

GOVERNMENT OF INDIA



सत्यमेव जयते

REPORT
ON THE
GRANT OF PROTECTION AND
OR ASSISTANCE
TO THE
CALCIUM CARBIDE INDUSTRY

BOMBAY

1956

BY THE GENERAL MANAGER, GOVERNMENT OF INDIA PRESS,
AND PUBLISHED BY THE MANAGER OF PUBLICATIONS, DELHI, 1956
Price: Rs. 1-6-0 or 2sh.

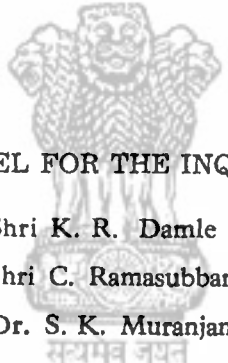
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PANEL FOR THE INQUIRY

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GOVERNMENT OF INDIA
MINISTRY OF COMMERCE AND INDUSTRY
RESOLUTION
TARIFFS

New Delhi, the 30th June, 1956

No. 37(1)-TB/56.—The Tariff Commission have submitted its Report on the grant of protection and/or assistance to the Calcium Carbide Industry on the basis of an inquiry undertaken by it under Section 11 of the Tariff Commission Act, 1951. Its recommendations are as follows:—

- (1) Protection to the Calcium Carbide Industry should be granted till the 31st December, 1958, and a standard rate of protective duty of 45 per cent *ad valorem* should be levied on imported Calcium Carbide.
- (2) The Indian Standard Institution should take expeditious steps to finalise standards for Calcium Carbide.
- (3) There is need for considerable improvement in the quality of Calcium Carbide produced by the Birla Jute Manufacturing Company Ltd., who should take immediate steps to improve and maintain uniformly the quality of their product.

2. Government accept the recommendation that protection to Calcium Carbide Industry be granted till the 31st December, 1958, and necessary legislation will be undertaken in due course to implement it. As regards the rate of protective duty, the Tariff Commission have worked out that, on the basis of the fair ex-works price of saleable Calcium Carbide manufactured by the Birla Jute Manufacturing Co., a duty of 63.3 per cent is indicated to protect the indigenous industry against foreign competition and they have further observed that even to barely cover their prime costs, overheads and interest on working capital, but without any return on the block (usually allowed at 10 per cent), the duty required to protect this unit's product against the imported product would come to 46.5 per cent. In the light of these calculations made by the Commission, Government see no special reason to reduce the protective duty from the current rate of revenue duty on Calcium Carbide, which is 50 per cent *ad valorem* to 45 per cent as recommended by the Tariff Commission. Steps will, therefore be taken to fix the protective duty on imported Calcium Carbide at 50 per cent *ad valorem*.

3. Government accept recommendation (2) and have asked the Institution to take necessary steps in this behalf.

4. The attention of M/s Birla Jute Manufacturing Co. Ltd., Calcutta is invited to recommendation (3).

(ii)

ORDER

Ordered that a copy of the Resolution be communicated to all concerned and it be published in the *Gazette of India*.

(Sd.) N. SUBRAHMANYAM,

Joint Secretary to the Government of India.



CONTENTS

PARA	PAGE
1. Origin of the case	1
2. Terms of reference	1
3. Method of inquiry	2
4. History of the industry, [its present position and future plans for expansion	2
5. Rated capacity and production	6
6. Uses of calcium carbide	6
7. Domestic demand	8
8. Process of manufacture	9
9. Raw materials, electric power and fuel	9
10. Quality of indigenous calcium carbide and standard specifications	11
11. Imports and import control policy	13
12. Existing rate of duty	14
13. C.I.F. prices and landed costs of imported calcium carbide	14
14. Cost of production and fair ex-works price of calcium carbide	15
15. Comparison of fair ex-works price of indigenous calcium carbide with the landed cost of imported product	21
16. Claim of the industry to protection or assistance	22
17. Scheme of protection	23
18. Summary of conclusions and recommendations	24
19. Acknowledgements	25

APPENDICES

I. Government of India, Ministry of Commerce and Industry Resolution No. 1-T (1)/55 dated 2nd April, 1955	26
II. List of firms, persons and associations to whom the Commission's questionnaires were issued and from whom replies or memoranda were received	27
III. List of persons who attended the public inquiry on 11th January, 1956	29
IV. Statement showing the c.i.f. prices, customs duties, clearing charges, landed costs and selling prices of imported calcium carbide	30

REPORT ON THE GRANT OF PROTECTION AND/OR ASSISTANCE TO THE CALCIUM CARBIDE INDUSTRY

1. **Origin of the case.**—An application for the grant of protection and assistance for the manufacture of calcium carbide was made to the Government of India by M/s. Birla Jute Manufacturing Co., Ltd., Calcutta, in their letter dated 29th November, 1954. The Company commenced production of calcium carbide on 15th November, 1954 and found that the cost of the product was much higher than the landed cost of imported calcium carbide due to several reasons such as high cost of raw materials and electric power, inferior quality of the available raw materials and the small volume of manufacture. The Company's application was referred to the Commission under Section 11 of the Tariff Commission Act, 1951 by the Government of India in the Ministry of Commerce and Industry Resolution No. 1-T(1)/55 dated 2nd April, 1955 (*Vide* Appendix I).

2. **Terms of reference.**—Under Section 14 of the Tariff Commission Act, the Commission is to have, among other matters, due regard to:—

- (a) the cost of production or manufacture in the principal growing, producing or manufacturing regions of India of the commodity produced by the industry claiming protection and the cost of which should be taken to be representative of the industry concerned;
- (b) the approximate cost of production or manufacture in the principal growing, producing or manufacturing centres of foreign countries of the commodity which competes with the commodity produced by the industry claiming protection, if the determination of such cost is necessary for the purpose of any case;
- (c) the approximate cost of import of any such competing commodity as is specified in clause (b);
- (d) the price which may be deemed to be the representative fair selling price for growers, producers or manufacturers in India in respect of the industry claiming protection;
- (e) the quantities of the commodity required for the consumption and the quantities thereof produced in or imported into India;
- (f) the effect of protection, if granted to an industry, on other industries, including cottage and other small-scale industries.

On the basis of its findings on the points referred to above, the Commission is to assess for the purpose of its Report:—

- (a) the relative advantages enjoyed by the industry;
- (b) the nature and extent of foreign competition;
- (c) the possibility of the industry developing sufficiently within a reasonable time to be able to carry on successfully, without protection;

- (d) the likely effect of a protective tariff or other form of protection on the interests of the consumer or of the industries using the commodity in question, as the case may be; and
- (e) the desirability or otherwise of protecting the industry in the public interest.

Section 14 further provides that in recommending the grant of protection to any industry the Commission may specify the conditions which shall be fulfilled before and after the grant of protection with particular reference to the following points, namely:—

- (a) the scale of output;
- (b) the quality of its products;
- (c) the price charged for its products;
- (d) the technological improvements required by the industry;
- (e) the need for research in the process of manufacture;
- (f) the training of officers, technicians and other persons employed in the industry;
- (g) the use in the industry of indigenous products, whether raw or manufactured;
- (h) the time within which an industry in respect of which protection has been given in advance of production, should start production; and
- (i) any other matter in respect of which the Commission considers it necessary to specify conditions.

3. Method of inquiry.—On 10th June, 1955 the Commission issued a press note inviting firms, persons and associations interested in the manufacture, import or use of calcium carbide to obtain copies of the relevant questionnaires from the office of the Commission and to submit replies thereto. A list of those to whom questionnaires were issued and of those from whom replies or memoranda were received is given in Appendix II. The Collectors of Customs and leading importers were requested to furnish information regarding c.i.f. prices and landed costs of imported calcium carbide. The Chief Industrial Adviser, Ministry of Commerce and Industry (Development Wing) was requested to furnish the Commission with a detailed memorandum on the industry. The Directors of Industries of the States of West Bengal, Madras and Travancore-Cochin were addressed for information relating to the manufacturing units situated in their States. Shri S. S. Mehta, Technical Director (Chemicals) and Shri S. V. Rajan, Cost Accounts Officer visited the factory of Birla Jute Manufacturing Co. Ltd., Calcutta on the 5th November, 1955 and examined the cost of production of calcium carbide produced by them. A public inquiry was held at the Commission's office at Bombay on 11th January, 1956. A list of persons who attended the inquiry is given in Appendix III.

4.1.1. History of the industry, its present position and future plans for expansion.—**History of the industry.**—Early in 1940 the Government of India announced that specified industries promoted with

their direct encouragement during war-time might feel assured that, if they were conducted on sound business lines, they would, by such measures as Government might devise, be protected against unfair competition from outside India. In accordance with this decision six industries were given an assurance of protection against unfair competition after the war, calcium carbide being one of them. The assurance was reiterated in Government's Notification No. 136-T(1)/42 of 31st October, 1942 in the following terms:—

“As the indigenous production of calcium carbide is an urgent war necessity, the Government of India have decided, in accordance with the declared policy, to give an assurance of post-war protection against unfair competition from abroad to all those who are either at present engaged in, or wish to undertake its manufacture provided their affairs are conducted on sound business lines.”

Despite these assurances, commercial production of calcium carbide was not established by any manufacturer during the war-years.

4.1.2. The first plant for the manufacture of calcium carbide in India was started in Combatore in 1945 by the Industrial Chemicals Ltd. The plant functioned in Coimbatore for about two years and was shifted to Talaiyuthu in Tirunelveli District as it experienced difficulties in obtaining the requisite electric power at the former place. Production in Talaiyuthu was re-started only in January, 1952 when power supply was available. The factory has been working intermittently since then, but organised commercial production was never established. The second plant was established in 1950 by the Travancore Electro-Chemical Industries Ltd. at Chingavanam in Travancore-Cochin State. The factory remained idle upto 1954, even after which production has been only on an experimental scale, and intermittent. The third plant was that of the Birla Jute Manufacturing Co. Ltd. in Calcutta. Plans for establishing the plant were formulated as early as 1942, but the orders for machinery and equipment were placed only in 1945. Delivery of the plant was completed in 1950. The transmission of orders for ancillary equipments was delayed till 1951 owing to the detailed work involved and the lack of a suitable expert. Regular production of calcium carbide commenced only from 15th November, 1954.

4.2.1. **Present position of the industry.**—There are at present three units in the industry viz., (1) The Birla Jute Manufacturing Co. Ltd., Calcutta, (2) The Industrial Chemicals Ltd., Talaiyuthu (Tirunelveli District) and (3) The Travancore Electro-Chemical Industries Ltd., Chingavanam, (Travancore-Cochin State). Only the first mentioned unit is engaged in commercial production of calcium carbide. The second and third units have only pilot plant equipment, and have been engaged in intermittent production on a small scale.

4.2.2. **The Birla Jute Manufacturing Co. Ltd., Calcutta,**—is a public limited company registered in the year 1919 with an authorised capital of Rs. 145 lakhs and subscribed and paid-up capital of Rs. 116 lakhs. The Managing Agents of the Company are Messrs.

Birla Brothers Ltd., who are entitled to a remuneration of 2 per cent. on the net sales of the Company. The Company is primarily engaged in the manufacture of jute products and linoleum, while that relating to calcium carbide is a subsidiary activity. During the year 1954-55 the Company's profits before appropriations amounted to Rs. 40,24,569 and net profits after provisions to Rs. 12,29,097. The capital reserves of the Company are Rs. 145 lakhs and general reserves Rs. 45 lakhs. No separate capital was issued for the calcium carbide factory, but the working capital required was advanced by the Jute Section of the Birla Jute Manufacturing Co. Ltd. subject to payment of interest at 4½ per cent. The value of the fixed assets installed for production of calcium carbide is Rs. 29.73 lakhs. Since the commencement of production of calcium carbide on 15th November, 1954 and up to 31st March, 1955 the operations on calcium carbide are reported to have resulted in a loss of Rs. 1.79 lakhs without the inclusion of provision for interest or depreciation. The factory is located at Birlapur in the 24 Parganas about 25 miles south of Calcutta.

4.2.3. The Industrial Chemicals Ltd., Talaiyuthu, Tirunelveli District, is a public limited company registered in the year 1943. It is managed by a Board of Directors, has an authorised capital of Rs. 5 lakhs and subscribed and paid-up capital of Rs. 77,500. The total borrowings of the Company amount to Rs. 3,05,000 on which interest has to be paid at 6 per cent. The original value of the fixed assets is about Rs. 1 lakh. The losses sustained by the Company on the operation of the factory up to 30th June, 1954 amounted to Rs. 2,88,654.

4.2.4. The Travancore Electro-Chemical Industries Ltd., Chingavanam Travancore-Cochin State, is a public limited company established in 1950 with authorised capital of Rs. 25 lakhs, issued and subscribed capital of Rs. 10,20,000 and paid-up capital of Rs. 9,71,200. A sum of Rs. 3 lakhs has been raised as debenture capital on which outstanding interest of Rs. 9,000 remained unpaid as at 31st December, 1954. The total borrowings of the Company by way of unsecured loans as on the above date amounted to Rs. 43,594. The Travancore-Cochin State Government has financial interest in the Company to the extent of 20 per cent. of the ordinary share capital and has two seats on the Directorate for its nominees. The Company's fixed assets as at the end of 1954 amounted to Rs. 4,28,000 for land and buildings, and about Rs. 4,50,000 for plant and machinery. The losses incurred by the Company up to the end of 1954 aggregated Rs. 2,04,000.

4.3.1. Future plans for expansion.—The Birla Jute Manufacturing Co. Ltd. has stated that as its existing plant is uneconomic in size it has applied to the Government of India for permission to expand it so as to produce 30 tons per day i.e., 10,000 tons per annum, with estimated fresh investment to the extent of about Rs. 60 lakhs. We were informed by the Company's representative at the public inquiry that Government had deferred, for the time being, taking a decision on the application for expansion.

4.3.2. The Industrial Chemicals Ltd., Talaiyuthu, has stated in its reply to our questionnaire that it has, under consideration, the

possibility of expanding its plant with modern equipment so as to produce 5,000 tons per annum.

4.3.3. The Travancore Electro-Chemical Industries Ltd., Chingavanam (Travancore-Cochin State) has been granted a licence to erect a plant for the production of 900 tons of calcium carbide per month, i.e. about 10,000 tons per year. The Company expects that the erection of the expanded plant would be completed in about eighteen months and that production is likely to commence early in 1958. The existing plant enjoys certain marked locational facilities for procurement of good raw materials and electrical energy at economic rates, and expansion at the same spot should seem to afford them a reasonable assurance of success. In view, however, of certain organisational difficulties that the Company is reported to have encountered since inception, the fulfillment of its expectations regarding establishment of production according to schedule would depend on the success of its efforts to secure the required finance and equipment.

4.3.4 The Travancore-Cochin Chemicals Ltd., Alwaye, Travancore-Cochin State, has been granted a licence to erect a plant with a capacity of 20 tons per day or about 6,000 tons per year. The location of the plant will be adjacent to the existing caustic soda chlorine plant which the Company is now operating at Alwaye. We are informed that the Company expects to start commissioning the plant in January 1958 and establishing full production by the middle of 1958. The Travancore-Cochin Chemicals Ltd. is a private limited Company jointly owned by Fertilizers and Chemicals (Travancore) Ltd., Mettur Chemical and Industrial Corporation Ltd., and the Government of Travancore-Cochin. The Managing Agents are M/s. Seshasayee Brothers (Travancore) Ltd.

4.3.5. Mr. I. H. Safrin has also been granted a licence to erect a plant at Thana near Bombay with a capacity of 20 tons per day or about 6,000 tons per year. We are informed that the name of the Company which will control the undertaking is Nicole & Ashley Chemicals Ltd. According to the terms of the licence which was issued on 23rd September, 1955 to Mr. Safrin, effective steps should be taken by the licensee within six months from the date of issue and production established within 24 months from that date. On the basis of this time schedule, the plant should commence production sometime about January 1958.

4.3.6. From what we have stated in the above three sub-paragraphs, it will be seen that from about the beginning of 1958 the aggregate increase in the indigenous production of calcium carbide will be to the tune of 21,000 tons per year, provided the three units which have been granted fresh licences succeed in erecting their plants and establishing commercial production of the material as stipulated in the licences granted to them. In assessing the envisaged increase in aggregate production it should be remembered that, as against the existing capacity of 1,000 tons of Travancore Electro-Chemical Industries Ltd., the fresh licence of 10,000 tons granted to the Company would result in a net increase of only 9,000 tons.

5. Rated capacity and production.—The following statement gives the present rated capacity of the three existing units and their production of calcium carbide during the last four years:

Producers	Annual rated capacity	Production (in tons)			
		1952	1953	1954	1955
Tons					
1. Birla Jute Mfg. Co. Ltd.	3,300	Nil	Nil	234	3,089
2. Industrial Chemicals Ltd.	750	98	15	79	24
3. Travancore Electro-Chemical Industries Ltd.	1,000	Nil	Nil	60	Nil
	5,050	98	15	373	3,113

The aggregate rated capacity of the industry, according to information available at present, will remain at the level of 5,050 tons till the end of 1957. If the expansion and erection proposals which have been recently sanctioned by Government go through according to expectations, the aggregate capacity of the industry in *early 1958* is likely to be 26,050 tons per annum.

6.1. Uses of calcium carbide.—Calcium carbide is at present used in the country mostly for the generation of acetylene gas used in welding and cutting of steel, and partly for lighting purposes. Some of the welders purchase calcium carbide and use small generators to obtain acetylene gas which is consumed in combination with oxygen. Others utilise acetylene gas stored in cylinders. To meet the requirements of the latter type of consumers there is a well organised industry which is engaged in the production of acetylene gas from calcium carbide on a large scale. The important units in this industry are the Indian Oxygen and Acetylene Co. Ltd., the Asiatic Oxygen and Acetylene Co. Ltd., and the Industrial Gases Ltd., who market the gas in the form of dissolved acetylene filled in cylinders. Units for the production of dissolved acetylene exist in Calcutta, Bombay, Burnpur, Jamshedpur, Delhi, Bangalore, Kanpur, Madras, Visakhapatnam and Ahmedabad, all of them being centres where there is a large demand for steel fabrication workshops. The consumption of calcium carbide for lighting purposes is inconsiderable as it is restricted to areas where electricity is not available, while, in electrified areas, it is used only for purposes for which electric lights cannot be used. The usage of the product in the lighting field is, therefore, likely to diminish in future with the wider spread of electrification. As regards the demand for welding and cutting purposes, there is likely to be an expansion alongside the anticipated expansion in the steel fabrication industry, but not necessarily in proportion to the latter expansion, the reason being that electric welding which is becoming increasingly popular might, to some extent, replace oxy-acetylene welding.

6.2. Besides these uses for calcium carbide which have been already established in the country its potential uses in the future are expected to be in the manufacture of calcium cyanamide and a

number of synthetic organic chemicals which find uses as solvents, plastic resins and intermediates. In the manufacture of plastic raw materials, the possibility is bright as chlorine, which is essential in the process, is available in plenty as a by-product of the electrolytic caustic soda industry. Some of the important chemicals which are derived from acetylene are enumerated below:—

(i) *Solvents*—

Tetrachloroethane, Tetrachloroethylene.

Trichloroethylene, Dichloroethylene.

Ethyl acetate and Butanol.

(ii) *Plastic resins*—

Polyvinyl chloride and polyvinyl acetate.

(iii) *Intermediates*—

Vinyl chloride, Vinyl acetate, Vinyl alcohol, Chloroprene, Acetaldehyde, Acetone, Acetic acid, Ethyl alcohol, Acetic anhydride and Chloroacetic acid.

The importance of the above chemicals in a country-wide programme of rapid industrialisation is being felt more than ever, and therefore the need for establishing production of the raw material at the lowest cost possible has been stressed in all quarters. Many of the chemicals can also be derived from other raw materials such as ethyl alcohol or the gases obtained in the refining of petroleum or in the manufacture of synthetic petrol. But as the choice of the starting material is determined on the basis of various factors, important among which are availability, quality and relative costs, indigenous calcium carbide requires to prove itself worthy of acceptance on the basis of supply, conformity to rigid standards and inexpensiveness.

6.3. Calcium cyanamide which is obtained by a simple reaction between calcium carbide and nitrogen is an alkaline nitrogenous fertilizer which is of considerable value in treating acidic soils which cannot be treated with ammonium sulphate or nitrate as these have a tendency to increase acidity. The scope for developing the demand for calcium cyanamide will, however, arise only if the product is made available to agriculturists at a price comparable with those of the other nitrogenous fertilizers. Calcium cyanamide is also used as starting material for the manufacture of melamine (which is an important raw material of the plastics industry) and of propellants for defence purposes.

6.4. From the evidence received by us in connection with this inquiry we have arrived at the conclusion that (a) there is good scope for the further growth and development of the calcium carbide industry, (b) such development is intimately connected with the establishment of the fresh industries capable of utilising the product as starting material referred to in paragraph 6.2 above and (c) the latter possibility can be achieved only if calcium carbide is made available at a price low enough to induce the establishment of such fresh industries. The cost factor of calcium carbide assumes, therefore, considerable importance in the general scheme of industrial development.

7.1. **Domestic demand.**—The average indigenous consumption of calcium carbide, as disclosed by the figures of imports for the six years from 1949-50 to 1954-55, was about 8,000 tons per annum. This assessment was generally confirmed by the evidence received by us from producers, importers and consumers. The Development Wing of the Ministry of Commerce and Industry have furnished us with the following estimates of future demand with a break-down under four heads:—

Users	(in tons)		
	Estimates for		
	1956	1957	1958
Dissolved acetylene manufactured by organised factories	5,500	6,000	6,500
Acetylene gas generated by workshops locally . . .	3,300	3,600	3,900
Acetylene gas produced for lighting purposes . . .	1,500	1,600	1,700
Manufacture of organic chemicals . . .	..	2,000	4,000
	10,300	13,200	16,100

7.2. We are informed that the Development Council for Heavy Chemicals (Alkalies) has recommended the following targets of production of calcium carbide by 1960-61.

	Tons
For organised manufacture of dissolved acetylene	8,000
For other acetylene users	7,000
For manufacture of chemicals	10,000
	25,000

It is conceivable that the actual demand under the first two heads might far exceed the total figure of 15,000 tons indicated as target if large scale expansion of the structural steel industry takes place in the country.

7.3. The question of future demand was discussed at the public inquiry and it was agreed by the representatives of all interests present that (as estimated by the Development Wing of the Ministry of Commerce and Industry) the demand for 1956, 1957 and 1958 was likely to be about 10,000 tons, 13,000 tons and 16,000 tons respectively, and that thereafter, it would rapidly go up to about 25,000 tons by 1960-61. We are accepting these estimates as reasonable prognostications and wish to make it clear that their realisations would depend on (a) the extent of expansion in the usage of carbide for welding purposes which would be in proportion to the expansion in the steel fabrication industry, subject to provision being made for the alternate use of electric welding and (b) the development of

the organic chemicals industry which is expected to absorb 10,000 tons and might do so only if suitable conditions are available for its development.

8.1. Process of manufacture.—Calcium carbide is manufactured by electro-thermal heating of lime with a carbonaceous material like coke, petroleum coke, anthracite or charcoal. The lime required for the process is produced with fuel such as coke, gas or oil. Combinations of carbonaceous materials are used depending upon their availability, price and properties such as ash content, phosphorus content and electrical conductivity of each material. Heat is supplied to the furnace by electric current carried through soderberg electrodes. The operation is controlled to maintain optimum temperature in the furnace so as to give the required yield. The furnace is tapped at intervals and the molten calcium carbide is received in ladles in which the material is allowed to cool and solidify. The solid calcium carbide is crushed, graded on screens and thereafter packed in air-tight drums.

9.1.1. Raw materials, electrical power and fuel.—The raw materials required for the production of calcium carbide by the conventional process are (i) limestone, (ii) coke and (iii) charcoal. Purity of raw materials is of utmost importance in this industry as the final product, *viz.*, calcium carbide, cannot be subject to any process of purification, and all impurities originally present in raw materials contaminate the finished product.

9.1.2. Limestone.—The desirable specification for limestone is as follows:—

Calcium carbonate	97% to 98%
Magnesium oxide	Maximum 0.5%
Aluminium oxide	Maximum 0.5%
Ferric oxide	
Silica	1.2%
Phosphorus	Maximum 0.004%
Sulphur	Traces.

The specification relating to calcium carbonate content is to ensure an economic yield and purity of the intermediate product *viz.*, lime. The other specifications are to keep down operating costs and avoid contamination. For instance, higher magnesium oxide content results in the formation of incrustations inside the furnace and interferes with the formation of carbide. It also results in higher consumption of electricity. Excesses of aluminium oxide and magnesium oxide reduce the fluidity of molten carbide and create difficulties in tapping of the furnace. Excess of silica results in introduction of impurity into the product in the form of ferro-silicon. The phosphorus which is contained in the limestone passes into the calcium carbide and gives rise to phosphine gas when it is used for producing acetylene. As phosphine gas is poisonous and explosive and ignites spontaneously in air, a higher content of phosphorus in calcium carbide vitiates the product and makes it dangerous in storage, handling or transit. Ample supplies of limestone are available in the country but as the specifications suited to the calcium carbide industry are rigid, the choice has to be made after balancing carefully such factors as cost of freight from quarry to

factory, adequacy of supply and quality. Under favourable conditions 1.65 to 1.75 tons of limestone yielding 0.945 to 0.98 tons of lime is required for each ton production of calcium carbide. The results achieved by Birla Jute Manufacturing Co. Ltd. have been comparatively poor and average about 2.8 tons of limestone per ton of production of calcium carbide. It is of interest to note in this connection that the cost of limestone to this Company is as much as Rs. 42 per ton out of which about Rs. 30 represents transportation charges, while the cost to the Industrial Chemicals Ltd. is only Rs. 7-8-0 per ton and the cost estimated by Travancore-Cochin Chemicals Ltd. is Rs. 28 per ton. The Industrial Chemicals Ltd. obtain limestone from the locality where their factory is established and incur transport charges to a negligible extent. The Travancore-Cochin Chemicals Ltd. have been obtaining limestone for their other needs from Sankaridrug in Salem District and the cost of Rs. 28 includes railway freight to Alwaye.

9.1.3. Coke.—The coke to be used for the manufacture of calcium carbide should contain as little ash and phosphorus as possible. Although large quantities of coke are made in India, the bulk of the material contains a high proportion of ash and phosphorus. High ash content lowers the quality of carbide and increases the consumption of electricity. When the ash content exceeds 8 per cent., it is necessary to blend the coke with anthracite, petroleum coke, charcoal or other suitable material with due regard to purity and cost.

9.1.4. Charcoal.—Charcoal is used in the furnace in combination with coke in order to compensate for the higher ash content of the latter. Supplies of the material are available all over India but it is necessary to choose the type that does not contain high volatiles or phosphorus. An excellent carbonaceous material is cocoanut charcoal which is available in plenty in Travancore-Cochin.

5.2.1. Fuel.—Coke is the conventional material used as fuel for burning limestone but the coke available contains a high proportion of ash, phosphorus, sulphur and iron pyrites. Under the circumstances furnace oil or gas would be a good substitute as these would eliminate all possibility of contamination with the impurities.

9.2.2. Electrodes.—Electrodes are formed using specially constructed steel casings into which freshly prepared Soderberg paste is poured. The paste is made up of graphite, pitch and low ash anthracite or petroleum coke. Regular supplies are available from the two firms manufacturing aluminium in the country.

9.3. Electric Power.—The production of calcium carbide takes place by the electro-thermal heating of lime with a carbonaceous material and involves consumption of a large volume of electricity. About 3,500 to 4,000 units are required to produce one ton of calcium carbide and consequently the cost of power constitutes a very important element in cost of production. Power rates in the Scandinavian countries and in Canada where larger plants have been established for manufacture of calcium carbide are as low as 0.91 of a pie per K.W.H. In India the lowest rate at present is 3.96 pies per K.W.H. in Travancore-Cochin, but generally, elsewhere, it is much higher. The rate paid by Birla Jute Manufacturing Co.

Ltd. is 8 pies per K.W.H. An increase of one pie per K.W.H. for power involves an increase in expenditure of about Rs. 20 per ton production of calcium carbide. The disadvantage suffered by the Indian industry through non-availability of cheap electric power is evident from this single factor.

9.4. Packing containers.—Calcium carbide has to be packed in moisture-proof sealed mild steel containers of 1 cwt. capacity. Safety regulations require that 24 gauge sheets must be used for making drums. The weight of the container is about ten per cent. of the weight of the material, and freight charges for transport of calcium carbide are, therefore, comparatively higher than in the case of other chemicals.

9.5. From the foregoing paragraph it will be seen that there are such wide variations in the cost of raw materials at different centres in the country that a unit established at one centre is likely to suffer very severely from locational disadvantages not affecting another unit at a different centre. Limestone prices vary from Rs. 7-8-0 to Rs. 42 per ton, coke prices from Rs. 35 to Rs. 70, charcoal prices from Rs. 70 to Rs. 143 and cost of power from 3.96 pies per K.W.H. to 8 pies per K.W.H. The question of location has also to be carefully considered from the angle of the distance of the factory from the centres of large consumption, as freight charges for transport of calcium carbide are high, and the on-carriage has also an element of risk, so that the locational economies achieved in production may have to be sacrificed in distribution.

10.1. Quality of indigenous calcium carbide and standard specifications.—In the absence of specifications set by the Indian Standards Institution, the quality of calcium carbide is at present judged in the light of British Standards. We are informed that the Indian Standards Institution has taken up the work of formulating standards. In the undermentioned statement we have furnished particulars of the British Standards and of the standards claimed to have been achieved by Birla Jute Manufacturing Co. Ltd.:—

	B.S.S. 642 : 1951	Birla Jute Mfg., Co. Ltd.
(a) Gas yield—in cu. ft. per lb. at 60° F & 30" mercury.	4.80 (15-120m. m. grades)	4.36* (25-80m. m. grades)
(b) The limits of impurities in the acetylene gas produced expressed as percentage by volume are as follows :—		
1. Sulphur compounds (Expressed as hydrogen sulphide)	0.15	0.15
2. Phosphorous compounds (Expressed as phosphine)	0.06	0.08
3. Arsenic compounds (Expressed as arsine)	0.001	0.001
4. Nitrogen compound (Expressed as ammonia)	0.10	0.10

* The gas yield of grades below 25/80 m.m. is lower. The average yields of various grades of carbide produced from February to September 1955 indicate that the gas yield is about 4% lower for the grade 15/25 m.m. and about 7% lower for the grade 7/15 m.m.

It will be observed from the above that deficiencies have been accepted by Birla Jute Manufacturing Co. Ltd. in regard to gas yield and impurities of phosphorus compound. Lower gas yield results in higher cost for the consumer on account of larger expenditure on freight and losses due to unsaleable residue after production of gases. Phosphorus compounds give rise to phosphine gas which is poisonous and forms explosive mixtures with acetylene gas. These dangers are specially enhanced when welding operations are carried out in a closed area. Almost all the consumers and importers have commented on these two deficiencies and have pointed out the lack of uniformity of the product from sample to sample. Instances were brought to our notice of supplies of the product having as low a gas yield as 3.83 cu. ft., and with phosphine content as high as 0.137 per cent. Another complaint made by some of the consumers is that indigenous carbide is sold in grades different from those recognised in the British Standards.

The following statement gives the comparative sizes:—

B.S.S.		B.J.M.
m.m.		m.m.
1—2		
2—4		
4—7		
7—15		
15—25		2—15
25—50		15—25
50—80		25—80
80—120		

Complaints have also been received from consumers that the material supplied by the Birla Jute Manufacturing Co. Ltd. does not strictly adhere to the prescribed sizes, and that very often sizes smaller than those prescribed are mixed with the properly sized material. Many consumers have stated that there is a high proportion of dust in the material supplied. We are also informed that some time ago the quality of the containers used by the Company was poor, and that the method of sealing these was unsatisfactory; noticeable improvement is reported to have taken place recently in this regard.

10.2. The question of quality was fully discussed at the public inquiry and while it was mentioned that gradual improvement was taking place in the quality of the product manufactured by Birla Jute Manufacturing Co. Ltd., stress was laid on the fact that the types of raw materials used by them were such as to make it difficult for them at any future time to eradicate the complaints against high phosphine content and low gas yield. It was stated that the basic fault rested with their method of burning limestone and that unless drastic improvements were made in this regard and in regard to the quality of the coke required in the furnace, no tangible improvement is likely to take place. These improvements, however, would result in increasing the costs. A specific point was made about the attempt made by Birla Jute Manufacturing Co. Ltd. with the Indian Standards Institution to increase the permissible limit of phosphine content from .06% (which is the

B.S.S. limit) to .08% on the ground that the raw materials available to them justified such increase. It was contended by a section of consumers that it was dangerous to increase the phosphine content, and that at any rate it should not be done for the benefit of a producer. This point is one for the Indian Standards Institution to take note of and decide after consideration of the technical problem involved. We may, however, mention that difficulties regarding adherence to British Standards have not been experienced by the Industrial Chemicals Ltd., or the Travancore Electro-Chemical Industries Ltd. These two units claim that their products conform to the British Standards. As regards the product manufactured by latter concern, samples have been tested by the Indian Oxygen and Acetylene Co. Ltd. who have certified that the average gas yield is 5 cubic ft. per lb. while the impurities including phosphine are well within the limits specified by British Standards.

10.3. After considering all the evidence placed before us we have come to the conclusion that there is need for considerable improvement in the quality of calcium carbide produced by the Birla Jute Manufacturing Co. Ltd. It is very necessary that they should take immediate steps to improve and maintain uniformly the quality of their product and for doing so, they may have to improve or alter their equipment, and choose better type of raw material. We recommend that the Indian Standards Institution should take expeditious steps to finalise standards for calcium carbide. In doing so we have no doubt they will take into consideration the production standards achieved by all the three units in the industry, and the nature of the raw materials available at the different centres where fresh licences have been granted, and not exclusively those used by the Birla Jute Manufacturing Co. Ltd.

11.1. **Imports and import control policy.**—Statistics of imports of calcium carbide are recorded separately in the Accounts relating to the Foreign (Sea, Air and Land) Trade and Navigation of India published by the Director General of Commercial Intelligence and Statistics. The quantity and value of imports of calcium carbide into the country from 1951-52 onwards are given below. These imports have been mostly from Norway, Sweden, Canada, Japan, Italy, Czechoslovakia and Germany.

Year	Qty. (tons)	Value (Rs. in lakhs)
1951-52	9,849	67.22
1952-53	5,211	35.87
1953-54	7,447	39.15
1954-55	9,422	52.49
1955-56	5,322	28.98
(April—December)		

11.2. Calcium carbide is classified under Serial No. 31-Part V of the Import Trade Control Schedule. Imports of calcium carbide were restricted from the period July—December 1954 when it was

removed from O.G.L. and general and soft currency licences were issued to established importers to the extent of 75% of half of their best year's imports. Applications from actual users were also considered. During the period January—June 1955 the quota for established importers was reduced to 50%. Applications from actual users were considered *ad hoc* in consultation with the Development Wing of the Ministry of Commerce and Industry. During the period July—December, 1955 the quota for established importers was further reduced to 25%. Applications from actual users were considered *ad hoc* in consultation with the Development Wing. The applications from actual users were to be submitted together with information regarding (i) total quantity consumed during the previous 6 months, (ii) quantity consumed during the same period from indigenous sources and (iii) evidence of firm orders placed for supply from indigenous sources. The policy continues to remain the same during the present period, viz., January—June, 1956.

12. **Existing rates of duty.**—Calcium carbide was classified under item No. 28(8) of the Indian Customs Tariff Schedule till the end of February, 1955 and was subject to a standard rate of duty of 31½ per cent *ad valorem*. From 1st March, 1955 the duty on this product has been increased to 50 per cent *ad valorem* in accordance with the Finance Act, 1955 and it has been separately classified under I.C.T. Item No. 28(33). The relevant extract from the First Schedule of the Indian Customs Tariff (Fortieth issue) is given below:—

Item No.	Name of article	Nature of duty	Standard rate of duty	Preferential rate of duty if the article is the produce or manufacture of			Duration of protective rates of duty.
				The United Kingdom	A British Colony	Burma	
28 (33)	Calcium carbide	Revenue	50 percent <i>ad valorem</i>	..	..	..	..

13.1. **C.I.F. prices and landed costs of imported calcium carbide.**—The information obtained from certain importers and the Collectors of Customs in port towns in regard to c.i.f. prices, landed costs and selling prices of imported calcium carbide is given in tabular form in Appendix IV. It was agreed, after discussion with the representatives of the different interests present at the public inquiry that as most of the imports of calcium carbide into this country were from Norway, Sweden, Canada and Japan, the price of Rs. 547-14-0 per ton for an actual consignment received at Calcutta on 28th October 1955 from Japan should be taken as the most representative price at current levels with which a comparison of the ex-factory price of the indigenous product should be undertaken. It was also agreed at the public inquiry that the average clearing charge should be assumed at Rs. 15-0-0 per ton.

13.2. The quotations of Rs. 483-2-11 dated 9-5-1955 and Rs. 476-4-0 dated May, 1955 relating to two consignments from Norway have

been discarded by us for the reason that they were special prices to the Indian Oxygen and Acetylene Co. Ltd. from their foreign associates.

14.1. Cost of production and fair ex-works price of indigenous calcium carbide.—One of our Cost Accounts Officers has examined the cost of production of calcium carbide at the factory of the Birla Jute Manufacturing Co. Ltd., and has submitted to us his cost report. We have discussed the cost data with the representatives of the Company, and in consultation with them, we have prepared our estimate of their future cost of production and fair ex-works price of calcium carbide. As the Company's representatives desired that the details of costs should be kept confidential, we are forwarding the report of the Costs Accounts Officer as a separate enclosure to this report. The period undertaken for investigation covers the six months ended 30th September, 1955. The quantity of calcium carbide produced during this period was 1,586 tons. The following statement gives the break-down under main heads of the actual cost of production for the period April–September, 1955, and our estimates of the future cost per ton of calcium carbide:—

	Actuals April–Sept., 1955		Estimate for future	
	Rs.		Rs.	
i. Raw materials	303.70		278.85	
ii. Electricity	203.67		189.38	
iii. Other conversion charges	153.72		140.59	
iv. Depreciation	75.41		74.17	
v. Packing	83.24		93.00	
vi. TOTAL	819.74		775.99	
vii. Less credit for recoveries	20.68		20.00	
viii. Net cost of production	799.06		755.99	
ix. Interest on working capital . . . . .	..		9.76	
x. Return on block . . . . .	..		92.19	
xi. Ex.-works price . . . . .	..		857.94	
xii. Add adjustment for fines @ 4.167% on ex-works excluding packing . . . . .	..		31.88	
xiii. Add price differential for "off-grade carbide" . . . . .	..		20.00	
xiv. Fair ex-works price of saleable calcium carbide . . . . .	..		909.82	

i.e. about Rs. 909-13-0

14.2. The factors that were taken into account in arriving at the above estimate were as under:—

14.2.1. Production.—The annual production is estimated to be about 3,225 tons on the basis of a plant capacity of about 10 tons per day (effective to the extent of 9.77 tons) for 330 days of working leaving out the days required for relining the furnace and kiln.

14.2.2. Raw Materials.—The quantities of raw materials per ton of carbide production, the rate per unit and the cost per ton of production are as under:—

Raw Material	Quantity per ton of production	Rate per ton of raw material	Cost of raw material per ton of production
	Tons	Rs.	Rs.
Limestone.	2·748	41·68	114·54.
Hand Coke for lime kiln	0·271	49·50	13·41
Hard Coke for furnace	0·319	49·50	15·79
Charcoal	0·630	143·00	90·09
Electrode Paste	130 lbs.	500·00	29·02
Electric Casings etc. . . . .	..	..	16·00
			278·85

Limestone was being obtained from Sylhet (Assam) by river and from Katni and Gotan by rail. The average recovery of lime from the limestone was stated to be about 56 per cent. In addition, there were losses in handling and crushing of limestone which amounted to about 10 per cent. Further, there was wastage in handling and crushing of lime through the formation of "fines" which amounted to about 30 per cent. of the lime which was fed into the furnace. It is possible to reduce these operational losses through greater efficiency.

Coke is used for burning limestone in the kiln and as carbonaceous material in the furnace in combination with charcoal. The consumption of coke in the kiln has been assumed at 10 per cent. of the weight of limestone in the charge to which was added a margin for crushing and handling losses at 9 per cent. The crushing and surface loss of coke which is fed into the furnace along with charcoal has been found to be eleven per cent.

Charcoal is obtained from Mirzapore at a distance of about 480 miles from Calcutta. Not only is the cost inclusive of freight high, but the quality is also poor. Handling and furnace loss of 9 per cent. has been allowed in assessing the usage.

14.2.3. Electric Power.—The consumption of power per ton of carbide production has been estimated at 4,545 units. Power for the carbide factory is being supplied by the Jute Mills power house and the rate charged is 8 pies per KWH consumed which is the normal grid rate in Calcutta. According to the Company's figures, the cost of generating power including overheads and profit is stated to be 11·03 pies per KWH, and, on this basis, the jute mill would appear to be selling the power at below cost.

14.2.4. Labour.—The cost of labour has been estimated on the basis of previous expenditure with suitable adjustments for increase in basic salary as a result of labour award, provision for dearness allowance and provident fund.

14.2.5. Consumable Stores, Repairs and Maintenance.—In estimating the future cost due provision has been made for future requirements including cost of relining the furnace and lime kiln.

14.2.6. Establishment and other overheads.—Our estimates have been based on actual expenditure in the past with extras for annual increments, and insurance premia paid to cover plant and machinery.

14.2.7. Depreciation.—Provision for depreciation has been made at the yearly rate equivalent to the average for five years from the date when the plant was commissioned, calculated at the written down values at rates normally allowable.

14.2.8. Credit for recoveries.—This item represents the amount realised by sales of “fines” of lime and limestone.

14.2.9. Interest on working capital and return on block.—Interest on working capital has been calculated at 4½ per cent. on an amount equivalent to four months’ cost of production. The original value of the block relating to production of calcium carbide is stated to be Rs. 29·728 lakhs. Return has been calculated at 10 per cent. of this amount.

14.2.10. Adjustment for “fines”.—While breaking up lumps of calcium carbide to the graded sizes required by consumers a quantity of unsaleable “fines” are left as residue. Provision at 4·167 per cent. of the production has been made in future estimates as ascertained from past experience.

14.2.11. Graduation loss.—As the entire production of calcium carbide assumed in the future estimate will not be of the standard grade of 25/80 m.m., a price differential of Rs. 20 per ton has been allowed to the company to compensate for the lower prices at which the “off-grade” of 15/25 m.m. and 2/15 m.m. are saleable.

14.3.1. The fair ex-works price of Rs. 909-13-0 for calcium carbide produced in the Birla Jute Manufacturing Co. Ltd., is so much higher than the average c.i.f. price of the imported product (*viz.*, Rs. 547-14-0 as mentioned in para. 14.1) that two questions straightaway pose themselves: (a) whether the factors relating to cost of production in the above Company are representative of those that subsist throughout the country, or are peculiar to the Birla unit and (b) what are the disadvantages from which the Birla unit suffers in regard to manufacture of calcium carbide as a result of its present location. From the evidence received by us we observe that in a few places outside Calcutta, it is possible to find locations for establishing carbide plants where, through availability of power and raw materials at much cheaper prices, the cost of production can be far lower than in the Birla unit. As examples we may mention the locations at Thana (near Bombay) and Chingavanam and Alwaye (Travancore-Cochin) where proposals for establishment of new factories have been approved by Government. From a *prima facie* examination of the data relating to the prices of raw materials and power at the locations at which these three newly licensed units are proposed to be established we find that the disadvantages from which the Birla unit suffers are considerable, and from that point of view its costs are not representative of the industry which will develop

elsewhere in the country in the near future. The following comparative table will support the above conclusion:—

Location	Limestone per ton	Charcoal per ton	Electric Power per KWH
	Rs.	Rs.	Pies
Thana (Bombay)	30	120	6
Chingavanam (Travancore-Cochin)	24	120	3·96
Alwaye (Travancore-Cochin)	28	70	4·68
Birla Jute Mfg. Co. Ltd., Calcutta	42	143	8

The Travancore Electro-Chemical Industries Ltd. and the Travancore-Cochin Chemicals Ltd. have both forwarded to us estimates of their costs of production of calcium carbide in their projected units. The former unit has based its data on its own experience of production of calcium carbide although on a pilot plant scale. The latter unit has drawn from data available in regard to raw materials relating to its production of caustic soda and chlorine products. The cost estimate furnished by the Travancore-Cochin Chemicals Ltd. was also discussed with its representative. According to the estimates furnished by the two companies the cost of production of calcium carbide for the Travancore-Cochin Chemicals Ltd. aggregates to about Rs. 515 and for the Travancore Electro-Chemical Industries Ltd. to about Rs. 462. After an examination of these estimates with the data furnished by them regarding raw material costs and estimated consumption, investment proposed and probable overheads etc. we feel that the estimates can be accepted as reasonable. In any event they justify the conclusions arrived at by us that locations are available in the country where the production of calcium carbide can be undertaken at considerably lower costs. This indicates that the fair ex-works price of the Birla unit, viz., Rs. 909-13-0 is not representative of the industry.

14.3.2. The fair ex-works price of Rs. 909-13-0 of the Birla unit includes a sum of Rs. 51·88 as adjustment for "fines" and price differential for "off-grades", of the final product, *vide* item Nos. (xii) and (xiii) in the statement in para. 14.1. Both the Travancore-Cochin Chemicals Ltd. and the Travancore Electro-Chemical Industries Ltd. do not require any allowance as they expect to absorb the unsaleable material ("fines" and "off-grades") in the manufacture of other products using calcium carbide as starting material. The Travancore-Cochin Chemicals Ltd. intend to manufacture polyvinyl chloride for which the "fines" and "off-grades" of calcium carbide can be used in their own acetylene generators. The Travancore Electro-Chemical Industries Ltd. intend to manufacture calcium cyanamide, with crushed calcium carbide, and would have no problem concerning the disposal of "fines" or "off-grade" material. The cases of these two companies illustrate the value of internal economies available to units which have composite plants for the manufacture of calcium carbide and products derived therefrom.

14.3.3. To the extent that the cost estimates relating to the Travancore-Cochin Chemicals Ltd. and the Travancore Electro-Chemical Industries Ltd. relate to a production of 8,000 tons and 10,000 tons respectively, and consequently their overheads have been distributed over larger outputs, the figures relating to Birla Jute Manufacturing Co. Ltd. are not strictly comparable with those of the other two units. We have, therefore, obtained from Birla Jute Manufacturing Co. Ltd. their own estimate of costs if they were allowed to expand their plant to a capacity of about 6,000 tons per annum, incorporating therein all possible economies that they expect to achieve. The estimate is as follows:—

	Per ton of Calcium Carbide production
	Rs.
Raw materials	246
Electric Power	131
Other Conversion Charges	95
Depreciation	76
Packing	90
TOTAL	638
Less credit for recovery	14
	624
Interest on working capital	8
Return on block	76
TOTAL	708
Add adjustment for fines	25
Gradation loss	34
	767

14.3.4. The above estimate has been examined by us in detail. We find that reduction in the cost of electric power has been calculated on the basis of 6 pies per unit as against the present rate of 8 pies, while the cost of generation at the Jute Mills power house is 11.03 pies per KWH. It is apparently expected that the cost of generation would go down as a result of expanded output. We are of opinion that while the scope for overall reduction in costs is extremely limited as regards raw materials, the estimated reduction in the quantum of power consumption and other conversion charges appear to have been based on optimistic assumptions which do not, in our view, seem to be justified unless some modern features in the design of kiln and furnace are adopted. The choice of the vertical lime kiln set up by the Company has resulted in limiting the choice of the type of limestone which could be used, as the physical characteristics of the limestone charged and the lime produced are

decisive factors for choice of limestone in a vertical kiln. The use of a vertical kiln has also introduced the necessity for crushing of lime which involves heavy losses in material. A horizontal kiln provides for a wider choice of material and can be used for burning of limestone of smaller size such as would produce lime which could be charged to the furnace without crushing. The use of coke as a fuel to burn limestone results in the introduction of impurities present in the low grade coke into the lime. The impurities ultimately pass into the finished calcium carbide. The use of fuel oil for burning limestone would avoid this difficulty. The choice of the open type stationary rectangular furnace with electrodes set in a line as installed in the Birla Jute Manufacturing Co. Ltd. has also little to commend for itself. We are advised that a cylindrical rotary furnace would operate with much greater efficiency. Further economies are possible in a larger closed type of furnace which would reduce losses due to material escaping as dust and would allow of the use of the furnace gases for burning limestone or as a source of carbon monoxide.

14.3.5. The conclusion that emerges from the above paragraph is that while considerable re-organisation and fresh investment would be required to achieve economies in the Birla Jute Manufacturing Co.'s unit, its fair ex-works price of calcium carbide would still remain stabilised at about Rs. 767 per ton which is very high when compared with the estimates of the two Travancore units viz., Rs. 515 and Rs. 462. Even after adding the charges for transporting the material from Travancore to Calcutta the cost of Travancore Calcium Carbide to consumers in Calcutta area will be much lower than that of the Birla unit.

14.4. At this stage it would be of interest to examine comparative figures of the conversion factors of various raw materials and usage of electric power per ton of carbide production relating to the Birla Jute Manufacturing Co. Ltd. and those of overseas manufacturers of the product.

	Birls Jute Manufacturing Co. Ltd.	Overseas
Limestone (tons)	2.748	1.65 to 1.75
Coke for kiln (tons)	0.271	0.132 to 0.140
Carbonaceous material (tons)	0.949	0.65 to 0.68
Power (KWH)	4,545	3,300 to 4,000

The high consumption of raw materials and power by Birla Jute Manufacturing Co. Ltd., is due to:—

- (a) Choice of improper type of equipment which has restricted the choice of raw materials and has resulted in losses in raw materials and increased consumption of electricity:

- (b) Use of limestone in the form of lumps which require crushing of lime before it is fed into the furnace and results in heavy losses in handling and crushing;
- (c) Inferior quality of limestone which results in higher consumption of electricity and reduced recovery of carbide;
- (d) Inferior quality of coke which results not only is contaminating the product (and to counteract which more of charcoal has to be added) but also in increasing the consumption of electricity; and
- (e) Inferior quality of charcoal which results in heavy wastage loss.

If to all the above factors, we add the high cost paid by the Company per unit of each of the raw materials and electric power, the picture that emerges is that of a high cost unit which suffers from locational disadvantages of considerable magnitude, has extremely limited scope for effecting economies even with expanded capacity, and, therefore, has very slender chances of survival under healthy competitive conditions against the other units which will be established in the near future.

15.1. Comparison of fair ex-works price of indigenous calcium carbide with landed cost of the imported product.—We give below a comparison of the fair ex-works price of saleable calcium carbide manufactured by Birla Jute Manufacturing Co. Ltd. with the landed cost without duty of the imported product, as mentioned in para. 13.1.

	Per Ton
	Rs. as. ps.
1. C.I.F. Price of the imported product	547—14—0
2. Clearing charges	15—0—0
3. Landed cost ex-duty of the imported product	562—14—0
4. Fair ex-works price of the indigenous product	909—13—0
5. Excess of ex-works price of the indigenous product over landed cost ex-duty of the imported product (4-3)	346—15—0
6. Percentage of Nos. 5 to 4	63.3%

15.2. On the basis of the figures of estimated costs of production of Travancore-Cochin Chemicals Ltd. and Travancore Electro-Chemical Industries Ltd., which are about Rs. 515 and Rs. 462 respectively, no duty is indicated as both these figures are well below that relating to the landed cost without duty of the imported product.

15.3. After taking into consideration all the factors relating to the location, equipment and production costs of the Birla Jute Manufacturing Co. Ltd. we have come to the conclusion that the Company is not sufficiently representative of the indigenous calcium carbide industry to justify acceptance of our estimates of the fair ex-works

price of its product as basis for assessing the quantum of protection needed by the industry. Our reasons for arriving at this conclusion are summarised below:—

- (a) Its equipment is operationally restrictive in scope;
- (b) The location of the plant at Calcutta, which was initially decided upon mainly because electric power was not available elsewhere has resulted in its having had to obtain inferior quality of raw materials at high cost;
- (c) The advantage to consuming industries which was initially envisaged when the plant was located at Calcutta (through saving in the charges for transport of the finished product) has been nullified by the high cost of production;
- (d) The cost of electric power is very high and the chances of reduction in the cost seem remote;
- (e) Internal economies usually available for composite chemical plants are not available to the unit. Expansion of capacity is likely to result in some reduction only in the restricted sphere of variable costs but the prime cost of production is not likely to go down. The scope for economies is, therefore, extremely limited;
- (f) The future development of the calcium carbide industry depends on the greater use of the product as a starting material for a number of organic chemicals and it will be a retrograde step to have prices at a high level.

16.1. Claim of the industry to protection or assistance.—At present the calcium carbide industry has only one unit engaged in commercial production of the material, viz., the Birla Jute Manufacturing Co. Ltd. This unit is an uneconomic unit and its costs are unrealistic. But the claim of the calcium carbide industry to protection should not be disposed of on the basis of the past performance or future prospects of Birla Jute Manufacturing Co. Ltd. alone. On the other hand, it would be necessary for us to deal with the question from other angles, such as the development of the industry in the larger interests of the country, and the need to safeguard the interests of fresh entrants into the field of production. It may be noted in this context that Section 11(a) of the Tariff Commission Act postulates the encouragement of an industry which has not started production but which is likely to do so if granted suitable protection.

16.2. The importance of the industry was recognised by Government as far back as 1942, and although little progress was registered till 1954, there has taken place, of late, an urgent realisation of the need for developing the industry in the national interest. Three new units have been granted licences to establish plants, and the Development Council for Heavy Chemicals has estimated that the demand for calcium carbide will reach a figure of 25,000 tons per annum within the next five years. The raw materials required for production of the chemical are available at reasonable prices and of acceptable quality at selected sites. It is conceivable that if factories are established at suitable locations, the units concerned will be able to achieve economic production within a reasonable time and to carry

on successfully thereafter without protection. An assurance of protection to the new units would, therefore, seem to be justifiable and indeed necessary, in order to create a favourable climate for them to undertake fresh investment and proceed to execute their plans.

16.3. As regards the Birla Jute Manufacturing Co. Ltd. we wish to make it clear that, although we have categorised their present costs as being unrealistic, and feel that, with the locational disadvantages which they suffer from, the chances of their stabilising their costs at economic or competitive levels in the future seem very slender, we are anxious to assure them of suitable conditions to continue in the production of calcium carbide for, say, the next three years or so. We expect that, in the meantime, they will take careful stock of their position and arrange, in their own enlightened self-interest, to have their factory removed to a less disadvantageous location in the country. It will be entirely unsound to evolve a scheme of protection which may tend to stabilise the price of calcium carbide to consumers at the present high level, and it is also very necessary that, by the time the new units are established, and plans for the manufacture of organic chemicals based on calcium carbide are well under way, the price of calcium carbide should be brought down to as low a level as possible. In recognition, however, of the pioneering efforts which the Birla Jute Manufacturing Co. Ltd. have put in, and the investment that they have undertaken on the project, we feel it only fair that, subject to certain adjustments, the steps so far taken by Government to protect their interests should be incorporated in the scheme of protection recommended by us. Such a course of action would, we expect, give them time to re-arrange their affairs suitably.

17.1. **Scheme of protection.**—We have stated in para 15.3 that the quantum of duty required to protect the calcium carbide industry should not be based on the present fair ex-works price of the product manufactured by Birla Jute Manufacturing Co. Ltd. However, in pursuance of what we have stated in paragraph 16.3 we feel that it would be reasonable to create such conditions as would enable the Company to realise for the product a price which will cover prime costs, overheads, depreciation and interest on working capital but not profit at 10 per cent. on the block. This would amount to Rs. 817.63 per ton (Rs. 909.82 less Rs. 92.19). On this basis the duty that would be required to protect the Birla Unit's calcium carbide against the imported product would amount to 46.5 per cent. We consider, however, that a duty of 45 per cent. *ad valorem* would be sufficient and that it should be possible for Birla Jute Manufacturing Co. Ltd. to introduce overall economies in their process of manufacture to the extent needed to absorb the above small difference of 1.5 per cent. The protective duty of 45 per cent. now proposed by us, would result in a reduction of 5 per cent. in the existing rate of 50 per cent. revenue duty on calcium carbide. It would serve the purpose of keeping Birla Jute Manufacturing Co. Ltd. in production up to full capacity of their plant. Indigenous production of calcium carbide would be maintained to the extent of 3,000 tons, the balance of the country's requirements being made available through imports.

17.2. We, therefore, recommend that protection to the calcium carbide industry be granted till 31st December, 1958, and that a

standard rate of protective duty of 45 per cent. *ad valorem* be levied on the imported product. A fresh investigation into the case of the industry will be undertaken by the Commission before the expiry of the period of protection in 1958, by which time, it is expected, the new units would establish production, and a clear picture of the situation would then be available.

17.3. Birla Jute Manufacturing Co. Ltd., is at present enjoying a sheltered market for its production of calcium carbide through import control. If the scheme of protection adumbrated by us is to be made effective, the Company should be asked to effect a reduction in its present selling price of the product consequent on the reduction of 5 per cent. in the duty from 50 per cent. to 45 per cent. We recommend that Government should take suitable steps in the matter.

18. Summary of conclusions and recommendations.—Our conclusions and recommendations are summarised as follows:—

- (i) The aggregate rated capacity of the calcium carbide industry is 5,050 tons per annum. If the establishment of new units takes place according to expectations, the aggregate capacity in early 1958 is likely to be 26,050 tons per annum.

[Paragraph 5]

- (ii) There is good scope for the further growth and development of the calcium carbide industry. Such development depends on the establishment of the fresh industries capable of utilising the product as starting material. This can be achieved only if calcium carbide is made available at a low price.

[Paragraph 6.4.]

- (iii) The demand for calcium carbide during 1956, 1957 and 1958 is likely to be about 10,000 tons, 13,000 tons and 16,000 tons respectively. The demand thereafter is likely to go up to 25,000 tons by 1960-61, depending on expansion of usage of calcium carbide for welding purposes, and the development of the organic chemicals industry as envisaged.

[Paragraph 7.3.]

- (iv) There is need for considerable improvement in the quality of calcium carbide produced by the Birla Jute Manufacturing Co. Ltd. who should take immediate steps to improve and maintain uniformly the quality of their product.

[Paragraph 10.3.]

- (v) The Indian Standards Institution should take expeditious steps to finalise standards for calcium carbide.

[Paragraph 10.3.]

- (vi) The Birla Jute Manufacturing Co. Ltd. is not sufficiently representative of the indigenous calcium carbide industry to justify acceptance of the fair ex-works price of its product as basis for assessing the quantum of protection needed by the industry.

[Paragraph 15.3.]

- (vii) It is possible to find locations in the country for the establishment of calcium carbide plants where, through availability of power and raw materials at prices much cheaper than at Calcutta, the cost of production can be far lower than in the Birla Jute Manufacturing Co. Ltd.

[Paragraph 14.3.1.]

- (viii) The future development of the calcium carbide industry depends on the greater use of the product as starting material for a number of organic chemicals and it will be a retrograde step to stabilise prices at a high level.

[Paragraph 15.3(f)]

- (ix) If calcium carbide factories are established at suitable locations, the units concerned will be able to achieve economic production within a reasonable time and to carry on successfully thereafter without protection.

[Paragraph 16.2.]

- (x) An assurance of protection to the new units for which licences have been granted is necessary in order to create a favourable climate for them to undertake fresh investment and proceed to execute their plans.

[Paragraph 16.2.]

- (xi) Protection to the calcium carbide industry should be granted till the 31st December, 1958 and a standard rate of protective duty of 45 per cent. *ad valorem* should be levied on imported calcium carbide.

[Paragraph 17.2.]

- (xii) Birla Jute Manufacturing Co. Ltd. should effect a reduction in its present selling price of calcium carbide consequent on the reduction of 5 per cent. in the duty from 50 per cent. to 45 per cent.

[Paragraph 17.3.]

19. Acknowledgements.—We wish to express our thanks to the representatives of the producers, importers and consumers and of the Associations of dealers, merchants and consumers for their kind co-operation in connection with this inquiry. We also place on record our appreciation of the valuable assistance received by us from Dr. G. P. Kane Industrial Adviser (Chemicals), Ministry of Commerce and Industry Government of India, New Delhi.

K. R. DAMLE, *Chairman.*

C. RAMASUBBAN, *Member.*

S. K. MURANJAN, *Member.*

S. K. BOSE, *Secretary.*

Bombay,

Dated the 27th February, 1956.

[Vide paragraph 1]

MINISTRY OF COMMERCE AND INDUSTRY

RESOLUTION

No. 1-T(x)/55.—In pursuance of section 11 of the Tariff Commission Act, 1951 (L. of 1951), the Central Government hereby refers to the Tariff Commission for enquiry and report an application for the grant of protection (whether by the grant of subsidies or the levy of protective duties or in any other suitable form) for the encouragement of the Calcium Carbide Industry in India.

3. Any person, firm or company interested in the industry or in any industry dependent on the use of this article, who desires that his or its views should be considered by the Tariff Commission, may make a representation in writing to the Tariff Commission, Contractor Building, Nicol Road, Ballard Estate, Bombay—I.

Joint Secretary to the Government of India.



सत्यमेव जयते

APPENDIX II

(Vide paragraph 3)

LIST OF FIRMS, PERSONS AND ASSOCIATIONS TO WHOM THE COMMISSION'S QUESTIONNAIRES WERE ISSUED AND FROM WHOM REPLIES OR MEMORANDA WERE RECEIVED.

[*Those who replied to the questionnaires or submitted memoranda.]

(A) Producers :

- *1. Birla Jute Manufacturing Co. Ltd., 8 Royal Exchange Place, Calcutta—1.
- *2. Industrial Chemicals Ltd., 21 Maharajah Surya Rao Road, Madras—18.
- *3. Travancore Electro-Chemical Industries Ltd., Chingavanam Kottayam, Travancore-Cochin State.
- *4. Travancore-Cochin Chemicals Ltd. Udyogamandal P. O., (Via) Alwaye, Travancore-Cochin State.
- *5. I. H. Safrin, 239, Abdul Rehman Street, Bombay—3.

(B) Importers :

- *1. Hindustan Chemical & Industrial Corporation, 22, Swallow Lane, Calcutta—1.
2. Rama Paint Mart, 99, Katra Barian, Delhi.
3. Roshanlal Monga and Co., 99, Katra Barian Delhi.
- *4. Boora Mal Amolak Ram, Diwan Hall, Chandni Chowk, Delhi.
5. Jitendra Nath Das, 62, Balaram Dey Street, Calcutta.
6. Sharma & Co., 5, Khairu Place, Calcutta.
- *7. Ghosh & Mitter, 33, Canning Street, Calcutta.
- *8. Indian Oxygen & Acetylene Co. Ltd., 48/1, Diamond Harbour Road, Calcutta—27.
9. Jatindra Kumar Dass, 211, Old China Bazar Street, Calcutta.
- *10. Industrial Gases Ltd., 138, Canning Street, Calcutta.
11. Sikandar Lall & Bros., 57, Canning Street, Calcutta.
12. Dutta Traders Corporation, 41, Lyons Range, Calcutta.
13. Sat Cowria Dass & Co., 196, Old China Bazar Street Calcutta—1.
- *14. Atlas Fertilizers Ltd., 4, Bankshall Street, Calcutta.
- *15. Sadhan Bros. & Co., 33, Canning Street, Calcutta.
- *16. Carbide Trading Co., 13, Old China Bazar Street, Calcutta.
17. Ramniwas Jhunhunwalla, P. O. Ramootalla, Howrah.
18. N. Jivanlal & Co., Ltd., 50, Princess Street, Bombay.
- *19. Vasantrao Goverdhandas & Bros., Patharia Palace, 75, Mohamed Ali Road, Bombay.
20. Gaslight Corporation, Bombay—22.
- *21. B. Paul & Company, Behind Imperial Bank, Delhi—6.
- *22. Bombay Calcium Carbide Merchants' Association, 49, Abdul Rehman Street, Bombay—3.
- *23. Sridhar & Co., Mount Road, Madras—2.
24. Autogenous Welding & Repair Co., Ltd., 63, Fergusson Road, Lower Parel, Bombay—13.

Importers—continued

- *25. Dey & Bros., 144-2, Harrison Road, Calcutta—7.
- *26. Jessop & Co. Ltd., 63, Netaji Subhas Road, Calcutta.
- 27. India Trades Corporation, 4, Lyons Range, Calcutta—1.
- *28. Radhkanto Dass & Sons, 211, Old China Bazar Street, Calcutta
- *29. Haranath Stores, 133-D, Netaji Subhas Road, Calcutta—1.
- *30. P. N. Dutt & Sons, 195, Old China Bazar Street, Calcutta.
- *31. Mill Products, 7/G, Clive Row, Calcutta—1.
- 32. Amarnath Kundu & Bros., 14/2, Old China Bazar Street, Calcutta—1.
- 33. Jankidass Ramgopal, 48, Canning Street, Calcutta—1.
- 34. Jiwan Das & Co., 176, Cross Street, Calcutta.
- *35. Kajaria Sons Ltd., 32, Armenian Street, Calcutta.
- 36. National Carbon Company (India) Ltd., Lakshmi Building, Sir P. M. Road, Bombay—1.
- *37. Carbide of Calcium Merchants' Association, 210/11, Old China Bazar Street, Calcutta—1.

(C) Consumers :

- *1. Indian Oxygen & Acetylene Co. Ltd., 48/1, Diamond Harbour Road, Calcutta—27.
- *2. Asiatic Oxygen & Acetylene Co. Ltd., 8, Dalhousie Square East, Calcutta—1.
- *3. Western Bengal Coal Fields Ltd., 8, Royal Exchange Place, Calcutta.
- *4. Indian Pipe Manufacturers Association, 35, Stephen House, 4, Dalhousie Square East, Calcutta—1.
- 5. T. V. Sundarm Iyengar & Sons Ltd., Madurai, South India.
- 6. Singareni Collieries Co. Ltd., "Mehera Menzil" Red Hills, P.B. No. 154, Hyderabad (Deccan).
- 7. Central Provinces Syndicate Ltd., Dolly Dale, Byramji Town, Nagpur.
- 8. Bajrang Jute Mills Ltd., Guntur.
- *9. Travancore Cements Ltd., Kottayam, Travancore-Cochin State.
- 10. Pande Bros., 7, Chittaranjan Avenue, Calcutta—13.
- *11. Trichy Everest Automobiles Ltd., Tiruchirapalli (Cantt.), Madras State.
- 12. Baravi Engineering Works, Tutricorin, South India.
- *13. Gemini Gas Welding Works, 74, Palamkottah High Road, Tuticorin, South India.
- 14. Tinnevely M.B.S. Co. Ltd., Tirunelveli Junction, South India.
- *15. The Controller of Stores, Southern Railway, Perambur, Madras.
- *16. India Cements Ltd., Talaiyuthu, R.S., Tirunelveli District, South India.
- 17. Mahavir Engineering & Datta Gas Welding, Kolhapur.
- 18. Anil Art Diamond & Co., 100, Mint Street, G.P.O. Box No. 1873, Madras—1.
- 19. Autogenous Welding & Repair Co., Ltd., 63, Fergusson Road, Lower Parel, Bombay—13.
- *20. Sreekrishna Light Works, Manik Chowk, Ahmednagar.
- *21. Bombay Steel & Gas Welding Works, Baramati District, Poona.
- *22. John Taylor & Sons (India) Ltd., Oorgaum P.O., South India.

APPENDIX III

[Vide paragraph 3]

LIST OF PERSONS WHO ATTENDED THE COMMISSION'S PUBLIC INQUIRY ON 11TH JANUARY 1956.

Producers :

1. Col. T. P. Rajan .	}	representing	Birla Jute Manufacturing Co.
2. Shri S. N. Chandak .			8, Royal Exchange Place,
3. Dr. S. C. Dholakia .			Calcutta—1.
4. Shri M. S. Bhandarkar .		„	Travancore Electro-Chemical Industries Ltd., P. O. Chingavanam, Travancore-Cochin State.
5. Shri R. V. Ramani .		„	Travancore-Cochin Chemicals Ltd., Udyogamandal P. O., (Via) Alwaye, Travancore-Cochin State.
6. Shri Venkataraman .		„	Nicole and Ashley Chemicals Ltd., c/o. I. H. Safrin, 239, Abdul Rehman Street, Bombay—3.

Importers :

1. Shri K. L. Garg .		„	Industrial Gases Ltd., 138, Canning Street, Calcutta—1.
2. Shri M. L. Vohra .		„	Jessop & Co. Ltd., 63, Netaji Subhas Road, Calcutta—1.
3. Dr. R. M. Thakkar .		„	National Carbon Company (India) Ltd., Lakshmi Building, Sir P. M. Road, Bombay—1.
4. Shri V. G. Pandhi .	}	„	Vasantraj Goverdhandas & Bros., Patharia Place, 75, Mohamedali Road, Bombay—3.
5. Shri K. G. Pandhi .			
6. Shri B. R. Bhalla .		„	B. Paul & Company, Behind Imperial Bank, Delhi—6.
7. Shri Hari Krishna .	}	„	Carbide of Calcium Merchants' Association, 210/11, Old China Bazar St., Calcutta—1.
8. Shri M. M. Dey .			
9. Mr. Abdulla Abdulkarim .		„	Bombay Calcium Carbide Merchants' Association, 49, Abdul Rehman Street, Bombay—3.

Consumers :

1. Shri A. K. Mukerji .	}	„	Indian Oxygen & Acetylene Co. Ltd., 48/1, Diamond Harbour Rd., Calcutta—27.
2. Shri T. P. L. Sinha .			
3. Shri A. K. Dutta .	}	„	Calcuim Carbide Dealers & Consumers Association, 2, Maharshi Debendra Rd., Calcutta.
4. Shri J. K. Periwal .			

Government Officials :

1. Dr. G. P. Kane, Industrial Adviser (Chemicals), Ministry of Commerce and Industry (Development Wing), Government of India, New Delhi.
2. Shri C. S. Ramu, Deputy Director of Industries and Commerce, Government of Madras, Madras.

APPENDIX IV

[Vide paragraph 13-1]

STATEMENT SHOWING THE *c. i. f.* PRICES, CUSTOMS DUTIES, CLEARING CHARGES, LANDED COSTS AND SELLING PRICES OF IMPORTED CALCIUM CARBIDE

Sl. No.	Source of information	Origin of import	Date of import	Type and specification	C. i. f. price	(Per ton)				Landed cost	Selling price
						Customs duty (50%)	Clearing charges				
1	2	3	4	5	6	7	8			9	10
1	Boora Mal Amolak Ram, Delhi.	Japan	8-4-55	50/80 m.m.	Rs. 480 0 0	Rs. 240 0 0	Rs. 25 0 0	Rs. 745 0 0	Rs. 997 13 0		
2	Vasantrao Goverdhandas & Bros., Bombay	Japan	25-4-55	Do.	Rs. 495 0 0	Rs. 247 8 0	Rs. 14 2 0	Rs. 756 10 0	Rs. 850 0 0		
3	Sridhar & Co., Madras	Canada	23-4-55	Do.	Rs. 630 0 0	Rs. 315 0 0	Rs. 10 3 0	Rs. 955 3 0	Rs. 1,201 7 0		
		Japan	9-5-55	Do.	Rs. 561 4 4	Rs. 280 10 2	Rs. 10 3 0	Rs. 852 1 6	Rs. 1,099 10 0		
4	Hindusthan Chemical and Industrial Corporation, Calcutta	Japan	30-8-55	Do.	Rs. 557 9 11	Rs. 278 13 0	Rs. 12 2 0	Rs. 848 8 11	Rs. 885 13 0		
5	Radha Kanto Dass & Sons Ltd., Calcutta	Canada	23-6-55	Do.	Rs. 620 0 0	Rs. 310 0 0	Rs. 12 8 0	Rs. 942 8 0	Rs. 972 8 0		
6	Dey & Brothers, Calcutta	Japan	21-5-55	Do.	Rs. 536 0 0	Rs. 268 0 0	Rs. 19 0 0	Rs. 823 0 0	Rs. 847 10 0		
7	Indian Oxygen & Acetylene Co. Ltd., Calcutta	Norway	6-6-55	Do.	Rs. 516 8 0	Rs. 258 4 0	Rs. 15 0 0	Rs. 789 12 0			

8	Jessop & Co. Ltd., Calcutta	Canada	5-11-55	..	595	2	9	297	9	4	40	0	0	932	12	1	..
		Do.	24-6-55	..	593	6	11	296	11	5	40	0	0	930	2	4	..
		Do.	1-6-55	..	611	5	8	305	10	10	20	0	0	937	0	6	..
		Do.	15-4-55	..	643	35	6	321	15	9	20	0	0	985	15	3	..
9	Hara Nath Stores, Calcutta	Czechoslovakia.	16-6-55	50/80 m.m.	570	2	11	285	1	6	40	11	7	896	0	0	977 7 0
10	Mill Products, Calcutta	Japan	28-10-55	Do.	547	14	0	273	15	0	24	5	5	846	2	5	885 13 0
11	P. N. Dutta & Sons, Calcutta	Canada	Latest as per letter dated 14-11-55	Do.	592	8	0	296	4	0	2	8	0	891	4	0	980 0 0
		Czechoslovakia.	14-11-55	Do.	535	5	0	267	10	6	2	8	0	805	7	6	860 0 0
		Do.		Do.	541	14	0	270	15	0	2	8	0	815	5	0	860 0 0
12	Carbide Trading Co., Calcutta	Canada	July, 1955	Do.	599	7	3	293	11	7	3	12	0	902	14	0	1,018 3 0
		Italy	May, 1955	Do.	580	5	10	290	2	11	3	12	0	874	4	9	896 0 0
		Japan	June, 1955	Do.	549	13	1	274	14	6	3	12	0	828	7	7	875 10 0
		Czechoslovakia.	March, 1955	Do.	549	12	1	274	14	0	0	0	0	828	7	7	880 12 0
13	Collector of Customs, Madras	Norway	9-5-55	Do.	483	12	11	241	14	6	15	3	10	740	15	3	..
		Canada	21-6-55	Do.	624	10	2	312	5	1	15	3	10	952	3	1	..
		Japan	15-6-55	Do.	545	4	4	272	10	2	15	3	10	833	2	4	..

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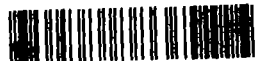
					Rs.	Pg.	Rs. As. Ps.	Rs. As. Ps.	Rs. As. Ps.	Rs. As. Ps.
14	Collector of Customs, Calcutta	Japan	11-3-55	50/80 m.m.	476	7	5 15 6	721 6 4		
		Italy	21-4-55	14 N D	64	11	8 0 0	973 0 9		
		Holland	19-5-55	..	5	7	7 7 10	896 5 7		
		Norway	May, 1955	50/80 m.m.	4	0	5 13 0	720 13 0		
		Canada	18-6-55	Do.		0	7 8 0	917 4 0		
		Do.	21-6-55	14 N D		0	7 11 0	939 6 0		
		Do.	Do.	..		0	7 8 0	917 4 0		
	Collector of Customs, Bombay	Sweden	18-4-55			
		Norway	19-4-55			
		Japan	25-4-55			
		Do.	19-5-55	..	4		..			
		Canada	3-6-55	..	62		..			
		Do.	Do.	..	62 ^R		..			

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