the monthly yield of milk recorded during the year from all the cows :—

Cow.	Sultana I.	Sultana III	Sultana IV	Baggum I	Baggum II	Banu	Rani	Amir Bt (Brown)	Kazim Bt (white first).	Qadir Bt (Red First)	Rahimán Bt (white)	Munhi-ud-din Bt (Grey)	Husein Bt (Red Second).
Breed.	Aden.	Aden	Aden	Kerry	Half bred Aden- Kerry	Aden	Aden	Aden	Aden	Aden	Aden	Aden.	Aden.
1	2	3	4	5	6	7	8	9	10	11	12	13	14
April 1884	M 24	M 110	M 66	M 13	M 9	M 55	M 38	M 29	M 77	M 6	M 48	M 72	M 0
May "	O 12	O 90	O 92	O 2	O 1	O 18	O 2	O 38	O 59	O ..	O 55	O 66	O 52
June "													
July "													
August "													
September "													
October "													
November "													
December "													
January 1885													
February "													
March "													
Total	36	849	1,021	712	403	581	221	260	406	694	436	604	550
Calved	29th Dec 1884	29th Dec 1884	3rd April 1884	13th May 1884	21st Sep 1884	17th Aug 1884	14th Sept 1884	20th Nov 1884	4th Dec 1884	14th July 1884	25th Dec 1884	19th Jan 1885	1st Sep. 1884
Periods not milking—													
From	1st June 1884	10th Nov 1884		8th March 1884		20th May 1884	8th March 1884	27th July 1884	3rd Sep 1884	16th April 1884	25th Dec 1884	9th Dec 1884	5th June 1884
To		2nd January 1885		16th May 1884		21st Aug 1884	17th Sept 1884	23rd Nov 1884	9th Dec 1884	17th July 1884		23rd Jan 1885	5th Sep 1884
Remarks.				* Sick from First milking to 29th July 1884			Sent to Madura, Salem, 11th Jan 1885		Sent to Madura, 24th March 1885		Sent to Madura, 24th March 1885		

104. *Sultana I*.—the old Aden cow, was on the recommendation of the Inspector of Cattle Diseases destroyed on the 23rd March last, on account of a fracture of the pelvis caused by an accident. She dropped her ninth and last calf in September 1883 and continued to yield milk till the close of May 1884, after which it was not found possible to get her to carry again. The yield of milk during her last milking period was the smallest recorded during the seven periods for which only full statistics are available, as will be seen from the following table. The small yield in the fourth period was probably due to the cow calving before her full time.—

MILKING PERIOD					Interval between each calving	Yield of milk			
Number				Date of commencement		DAY.	MFAS.	OLS.	GALLONS.
Third	..	..	...	May	1877	396	832	3	299.41
Fourth	...	...	...	June	1878	335	694	1	241.68
Fifth	...	...	...	August	1879	426	831	1	298.96
Sixth	..	...	...	July	1880	427	965	2	347.27
Seventh	...	...	...	September	1881	373	843	1½	304.39
Eight	.	...	...	October	1882	340	1,024	5	369.54
Ninth	..	..	...	September	1883	260	627	1½	226.42

This cow was nearly 11 years on the farm and produced nine calves during that period. She had a calf at foot when she was imported and it is probable that she had one or more before she arrived, as she was then over six years old. As to her milking capabilities, the figures given speak for themselves, and her milk was remarkably rich.

105. *Sultana III*, a daughter of the above cow, referred to in paragraph 100 of last year's report, gave during her last, that is, her second milking period, 1,153 Madras measures, or 416.23 gallons of milk, which shows an increase of 32 measures over the outturn of the first milking period. She produced her third calf on the 29th December, and the yield of milk has since been fair. The cow promises to succeed nearly as well as her mother.

Sultana IV is the third heifer dropped by the old cow *Sultana I*. She dropped her first calf on 2nd April 1884 when about 3 years and 9 months old, and her yield of milk, recorded up to 31st March last, was 1,021 measures, or 368.59 gallons, and the milking period was not closed. This outturn is satisfactory and particularly so for a first milking period.

106. *Banu*, a cow imported in the year 1881 and referred to in the same paragraph of the last year's report as the foregoing cow, calved on the 17th August last, and the calf, a bull, strongly resembles the Devon bull to which the cow was put. Up to the close of the year 508 measures 1½ ollocks, or 183.46 gallons of milk were obtained from her, which is less than her yield in previous periods.

Rani is the second cow imported in 1881. She also had a calf by the Devon bull on the 13th September last. The calf is a bull and possesses a good many of the characteristics of the sire. She yielded up to the 12th January 221 measures and 2 ollocks, or 79.87 gallons of milk. She was then sent with her calf to the Shevaroy's. The milking capabilities of this cow have hitherto been below the average of the Aden breed.

107. *Baggium I*, the Kerry cow referred to in paragraph 100 of the last report, calved on the 13th May 1883 and yielded milk till the close of the year, the outturn being 712 measures 3 ollocks, or 257.17 gallons, which is far below that of the preceding milking period. The cow was for a long time suffering from partial paralysis and a good deal of the milk during her illness has not been taken into account. This cow was also served by the Devon bull, but the calf, which is a heifer, does not show much resemblance to its reputed sire.

A heifer, *Baggium II*, out of this cow, by an Aden bull dropped her first calf on 22nd September last when not 3 years old. This calf, a heifer, is by the Devon bull referred to. The registered yield of milk up to the 31st March was 403 measures.

3 ollocks, or 145.62 gallons, and she was still milking at that time. The yield is not very good, but the cow may improve in this respect in future milking periods.

108. The cows to be considered next are those imported from Aden last year and also referred to in paragraph 100 of that year's report. These were brought over in two batches of three each in the months of January and February. They all had calves at foot on arrival.

Amir Bi yielded 241 measures and 1 ollock, that is 87.40 gallons of milk before she ran dry, and dropped her first calf on the farm on the 20th November. Up to the close of the year under report her yield of milk was 160 measures and 4 ollocks, that is 57.94 gallons, a very poor outturn. The cow is the oldest of those imported with her and, as far as can be judged at present, is the poorest milker of the lot. She is, however, a well-built and good-conditioned animal. *Kázim Bi*, another cow of the same batch, yielded, before she dropped a calf here on the 4th December, 371 measures and 6 ollocks, or 134.20 gallons of milk. Up to the 24th March last in the present milking period, she yielded 245 measures and 6 ollocks, or 88.72 gallons of milk, when she was sent with her calf to the Madura Farm. She promises to turn out a fair milker, but no definite conclusion can be arrived at regarding her milking powers, as she was not sufficiently long under observation.

Qádir Bi, the red cow of the same batch as the last two, after her first arrival here gave 96 measures and $2\frac{1}{2}$ ollocks, or 34.77 gallons of milk, and dropped her first calf on the farm on the 14th July last. Up to the close of the year 688 measures, $1\frac{1}{2}$ ollocks, that is 248.44 gallons of milk, were obtained and the cow continues to yield on the average $1\frac{1}{2}$ measures daily. She appears to be the best milker of her batch. The cows of the second batch are distinguished by the names of *Rahímán Bi*, *Muhí-ud-dín Bi* and *Husain Bi*. The first named is a white cow, which continued after her arrival to give milk till the end of December last, the total outturn being 538 measures and 7 ollocks, or 194.54 gallons. She was sent to Madura on the 24th March, being at the time in calf. From the above yield, the cow appears to have fair milking capabilities. *Muhí-ud-dín Bi*, a grey cow, produced her first calf on the farm on the 19th January last. She had given 536 measures and $2\frac{1}{2}$ ollocks, that is 193.61 gallons of milk before then, and has yielded 149 measures, or 53.79 gallons since. The calf died of dysentery when about eight days old. The cow was sent to Madura along with the others named. The last cow of this second batch is *Husain Bi*. She, having after her arrival yielded 146 measures, 6 ollocks, or 52.98 gallons of milk, had a calf on the 1st September last. She gave during the ensuing milking period, which ended on the 30th April, a total of 513 measures and 7 ollocks, or 185.51 gallons. This is but a poor outturn, but she may improve in future.

• 109. *Sheep*.—Of the two half-bred South-down rams purchased in 1879, one died in October 1883 and the other was sold in August 1884, being too old for breeding purposes. Three farm-bred rams were put to the flock between 15th August and 2nd September last, and as the result of this crossing 41 lambs were born during the year, the bulk of which were dropped in January and February last. The mortality among the lambs did not exceed 12 per cent., and the flock on the whole was very healthy. The usual statement showing the strength of the flock and the mortality among them as compared with the corresponding figures for the previous years is given below:—

						Average, 1873-77.	Average, 1878-82.	1883.	1884.
Average number of flock	...	...	...	...	...	247	178.8	108.6	120.53
Number of deaths	...	...	...	...	...	20.6	48.2	4	8
Percentage of deaths	...	...	...	...	...	8.40	27.70	3.6	6.66
Rainfall	...	...	...	...	...	48.32	48.27	66.10	82.23

It has generally been found to be the case that the heavier the rainfall the greater is the mortality among sheep, but it is very gratifying to remark that, although the year under report was the wettest ever experienced, yet the death-rate in the flock was small.

112. These figures speak for themselves. Massey's new C. P. and Avery's plough may be said to be equal in effect, as the pattern of the former was not new when used and Avery's was. The manner in which a real plough of even so rudimentary a nature as those tried excels the stick of the country is brought out in these figures with most startling effect—a result not fully anticipated as it was not believed that, taking the favorable calculation as to depth for the country implement, it would have been shown to cost between three and four times as much to stir the soil on the same area of land with it as with a real plough.

The great saving shown in the cost of turning over the soil is remarkable. Besides this aspect of the question there is the effect on the land. With a real plough the furrow slice is inverted, the soil thoroughly exposed and the weeds buried and thus destroyed.

It was intended to record the outturn from the plots thus ploughed, but as they were submerged by the floods of December, the results are not worth of record.

113. In this trial Avery's plough did very good work; it cuts its furrow clean, and turns the slice well. The draught did not appear to be much even for the small cattle used; in fact those working with the country plough were straining a good deal while doing less work. The plough is a good one, but its cost is high, Rs. 15. Its working parts are steel. An arrangement is said to exist in it for raising and lowering the pole for cattle of different sizes, but it did not work. The manner of fastening the pole to the plough is faulty and likely to lead to accidents.

114. *Seed-drills.*—Some experiments were made during the year to test the cost of working with the ordinary bamboo seed-drill, and Bird's seed-drill imported last year. The Garret's seed-drill generally used on the farm was also worked at the same time, but as the cost of working it is well known, and the specimen we have is antiquated, and the results are not recorded here. In the trial of the other drills some minor mistakes occurred, which, however, do not materially affect the results. They are tabulated below:—

		Bird's Drill.	Bamboo Drill.
Length of run	...	220 yards	220 yards
Total distance travelled	...	1,833 yards	1,173 yards
Time, working	...	31 minutes	31 minutes
Day's work, eight hours	...	3½ acres	3½ acres
		RS. A. P.	RS. A. P.
Total cost of machine	...	70 0 0	6 0 0
Daily cost—			
Coolies	...	2=0 6 0	2= 0 6 0
Cattle	...	...	0 8 0
Interest, wear and tear, &c.	...	0 2 9	0 0 3
	Total...	0 8 9	0 14 3
Cost per acre	...	0 2 4	0 3 10

Although therefore Bird's drill is eleven times as costly as the simple bamboo drill, it is a far cheaper machine and besides that requires no cattle to work it. It has been used frequently on the farm during the past year and given great satisfaction. It is strong and portable, adjustable in several ways and could, doubtless, be made up in India for far less than its imported price. It has been found possible to sow cholum at rates varying from 20—100 lb. per acre with it, and the rates could be further varied if required. The machine has thoroughly justified its purchase, which was made on two grounds:—

(1) to obtain a small and simple machine.

(2) to obtain ideas for the improvement of our bamboo drill.

115. One of Avery's *Stock ploughs*, which is a convertible bullock-hoe, was received during the year, and on trial found to be useful for all sorts of work amongst standing crops. Of Howard's "*Byots*" implements referred to last year, the grubbers and bullock-hoe are of some use, but they all suffer from their make not giving sufficient control to the driver.

VI.—GENERAL.

116. *Estate*.—The area of the estate was reduced during the year by 5·30 acres, of which ·27 was arable; this land was handed over to the Public Works Department early in the year for the purpose of erecting training banks for the Adyar. The buildings and other works on the estate were kept in repair, but a good deal of damage was done by the heavy rains and floods, amongst which may be noticed the destruction of the bridge connecting the two sections of the farm, and the washing away of a part of the road leading to it by the breaching of the Mylapore tank near its waste weirs. The old Assistant Superintendent's bungalow, condemned as unsafe in 1881, was partially repaired and a portion taken down, and has since been used as the office of the Agricultural Reporter who previously had no regular office.

117. *Accounts*.—In the following statements, the accounts of the farm are shown. No credit is taken for stock or seeds distributed. No attempt has been made to allot to Live-stock the proper proportion of the crops raised for consumption. Similarly no credit has been taken under Implements for wear and tear in the tillage of land, and in harvesting crops, &c. A comparative valuation statement is given in Appendix IV.

Receipts.				Cash Account for 1884-85.				Expenditure.			
	RS.	A.	P.		RS.	A.	P.		RS.	A.	P.
Capital advanced by Government during the year ...	3,710	8	11	Establishment ...	1,402	8	0	Cooly labor ...	2,861	0	6
Implements and machines ...	826	4	6	Implements and machines ...	526	9	11	Live-stock ...	1,944	11	10
Live-stock ...	1,203	5	5	Live-stock ...	125	5	11	Seeds ...	432	13	11
Crops ...	1,453	7	8	Seeds ...	189	7	5	Manures ...			
Sundries, &c. ...	296	6	1	Contingencies... ..							
Ploughs sold in districts ...	150	8	0								
Refund of unexpended balance of Rs. 50 advanced for aloe cultivation ...	19	15	8								
	7,660	8	3						7,482	9	5

Profit and Loss Account.							
	RS.	A.	P.		RS.	A.	P.
Establishment ...	1,401	8	0	Sundries ...	125	15	10
Labor ...	561	15	5	Crops ...	995	0	9
Live-stock ...	256	4	0	Capital for balance of loss ..	1,658	15	3
Implements ...	560	4	5				
	2,779	15	10		2,779	15	10

Balance Sheet on the 31st March 1885.							
Liabilities.				Assets.			
	RS.	A.	P.		RS.	A.	P.
Due to sundry persons ...	360	0	1	Due by sundry persons ...	226	0	10
Capital ...	31,524	2	4	Valuation for 1885 ...	31,658	1	7
	31,884	2	5		31,884	2	5

C. MISCELLANEOUS.

118. *Collection of Native Implements and Tools, &c.*—A commencement was made in getting together a representative collection of these articles by indenting for specimens of those used in Tinnevely, North Arcot, Bellary and Vizagapatam, besides a few from Coimbatore and the Godavari. As soon as these are received, it is intended to add specimens, or models in the case of large machines, of any patterns not represented, so that ultimately the collection may really represent this branch of the rural economy of the Presidency. The collection will be kept at Saidapet, as it is of more use there in connection with the School of Agriculture than it could be elsewhere.

This represents the cost of the Farm for the year.

119. *Library*.—It being thought better to make one strong library of reference instead of two, all the exchanges, &c., received in the Agricultural Reporter's office are now deposited in the library of the School of Agriculture, where they will remain unless the arrangement is found unsatisfactory. All similar exchanges have, for years past, been passed on to the same library. The Agricultural Reporter receives no papers direct by which he can keep abreast of the agricultural knowledge of the day, and inform himself regarding the agriculture of somewhat similarly conditioned countries to this Presidency, but he receives for perusal the papers supplied to the Agricultural College. During the year, however, sanction was obtained for the supply to his office for several American and other papers for the purpose named.

120. *Establishment*.—Mr. C. K. Subba Row, Deputy Superintendent, Government Farms, remained in charge of the Saidápet Farm from 1st April to 13th October when he was transferred to the Educational Department, excepting for one month when he was absent on privilege leave, and his place was filled up by the appointment of Mr. S. L. D'Silva as Probationary Deputy Superintendent on 19th November, and the latter officer remained in charge of the Saidápet Farm till the end of the year. No changes were made in the subordinate staff, and as a whole they gave satisfaction.

The clerk who accompanied me on tour in Kurnool suffered severely from fever; my peons and lascars also suffered.

121. *Finances*.—A detailed statement is given in Appendix IV showing, as far as is known, the expenditure on agricultural services during the year. It is not a complete one, as expenditure goes on under various officers and is not always communicated. The following is a comparative statement of the receipts and charges as far as known, for the past five years:—

Items		1880-81	1881-82	1882-83	1883-84	1884-85
		RS	RS	RS	RS.	RS
Receipts—						
• Provincial Grant		20,000	20,000		2,000	2,000
Surplus Pound Fund	..	41,694	46,832	29,086	34,254	32,318
Departmental Receipts	..	4,003	4,992	6,049	11,209	3,950
Total		65,697	71,824	35,135	47,463	38,260
Expenditure—						
General Supervision		17,196	21,468	23,285	25,219	15,374
Saidápet Experimental Farm ..		7,637	10,198	10,830	14,767	7,483
School of Agriculture	..	15,401	20,325	24,843	23,851	
Estate Charges and Improvements		3,531	2,811	2,487	2,035	1,283
District Operations				7,190	3,249	2,644
Cattle Disease Inspection	..			8,809	23,103	28,008
Total		43,765	54,802	77,444	92,224	54,792

MEMORANDUM.

The reports received since paragraphs 25—31 of the general report were written are of much the same general nature as those previously referred to. They generally record failures, and failures due in too many cases to carelessness or ignorance.

2. The report from Kistna is a supplementary one, but gives no results worth notice. In one respect it is worthy of attention, however, and that is as regards the conflicting testimony as to the vitality of the seed sown.

3. In the report for Vizagapatam, the success recorded with Manilla hemp is promising, as also is that with ground-nuts.

The goodness of the eucalypt seeds distributed is testified to herein, and renders the failures experienced in other districts more inexplicable.

4. From South Arcot, the report now under reference relates solely to eucalypts, and, though some success appears to have been attained at Tenmallai, the main experiment in sowing the seeds was a failure.

5. In the Tinnevely report, there is nothing worthy of note, as ults are of the nature of those mentioned in the general review; Mr. Brasier's failure to get the eucalypts seeds to germinate excepted. The Collector's remarks, however, in his letter, No. 578, dated 23rd July, regarding the want of requisite knowledge to deal with the seeds sent out, only emphasise those recorded in paragraph 25 of the general report. For, if it is necessary to furnish instructions as to the cultivation of such simple products as those of which it has been the practice to distribute seed, it can never be expected that good results will follow from such distribution. When first more knowledge has been diffused and the general practice of husbandry has been raised, it will be time enough to distribute the seeds of a better class of products than those which flourish under ordinary native agriculture. The correspondence referred to by the Collector is enclosed for reference.

6. From Chingleput, the reports are all of failures, partly owing to the inclemency of the season; but it is noticeable that in one case no ryot could be found who was willing to sow the seeds. Why they were indented for is, therefore, a mystery. A few mahogany seedlings were raised in this district.

7. In Anantapur, divi-divi seems to have failed owing to the adverse nature of the season. Regarding tobacco, no particulars of outturn are given, though the crop is said to have been harvested in December last, and in the Collector's covering letter an outturn of 50 maunds (weight not recorded) is said to have been obtained; the area experimented on being 6 acres. In this district also there seems to have been a failure to get ryots to sow the seed sent out.

8. From North Arcot, the report is incomplete; and in that portion which relates to tobacco and eucalypts records failures.

9. Finally, the Collector of Nilgiris reports favorably of the growth of the *Eucalyptus Planchoniana* at Coonoor.

10. Taken as a whole nothing can be more disappointing and disheartening than such reports as have been received this year. It is too soon yet to surmise what may be the ultimate results obtained with Manilla hemp and the different eucalypts, and for the current year distribution of seed is now rapidly drawing to completion. But it seems doubtful whether it is wise to spend much money on such work, when there is other work of much greater importance only standing still for want of funds; e.g., experimental research regarding our indigenous crops.

11. The report regarding the trial of a bamboo drill in Ganjam is not of such value, as results said to have been obtained are in direct contradiction to what is absolutely known as to the powers of the drill.

SAIDAPET,
17th August 1885.

(Signed) C. BENSON, M.R.A.C.,
Agricultural Reporter to Government.

APPENDIX I.A.

STATEMENT showing the Daily Rainfall during the Year 1884-85.

	April.	May.	June.	July.	August.	September.	October.	November.	December.	January.	February.	March.
1st	·07	·06	..	..	..	..	..	..
2nd	·32	..	..	..	·02	..	..	..
3rd	·03	..	·40	..	..	..	..
4th	3·61	..	..	..	..
5th	·20	..	·20	4·00	..	..	..	..
6th	·27	·23	..	..	2·59	·25	..	..	..
7th	·05	3·80	·10	..	..	..
8th	·57	..	1·48	..	..	..	7·05	·22	..	..	..
9th	3·61	..	..	..	..
10th	2·80	..	..	..	..
11th	·08	..	..	·03	..	..	..	..
12th	·02	..	·27	..	..	..	..
13th	·23	..	..	..	1·25	..	..	..	..
14th	1·41	..	·27	·84	..	..	..	..
15th	·45	·26	·33	..	·30	..	..	..
16th	·90	2·85	..	3·25	..	..	..
17th	·03	..	..	·50	1·30	..	2·07	..	..	..
18th	·32	..	..	·10	·43	..	5·20	..	..	..
19th	·11	3·70	..	2·63	..	..	..
20th	·81	..	..	·54	1·50	..	·07	..	..	..
21st ..	1·71	..	..	..	..	·95	1·25	·25	..	..	..	..
22nd	·10	·30	·15	..	..	..	·06
23rd	·30	..	..	1·60	·64	..	..	..
24th	·35	..	..	..	..	·57
25th	·03	..	2·67	·46	..	..	..	..
26th	2·60	1·34	..	..	..	..
27th	·01	..	..	..	..	..	..
28th	·45	..	1·60	..	·02	..	..	..	..
29th	·07	..	·14	..	..	..	..	..	..
30th	·29	..	..	·85	..	..	..	..	..
31st	·01	..	..	..	..	..
Total ..	1·71	·57	1·16	2·79	3·04	4·37	18·16	34·90	14·90	..	..	·63

APPENDIX I.B.

STATEMENT showing the Weekly Rainfall in 1884-85 compared with the Average of the previous fourteen Years.

Weeks.	1884-85.		AVERAGE OF THE PREVIOUS 14 YEARS.		Weeks.	1884-85.		AVERAGE OF THE PREVIOUS 14 YEARS.	
	Rainfall.	Wet Days.	Rainfall.	Wet Days.		Rainfall.	Wet Days.	Rainfall.	Wet Days.
1st ..	..	..	·15	·14	27th ..	·20	1	2·37	2·57
2nd ..	..	..	·09	·13	28th ..	·05	1	2·00	2·14
3rd ..	1·71	1	·04	·13	29th ..	10·38	7	2·67	3·14
4th ..	..	..	..	..	30th ..	6·67	5	3·32	3·14
5th ..	..	..	1·02	·40	31st ..	1·26	3	2·53	2·36
6th ..	·57	1	·93	·21	32nd ..	27·89	7	3·07	2·93
7th ..	..	..	·17	·21	33rd ..	2·30	4	3·73	3·29
8th ..	..	..	1·95	·72	34th ..	2·90	3	4·08	2·93
9th ..	..	..	·14	·43	35th ..	1·82	3	3·59	2·48
10th ..	..	..	·60	1·07	36th ..	·59	4	1·19	1·57
11th ..	..	..	·97	1·49	37th ..	·30	1	1·44	1·36
12th ..	1·16	3	·21	1·22	38th ..	13·47	6	·46	·86
13th ..	..	..	·51	1·78	39th ..	·54	1	·51	·93
14th ..	·27	1	·77	1·64	40th ..	..	..	·32	·51
15th ..	1·71	2	·84	2·14	41st ..	..	..	·13	·21
16th ..	..	..	1·02	1·86	42nd ..	..	..	·05	·29
17th ..	·45	1	·78	2·28	43rd ..	..	..	·25	·36
18th ..	·75	4	1·10	2·58	44th ..	..	..	·14	·21
19th ..	·46	3	1·22	2·65	45th ..	..	..	·50	·36
20th ..	1·86	2	1·28	2·22	46th ..	..	..	..	..
21st ..	·38	2	·82	1·93	47th ..	..	..	·21	·70
22nd ..	·06	1	1·33	2·43	48th ..	..	..	·10	·14
23rd ..	·03	1	1·66	2·22	49th ..	..	..	·05	·21
24th ..	·26	3	1·32	2·00	50th ..	..	..	..	..
25th ..	2·25	6	1·44	1·36	51st ..	·06	1	·15	·21
26th ..	1·75	3	·97	1·28	52nd ..	·57	1	..	..

APPENDIX I-C.

STATEMENT showing the Monthly Rainfall during 1884-85 compared with the Average of the previous fourteen Years.

Months.	1884-85.		AVERAGE OF THE PREVIOUS FOURTEEN YEARS.	
	Rainfall.	Wet Days.	Rainfall.	Wet Days.
April	1.71	1	.29	.50
May ... ..	.57	1	3.26	1.72
June	1.16	3	2.36	5.93
July	2.79	6	4.02	9.01
August	3.04	9	4.82	9.79
September	4.37	13	5.90	7.80
October	18.16	16	11.54	11.07
November	34.90	18	14.97	12.58
December	14.90	12	4.49	5.21
January ... ..	...	...	.59	1.36
February ... ..	...	...	.72	.49
March ... ..	.63	2	.25	.49
Total ...	82.23	81	53.21	65.95

APPENDIX II-A.
STATEMENT showing the Outturn of Fodder Crops for the Year 1884-85

No.	Description of Crop.	Number of Field and Plot.	Area of Plot.	SOWING.			DETAILS OF HARVESTING.			RAINFALL.		Remarks.	
				Date.	Seed.		Date.	Outturn.		Duration of Growth.	Inches.		Wet Days.
					Total.	Per Acre.		Total.	Per Acre.				
1	Dumbu ..	32	1-52	30th July 1884 ..	31	20-4	24th September 1884 ..	L.R. 3,704	L.R. 2436-8	Days. 56	6-66	From three cuttings. The crop is still standing.	
2	Guinea grass	15-A III	1-12	13th October 1883 ..	Planted.		7th April 1884 to 16th March 1885.	6,043	4395-5	344	81-60	Only one cutting; the crop was subsequently removed.	
3	Do.	15-B	2-36	25th August 1882 ..	Do.		1st April 1884 to 5th July 1884.	3,525	1,500	95	3-44	Do. do.	
4	Do.	21 East.	2-97	2nd October "	Do.		1st April 1884 to 24th May 1884.	5,642	1899-7	53	2-28		
5	Do.	27 "	2-17	November 1881 ..	Do.		1st April 1884 to 3rd May 1884.	2,986	1,376	32	1-71	Crop still standing.	
6	Do.	27 West.	2-05	9th "	Do.		1st April 1884 to 5th May 1884.	2,213	1079-5	34	1-71	Casuarina trees have been planted amongst the crops.	
7	Do.	34-A	1-38	11th October 1883 ..	Do.		24th April 1884 to 17th October 1884.	8,920	6463-9	176	19-85	Crop still standing.	
8	Horse-grass	13 South.	1-73	21st June 1884 ..	47-5	27-45	25th September 1884 ..	3,024	1,748	96	8-45		
9	Do.	4-A	1-30	10th July "	10-6	28-6	4th "	1,184	3,200	56	4-17		
10	Do.	4-A	1-70	10th "	48-5	28-5	2nd October "	5,264	3096-4	84	9-45		
11	Do.	15-A II	1-35	21st June "	7-6	21-7	4th September "	644	1,840	75	5-92		
12	Do.	15 East.	1-84	25th April "	50	27-2	31st July "	3,736	2041-5	97	4-52		
13	Do.	17 "	1-84	2nd February 1884 ..	40	21-7	31st May "	4,038	2206-6	119	2-28		
14	Do.	17 "	1-84	2nd December "	38	20-7	21st February 1885	5,143	2802-72	81	14-90		
15	Do.	22 "	1-75	1st April "	25	33-3	18th June 1884	2,236	2981-3	78	2-63		
16	Do.	22 "	1-87	23rd "	32	36-5	9th July "	840	967-8	77	3-48		
17	Do.	23 South.	2-13	9th July "	52	24-4	2nd October 1884	8,008	3777-3	85	9-45		
18	Do.	20-A North.	2-13	3rd April "	26	32-5	13th June "	1,764	2,205	71	2-28		
19	Do.	29-B III	2-05	8th May "	15	36-5	4th August "	120	292-6	88	11-91		
20	Do.	30-A	1-68	24th March "	40	19-5	26th June "	8,080	3841-4	94	3-44		
21	Do.	31	1-68	20th "	45	28-5	9th May "	2,268	1435-4	50	2-28		
22	Do.	31	1-68	10th May "	38	24-05	19th July "	520	329-1	70	3-14		
23	Do.	33	2-36	23rd April "	85	36-01	21st July "	10,662	4517-8	89	3-71		
24	Do.	33	2-36	13th December "	74	31-36	24th March 1885	6,608	2,800	101	14-94		
25	Do.	34-B	1-19	29th March "	10	52-6	21st June 1884	1,316	6926-3	84	3-44		
26	Do.	34-B	1-58	8th May "	18	31-03	17th July "	872	1503-4	70	3-71		
27	Do.	37-A	2-13	5th "	10	22-2	14th "	2,132	4737-8	46	2-28		
28	Do.	37-B, C, D.	2-13	27th March "	55	30-5	12th May "	3,228	1793-3	46	2-28		
29	Horse-grass and red cholom	23 South.	1-78	12th "	87-5	41-1	12th June "	2,012	946-8	92	2-28		
30	Planters' Friend	10 West.	3-43	19th August "	74	41-57	11th October "	9,416	5289-9	53	4-95		
31	Do.	12	1-33	8th June "	71-5	20-8	7th August "	25,034	7298-5	59	4-77		
32	Do.	14 South.	1-76	23rd March "	33	24-8	5th May "	2,678	2013-5	43	1-71		
33	Do.	32	1-00	4th October "	35-5	20-2	31st January 1885	1,557	884-6	119	67-96		
34	Red cholom	13 North.	1-55	26th April "	24	24	16th July 1884	10,540	10,640	81	3-71		
35	White cholom	4-A	1-86	4th December "	17-5	47-41	21st February 1885	1,770	1141-93	79	14-88	From only a single cutting.	
36	Do.	11	1-86	18th November "	21-41	24-9	7th March "	3,752	4362-80	109	19-62	Do.	
37	White car-paddy	River Flats.	2-28	21st March "	18-5	66	9th May 1884	431	1,550	49	2-28		

APPENDIX II-B.
STATEMENT showing the Outturn of Unirrigated Cereal Crops of 1884-85.

No.	Description of Crop	Number of Field and Plot	Area of Plot	SOWING			DETAILS OF HARVESTING					RAINFALL	
				Date of	Amount		Date.	Outturn			Duration of Growth Days	Inches	Wet Days.
					Seed Sown	Per Acre		Grain	Straw	Grain per Acre	Straw per Acre		
1	Amber sugar-cane ..	4-A	64	3rd October 1884	LB 16	25	20th February 1885	LB 26	LB 977	LB 196 9	LB 4651 6	67 96	46
2	Maize ..	15-B	1 18	19th September 1884	70 75	59 9	20th December 1884	193 5	608 5	164	5157 2	70 46	52
3	Planters' Friend ..	32	3 00	4th October 1884	60 7	20 2	6th March 1885	207 5	2,484	69 2	821 3	67 96	46
4	Do. ..	33	2 36	16th August "	43	18 2	1st December 1884	420	148 12	178	6276 3	58 35	53
5	Ragn ..	13	1 63	4th October "	27 4	16 8	3rd February 1885	80	592	49	363 2	67 96	46
6	Do ..	14	1 33	30th September 1884	33	24 31	7th January	502	2,522	377 4	1890 2	67 96	46
7	Red cholera ..	16 West	1 00	20th "	37 8	37 8	27th December 1884.	4	8,360	4	8,360	70 35	51
8	Do. ..	17	1 84	11th July 1884	106 5	57 9	11th November "	61	15,634	33-1	8496 7	54 43	51
9	Sorghum saccharatum	10-B East	2 32	24th September 1884.	35 5	15 3	19th January 1885	163	14,202	70 3	6121 6	69 71	49
10	Yellow cholera ..	15-A I	2 17	22nd "	51	23 2	9th "	41 5	8,730	19 1	4,023	69 81	50
11	Do. ..	15-A II	85	23rd "	20	23 5	9th "	5 8	3,136	6 8	3748 2	69 71	49

Sown with Nankin cotton and the two crops occupied 1-25 acres, half of which to this crop.

Only half the area appointed to this crop, the other half being occupied by New Orleans cotton.

Damaged seriously by flood.

Most of the ear heads were empty.

Crop very much rusted

The straw was weighed dry.

APPENDIX II-D.

STATEMENT showing the Lint obtained from Cotton-in-seed harvested in 1884.

Month.	FIELD No. 15 EAST.			FIELD No. 10-B.			FIELD No. 10-A.			FIELD No. 11.		
	Cotton-in-seed	Lint.	Percentage of Lint.	Cotton-in-seed.	Lint.	Percentage of Lint.	Cotton-in-seed.	Lint.	Percentage of Lint.	Cotton-in-seed.	Lint.	Percentage of Lint.
February ..	LB. 16.0	LB. 5.25	32.8	LB. 2.0	LB. .75	37.5	LB. 0.5	LB. .16	32	..	..	..
March ..	24.5	7.75	31.8	4.0	1.25	31.2	1.0	.25	25	..	..	..
April ..	24.5	7.75	31.8	34.5	10.75	31.2	59.0	17.75	30.1	..	..	..
May ..	32.5	9.25	28.5	7.0	2.25	32.1	4.5	1.75	38.9	1.5	.50	33.3
June ..	35.0	9.75	27.9	27.0	7.25	26.9	52.5	14.25	27.1	13.5	3.75	27.7
July ..	59.0	14.50	24.6	208.0	51.00	24.5	83.5	20.50	24.6	7.0	1.75	25
August ..	35.0	9.00	25.7	270.5	69.75	25.8	81	20.25	25	89.5	22.75	25.4
September and October ..	105.0	27.00	25.7	173.5	49.25	28.4	..	..	..	12.0	3.50	29.2
Total ..	331.5	90.25	27.22	726.5	192.25	26.46	282.0	74.91	26.56	123.5	32.25	26.11

APPENDIX III-A.

STATEMENT showing the Number of Stock maintained during each Month of the Year 1884-85.

Description of Stock.	1884									1885.			Average.
	April.	May.	June.	July.	August.	September.	October.	November.	December.	January.	February.	March.	
Bullocks and bulls ..	19	19	19	19	18	18	18	17	17	16	16	14	17.5
Cows ..	11	11	11	11	11	13	13	13	13	12	12	8	11.6
Young bulls and heifers ..	18	18	18	18	18	18	18	18	18	19	18	17	18.0
Small calves ..	12	13	13	14	15	16	16	17	19	16	16	15	16.1
Sheep ..	70	69	69	69	68	85	85	85	107	107	108	99	84.9
Lambs ..	45	45	46	46	46	27	28	29	6	37	38	37	35.8
Equivalent as country cattle of 300 lb. live weight ..	102.5	102.8	102.9	103.4	101.7	107.7	107.8	106.4	109.5	108.1	107.0	*92.0	104.2

* 1 Cow, bull or bullock = 2 young bulls or heifers = 4 small calves = 10 sheep = 20 lambs = 2 country cattle.

APPENDIX III-B.

Cost of Artificial Food supplied to the Live-stock during the Year 1884-85.

	WORKING CATTLE AND BULLS.		YOUNG STOCK.		COWS AND CALVES.		SHEEP.		Sup-plied.	Value.
	Amount.	Value.	Amount.	Value.	Amount.	Value.	Amount.	Value.		
Ground-nut cake ..	LB. 21,948	RS. A. P. 351 2 8	LB. 12,053	RS. A. P. 192 13 7	LB. 17,597	RS. A. P. 281 8 10	LB. 17,514	RS. A. P. 280 3 7	LB. 69,112	RS. A. P. 1,105 12 8
Bran ..	119	2 15 7	3,479	61 15 7	5,081	125 12 6	127	3 2 10	7,756	193 14 8
Salt ..	704	20 6 3	368	10 9 7	668	15 4 5	592	17 2 4	2,380	68 6 7
Grains ..	72	1 12 0	17	0 3 0	1,188	42 7 0	5	0 3 0	1,282	44 9 0
Dholl, husk ..	499	7 10 10	4,674	70 5 11	5,683	87 6 10	6	0 1 6	10,702	165 9 1
Total ..	..	383 15 4	..	335 15 8	..	652 7 6	..	800 13 3	..	1,572 3 9
Deduct one-third charged to manure ..	..	127 15 9	..	111 15 10	..	184 2 6	..	100 4 5	..	524 6 7
Net charge ..	..	255 15 7	..	223 15 10	..	468 5 0	..	699 8 10	..	1,048 13 2
Cost per head per mensem. ..	..	1 3 6	..	1 0 7	..	2 10 5	..	0 2 3	..	0 13 5