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GOVERNMENT OF INDIA
TARIFF COMMISSION

REPORT ON THE CONTINUANCE OF PROTECTION TO THE ALUMINIUM INDUSTRY

BOMBAY 1968

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India, Tariff (——Commission)
Report on the Continuance
of Protection to the Aluminium
Industry

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DR. P. V. Gunihatri,
Secretary.

GOVERNMENT OF INDIA

MINISTRY OF COMMERCE

New Delhi, the 7th Dec., 1968.

RESOLUTION

Tariffs

No.1(1)-Tar./68.—The Tariff Commission has submitted its Report on the continuance of protection to the Aluminium Industry on the basis of an inquiry undertaken by it under sections 11(e) and 13 of the Tariff Commission Act, 1951 (50 of 1951). Its recommendations are as follows :—

(1) Protection granted to ingots, bars, etc. covered by I.C.T. Item No. 66(1) should be continued for a further period of three years ending 31st December, 1971 at the existing rate of duty of 20 per cent *ad valorem* exclusive of the surcharge and the countervailing excise duty.

(2) The existing rates of protective duty on sheets and circles, strips and foils covered by I.C.T. Item No. 66(a) may be continued for a period of three years ending 31st December, 1971.

(3) The duty on cryolite and aluminium fluoride is 27½ per cent *ad valorem* Standard and 17½ per cent *ad valorem* Preferential under Item No. 28 of the I.C.T. Schedule while the duty on the raw material required for their production is 60 per cent. This tariff anomaly needs to be rectified and the duty on the raw material should be brought down to the same level as that of the finished material.

(4) It was brought to the notice of the Tariff Commission that in the matter of rebate of customs and or excise duty all exporters are not treated on the same level. If this is so, the matter may be re-examined.

(5) Suitable action may be taken to include bauxite in the First Schedule of the Mines and Minerals (Regulation and Development) Act in order to remove the disparities that prevail today in the policies for the grant of mining leases by the various States to an industry which has an all India character.

(6) It would be desirable that Government re-examine the position in order to ensure that India may not be exporting aluminium and also simultaneously negotiating for imports. It may not be in the interest of the country to encourage exports until such time as domestic requirements can be fully met from indigenous production.

(7) Greater care is needed in estimating requirements of aluminium in order to avoid unnecessary imports.

(8) Unless there is a possibility of discovery of any substantial deposits elsewhere which have not so far been located by the Geological Survey of India closer attention needs to be given to the question of the deposits and their planned utilisation. Connected with this issue is that of beneficiation to ensure that the high grade deposits are not used up leaving only low grade ores which might not be useable without admixture of high alumina content bauxite.

(9) Early prospecting by the various organisations engaged on geological survey for locating and also proving deposits of bauxite and for the formulation of plans for beneficiation in order that high grade bauxite deposits are not used up is recommended.

(10) Until concrete steps are taken for large scale exploration of bauxite and these meet with success the plan of exporting alumina to the possible detriment of the indigenous industry should be deferred.

(11) Petroleum coke being a bye-product of indigenous crude, it would be desirable to ascertain the reasons for high cost and if possible to bring this down.

(12) It would be desirable to phase the implementation of power programmes in such a way that the actual requirements of aluminium can be readily determined.

(13) It would be desirable for Government to examine again the question of electricity tariffs in detail particularly with a view to determining the range of disparities between on e State and another and to devise ways and means for bringing about such uniformity as may be possible without affecting the financial interests of the parties concerned.

(14) A closer and careful assessment may in future be made before imports of aluminium on such large scale are allowed.

(15) It seems opportune that some preliminary thinking should be given to the subject of a National Grid in consultation with the State Governments with particular reference to the possibility of building up such a grid in the interest of developing electro-chemical and electro-metallurgical industries in the country whose electricity bill constitutes a major item of cost.

(16) The main consideration in the matter of installation of capacity for fabrication should be of economies of production and a suitable balance should be maintained between the capacity of fabrication by the primary producers and the rest.

(17) Caution in the matter of permitting the installation of capacities for fabrication where the plant and machinery are not of economic size is advocated.

(18) Establishment of alumina plants within a stipulated period should be a condition precedent in future to the setting up of smelters in order that unnecessary dependence on imported alumina may be eliminated.

(19) It is necessary to investigate into the reasons for the very high prices of indigenous cryolite and aluminium fluoride in order to explore the possibilities of bringing them down.

(20) It would be desirable to explore the possibility of indigenous manufacture of pre-backed carbon blocks and plates also instead of making substantial outlays on their imports.

(21) When the production of fluorspar commences at Ambadungar it should fully meet the requirements of the aluminium industry.

(22) The alumina requirements for indigenous production of cryolite and aluminium fluoride are comparatively small and it should be possible for the industry to meet it.

(23) It appears that in certain cases the quality of the Indian product is not satisfactory and that there is considerable room for improvement.

(24) The attention of the Hindustan Steel Ltd., should be invited to the need for improvement in the quality and for stepping up capacity for pitch in order to meet future requirements of the aluminium industry.

2. Government accept recommendations (1) and (2). Necessary legislation in Parliament will be undertaken in due course.

3. Recommendations (3) to (5) are being examined with a view to taking appropriate action.

4. Government have taken note of recommendations (6) and (7). Detailed studies on the likely demand for aluminium have been carried out in connection with the Fourth Five Year Plan. In this connection, it is pointed out that as it takes time to develop export market and as there is a good potential for export in the long run, it may be necessary to retain the leeway obtained in this direction by continuing to export a portion of production even when indigenous production were to fall short of domestic requirements on short-term assessments.

5. Recommendation (10) will be kept in view before finalising proposals for export-oriented alumina plants. Government consider that a modest export may not be detrimental to the indigenous industry, and that it would be necesarry to have a flexible approach.

6. Government have taken note of recommendations (8), (9), and (11) to (20) and steps will be taken to implement them as far as possible. The attention of the respective industries is drawn to recommendations (11) and (19) to (23), of State Governments to recommendation (15), of the Government of Gujarat to recommendation (21), and of Hindustan Steel Ltd. to recommendation (24).

ORDER

ORDERED that the Resolutio n be published in the Gazette of India and a copy thereof communicated to all concerned.

(S. VENKATESAN)

Joint Secretary to the Government of India.

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REPORT ON THE CONTINUANCE OF PROTECTION TO THE ALUMINIUM INDUSTRY

1. Our conclusions and recommendations are summarised below :

Summary of conclusions and recommendations

We are of the view that the main consideration in the matter of installation of capacity for fabrication should be of economies of production and that a suitable balance should be maintained between the capacity of fabrication by the primary producers and the rest.

(Paragraph 7.14)

(ii) We would advocate caution in the matter of permitting the installation of capacities for fabrication where the plant and machinery are not of economic size.

(Paragraph 7.14)

(iii) We consider that it would not be unreasonable to expect a total domestic demand for aluminium of 135,000 tonnes for 1968, 165,000 tonnes for 1969, 195,000 tonnes for 1970 and 225,000 tonnes for 1971.

(Paragraph 8.5.2)

(iv) It would be desirable that Government re-examine the position in order to ensure that we may not be exporting aluminium and also simultaneously negotiating for imports. It may not be in the interest of the country to encourage exports until such time as domestic requirements can be fully met from indigenous production.

(Paragraph 8.6 and 13.10)

(v) Greater care is needed in estimating requirements of aluminium in order to avoid unnecessary imports.

(Paragraph 8.6)

(vi) It would be desirable to phase the implementation of power programmes in such a way that the actual requirements of aluminium can be readily determined.

(Paragraph 8.6)

(vii) Unless there is a possibility of discovery of any substantial deposits elsewhere which have not so far been located by the Geological Survey of India closer attention needs to be given to the question of the deposits and their planned utilisation. Connected with this issue is that of beneficiation to ensure that the high grade deposits are not used up leaving only low grade ores which might not be usable without admixture of high alumina content bauxite.

(Paragraph 9.4.6)

(viii) We recommend early prospecting by the various organisations engaged on geological survey for locating and also proving deposits of bauxite and for the formulation of plans for beneficiation in order that high grade bauxite deposits are not used up.

(Paragraph 9.4.7)

(ix) We suggest that suitable action may be taken to include bauxite in the First Schedule of the Mines and Minerals (Regulation and Development) Act in order to remove the disparities that prevail today in the policies for the grant of mining leases by the various States to an industry which has an all India character.

(Paragraph 9.4.8)

(x) We feel that until concrete steps are taken for large scale exploration of bauxite and these meet with success the plan of exporting alumina to the possible detriment of the indigenous industry should be deferred.

(Paragraph 9.5.3)

(xi) Establishment of alumina plants within a stipulated period should in our view be a condition precedent in future to the setting up of smelters in order that unnecessary dependence on imported alumina may be eliminated.

(Paragraph 9.5.4)

(xii) Petroleum coke being a bye-product of indigenous crude, it would be desirable to ascertain the reasons for high cost and if possible to bring this down.

(Paragraph 9.7.3)

(xiii) When the production of fluorspar commences at Ambadungar it should fully meet the requirements of the aluminium industry.

(Paragraph 9.8.6)

(xiv) The alumina requirements for indigenous production of cryolite and aluminium fluoride are comparatively small and it should be possible for the industry to meet it.

(Paragraph 9.8.6)

(xv) The duty on cryolite and aluminium fluoride is 27 1/2 per cent *ad valorem* Standard and 17 1/2 per cent *ad valorem* Preferential under Item No. 28 of the I.C.T. Schedule while the duty on the raw material required for their production is 60 per cent. This tariff anomaly needs to be rectified and the duty on the raw material should be brought down to the same level as that of the finished material.

(Paragraph 9.8.7)

(xvi) It is necessary to investigate into the reasons for the very high prices of indigenous cryolite and aluminium fluoride in order to explore the possibilities of bringing them down.

(Paragraph 9.8.7)

(xvii) We would invite the attention of the Hindustan Steel Ltd., to the need for improvement in the quality and for stepping up capacity for pitch in order to meet future requirements of the aluminium industry.

(Paragraph 9.9)

(xviii) It would be desirable to explore the possibility of indigenous manufacture of pre-baked carbon blocks and plates also instead of making substantial outlays on their imports.

(Paragraph 9.10)

(xix) It would be desirable for Government to examine again the question of electricity tariffs in detail particularly with a view to determining the range of disparities between one State and another and to devise ways and means for bringing about such uniformity as may be possible without affecting the financial interests of the parties concerned.

(Paragraph 9.11.5)

(xx) It seems to us opportune that some preliminary thinking should be given to the subject of a National Grid in consultation with the State Governments with particular reference to the possibility of building up such a grid in the interest of developing electro-chemical and electro-metallurgical industires in the country whose electricity bill constitutes a major item of cost.

(Paragraph 9.11.5)

(xxi) It appears that in certain cases the quality of the Indian product is not satisfactory and that there is considerable room for improvement.

(Paragraph 10.3)

(xxii) A closer and careful assessment may in future be made before imports of aluminium on such large scale are allowed.

(Paragraph 13.3)

(xxiii) It was brought to our notice that in the matter of rebate of customs and/or excise duty all exporters are not treated on the same level. If this is so, we recommend that the matter may be re-examined.

(Paragraph 13.11)

(xxiv) We recommend that protection granted to ingots, bars, etc. covered by I.C.T. Item No. 66(1) should be continued for a further period of three years ending 31st December 1971 at the existing rate of duty of 20 per cent *ad valorem* exclusive of the surcharge and the countervailing excise duty.

(Paragraph 18.2)

(xxv) As regards sheets and circles, strips and foils covered by I.C.T. Item No. 66 (a) the existing rates of protective duty may be continued for a period of three years ending 31st December 1971.

(Paragraph 18.3)

2. Previous tariff inquiries

2.1. The case of protection to aluminium industry was one of the 48 taken over by the Tariff Commission from the late Tariff Board in 1952. The Tariff Board had undertaken two inquiries into the industry in 1946 and 1951 while the Tariff Commission has undertaken four inquiries in 1955, 1958, 1960 and 1964. This is therefore the seventh tariff inquiry into the industry. The relevant items covered under the Indian Customs Tariff Schedules are 66 (a) and 66 (1).

2.2. It was one of the industries to which early in 1940, Government had extended an assurance of protection with a view to encouraging production of aluminium in the country. However, it was only in 1946 that the claim of the industry for assistance or protection was referred to the Tariff Board. The Board submitted to Government in the same year its recommendations for the grant of protection to the industry through protective duty as well as a subsidy. As the Board in its report had raised various important issues and in Government's view a further examination thereof was necessary, an official Committee was subsequently appointed. In the light of the findings of the Committee and of the variations in the costs of production and the c.i.f. prices since 1946, Government made certain modifications to the scheme recommended by the Board and granted protection through duty-cum-subsidy to the industry with effect from 15th May, 1949. The rates of protective duty imposed were 30 per cent *ad valorem* plus specific duty of Rs. 328 per ton of ingots and Rs. 121 per ton of sheets, strips and circles in 1949-50. The rates of specific duty were to be progressively reduced to Rs. 146 and nil respectively in 1951-52.

2.3. In 1951 at the request of Government the Tariff Board conducted a review of the scheme of protection and recommended discontinuance of the subsidy and the specific

duty. Protection was thus extended to the industry upto 14th May 1952 by retaining the duty of 30 per cent *ad valorem*. The period of protection was thereafter continued from year to year till 31st December, 1955, in consultation with the Tariff Commission.

2.4. The third inquiry into the industry was undertaken by the Commission in 1955 and on its recommendation the then existing rate of protective duty of 30 per cent *ad valorem* plus a surcharge of 5 per cent was continued upto 31st December 1958. Under the Finance (No. 2) Act, 1957 the protective duty was rounded off to 35 per cent *ad valorem*.

2.5. Another inquiry into the industry held in 1958 led to further continuance of protection at the same rate of duty upto 31st December, 1960. By the Finance Act, 1960 excise duties at Rs. 300 per tonne of aluminium in any crude form including ingots, bars, block, slabs, billets, shots and pellets, and Rs. 500 per tonne of alumimium manufactures, namely plates, sheets, circles, strips and foil in any form or size were imposed from 1st March, 1960. To remove the disadvantage of the excise duty to the domestic industry, countervailing import duty at the above rates was also fixed in respect of imports of the corresponding products.

2.6. In 1960 the Commission conducted the fifth inquiry into the industry and recommended continuance of protection to the industry for four more years ending 31st December 1964 at a reduced rate of protective duty of 25 per cent *ad valorem* on aluminum in any crude form including ingots and alumimiun manufactures like plates, sheets, circles and foils. The Government of India accepted the recommendation of the Commission in so far as it related to the period of protection but did not consider it necessary to reduce the rate of protective duty from 35 per cent *ad valorem* to 25 per cent *ad valorem* as recommended by the Commission.

2.7. The last Report on the industry which was the sixth in the series was submitted by the Commission to Government in September 1964 wherein it recommended

that the protection granted to the aluminium ingots, bars, etc. covered by the I.C.T. Item No. 66(1) and aluminium manufactures covered by the I.C.T. item No. 66 (a) should be continued for a further period of four years ending 31st December, 1968 at the existing rate of perotective duty of 35 per cent *ad valorem* excluding the then prevalent surcharge and the countervailing excise duty. It also recommended that the then existing concessional duty of 20 per cent *ad valorem* (Standard) and 10 per cent *ad valorem* (Preferential) on imports of alumina should be continued for a further period of four years, i. e. upto 31st December, 1968, by which time alumina plants for the new or expanded capacities were expected to be erected and commissioned within the country. The Government of India in the Ministry of Commerce by their Resolution No. 1(1) Tar-64 dated 9th December, 1964 accepted the Commission's above recommendations.

3. Present inquiry

3. The protection granted to this industry is due to expire on 31st December, 1968. The present inquiry has therefore been undertaken by the Commission under Section 11(e) read with Section 13 of the Tariff Commission Act, 1951 which empowers it to inquire into and report on any further action required in relation to protection granted to an industry with a view to its increase, decrease, modification or abolition according to the circumstances of the case.

4. Method of inquiry

4.1. The Commission issued a press note on 4th March 1968, announcing that special questionnaires for producers, importers and consumers were ready for issue and inviting parties interested in the inquiry to obtain copies of such questionnaires as they desired from the Commission. Preceding this, questionnaires were issued to the known producers, importers and consumers of aluminium and their respective associations. Raw material manufacturers were also addressed with a view to assessing the present position, future requirement and indigenous availability of raw materials for the aluminium industry.

The Directorate General of Technical Development (D.G.T.D.) was requested to forward a detailed memorandum on the various aspects of the industry. The Development

Commissioner, Small Scale Industries was also addressed for a similar memorandum in respect of the small scale sector of the industry. The Indian Standards Institution (I.S.I.) was requested to indicate the progress made since the last inquiry with regard to the preparation of Indian Standard specifications required by the aluminium industry. Memodanda were also called for from the Department of Mines and Metals, (Metals Section), in the Ministry of Steel, Mines and Metals, Ministry of Finance (Department of Revenue and Insurance), Minerals and Metals Trading Corporation of India Ltd., (M.M.T.C.), Planning Commission, Central Water and Power Commission (C.W.& P.C.), the Council of Scientific and Industrial Research, New Delhi and the Central Electro-Chemical Research Institute, Karaikudi on information regarding those aspects of the industry with which they were concerned. Information relating to certain specific points on raw materials was asked for from the Geological Survey of India and the Indian Bureau of Mines. All the State Governments and Directors of Industries in the States were separately addressed to send memoranda relating to the problems of the aluminium industry in their respective States. Similar information was also solicited from the various State Electricity Boards. Data regarding c.i.f. prices and landed costs were sought from the Collectors of Customs in principal ports. The Indian High Commissions in U.K. and Canada, Embassies in U.S.A., Japan and France and the Consulate General in West Germany were requested to furnish information regarding f.o.b. prices of the aluminium products in their respective countries. A list of parties to whom questionnaires/letters were issued and from whom replies/memoranda have been received is given in Appendix I.

4.2. The Commission and its Officers visited certian units manufacturing aluminium and aluminium products. The details of the units so visited are given in Appendix II. Two units namely, Indian Aluminium Co., Ltd., Calcutta and Hindustan Aluminium Corporation Ltd., Renukoot were selected for cost investigation. The former was selected for costing during the previous inquiries of the Commission while the latter was selected for the first time during the last inquiry in 1964.

4.3. A public inquiry into the industry was held on August 20, 1968. A list of persons who attended the inquiry is given in Appendix III. The representatives of Indian Aluminium Co. Ltd., and Hindustan Aluminium Corporation Ltd., met us separately on 21st August, 1968 for discussion of their costs of manufacture.

5. Scope of the inquiry

5.1. The existing scheme of protection to the aluminium industry covers the following :

(i) Aluminium in any crude form including ingots, bars, blocks, slabs, billets, shots and pellets covered under I.C.T. Item No. 66(1);

(ii) Aluminium manufactures, namely plates, sheets, circles, strips and foil covered under I.C.T. Item No. 66(a); and

(iii) Aluminium foils in any form or size ordinarily used as parts and fittings of tea chests, also covered under I.C.T. Item No. 66(a)

According to the proviso to I.C.T. Item No. 70(1), all non-ferrous alloys and manufactures containing more than 97 per cent aluminium shall be deemed to be aluminium in crude form or aluminium manufactures as the case may be, and are therefore covered by the scheme of protection to the aluminium industry. All other manufactures of aluminium including extruded items covered under I.C.T. Item No. 66(b) and aluminium scrap covered under I.C.T. Item No. 66(2) are outside the scope of protection and carry only revenue rates of duty.

5.2. In connection with the present inquiry we have not received any specific request regarding change in the scope of the inquiry or with regard to inclusion of any more items within the scope of protecion. However, sometime ago the Minisry of Commerce sought the Commission's views on the exemption from central excise duty leviable on aluminium irrigation pipes used in sprinkler and portable pipeline irrigation systems. The Commission in its letter dated 30th December 1967 replied *inter alia*

that the cost of production of aluminium irrigation pipes had not been examined as it was not considered necessary to extened the present scheme of protection to such pipes and therefore it was not in a position to offer any firm opinion on the issue. The Commission nevertheless agreed to examine this issue during the course of the present inquiry but no specific confirmation was received from the Government. We have therefore not gone into this question.

6. Implementation of ancillary recommendations, made in the Report of 1964

6.1 In its last Report on the continuance of protection to the aluminium industry, the Commission had made several recommendations on matters other than tariff. Of these, three recommendations related to capacity and its expansion, two dealt with the principal raw material bauxite, one was on the subject of availability of power and power tariff and another on prices. The extent to which these recommendations have been implemented is briefly indicated below :

6.2. *Recommendation :*

"While Government policy of granting fabricating capacities to primary producers of aluminium would contribute to economies of production and be in the long term interest of the consumer, the small and medium fabricators should be provided with their requirements of ingots."

It has been the policy of Government—according to the the reply from the Ministry of Steel, Mines and Metals—to grant some capacity for the manufacture of semis to the primary producers with a view to make aluminium smelting economical. At present, primary producers are considered for grant of fabrication capacity upto 50 per cent of their ingot capacity which includes 10 per cent in the form of properzi rods.

6.3. *Recommendation :*

"Since it will be in the national interest to encourage the growth of the large units in this industry, while

sanctioning new and increased capacities Government should keep in view the size of the unit and the desirability of falling in line with the world trend towards the expansion of smelter capacities."

The Ministry of Steel, Mines and Metals has informed us that the capacity of indigenous aluminium smelters is progressively being expanded so as to realise economies inherent in larger scale of production. Proposals for expansion of exisiting units of smaller sizes, as and when received, are given due consideration; while licensing new units, scope for expansion to an ultimate capacity of 50,000 to 60,000 tonnes per annum is also being kept in view. According to the Ministry the existing disparity in the installed capacity ranging from 7,500 tonnes to 60,000 tonnes is likely to remain for quite some time, resulting in high cost of production in the smaller smelters. The Ministry has added that relief is now being given to the small producers of the metal in the matter of absorption of additional central excise duty.

6.4. *Recommendation :*

"The future demand for aluminium will increase even faster than in he past. The objective of national policy should therefore be to develop this industry as fast as possible and to render it all assistance during its expansion."

The former Ministry of Steel and Mines had informed us that a close watch on the trend or demand for this metal was kept so as to consider additional schemes if found appropriate.

6.5 *Recommendation :*

"As bauxite is a basic raw material for the aluminium industry it is important that there should be a uniform all-India policy in respect of grant of bauxite mining concessions. It is also necessary that these concessions should be granted to primary users of the ore in preference to others."

6.6 *Recommendation :*

"As the present known deposits of bauxite are likely to be exhausted by about 1990, urgent steps are required to carry out extensive prospecting work both on the known and potential deposits."

6.7 *Recommendation :*

"Aluminium is an industry of national importance. It is desirable that power rates applicable to this industry whose progress depends upon cheap, abundant and assured supply of electric power should as far as possible, be uniform all over the country so that new units could be set up wherever power is available, without fear of unfair competition from other producers of of the metal. The whole question should be examined in consultation with the State Governments and representatives of the State Electricity Boards and aluminium producers so that means may be devised to assure the industry of reasonably low tariff rates and uniformity and constancy of duties over long periods. Considering the high load factor, it should be in the interests of the States themselves to encourage this industry and to keep the rates chargeable to it constant and at a low margin of profit."

The extent to which the above recommendations were implemented has been indicated in paragraph 9.

6.8 *Recommendation :*

"The producers should review their pricing policies so as to fix their prices in fair relation to their cost of production."

In its letter No. 2(7) Met /64 dated 10th February 1965, the then Ministry of Steel and Mines had informed the Commission that the attention of the primary producers of aluminium was drawn to this recommendation. The comments received from the manufacturers in this regard are summarised in paragraph 15.3.

7. Progress since last inquiry and present position

7.1. The aluminium Production Company of India was registered in December 1938 but its name was later changed to the Indian Aluminium Co. and it set up its rolling mills in Calcutta in 1941, smelter in Alwaye in 1943 and alumina works at Muri in 1947. The Aluminium Corporation of India was registered in October, 1937 and started production at its factory in Asansol in 1944. The third unit to be set up was the Hindustan Aluminium Corporation which was registered in 1958 and was set up at Renukoot and started production in 1962. The Madras Aluminium Co. was established in 1960 and its plant was installed at Mettur. Production commenced in 1965. The capacity and production of these units from 1964 to 1967 are as in Table 7.1.

7.2. *Utilisation of capacity.*—In 1967 the Aluminium Corporation of India achieved production in excess of its capacity by 1.5 per cent. The Indian Aluminium Company's production was 3.4 per cent short of its installed capacity. However, in the case of the Hindustan Aluminium Corporation the production was only. 72.5 per cent of the installed capacity of 60,000 tonnes. This is said to be due partly to the fact that the installed capacity of 60,000 tonnes was achieved about the end of the year. On the other hand there were certain other problems with which the units was faced such as poor offtake of metal owing to heavy imports leading to the accumulation of stocks with consumers, sluggish conditions in the market which have been interpreted by the unit to result from levy of heavy excise duty, low sales on account of the general recession in the industry and the slowing of the progress on power projects of the several Electricity Boards leading to reduction of offtake of E.C. grade aluminium metal.

7.3. *Future expansion of the industry.*—Between now and the end of the Fourth Five Year Plan an additional capacity of 4,01,300 tonnes is proposed to be set up. Particulars of this additional capacity are set out below :

TABLE—7.1.

Capacity and production of primary aluminium

Name of Producer	Capacity		Production of primary metal			
	1964	1968	1964	1965	1966	1967
(i) Indian Aluminium Co. Ltd.						
(a) Hirakud	20,300	20,000				
(b) Alupuram	6,000	15,850				
TOTAL .	26,300	35,850	26,607	30,482	26,230	34,620
(ii) Aluminium Corporation of India Ltd., Asansol—Bardwan	7,500	8,700	7,180	7,274	7,152	7,609
(iii) Hindustan Aluminium Corporation Ltd., Renukoot—Mirzapur	20,000	60,000	22,880	25,243	40,566	43,614
(iv) Madras Aluminium Company Ltd., Mettur—Salem	Nil	12,500	..	5,985	9,816	10,732
TOTAL .	53,800	117,050	56,667	68,984	83,764	96,575

TABLE 7.2.

Future Expansion

Name of the unit	Additional capacity	Form in which approval granted	Expected date of commencement of production
	(Tonnes)		
A. *Existing units*			
(i) Indian Aluminium Co., Hirakud.	20,000	Letter of intent	No definite date
(ii) Indian Aluminium Co., Belgaum.	30,000	Licensed under the I (D & R) Act.	End of 1969
(iii) Indian Aluminium Co., Belgaum.	70,000	Letter of intent	1973-74 or later
(iv) Aluminium Corporation of India, Asansol.	3,800	Do.	1970-71
(v) Hindustan Aluminium Corporation, Renukoot.	60,000	Licensed under the I (D & R) Act.	1971-72
(vi) Madras Aluminium Co., Mettur Dam.	12,500	Do.	1969-70
TOTAL (A)	196,300		
B. *New units*			
(i) Bharat Aluminium Co. (A public sector undertakings)			
(a) Korba	100,000	Applied for but installation being made	1972-73
(b) Koyna	50,000	Applied for but project under implementation.	1973-74
(ii) J. K. Industries, Kerala.	30,000	Letter of intent	No definite date
(iii) Government of Gujarat (Venture not yet named)	25,000	Not yet approved.	No definite date
TOTAL (B)	205,000		
GRAND TOTAL (A) & (B)	401,300		

There was another scheme for the expansion of the Madras Aluminium Company's smelter at Mettur by 25,000 tonnes but the application of the unit has not been approved. Accoriding to the report of the Sub-group on aluminium and magnesium of the Planning Group on Non-ferrous metals constituted by the Department of Mines and Metals in the Ministry of Steel, Mines and Metals and submitted to the Government sometime back the present capacity and expansion in future are likely to be as in Table 7.3.

In the above table the expansion by 20,000 tonnes of the Hirakud Plant and the project of 25,000 tonnes of the Gujarat Government have not been included. Brief particulars in respect of the expanision schemes are as follows :

7.4. *Indian Aluminium Company.*—This unit has a scheme for the expansion of capacity of the existing smelter at Hirakud for which a letter of intent has been issued. It has another scheme for the establishment of a new smelter at Belgaum with an initial installed capacity of 30,000 tonnes for which a licence has been granted and at a later stage for expansion of the same by 70,000 tonnes for which a letter of intant has been issued Installation of the first stage of the Belgaum smelter is expected to be completed by the end of 1969 and production may commence in 1970. Additional expansion is contemplated in the following years. If all these schemes of the company—including expansion of the Hirakud smellter-materialies the final aggregate capacity of all the smelters of the company will be 1,56,000 tonnes.

7.5. *Aluminium Corporation of India.*—Though one of the two oldest, has remained the smallest so far. It is likely to expand by gradual stages in the next three years going up from the present 8,700 tonnes to 9,000 tonnes and then to 10,000 tonnes and on to 12,500 tonnes by the year 1971-72. The earlier plan of J.K. Industries who are the Managing Agents for the Aluminium Corporation of India was to set up a new smelter in Kerala, for which a letter of intent had been issued, but it is now likely to be shifted to orissa and will come up in the Fifth Five Year plan.

TABLE 7.3.

Progressive increase in capacity

(Tonnes)

	1968—69	1969—70	1970—71	1971—72	1972—73	1973—74	Fifth Plan 1978—79
(i) Hindustan Aluminium Corpn.	60,000	60,000	60,000	70,000	100,000	120,000	120,000
(ii) Indian Aluminium Co. . .	36,000	50,000	66,000	66,000	85,000	96,000	136,000
(iii) Bharat Aluminium Co. .	..	..	..	..	25,000	90,000	150,000
(iv) Madras Aluminium Co. .	12,000	12,000	20,000	25,000	25,000	25,000	25,000
(v) Aluminium Corporation of India (J. K. Industries) . .	9,000	9,000	10,000	12,000	12,000	12,000	42,000
TOTAL .	117,000	131,000	156,000	173,000	247,000	343,000	473,000

7.6. *Hindustan Aluminium Corporation.*—An additional capacity of 60,000 tonnes has been licensed. Out of this, according to the Report of the sub-group for Aluminium and Magnesium of the Planning Group on Nonferrous Metals 10,000 tonnes is likely to be set up in 1971-72 and another 30,000 tonnes in 1972-73 reaching the total licensed capacity of 1,20.000 tonnes by the year 1973-74. Though the expansion has been licensed at the existing site, the unit is considering setting up the additional capacity at another site preferably in Gujarat where certain facilities in the matter of availability of power and nearness of port are envisaged.

7.7. *Madras Aluminium Company.*—is expected to achieve the capacity of 20,000 tonnes in 1970-71 and will expand by another 5000 tonnes in the following year.

7.8. *Bharat Aluminium Company.*—is a public sector project with two scheme in view one to set up a plant at Korba with a capacity of 100,000 tonnes and the other at Koyna with a capacity of 50,000 tonnes. Of these Korba is likely to come up first with the initial installed capacity of 25,000 tonnes in 1972-73 and additinal 65,000 tonnes in 1973-74. The remaining capacity of 10,000 tonnes together with the total capacity of the Koyna plant is likely to be set up during the Fifth Five Year Plan in order to reach the final capacity of 150,000 tonnes by the year 1978-79.

7.9. No definite dates and programmes have so far been envisaged in respect of the expansion programme of Indian Aluminium Company at Hirakud or for the setting up of a new smelter at Gujarat and these capacities have been therefore put off to the end of the Fifth Five Year Plan. Adopting the year 1968-69 as the base, expansion of capacity in subsequent years in terms of percentage is likely to be of the following order :—

TABLE 7.4.

progressive expansion in future

	Capacity (000 tonnes)	Percentage of 1968-69
1968-69	117	100
1969-70	131	112

	Capacity (000 tonnes)	Percentage of 1968-69
1970-71	156	133
1971-72	173	148
1972-73	247	211
1973-74	343	293
End of Fifth Five Year Plan		
1978-79	518	443

7.10. It would be interesting to compare in this context the figures of production of aluminium in different countries of the world. These figures relate to the period from 1963 to 1966 and are as follows :—

TABLE 7.5.

Production of aluminium in different countries of the world.

(In '000 tonnes)

Name of country	Production			
	1963	1964	1965	1966
1. United States . .	2,097.9	2,315.8	2,498.8	2,692.8
2. U.S.S.R. . . .	960.0	1,000.0	1,280.0	1,300.0
3. Canada . . .	652.6	764.4	762.3	818.3
4. France . . .	298.4	315.4	340.6	363.5
5. Japan . . .	233.9	265.8	292.8	337.3
6. Norway . .	219.2	252.6	276.3	330.2
7. West Germany .	208.8	219.9	234.4	243.9
8. Italy . . .	91.4	115.5	124.0	127.6
9. China (Estimated) .	100.0	100.0	100.0	100.0
10. Australia . .	41.9	80.3	87.8	92.0
11. India (including Goa)	55.2	55.2	67.2	83.3
12. Austria . . .	76.5	77.7	78.7	78.9
13. Switzerland . .	61.2	64.2	67.1	68.0
14. Spain . . .	43.5	61.8	51.4	60.8

Name of country	Production			
	1963	1964	1965	1966
15. Czechoslovakia .	60.0	6.0	62.0	62.0
16. French Africa (Former)	52.9	50.6	50.8	..
17. Hungary . . .	55.5	56.9	58.1	60.5
18. Poland . . .	46.6	47.8	47.3	55.2
19. East Germany . .	60.0	45.0	50.0	50.0
20. Rumania . . .	..	..	22.8	46.9
21. Yugoslavia . .	35.9	34.8	40.3	42.0
22. United Kingdom .	31.1	32.2	36.2	37.1
23. Greece . . .	..	..	..	36.0
24. Brazil . . .	30.0	25.0	29.6	35.0
25. Sweden . . .	18.0	30.4	30.6	29.5
26. Mexico . . .	..	15.0	19.1	20.9
27. Netherlands . .	..	..	..	20.3
28. Formosa . .	11.9	17.7	18.9	17.2
29. Surinam . . .	..	..	..	2.0
WORLD TOTAL .	5,542.4	6,104.0	6,727.1	7,211.2

The production of a number of countries including Austria, Czechoslovakia, East Germany, Greece, Hungary, Netherlands, Poland, Rumania, Spain, Sweden, Switzerland, U.K. and Yugoslavia is lower that of India in 1966.

7.11. *Semi-Manufacturers and Manufacturers :*

7.11.1. *Number of Units :* Including Indian Aluminium Co. and Aluminium Corporation of India 11 units were engaged in the production of sheets and circles at the time of the Commission's last Report. In addition, three units, namely, Hindustan Aluminium Corporatiin, Madras Aluminium Company and Jeewanlal (1929) Ltd., Madras were also expected to set up rolling capacity by the end of

1966, middle of 1965 and in 1967 respectively. According to the information collected for the present inquiry, there are at present 15 units engaged in the Production of sheets and circles, including three primary metal producers. In addition, there are a large number of units in the small scale sector too.

7.11.2. *Capacity and production :* At the time of the last inquiry the following additional capacities were licensed:

Name of the Unit	Additional capacity licensed (Tonnes)	Year of proposed installation
(i) Aluminium Corporation of India	2,500	By end of 1964.
(ii) Hindustan Aluminium Corporation	20,000	By 1966.
(iii) Madras Aluminium Co. .	3,500	By middle of 1965.
v) Jeewanlal (1929), Madras	3,860	1967.
TOTAL .	29,860	

As and when all the above licences were implemented it was anticipated that the rolling capacity in the country would increase from 27,100 tonnes to 56,960 tonnes. According to the information now available Aluminium Corporation of India has installed its additional capacity of 2,500 tonnes, Hindustan Aluminium Corporation too has established its full capacity of 20,000 tonnes but Madras Aluminium Co. has not yet installed its rolling capacity. Jeewanlal (1929) Ltd., Madras, has informed us that it had abandoned the project towards the end of 1964. Table 7.6 shows the names of the units along with their installed capacity at the time of last Report, as well as their present installed capacity along with the figures of production of sheets and circles during the years 1964, 1965, 1966 and 1967.

TABLE 7.6

Installed capacity and production of sheets and circles during the period 1964 to 1967

(In Tonnes)

Sl. No.	Name of the Producer	Installed capacity		Production of sheets and circles			
		As adopted in 1964 Report	In 1968	1964	1965	1966	1967
1	Indian Aluminium Co. Ltd., Belur	16,800	18,000	14,617	16,096	14,312	13,879
2	Aluminium Corporation of India, Asansol	2,400	4,900	2,642	3,240	4,150	4,530
3	Hindustan Aluminium Corporation Ltd., Renukoot	..	20,000	..	1,068	7,963	8,969
4	Metal Rolling Works (P) Ltd., Bombay	2,500	2,536	1,825	1,850	1,850	1,838
5	Devidayal Metal Industries, Bombay	1,800	1,800	1,441	1,536	1,435	1,587
6	Popular Metal Works & Rolling Mills, Bombay	600	600	682	663	727	664
7	Rashtriya Metal Industries Ltd., Bombay	1,200	1,500	15	14	37	40
8	Mysore Premier Metal Factory, Madras	600	750	508	556	459	518

9	Hooseini Metal Rolling Mill (P) Ltd., Bombay	600	N.A.	263	217	285	309
10	Shri Mahesh Metal Works, Kishangarh .	N.A.	N.A.	38	8	18	58
11	Agarval Metal Works (P) Ltd., Rewari .	600	N.A.	171	191	333	221
12	Kamani Metals & Alloys, Bombay .	N.A.	N.A.	Nil	Nil	21	8
13	N. M. Metal Industries, Bombay . .	N.A.	N.A.	75	110	1	216
14	Shibu Metal Works, Jagadhri . .	N.A.	N.A.	Nil	150	178	390
15	Naranlala Metal Works, Navsari .	N.A.	N.A.	Nil	Nil	55	59
		27,100	50,086	22,277	25,699	31,824	33,286

It may be seen that as against the capacity of 27,100 tonnes installed at the time of the last Report the present installed capacity for the units which have reported stands at 50,086 tonnes. This is likely to be higher since the capacities for 7 units are not known.

7.11.3. *Future expansion :* Since the last report a new licence for setting up rolling capacity at Kalwa has been issued in favour of Indian Aluminium Co. Ltd. The capacity licensed is 11,500 tonnes and the unit expects the plant to go into production at the same time as the completion of the first stage of its Belgaum smelter.

7.12. *Aluminium foils :*

7.12.1. At the time of the Commission's last Report India Foils Ltd., Calcutta was the only manufacturer producing aluminium foils (foils and container sheets) in the country. Its total capacity was 4,200 tonnes (3,000 tonnes for foils and 1,200 tonnes for container sheets). The Commission was then informed that licences were issued to the following three units for the manufacture of foils and they were expected to go into production according to the following programme :

Name of the unit	Capacity licensed (Tonnes)	Probable date of production
(i) Indian Aluminium Co. Ltd., Calcutta	2,500	July 1965
(ii) Aluminium Corpn. of India, Calcutta	500	End of 1964
(iii) General Industrial Society Ltd., New Delhi . . .	1,200	July 1965

7.12.2. We have now been informed that the Aluminium Corporation of India commenced making of aluminium foils from September 1964 and that the Indian Aluminium Co. commenced its regular production from January 1966. No information could be obtained in respect of the General Industrial Society Ltd., New Delhi. The Table 7.7 shows the position with regard to the capacity and

production of aluminium foils including container sheets in the country.

TABLE 7.7

Production of foils and container sheets

(Tonnes)

Name of the Unit	Present installed capacity	Production of foils and container sheets during			
		1964	1965	1966	1967
(i) India Foils Ltd. .	4,200	3,463	3,576	2,982	3,592
(ii) Aluminium Corporation of India .	500	..	130	280	310
(iii) Indian Aluminium Company . .	2,500	..	132	917	1,537
TOTAL .	7,200	3,463	3,838	4,179	5,439

No additional capacity has been sanctioned for the expansion of the foil producing units. The India Foils Ltd. had applied for expansion for its foil mill to 5,000 tonnes but the Company was informed by the Government that there was not scope for the establishment of further capacity for the manufacture of foils.

7.13. *Aluminium industry in the small scale sector:*

7.13.1. The Development Commissioner, Small Scale Industries has informed us that there are 43 units in the small scale sector engaged in the manufacture of circles, strips etc. dispersed all over the country. The Statewise distribution of these units is as follows :—

Delhi	9
Madhya Pradesh	1
Madras	7

Maharashtra	3
Punjab	4
Uttar Pradesh	7
West Bengal	12
TOTAL .	43

7.13.2. At the time of our last Report the Development Commissioner, Small Scale Industry had placed the capacity of the small scale sector at about 8,000 tonnes per year while the Indian Non-Ferrous Metals Manufacturers' Association, Calcutta had placed the capacity figure at 6,000 tonnes. In connection with the present inquiry the Development Commissioner has stated that the capacity of the industry on single shift basis for aluminium plates, sheets, circles and strips is 6,180 tonnes. Production during the last four years is reported to be as follows :—

TABLE 7.8

Production of Small Scale Units

(Tonnes)

Year	Aluminium plates, sheets, circles and strips
1964	3644
1965	3672
1966	3807
1967	3566

Statewise installed capacity and production of these items as reported by the Development Commissioner are in Table 7.9.

TABLE 7.9

Statewise capacity and annual production of Small Scale Units

(Tonnes)

State	No. of units	Capacity	Production			
			1964	1965	1966	1967
Delhi . .	9	1,438	569	598	632	703
Madhya Pradesh	1	60	8	16	13	13
Madras .	7	172	242	244	197	158
Maharashtra .	3	1,850	1,561	1,476	1,565	1,428
Punjab .	4	640	245	225	305	356
Uttar Pradesh .	7	N.A.	182	246	305	169
West Bengal .	12	2,020	837	867	790	739
	43	6,180	3,644	3,672	3,807	3,566

(NOTE : Figures of production in some cases are not complete.)

7.13.3. There was a substantial increase in production in 1966 but a fall even below the level of 1964 in the year 1967. The Development Commissioner has attributed this fall to the high prices of crude aluminium. According to him the small scale units have certain other problems too. Aluminium sheets of a particular brand required by some of the utensil manufacturers are said to be in short supply. While ingots manufactured by the Indian Aluminium Co. are available, semis made by some companies are said to be difficult to obtain. Efforts were made to secure the particulars of each of the units but it was not possible to get the necessary data since the Development Commissioner relies, it appears, on figures furnished to him not in respect of individual units but for the whole State.

7.14. Primary producers are licensed for rolling capacity only to a certain extent of their production and the remaining which is about half is meant for being processed

by fabricators. The existing manufacturers of semis would wish to have a larger share in fabrication and view with concern the possible grant of licences to smelters for fabrication. On the other hand primary producers urge very strongly that there is greater need for integration of the units which produce ingots, since this is the practice all over the world and the combination of fabrication activity together with smelting not only reduces cost but provides incentive for development of smelting capacity. In this connection it was also mentioned that properzi rod was being classified as an item of fabrication while it was nothing but only slightly different from ingot being produced directly from melted metal and it should be considered as a primary product. The difficulty it appears arises in the matter of customs classification for it is said that the rod should be treated as fabrication although it is made by primary producers in the metal state. We are of the view that the main consideration in the matter of installation of capacity for fabrication should be of economies of production and that a suitable balance should be maintained between the capacity of fabrication by the primary producers and the rest. Considering that the future expansion of capacity is likely to be more than three times of what exists now, there is no ground for apprehension on the part of manufacturers of small scale units that their capacity would suffer as a result of additional manufacturing capacity being granted to the primary producers. We would, however, advocate caution in the matter of permitting the installation of capacities for fabrication where the plant and machinery are not of economic size.

8. *Domestic Demand :*

8.1. Within the last ten years the domestic consumption of aluminium has increased more than fourfold, for the consumption in 1958 was about 29,000 tonnes while the availability in 1967 was of the order of 152,000 tonnes and the consumption was about 130,000 tonnes. The main reason for this phenomenal increase is the use of AAC and ACSR for almost all electrical transmission lines and also of a number of end uses in the field of lamp caps, bus bars, rotor astings, sheathing of cables and other items. This consump-

tion of aluminium for transportation equipment, domestic utensils, packing material has also very greatly increased with the result that in spite of a very considerable increase in domestic production, substantial imports had also to be maintained over these years.

8.2. At the last inquiry future domestic consumption was estimated at 1,15,000 tonnes in the year 1964 as against the availability of 75,000 tonnes in the year 1963 and the demand during the years 1965, 1966 and 1967 was estimated at 1,25,000, 1,45,000 and 1,70,000 tonnes respectively. As between the years 1964 and 1967 the break-up of the demand was estimated as follows :

TABLE 8.1

Break-up of demand estimated in 1964

(Tonnes)

Consuming industries	1964	1967
1. Electrical Industry (ACSR & AAC) . .	52,000	72,000
2. Utensils	18,000	30,000
3. Defence production reserves, exports etc. .	12,000	22,000
4. Transportation	12,000	18,000
5. Canning & packaging	7,000	10,000
6. Building & Construction	4,000	5,000
7. Food & Farming	2,500	4,000
8. Miscellaneous uses	7,500	9,000
TOTAL .	1,15,000	1,70,000

8.3. The actuals for the year 1964 to 1967 however show that the consumption has not kept pace with the estimates though the domestic availability in 1967 came very near the estimated demand for that year owing to heavy imports. One of the reasons for the demand not keeping pace with the estimates is said to be the slackening of the speed in the implementation of power projects. The figures of the availability during the previous years are as follows :

TABLE 8.2

Availability of Aluminium

(Tonnes)

Year	Stock from previous year	Production during the year	Total	Stocks taken over to next year	Balance	Imports during the year	Scrap at 10% of previous year's production	Total	Exports	Availability
1	2	3	4	5	6	7	8	9	10	11
1964 . . .	9,597	56,667	66,264	2,837	63,427	22,155	5,500	91,082	2,357	88,725
1965 . . .	2,837	68,984	71,821	2,361	69,460	22,769	5,700	97,929	815	97,114
1966 . . .	2,361	83,764	86,125	3,731	82,394	22,520	6,900	1,11,814	1,339	110,475
1967 . . .	3,731	96,575	1,00,306	4,388	95,918	48,402	8,400	1,52,720	1,064	151,656

8.4.1. The consumption pattern in India in 1966 as estimated by the Study Group set up by the Department of Mines and Metals, was as follows :

TABLE 8.3

Expected consumption pattern-1966

Consuming industry	Percentage
Electrical	50
Domestic appliances	18
Transport	11
Other industries	11
Canning and packaging	7
Building and construction	3
TOTAL	100

8.4.2. Of the four manufacturers of ingots, three have given particulars of the end-uses of primary metal sold by them in 1967. The percentage figures are as follows :

TABLE 8.4

Percentages of end-use as reported by the producers for the year 1967

End-uses	Indian Aluminium Co.	Hindustan Aluminium Corporation	Madras Aluminium Co.	Average total percentage
(i) Electrical	49·50	49·74	36·1	47·9
(ii) Transportation	10·80	4·93	24·5	9·7
(iii) Domestic utensils and other commercial supplies	13·15	4·56	32·2	16·9
(iv) Canning & packaging	12·21	16·07	0·2	10·3
(v) Building & construction	3·25	11·15	..	3·4
(vi) Food/Textiles/Chemicals	1·21	..	..	0·5
(vii) Miscellaneous uses	9·26	13·55	7·0	11·05
(viii) Export	0·62	..	..	0·25
TOTAL	100	100	100	100

8.4.3. On the other hand, the Study Group for Aluminium and Magnesium of the Planning Group for Non-ferrous Metals has estimated the consumption in the years 1968-69, 1970-71 and 1973-74 to be of the following order :

TABLE 8.5

Percentages of end-uses estimated by the Study Group

	1968-69	1970-71	1973-74
(i) Electrical	43·3	45·2	44·3
(ii) Transportation	8·0	7·2	7·2
(iii) Domestic utensils and other commercial supplies	18·0	14·5	12·5
(iv) Canning and packaging	8·0	7·2	7·2
(v) Building and construction	2·7	2·7	3·3
(vi) Food/Textiles/Chemicals	1·3	1·8	2·0
(vii) Miscellaneous uses	6·7	7·7	7·9
(viii) Defence	2·0	2·3	2·6
(ix) Export	10·0	11·4	13·0
TOTAL	100	100	100

The envisaged pattern of consumption is similar over the years.

8.4.4. Comparative figures for other countries together with those of India for the year 1966 are given as follows :

TABLE 8.6

Comparative pattern of consumption

Industry	Percentage of total consumption			
	Britain (1964) *	U.S.A. (1964) *	Japan (1964) *	India (1966)**
(i) Electrical	13	12	6	50
(ii) Transport	32	25	22	11
(iii) Building & construction	9	25	10	3
(iv) Canning & packaging	7	9	3	7
(v) Domestic and appliances	11	10	28	18
(vi) Others	28	19	31	11
TOTAL	100	100	100	100

Source: *Light Metals & Metal Industry (London), February, 1966.
**Industry Estimates.

8.4.5. The disparity between the pattern of consumption in India and in developed countries is mainly because of the heavy demand in India for aluminium for electric installations and lack of equivalent progress in transport equipment or sophistication in building requirements.

8.5.1. The various estimates of future demand as furnished to us are as below :

TABLE 8.7

Estimates of future demand

(In '000 tonnes)

	1968	1969	1970	1971
(i) D.G.T.D. . .	150	200	250	300
(ii) Indian Non-ferrous Metals Manufacturers' Association	145	170	195	230
(iii) Indian Aluminium Co. . . .	160	180	200	230
(iv) Hindustan Aluminium Corpn. .	107	122	137	153
(v) Aluminium Corporation of India .	150	185	221	254
(vi) Madras Aluminium Co. . .	150	190	240	299
(vii) Devidayal Metal Industries . .	147	178	227	285

8.5.2. In estimating the future demand the requirements of power generation have been paramount since almost about half of total availability of aluminium is used in this field. It has, however, been observed that during the Third Plan the increase in power generation did not take place according to expectation. Some of the units such as the Indian Aluminium Co. have observed that a degree of caution is necessary in estimating the demand for future. We have already observed that the actual consumption for the year 1967 was of the order of 130,000 tonnes excluding

exports. Keeping in view the trend of the growth of consumption during the previous years we consider that it would not be unreasonable to expect a total domestic demand of 135,000 tonnes for 1968, 165,000 tonnes for 1969, 195,000 tonnes for 1970 and 225,000 tonnes for 1971. At the rate at which capacities are likely to be installed in future years, there will, it appears, be a substantial shortfall between the demand and the indigenous capacity. Only in the year 1972-73 when substantial increases in capacity will be achieved would there be a surplus. We have observed that in the year 1967 the imports were of the order of 48,402 tonnes which were more than double the figures of any of the previous three years. As a result a surplus of about 17,000 tonnes is estimated to have been held over from this year and emphasis is now being laid on exports in order to achieve a balance between demand and availability. This apparent surplus is, however, bound to be very short-lived. Even if the forecasts for future demand are substantially scaled down there is no possibility of the indigenous production going up to the estimated demand. Even if production is achieved at 100 per cent of the estimated installed capacity in future with ten per cent of the previous year's production being available as scrap, there would still be a gap as the following figures would show :

TABLE 8.8

Gap between avilability & demand

(Tonnes)

Year	Estimated capacity to be installed	Scrap generation	Total	Estimated demand	Gap
1968 . .	1,17,000	9,700	1,26,700	1,35,000	8,300
1969 . .	1,31,000	11,700	1,42,700	1,65,000	22,300
1970 . .	1,56,000	13,100	1,69,100	1,95,000	25.900
1971 . .	1,73,000	15,600	1,88,600	2,25,000	36,400

8.6. At the public inquiry it was stated on behalf of the Government that owing to surplus availability efforts were being made to export the metal. The exact data with regard to the quantities of imported material in stock as well as the quantities likely to be imported through licences which are still valid were not available. But assuming that the figure of 17,000 tonnes given by the Sub-Group for Aluminium and Magnesium on Non-ferrous Metals is correct, this quantity will be used up during the current year and the next and there would be need even in the year 1969 of imports to the extent of about 14,000 tonnes. If we were to export aluminium now and lose the surplus, it is quite likely that by the beginning of the next year the need for import may again be felt. The emphasis on exports resulted, it appears, from an optimistic expectation of early realisation of additional capacity. Now that the picture is a little clearer and capacities are not likely to be set up as early as it was expected some time ago, it would be desirable that Government re-examine the position in order to ensure that we may not be exporting aluminium and also simultaneously negotiating for imports. Should it be possible to hasten the installation of additional capacity or set up new units earlier than scheduled and the capacity so indstalled generates production in excess of the domestic demand, exports may by all means be encouraged, but until such time as imports are necessary it will not be in the interest of the domestic economy to try to export aluminium. One of the units has, while giving its reasons for low utilisation of capacity in the previous years, stated that owing to heavy imports stocks had accumulated and it is not possible to maintain production at the usual level. This may be only a passing phase and may not be interpreted to mean that the surplus will be maintained or continued over the next two or three years. While we are inclined to put in this word of caution against exports when the domestic requirements cannot be fulfilled by domestic production and imports are inevitable, we would also add that greater care is needed in estimating requirements in order to avoid unnecessary imports; for certain assumptions were made with regard to the future requirements of AAC and ACSR, but before the relevant schemes were ripe for implementation the quantum of imports was decided and followed up resulting in a surplus which

not only depressed domestic production but led to accumulation of stocks. It would therefore be desirable in future to phase the implementation of power programmes in such a way that the actual requirements can readily be determined.

8.7. *Estimated demand of aluminium semis :*

8.7.1. The Ministry of Steel, Mines & Metals stated that the existing capacity and the capacity for which licences have already been approved would be sufficient to meet the demand by 1970-71 and that gaps, if any, are likely to be filled by allowing additional capacity for aluminium on the basis of the recommendations of the Sub-Group mentioned earlier.

8.7.2. According to the Sub-Group for Aluminium and Magnesium of the Planning Group on Non-Ferrous Metlas the demand for rolled products which is currently about 53,500 tonnes is expected to be about 77,000 tonnes by 1970-71 and 110,000 tonnes by 1973-74 (including 5,000 tonnes for export). The following table shows the expected production capacity (producer-wise), the demand and the excess/short-fall. It will be observed that excess capacity will emerge during the second half of the Fourth Plan and should prove sufficient even in the early years of the Fifth Plan.

TABLE 8.9

Capacity and Demand for semis

('000 tonnes)

	1970-71	1973-74
Demand	77·0	110·0
Production capacity :		
Hindustan Aluminium Corporation . .	10·0	20·0
Indian Aluminium Co.	29·5	29·5
Madras Aluminium Co. . . .	..	7·0
Aluminium Corporation of India . .	4·9	6·4

Bharat Aluminium Co. . . .	..	40·0
Secondary & mint rolling . . .	18·0	20·0
TOTAL .	62·4	122·9
Excess (+)/Shrotfall (—) . . .	—7·6	+12·9

9. Raw materials

9.1. Bauxite, caustic soda, soda ash, lime, petroleum coke, cryolite, flourspar, aluminium fluoride, pitch fuel oil and electric power are the main raw materials needed for the manufacture of aluminium. The approximate requirements per tonne of metal are as follows :—

Bauxite	5·5	tonnes
Petroleum coke	0·45	,,
Pitch	0·19	,,
Cathode carbon	0·03	,,
Cryolite	0·05	,,
Aluminium fluoride	0·03	,,
Fuel oil	0·32	,,
Coal	1·5	(1,000 BTU/lb)
Caustic soda	0·20	,,
Lime	0·10	,,
Electricity	2·4	Kwy.

9.2. At the first stage bauxite is converted into alumina and then alumina is processed into ingot. About 2.75 tonnes of bauxite are needed to produce one tonne of alumina and about 2 tonnes of alumina are needed to make one tonne of aluminium ingot. The individual requirements of certain raw materials as estimated by the Dapartment of Economic and Social Affairs of the United Nations in its publication "Pre-Investment Data for the Aluminium Industry 1966" for an aluminium plant of about one thousand tons of alumina per day based on a survey made in 1961 as compared with average input requirements per tonne of alumina for India are as given in Table 9.1.

TABLE 9.1

Raw material requirements per ton of calcined alumina

Item	Trihydrate bauxite	Monohydrate bauxite	Indian bauxite
Bauxite (tons)	2·1	2·5	2·75
Caustic Soda (NaOH) (kg)	80	170	120
Steam (tons)	2·0	2·4	6·0
Electric power (kWh)	200	275	280
Fuel for calcination (litres of fuel oil)	130	130	150

9.3. The consumption of some of the other important raw materials in other countries is shown as follows in this publication.

TABLE 9.2

Input requirements for primary aluminium for selected countries

Kg. per tonne of output except as indicated

Input	Hungary	Japan	Norway	United States	India
Alumina (tons)	1·91	1·95	..	1·93	1·95
Fluorides (fluorine content) (kg)	39	45	44	38	..
Cryolite (kg)	30	56	40	24	50
Aluminium fluoride (kg)	9	23	34	29	30
Total Carbon (kg)	555	646	..	700	650

9.4. *Bauxite :*

9.4.1. In 1964 the Commission had been informed that the country's reserves were of the order of about 59 million tonnes of usable bauxite which would be exhausted by the year 1990. The Geological Survey of India has since arrived at the following figures of reserves of bauxite :—

Proved	22·50	million tonnes
Indicated	18·56	,, ,,
Additional inferred	90·66	,, ,,
TOTAL	131·72	,, ,,

9.4.2. The reserves of metal grade bauxite as distributed between different States are said to be about 130 million tonnes, as follows :—

State	Reserve of Bauxite (million tonnes)
Maharashtra	53·2
Madhya Pradesh	24·4
Gujarat	18·3
Bihar	17·3
Jammu & Kashmir	11·8
Madras	2·2
Mysore	1·8
Orissa	0·9
	129·9

9.4.3. In the bulletin entitled "Bauxite in India—An Assessment of Reserves" there is an assessment of reserves by the Geological Survey of India. The total reserves of all grades are placed at 128.3 million tonnes. of which 64.7 million tonnes are said to be of high grade.

9.4.4. The sub-group on Aluminium and Magnesium of the Planning Group for Non-ferrous Metals has estimated the reserves of high grade and of all grades of bauxite as follows :—

TABLE 9.3

State-wise and Region-wise reserves of Bauxite in relation to All-India Reserves.

	Reserves in million tonnes	
	High Grade	All Grades
East-Central Region		
Madhya Pradesh	21·558	27·621
Bihar	17·060	17·261
Orissa	0·883	1·499
TOTAL	39·501	46·381
Southern Region		
Mysore	0·271	5·198
Madras (Shevaroy, Palni & Nilgiris)	0·585	10·756
Kerala	..	2·00
TOTAL	0·856	17·954
Western Region		
Maharashtra	13·118	65·597
Gujarat	11·843	18·284
TOTAL	24·961	83·881
Jammu & Kashmir	1·825	11·782
GRAND TOTAL	67·143	159·998

9.4.5. The Indian Bureau of Mines estimates the requirements of the different grades of bauxite as follows :—

TABLE 9.4

Requirements of Bauxite

(Millions tonnes)

	1970-1971	1975-1976	1980-1981	1970/71 1980/81	1980/81 1990/91
(i) Metal grade .	1·80	2·47	3·36	21·0	33·6
(ii) Refractory grade .	0·26	0·43	0·71	3·5	7·1
(iii) Chemical grade .	0·06	0·10	0·16	0·8	1·6
(iv) Other grades .	0·33	0·50	0·61	4·2	6·1
(v) Export grade (High grade) . .	0·07	0·10	0·10	0·9	1·0
	2·52	3·60	4·94	30·4	49·4

9.4.6. Considering the present rate of expansion of the aluminium industry in India and its likely future requirements there will be very little reserve of bauxite left by the end of the present century. According to the Geological Survey of India the bulk of the bauxite exported at present contains about 58 per cent alumina which is of the best quality available in the country. In the past three years an average of 70,728 tonnes of bauxite has been exported at the average price of Rs. 36.24 per tonne. Unless there is the possibility of discovering substantial deposits elsewhere which have so far not been located by the G.S. I. closer attention needs to be given to the question of the deposits and their planned utilisation. Connected with this issue is that of beneficiation to ensure that the high grade deposis are not used up leaving only low grade ores which might not be usable without admixture of high alumina content

bauxite. We have been informed by the National Metallurgical Laboratory that excellent facilities exist in the N.M.L. for carrying out beneficiation studies of bauxite samples on batch as well as pilot plant scales. It has already investigated beneficiation characteristics of a few bauxite samples from different deposits. The Laboratory has published two reports, one on the reduction of iron oxide content in a bauxite sample from Jabalpur District and the other on beneficiation of ferruginous bauxite. The Laboratory has also carried out some work on the recovery of economic values from red mud—a waste product of the aluminium industry.

9.4.7. The publication of the United Nations mentioned earlier gives a number of other minerals which have been used as ore for the production of aluminium : some of these are :

Nepheline,

Andalucite,

Leucite.

It has however been mentioned in the same publication that even though these ores were used in some of the European countries on a trial basis owing to the non-availability of good grade bauxite, all countries had reverted to bauxite except the Soviet Union which continues to use Nepheline ore and intends also to expand its extractions. It is not known whether in the face of the dwindling deposits of high grade bauxite any attempt to explore the availability of other aluminium ores has been made in India. We would however recommend early prospecting by the various organisations engaged on geological survey for locating and also proving deposits of bauxite and for the formulation of plans for beneficiation in order that high grade bauxite deposits are not used up.

9.4.8. Notwithstanding the fact that the aluminium industry is the largest non-ferrous metals industry in the

country and the only non-ferrous metal for which raw materials are available in our country, its ore does not find a place in the first Schedule of the Mines and Minerals (Regulation and Development) Act and the previous approval of the Central Government for the grant of prospecting licence or mining lease of bauxite is not required. While minerals such as coal, copper, gypsum, iron ore, lead, tin and zinc figure in the schedule, bauxite is conspicuously absent. In 1949 when the law was enacted aluminium manufacture was not a prominent industry but since then it has become the most important industry for non-ferrous metals in the country. In the course of the inquiry it was represented to us that before grant of prospecting licences or mining leases for bauxite, State Governments wanted that assurance should be given that the unit would be set up within the States and that even in the case of established units it was not possible to obtain leases on the ground that these were not situated within the States which have the deposits. In some cases units have to purchase bauxite from intermediaries at a high price. Considering that the aluminium industry has developed to a stage where availability of the ore is a matter of national concern, this raw material should be made available in accordance with a common policy for the entire country. We therefore suggest that suitable action may be taken to include bauxite in the First Schedule of the mines and Minerals (Regulation and Development) Act in order to remove the disparites that prevail today in the policies for the grant of mining leases by the various States to an industry which has an all India character.

9.5. *Alumina*

9.5.1. The basic requirement for the production of aluminium is the setting up of the alumina plant, and capacity of each unit for the production of alumina should be roughly equivalent to twice the capacity for aluminium. The gestation period for setting up an alumina plant is longer than that for setting up a smelter. The capacity and production of alumina by the existing units during the last four years were as follows :—

TABLE 9.5

Capacity and production of Alumina

Units	Capacity in 1964 (Tonnes)	Capacity in 1967 (Tonnes)	Production 1964 (Tonnes)	% of capacity	Production 1965 (Tonnes)	Production 1966 (Tonnes)	Production 1967 (Tonnes)	% of capacity
(i) Indian Aluminium Company . .	60,000	70,000	65,500	108	67,980	60,606	64,220	92
(ii) Hindustan Aluminium Corporation	60,000	1,20,000	43,294	72	50,420	47,273	65,472	55
(iii) Madras Aluminium Company . .	Nil	25,000	..	..	..	22,137	23,335	93
(iv) Aluminium Corporation of India .	15,000	15,000	8,747	58	14,906	15,020	14,376	96
TOTAL .	1,35,000	2,30,000	1,17,541	87	1,33,306	1,45,036	1,67,403	73

9.5.2. The quantities of alumina needed on the basis of the average usage in order to produce the metal actually manufactured together with the quantities manufactured and also imported are as follows :—

TABLE 9.6

Requirements of Alumina

(Tonnes)

Year	Aluminium produced	Alumina needed Col. 2×2	Produced indigeneously	Gap	Imported
1964 . .	56,667	1,13,300	1,17,541	+4,241	2,597
1965 . .	68,984	1,38,000	1,33,306	—4,694	2,535
1966 . .	83,764	1,67,500	1,45,036	—22,464	14,073
1967 . .	96,575	1,93,200	1,67,403	—25,797	19,690
TOTAL .	3,05,990	6,12,000	5,63,286	—48,714	38,895

9.5.3. There is a significant disparity between the quantity of alumina produced and that needed. While such disparity may be countenanced in the very initial stage of the setting up of a plant, its continuance over a number of years is indicative of faulty planning and execution. Hindustan Aluminium Corporation has been particularly lagging in achieving production matching with capacity. Owing to this short-fall in the production of alumina, substantial imports had to be made in the previous years, and contrary to expectation these were higher in 1967 than in 1966. Notwithstanding the fact that each of the units had been in production for a number of years, achievement of self-sufficiency in the production of alumina has been avoidably tardy. The Indian Aluminium Company has stated that if needs 5,000 tonnes per annum of alumina during the current and the next two years. In addition to this the Belgaum smelter will need imported alumina to the extent of 40,000 tonnes for the first nine months of its production. Despite substantial imports in the past, the prospect of the future too is that similar imports will have to be continued. In contrast to this situation, the Ministry of Steel, Mines and Metals has informed us that the Government of India have approved

in principle the proposal to set up an export oriented plant of 1,50,000 tonnes in Gujarat for the export of alumina and that the State Government of Gujarat and the Gujarat Mineral Development Corporation have been requested to initiate action in the matter immediately. This would be a most welcome project, had it not been for the contraindications of the very limited availability of bauxite. If exports of alumina are made and new deposits of bauxite are not located Indian industry may after a decade or two be faced with serious shortages of raw material. We feel that until concrete steps are taken for large scale exploration of bauxite and these meet with success the plan of exporting alumina to the possible detriment to the indigenous industry should deferred.

9.5.4. We also observed that while in the case of the Indian Aluminium Company the production of alumina at 91.7 per cent of the capacity was achieved in 1967 and Madras Aluminium Company as well as the Aluminium Corporation of India did even better, the Hindustan Aluminium Corporation produced only 54.6 per cent of its capacity in 1967 and earlier in 1964 it produced 72.1 per cent of the capacity. Establishment of alumina plant within a stipulated period should in our view be a condition precedent in future to the setting up of smelters in order that unnecessary dependence on imported alumina may be eliminated.

9.6. *Caustic Soda.*—About 200 kgs. of caustic soda are needed for a each tonne of aluminium. The country is self-sufficient in the matter of production of caustic soda and considering that adequate capacities have been established already it is expected that the total requirements would be met in future from the indigenous production. The producers are generally satisfied with the quality of indigenous caustic soda, though they made some complaints about high prices. It has for instance been pointed out that the input by way of caustic soda per tonne of metal comes to about Rs. 200 in India while in foreign countries it is about half this amount. Unless the utilisation position of chlorine improves any substantial reduction in the price of caustic soda does not appear to be likely.

9.7. *Calcined petroleum coke*

9.7.1. For each tonne of aluminium ingot 0.45 tonne of calcined petroleum coke is needed which in turn is obtained from raw petroleum coke, the bye-product of oil refineries. Every tonne of raw petroleum coke yields approximately 3/4 tonne of calcined petroleum coke. According to the capacities proposed to be set up in the future years the approximate requirements of calcined petroleum coke during the current and the next three years would be as follows :—

Requirement of calcined petroleum coke

Year	in '000 tonnes
1968	53
1969	59
1970	70
1971	78

9.7.2. There are only three refineries in India which manufacture petroleum coke and their production during the previous four years was as follows :—

TABLE 9.7

Production of Petroleum Coke

(Tonnes)

Refinery	1964	1965	1966	1967
1. Digboi . . .	12,905	12,323	11,720	12,865
2. Noonmati . .	40,272	39,614	40,586	43,762
3. Barauni (Financial Years)	8,790	35,451	37,239	65,263
	61,967	87,388	89,545	1,21,890

9.7.3. Petroleum coke is supplied to the Indian Carbon Company which converts it into calcined product for aluminium smelters. In addition, the Indian Oil Corporation Limited is also setting up a calcining plant at Barauni. Calcined

petroleum coke is also needed for calcium carbide, steel and ferro-manganese industries and their annual requirements are estimated at about 17,000 tonnes by the end of the Fourth Plan or approximately 1/4th of the requirements of the aluminium industry. The production for the year 1967 of the three refineries was about 122 thousand tonnes of green petroleum coke, which on calcination should have yielded about 90 thousand tonnes of calcined petroleum coke and this production should have been more than enough to meet the entire requirements of the aluminium industry as well as other industries using this raw material. In fact even if no additional capacity is set up for the production of calcined petroleum coke the existing production should be enough for the estimated requirements upto the year 1971. The representatives of the industry stated at the public inquiry that today all the units had import licences but for the last two years they had actually exported petroleum coke owing to surplus availability. Concern was however expressed by them with regard to the increase in the rates of duty on petroleum coke. We find it difficult to understand why it should be necessary either to issue import licences to the manufacturers of aluminium for the import of petroleum coke or to import the material at all, when there is surplus availability and the quantities produced and capacities available are more than enough to meet the requirements for the next four years. Increase in the anticipated requirements of petroleum coke is likely to take place in subsequent years and it is hoped that the Barauni Refinery will step up its production, which is very much short of the capacity. It has been reported to us that owing to disparity in prices the imput value of the material per tonne of metal for the American Producer is only about Rs. 135 while it is Rs. 235 for the Indian Producer, as petroleum coke costs Rs. 300 per tonne in the U.S.A. while it costs Rs. 525 per tonne in India. It is singnificant that petroleum coke of the quality suitable for aluminium and other industries can be produced only from crude oil available indigenously. The crude imported from the Middle East is not suitable for this purpose owing to the high level of sulphur present in the latter. Petroleum coke being a bye-product of indigenous crude, it would be desirable to ascertain the reasons for high cost and if possible to bring this down.

9.8. *Cryolite, Aluminium Fluoride and Fluorspar*

9.8.1. The requirements of these raw materials for the production of one tonne of aluminium metal are, according to the estimates framed by the sub-Group on Aluminium and Magnesium of the Planning Group on Non-Ferrous Metals as follows :—

Cryolite	50 Kgs.
Aluminium—fluoride . . .	30 Kgs.
Fluorspar	2 Kgs.

9.8.2. In actual usage about 30 kgs. of cryolite were used and in estimating the cost this usage factor has been adopted. Both cryolite and aluminium fluoride are manufactured from fluorspar, alumina and sulphuric acid. Though cryolite occurs in natural form also, most of it is synthetically manufactured, Aluminium fluoride is always produced synthetically. These items were until recently imported. Alumina is the basic material produced from bauxite and should be available in sufficient quantities for processing with fluorspar. But it appears that the alumina needed for the manufactured of cryolite and aluminium fluoride had in the past to be imported by the units which manufacture these raw materials. Substantial deposits of fluorspar are said to be located in Rajasthan, Gujarat and Madhya Pradesh, but it has been stated in the report of the Sub-Group that the only deposits which have been prospected in detail are those of Ambadungar in Gujarat and that the Gujarat Mineral Development Corporation proposes to set up a beneficiation plant to produce 20,000 tonnes of acid grade fluorspar.

9.8.3. According to the estimated capacities to be set up from the years 1968 to 1971 the requirements of cryolite aluminium fluoride and fluorspar at the rates given above would be as follow

TABLE 9.8

Requirements of cryolite, aluminium fluoride and fluorspar

(In tonnes)

	1968	1969	1970	1971
Cryolite . .	5,850	6,550	7,800	8,650
Aluminium fluoride .	3,510	3,930	4,680	5,190
Fluorspar . . .	234	262	312	346

9.8.4. We have been informed by the only important manufaturer of this raw material, *viz.*, Navin Flourine Industries that the usage of fluorspar and aluminium hydrate for the manufacture of cryolite and aluminium fluoride are as follows :

TABLE 9.9

Requirements of fluorspar and aluminium hydrate per tonne of product

Product	Fluorspar (Tonnes)	Aluminium hydrate
Cryolite . . .	1·38	0·4
Aluminium fluoride .	1·725	1·02

9.8.5. The total requirement of these metarials in order to produce the requisite quantities of cryolite and aluminium fluoride together with the quantities of fluorspar needed for direct use in the smelters would be as follows :—

TABLE 9.10

Total Requirements of fluorspar and aluminium hydrate

(In '000 Tonnes)

	1968	1969	1970	1971
Fluorspar . . .	14	16	19	21
Aluminium hydrate .	6	7	8	9

9.8.6. When the production of fluorspar commences at Ambadungar it should fully meet the requirements of the aluminium industry. The alumina requirements are comparatively small, and it should be possible for the indigenous industry to meet it.

9.8.7. For the reasons already mentioned in paragraph 9.5.4 we consider that it would be desirable to produce the requirement of aluminium hydrate also indigenously instead of importing it. There is a significant disparity between the prices of imported and indigenous cryolite and aluminium fluoride. The cost of the indigenous aluminium fluoride ex-Navin Flurine Industries' works is Rs. 6,050 per tonne and for cryolite it is Rs. 5,000 per tonne exclusive of all taxes as against the c.i.f. price of Rs. 1,900 per tonne for

cryolite and Rs. 2,070 for aluminium flouride. In both the cases the price of the indigenous product is almost three times that of the imported item. Fluorspar which is the main raw material for the manufacture of both items is imported by the manufacturer at a c.i.f. price between Rs. 211 and Rs. 758 per tonne. The import duty on fluorspar is 60%. Aluminium hydrate or alumina was imported at the c.i.f. rate of Rs. 777 per tonne. The rate of duty is 15% standard and 5% preferential under Item No. 28 of the I.C.T. Schedule. The duty on cryolite and aluminium fluoride is 27½ per cent Standard and 17½% preferential under Item No. 28 of the ICT Schedule while the duty on the raw material is 60%. This tariff anomaly needs to be rectified and the duty on the raw material should be brought down to the same level as that of the finished material. It is also necessary to investigate into the reasons for the very high prices of these two materials in order to explore the possibilities of bringing them down.

9.9. *Pitch* : About two hundred kilograms of pitch are needed for each tonne of metal. Both soft and hard pitch are available indigenously. Soft pitch is supplied by Shalimar Tar Products, Bararee Coal Company and Hindustan Steel Ltd., Bhilai. Hard pitch is produced by Hindustan Steel Ltd., Rourkela only. While Indian Aluminium Co. uses soft pitch and Madras Aluminium Co. uses mostly hard and medium pitch, Hindustan Aluminium Corporation uses all the varieties. No producer has complained against the prices of pitch but Madras Aluminium Co., and Hindustan Aluminium Corporation have stated that the quality of pitch is not to their specification and that the quality of hard pitch supplied by the Hindustan Steel has of late deteriorated. Inferior quality of pitch causes dusting in the smelter thereby increasing the consumption of power per tonne of metal and also spoils the quality of the product. The representative of the Ministry of Steel, Mines and Metals stated at the public inquiry that if the producers were to clarify their problems with regard to specification it may be possible to settle the matter by mutual discussion. Madras Aluminium Co. and Indian Aluminium Co. have stated that they experience difficulty in getting an adequate number of wagons for the bulk movement of pitch. The Sub-Group anticipates shortage

of hard pitch supplied by the Hindustan Steel Ltd., after 1970-71 and has recommended the setting up of sufficient distilling facilities. We would invite the attention of the Hindustan Steel Ltd., to the need for improvement in the quality and for stepping up capacity in order to meet future requirements of the aluminium industry.

9.10. *Anode and Cathode Carbon materials* : These carbons are made from calcined anthracite coke, pitch and graphite. About 30 Kilograms of carbon are required for each tonne of aluminium produced. All the units are at present making their own anodes. In the case of cathodes, Indian Aluminium Co., the Madras Aluminium Co. and the Aluminium Corporation of India are importing pre-baked blocks/plates which are made from calcined anthracite coal, calcined petroleum coke, pitch and graphite. The India Carbon Co. Ltd., has informed us that it has applied for licence to manufacture cathode blocks. It also appears that it is in a position to cater to the needs of the aluminum industry for pre-baked carbon blocks which are being imported. It would therefore be desirable to explore the possibility of indigenous manufacture of those items also instead of making substantial outlays on imports.

9.11. *Electric power* :

9.11.1. One of the items of the heaviest cost in the production of aluminium is power. The actual consumption of power per tonne of aluminium by the producers during the last four years was as follows :

TABLE 9.11

Power consumed for production of aluminium

	(Quantity (1000 Kwh.) consumed per tonne of Metal			
	1964	1965	1966	1967
(i) Indian Aluminium Co., Alupuram	20·36	20·33	20·15	18·96
Hirakud	19·06	19·12	22·20	20·13
(ii) Madras Aluminium-Co.	..	20·57	20·57	20·57
(iii) Hindustan Aluminium Corporation	18·60	18·86	19·06	18·80

9.11.2. The rates per unit excluding duty for the different regions in the country vary from Rs. 100 per Kwy to Rs. 307 per Kwy as the figures in the table 9.12 would show.

9.11.3. At the time of the last inquiry the Commission had made a recommendation that the whole question should be examined in consultation with the State Governments and the representatives of the States Electricity Boards and the Aluminium producers so that means may be devised to assure the industry of reasonably low tariff rates and uniformity and constancy of duties over long periods and to keep the rates chargeable to it constant and at a low margin of profit. The Ministry of Irrigation and Power after having considered the recommendations of the Venkataraman Committee came to the conclusion that the Electricity Boards should supply power normally at rates not lower than those which provide for operation, and maintenance costs, depreciation and interest charges and some margin of profit. In regard to the rate of supply of power to the electrical, chemical and metallurgical industries, Government suggested that the profit margin may be reduced to a suitable level but in any case the rate should not be lower than what can meet the cost of operation maintenance, depreciation and interest charges. The Central Water and Power Commission has observed that the proposal for uniform tariff all over the country for power supplied to the aluminium industry is not feasible since ownership source, scale of generation, extent of transmission and distribution facilities, load potentials etc. vary from State to State as also the financial position of the State Electricity Boards. As regards the levy of Electricity duty, the Venkataraman Committee had recommended a ceiling of one and half per cent on the capital base, the actual rate of duty being left to the discretion of the State Governments.

9.11.4. The Ministry of Steel, Mines and Metals is of the view that in the case of thermal power the rates cannot be called economic for aluminium smelting and has cited the case of Koros aluminium project where the rate of about Rs. 286 per Kwy was being quoted. The rates at present operative in the various states where aluminium industries are located are as follows :—

TABLE 9.12.

Power rates for the aluminium industry (for aluminium smelting only)

Name of the Company	Quantum of power/contracted demand	Rate Rs. per KW year	Rate per unit assuming 90% L.F.	Rate of elect duty per Unit	Total Cost per Unit	Remarks
1	2	3	4	5	6	7
(i) Hindusthan Aluminium Corporation, U.P.	(i) 55 MW (ii) 100 MW*	175 307	1·997717p 3·506p	Nil Nil	1·997717p 4·479p	The price under 'total cost' takes into account coal price variation @0·973p/unit. The Corpn. have stated that the rate for power works out to about Rs. 400 per KW year. *The Corpn. have since commissioned their own thermal plant and the extent of power being obtained from the UP Grid is not known.
(ii) Aluminium Corpn. of India, W. Bengal	15000 KW	247	2·97 p	About 0·55p. per Kwh.	3·52p. per Kwh	The price of Rs. 247 per KW year includes coal surcharge of Rs. 127·00.

(iii) Madras Aluminium Co., Madras.	40000 KVA	120 — 50% surcharge	0.218p.	5% on elect. bills	0.267 p	It is stated that the Co. is exempted from the electricity duty for 3 years from 31-1-1965. The rate shown under Col. 6 is inclusive of 50% surcharge.
(iv) Indian Aluminium Co., Kerala.	7000 KW 7000 KW 1300 KW 12500 KW 12500 KW	100 105 130 130 130	.. ..	20% 20% 10% 10% 10%	(In dispute)	It is stated that the payments are made on the basis of "30 minute maximum demand"—in other words, the Co. do not pay on the basis of energy or units consumed. The load factor is about 98% and not 90%.
(v) Indian Aluminium Co., Orissa	25000 KW 1500 KW 23500 KW	120 135 165	.. .. ..	15% 15% 15%	..	
(vi) Indian Aluminium Co., Mysore.	75000 KW	150	..	..	..	Smelter under erection.
(vii) Bharat Aluminium Co., Maharashtra.	..	205	..	..	..	The rate being offered by the State Govt. Agreement still under negotiation.
(viii) Bharat Aluminium Co., M.P.	..	126 for first block of 80 MW & 286 for balance.				

9.11.5. In view of the fact that the entire issue has been examined in detail by the Government with the help of a Committee appointed for this purpose it is not possible to make any additional recommendation on this point even though the present situation is far from satisfactory and leads not only to high costs but constitutes also a disincentive to some of the manufacturers to expand their capacity if the State Government do not allow them a lower rate of tariff or after having once allowed it, to effect periodical increases. Considering that one of the largest items of cost in the case of aluminium is power and also in view of the fact that the industry will greatly expand in future it would be desirable for Government to examine again this question in detail particularly with a view to determine the range of disparities between one state and another and to devise ways and means for bringing about such uniformity as may be possible without affecting the financial interest of the parties concerned. In this context the idea of a National Grid has been canvassed from time to time. We are conscious of the wide implications of such a proposal but it seems to us opportune that some preliminary thinking should be given to the subject in consultation with the State Governments with particular reference to the possibility of building up such a grid in the interest of developing electro-chemical and electro-metallurgical industries in the country, whose electricity bill constitutes a major item of cost.

10. *Quality and Research:*

10.1. General satisfaction has been expressed in the replies that we have received to our questionnaire on the quality of primary metal. On sheets and circles a certain amount of dissatisfaction still prevails. It has been stated by some of the consuming establishments that the finish, hardness, and uniformity in thickness is not satisfactory. In the case of wire rods also dissatisfaction has been voiced. One of the largest users of container sheets has complained about lack of uniformity in thickness and surface defects like dent.

10.2. The Indian Electrical Manufacturers' Association intimated to the D.G.T.D. the following defects with regard to the indigenous E.C. grade rods :

(i) Lack of consistency in tensile strength or size.

(ii) Foreign material embedded in the rods.

(iii) Presence of hollows and blowholes.

(iv) Poor coiling, that is coils are found to contain two on three pieces instead of one.

10.3. It appears that in certain cases the quality of the Indian product is not satisfactory and that there is considerable room for improvement.

10.4. The industry has been in existence for the last twenty years and has had the benefit of protection. It was to be expected that during this period adequate indigenous know-how would have developed in order to enable any new units, that may be set up, to draw upon such techniques as may be available within the country, to reduce dependence on comprehensive foreign collaboration. This could have been achieved by setting up a Design and Research Organization with the active help of the aluminium manufacturers in India. But such a step was not until recently taken. It is however heartening to note, that it is now proposed to set up an Aluminium Institute which will make use of existing facilities at the National Metallurgical Laboratory, and other places in the country.

11. *Standards :*

11.1. We have been informed by the Indian Standards Institution that there are 30 Indian Standard specifications for aluminium products. The list is given below :

(i) *Bar, rod and sections*

IS : 733-1967	Wrought aluminium and aluminium alloys, bar, rods and sections (for general engineering purposes) (*first revision*)
IS : 1841-1961	Rolled aluminium rods (electrical conductor grade) for electrical purposes

Draft Indian Standard Dimensions for wrought aluminium and aluminium alloy, bar, rod and section.

(ii) *Plate, sheet and strip*

IS : 736-1965	Wrought aluminium and aluminium alloys, plate (for general engineering purposes) (*revised*)
IS : 737-1965	Wrought aluminium and aluminium alloys, sheet and strip (for general engineering purposes) (*revised*)
IS : 1254-1965	Corrugated aluminium sheet (*revised*)
IS : 2676-1964	Dimensions for wrought aluminium and aluminium alloys, sheet and strip
IS : 2677-1964	Dimensions for wrought aluminium and aluminium alloys, plate.
IS : 3436-1966	Aluminium-clad aluminium alloy sheet, strip and coil for aircraft purpose.

(iii) *Wire*

IS : 739-1966	Wrought aluminium and aluminium alloys, wire (for general engineering purposes) (*revised*)
IS : 2067-1962	Wrought aluminium for electrical purposes, wire (Other than that used for overhead conductors)
IS : 2525-1963	Diameters of aluminium and aluminium alloys wire

(iv) *Tube and hollow sections*

IS : 738-1966	Wrought aluminium and aluminium alloys, drawn tube (for general engineering purposes) (*revised*)
IS : 1285-1958	Wrought aluminium and aluminium alloys, extruded round tube and hollow sections (for general engineering purposes)

IS : 2673-1964 Dimensions for wrought aluminium and aluminium alloys, extruded tube (round)

IS : 2678-1963 Dimensions for wrought aluminium and aluminium alloys, drawn tube

(v) *Ingots and castings*

IS : 20-1959 Cast aluminium and aluminium alloys for utensils (*second revision*)

IS : 23-1965 Primary (virgin) aluminium notched bars and ingots for remelting for aircraft purposes.

IS : 202-1966 Aluminium casting alloy ingots and castings for aircraft purposes (*second revision*)

IS : 617-1959 Aluminium and aluminium alloys ingots and casting for general engineering purposes (*revised*)

IS : 1820-1963 Recommended shapes and sizes of aluminium notched bars and ingots for remelting purposes.

IS : 2590-1964 Primary aluminium ingots for remelting for general engineering purposes.

IS : 3435-1968 99 per cent secondary aluminium notched bars and ingots for remelting for aircraft purposes.

IS : 4026-1967 Aluminium ingots (E.C. grades)

(vi) ***Rivet, bolt and screw stock***

IS : 710-1966 Wrought aluminium and aluminium alloys, rivet stocks (for general engineering purposes)

IS : 1284-1966 Wrought aluminium and aluminium alloys, bolt and screw stock (for general engineering purposes) (*revised*)

IS : 3577-1967 Diameters of wrought aluminium and aluminium alloys, rivet, bolt and screw stock

(vii) *Forging stock and forgings*

IS : 734-1967 Wrought aluminium and aluminium alloys, forging stock and forgings (for general engineering purposes) (*first revision*)

(viii) *Aluminium utensils*

IS : 21-1959 Wrought aluminium and aluminium alloys for utensils (*second revision*)

(ix) *Aluminium foil*

IS : 1705-1960 Aluminium foil for milk bottle caps

(x) *Anodized Aluminium*

IS : 1868-1968 Anodized Aluminium

11.2. All the producers claim that their products are in general conformity with the provisions of the Indian Standards specifications.

11.3. *Certification Marks Scheme.*—The ISI issues licences for use of the ISI Certification Mark which would ensure conformity of the product to the relevant Indian Standard. None of the primary metal producers had joined this scheme while 26 other units had registered themselves until January 1968 and were using the Certification Mark for conformity to IS : 21-1959, namely Wrought Aluminium and Aluminium Alloy for utensils.

12. Import Control Policy

12.1. *Import Control Policy.*—For the purpose of import control, aluminium and aluminium manufactures are covered, by serial Nos. 12 and 13 of part II of Import Trade Control Schedule. The import control policy followed during the licensing periods from April 1964 to the current licensing period is summarised below.

12.2. *Aluminium circles, sheets, strips and other manufactures not otherwise specified.*—During the period 1964-65, allocations were made in favour of actual users for wire rods for the manufacture of ACSR and AAC as well as for the import of aluminium electrodes. During the period 1965-66 applications from chemical industry for the import of 34 gauge aluminium strip required for making antibiotic vial seals were considered. Manufacturers of bangles in the

s mall scale sector were also allowed to meet 25 per cent of the requirements of finer varieties of aluminium foils by imports subject to a maximum of Rs. 500. During the period 1966-67 the same policy continued and during the period 1967-68 it was limited to wire rods used in the manufacture of ACSR and AAC, aluminium electrodes and 34 gauge and thinner gauge pre-fabricated aluminium strips in coils for the drugs and pharmaceutical industry. During the current period 1968-69 the same policy continues.

12.3. *Aluminium in crude form including ingots, bars, blocks, slabs, billets, shots and pellets.*—In 1964-65 for the non-scheduled sector/small scale units, the requirements were to be met from canalised imports and allocations in case of scheduled industries were to be made from import under the Colombo Plan.

1965-66 : In addition to what has been mentioned for the previous year, the requirements of the small scale units for electrolytic aluminium wire rods were to be met from stocks imported by the S.T.C.

1966-67 : The same policy was continued.

1967-68 : Import was limited to E.C. grade only for actual users and to scheduled units under the Colombo Plan. During the current year (1968-69) it has been allowed only in regard to the actual users for E.C. grade only.

12.4. The D.G.T.D. has informed us that following devaluation of the rupee in 1966 imports were liberalised. Two of the producers, Indian Aluminium Co. and Madras Aluminium Co. have complained that due to liberal import control policy in the post-devaluation period the indigenous producers have been finding it very difficult to dispose of their products. Manufacturers have urged that the imports of such aluminium items which are now being manufactured in the country should be totally banned.

12.5. Hindustan Aluminium Corporation has complained that licensing of import of E.C. grade metal on account of exaggerated demand of the various Electricity Boards resulted in accumulation of stocks of the indigenously manufactured material. It has been suggested that before imports are allowed domestic availability and demand should be carefully assessed by consulting indigenous manufacturers.

Since the indigenous prices were after devaluation not unfavourable and the margin of advantage to the importer was very small, import licences to the extent purported to have been issued were not utilised.

13. Imports and Exports

13.1 *Imports.*—A statement showing the imports of aluminium and its manufactures categorywise during the last four years commencing from 1964 as published in the Monthly Statistics of Foreign Trade of India is given in Appendix IV.

13.2. The following Table gives the summary of annual imports together with their value for 1964, 1965, 1966 and 1967.

TABLE 13.1

Imports of Aluminium from 1964 *to* 1967

(Quantity in Tonnes, Value in Lakhs Rs.)

Year	Aluminium & Alloy Unwrought		Aluminium & Alloy Worked		Total	
	Quantity	Value	Quantity	Value	Quantity	Value
1964	2,149	56·34	20,006	613·87	22,155	670·21
1965	3,952	104·68	18,817	592·08	22,769	696·76
1966	6,560	236·67	15,960	646·22	22,520	882·89
1967	25,801	1,084·40	22,601	1,155·84	48,402	2,240·24

13.3. The imports in the year 1967 were particularly heavy as a result of which stocks of about 17,000 tonnes are said to be available from the previous year. In future a close and most careful assessment may be made before imports on such large scale are allowed.

13.4. *Exports.*—Details of exports of aluminium from India during the years 1964, 1965, 1966 and 1967 are given in Appendix V. The following Table No. 13.2 gives a summary of the exports :—

TABLE 13.2

Exports of Aluminium from 1964 to 1967

(Quantity in Tonnes, Value in Lakh Rs.)

Year	Aluminium & Alloy Unwrought		Aluminium & Alloy Worked		Total	
	Quantity	Value	Quantity	Value	Quntity	Value
1964	2,092	42·06	265	10·83	2,357	52·89
1965	3	0·38	812	23·89	815	24·27
1966	403	11·09	936	32·45	1,339	43·54
1967	224	7·80	840	44·55	1,064	52·35

13.5. At best this constitutes about two per cent of the total production in the country.

13.6. The f.o.b. price at which exports of commercial grade aluminium are being made by the Hindustan Aluminium Corporation was reported to be 20.5 cents per pound. This is equivalent to Rs. 3,390 per tonne.

13.7. Imports have been reported at the following c.i.f. rates by the Collectors of Customs :—

	Rs. per tonne c.i.f.
U.S.A.—	
9-5-1967	4,052
31-5-1967	4,040
18-12-1967	3,729
26-2-1968	3,662
Canada—	
29-4-1967	3,919
20-6-1967	4,094
27-9-1967	4,052
28-9-1967	4,093
14-11-1967	4,070
14-2-1968	3,804
Norway—	
25-10-1967	4,340

13.8. The total imports of aluminium in crude form in the year 1967-68 were 25,480 tonnes valued at Rs. 1,062.49 lakhs. On this basis the average c.i.f. price per tonne works out to Rs. 4,170 per tonne.

13.9. Ignoring the imports from Norway, the remaining imports have been made at prices ranging from Rs. 3,662 to Rs. 4,094 per tonne c.i.f. The net loss of foreign exchange per tonne on exports would, therefore, be from Rs. 272 to Rs. 704 per tonne. If we consider the average c.i.f. price of Rs. 4,170 per tonne the loss would come to Rs. 780 per tonne.

13.10. If we adopt the latest c.i.f. prices for our comparisons, assuming that exports will be at the same rate, as we are more concerned with future and the consequent loss in foreign exchange in future the differences would be as follows :

	U.S.A. Rs.	Canada Rs.	Average Rs.
Import	3,662	3,804	3,733
Export	3,390	3,390	3,390
	272	414	343

Since it is not possible to predict the pattern of imports it would suffice to mention that the average of disadvantage will be about Rs. 350 per tonne and more for imports with higher c.i.f. value. On the whole it has been definitely established that there is a net drain in foreign exchange owing to export of metal.

13.11. It was brought to our notice at the public inquiry that in the matter of rebate of customs and/or excise duty all exporters are not treated on the same level. If this is so, we recommend that the matter may be re-examined.

13.12. After 1972-73 when the production of aluminium is likely to become surplus in the country there will be considerable scope for export, but efforts need to be made in the meanwhile to reduce the cost to a level consistent with the competition in the international market. The Ministry of Steel, Mines and Metals has informed us that with a view to encouraging the exports it has been stipulated in the

licences issued recently for additional capacity that the producers must export about 10 per cent of their expanded production of aluminium in the form of commercial grade metal or aluminium semis or finished products. To what extent the units can succeed in doing so without leading to internal price rise with the short realisation on the export is problematic. It has already been established that in the next few years substantial imports need to be maintained in order to bridge the gap between the domestic demand and availability. If on the top of it exports were to increase this gap would require further outlay on foreign exchange; it may, therefore, not be in the interest of the country to encourage exports until such time as domestic requirements can be fully met from indigenous production.

14. Existing rates of duty

14.1. *Customs duty.*—Aluminium and its manufactures are assessed to duty under Item Nos. 66(a) and 66(1) of the First Schedule to the Indian Tariff Act, 1934 the relevant extract from which is reproduced below :

TABLE 14.1

Rates of Customs duty on aluminium & aluminium manufactures

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 U. K.	A British Colony	Burma	
1	2	3	4	5	6	7	8
66	Aluminium manufactures, the following, namely:—						
	(a) Plates, sheets, circles, strips and foil, including foil in any form or size ordinarily used as parts and fittings of tea chests.	Protective	27½ per cent *ad valorem*	..	..	..	December 31, 1968

1	2	3	4	5	6	7	8
66	(1) Aluminium in any crude form including ingots, bars, slabs, billets, shots and pellets.	Protective	20 per cent *ad valorem*	..	..	..	December 31, 1968

NOTES 66(1) : (1) Under Government of India, Ministry of Finance (Department of Revenue), Notification No. 126-Customs, dated the 20th August, 1965, as subsequently amended by Notifications No. 144-Customs, dated the 31st August, 1965, No. 105-Customs, dated the 6th June, 1966, and No. 211-Customs, dated the 23rd December, 1966, the Central Government hereby exempt the goods specified in column 1 of the Table below when imported for the manufacture of aluminium conductors steel re-inforced or hard drawn stranded aluminium conductors for overhead power transmission purposes, from so much of that portion of Customs duty leviable thereon which is specified in the First Schedule to the Indian Tariff Act, 1934 as is in excess of that specified in the corresponding entry in column 2 of the said Table:

TABLE

Description of goods	Rate of duty
1	2
Electrolytic aluminium wire bars, electrolytic aluminium billets, or electrolytic aluminium ingots.	15 per cent *ad valorem*

Provided that the importer by the execution of a bond in such form and in such sum as may be prescribed by the Assistant Collector of Customs, binds himself to pay, on demand, in respect of such materials including the wastage that occurs during manufacture as are not proved to the satisfaction of the Assistant Collector of Customs, to have been used for the aforesaid purpose, an amount equal to the difference between the duty leviable on such materials but for the exemption contained herein and that already paid at the time of importation.

(2) The amendment by Notification No. 211-Customs, dated the 23rd December 1966 shall be deemed to have been into force on to the 19th November, 1966.

14.2. *Central Excise Duty.*—Aluminium and aluminium manufactures are covered under serial No. 27 of the Central Excise Schedule. The current rates of duty on the relevant items are as shown below :

TABLE 14·2

Rates of Central Excise duty on aluminium and aluminium manufactures

Tariff Item No.	Description of goods	Rate of Duty	
		Basic	Special
1	2	3	4
27. *Aluminium:*			
	(a) in any crude form including ingots, bars, blocks, slabs, billets, shots and pellets.	Rs. 950·00 per M. Tonne.	20% of the basic duty chargeable.
	(b) manufactures, the following namely, plates, sheets, circles and strips in any form or size not otherwise specified.	Rs. 1450.00 per metric tonne.	Ditto
	(bb) foils, that is a product of thickness (Excluding any backing) not exceeding 0·15 millimetre.	Rs. 2,000·00 per metric tonne	Ditto

Notes relating to the excise duty leviable :

(i) Plates, sheets, circles, strips and foils in any form or size of aluminium produced in Ordnance Factories belonging to the Central Government and intended for consumption by the Ordnance Factories or for supply to Central Government Departments are exempt from the whole of the duty of excise leviable thereon *vide* Notification No. 188/61-C. E. dated 23-12-1961.

(ii) Strips and foils of aluminium falling under this item, which are proved to the satisfaction of the Collector of Central Excise to be inteded for the manufacture of imitation "Zari", are exempt from whole of the duty of excise leviable thereon *vide* Notification No. 124/66 C.E. dated 30-7-1966.

(iii) Aluminium articles falling under sub-item (b), (bb), (c) and (d) of this item in the manufacture of which duty-paid aluminium in any form is used, are exempt from so much of the duty of excise leviable thereon as is equivalent to the duty of excise or the additional duty Section 2A of the Indian Tariff Act, 1934 (32 of 1934), as the case may be, already paid on such aluminium in any form, subject to the condition that the procedure set out in rule 56A is followed in relation to the manufacture of such aluminium articles (*vide* Notification No. 91/67-C. E. dated 26-5-67).

(iv) The Central Government hereby exempts extruded rods of aluminium with a circular or arc-like (part of a circle) cross section falling under sub-item (d) of this item—

(a) where such extruded rods have been made from aluminium in any crude form is respect of which the appropriate amount of duty under sub-item (a) of this item or the additional duty leviable under Section 2A of the Indian Tariff Act, 1934 (32 of 1934) as the case may be, has already been paid, from the whole of the duty of excise leviable thereon :

(b) in other cases from so much of the duty of excise leviable thereon as is in excess of Rs. 950.00 per metric tonne (Notification No. 119/67-C. E. dated 14-6-67).

(v) Aluminium in any crude form including ingots, bars, blocks, slabs, billets, shots and pellets falling under sub-item (a) of this item is exempt from the whole of the duty of excise leviable thereon if such

aluminium in any crude form is made from any of the following materials or a combination thereof namely:—

(i) old aluminium scrap; or

(ii) scrap obtained from virgin metal on which the prescribed amount of duty of excise or the additional duty leviable under section 2A of the Indian Tariff Act, 1934 (32 of 1934), as the case may be, has already been paid ; or

(iii) virgin aluminium in any crude form on which the prescribed amount of duty of excise or the additional duty leviable under section 2A of the Indian Tariff Act, 1934 (32 of 1934), as the case may be, has already been paid (Notification No. 120/67 C.E. dated 14-6-67).

(iv) The Central Government hereby exempts the following aluminium manufactures, namely, plates, sheets, circles, and strips in any form or size falling under sub-item (b) of this item from so much of the duty of excise leviable thereon as is in excess of Rs. 500/- per metric tonne if such aluminium manufactures are manufactured out of aluminium in any crude form made from any of the following materials or a combination thereof, namely;

(i) old aluminium scrap; or

(ii) scrap obtained from virgin metal on which the prescribed amount of duty excise or the additional duty leviable under section 2A of the Indian Tariff Act, 1934 (32 of 1934), as the case may be, has already been paid; or

(iii) virgin aluminium in any crude form on which the prescribed amount of duty of excise or the additional duty leviable under section 2A of the Indian Tariff Act, 1934 (32 of 1934), as the case may be, has already been paid.

Nothing contained in this notification shall apply to plates, sheets, cirlces and strips of the kind referred to above, manufactured by a manufacturer who also manufactures virgin aluminium from bauxit or from alumina or from both, whether in the same or in another factor in India (Notification No. 121/67-C. E., dated 14-6-67).

(vii) Aluminium circles, falling under sub-item (b) of this item and having thickness of an above 0·56 mm (24 SWG) but not above 1·22 mm (18 SWG), are exempt with effect from 26th may, 1967 from so much of the duty of excise leviable thereon as is equivalent to the duty leviable at Rs. 500 per metric tonne (Notification No. 169/67 C.E. dated 24-7-67).

(viii) The Central Government hereby exempts with effect from 26-5-67 aluminium in any crude form falling under sub-item (a) of this item and aluminium manufactures falling under sub-item (b) of the same item from so much of the special duty of excise as is equivalent to the special duty of excise leviable at Rs. 120·00 per metric tonne.

Nothing contained in this notification shall apply to any aluminium manufactures in respect of which the exemption contained in notification No. 121/67-Central Excises dated the 14th June, 1967, is availed of (Notification No. 190/67-C.E. dated 5-8-1967).

(ix) In exercise of the powers conferred by sub-rule (1) of rule 8 of the Central Excise Rules, 1944 read with sub-clause (4) of clause of the Finance Bill, 1958 which clause has, by virtue of a declaration made under the Provisional Collection of Taxes Act, 1931 (16 of 1931), the force of Law, the Central Government hereby exempts aluminium falling under item No. 27 of the First Schedule to the Central Excise Salt Act, 1944 (1 of 1944) and specified in column (2) of the Table hereto annexed; from so much of the duty of excise and

special duty of excise leviable thereon as is specified in column (3) and column (4), respectively of the said Table, subject to the conditions that—

(i) such aluminium is manufactured by its manufacturer from bauxite or from alumina or from both; and

(ii) clearances of aluminium, in whatever form, by by the said manufacturer during the preceding financial year did not exceed 12,500 metric tonnes.

Table

Sr. No.	Description	Rate of duty of excise	Special duty of excise
1	2	3	4
1	Aluminium in any crude form falling under sub-item (a) of Item No. 27 aforesaid.	Rs. 80 per metric tonne.	The whole.
2	Aluminium manufactures falling under sub-item (b) of Item No. 27 aforesaid—		
	(a) aluminium circles having thickness of and above 0·56 millimetre but not above 1·22 millimetres.	Rs. 80·00 per metric tonne.	The whole
	(b) Other aluminium manufactures.	Nil	Rs. 270·00 per metric tonne.
3	Aluminium foils, pipes and tubes and extruded shapes and sections falling under sub-items (bb)* of Item No. 27 aforesaid.	Nil	Rs. 150·00 per metric tonne.

Nothing contained in this notification shall apply to any manufacturer who avails of the exemption contained in the noification of the Government of India in the Ministry of Finance (Department of Revenue & Insurance) No. 32/68-Central Excises, dated the 1st March 1968. (Notification No. 24/68-C.E., dated 1-3-1968.)

(x) In exercise of the powers conferred by sub-rule (1) of rule 8 of the Central Excise Rules, 1944, read with sub-clause (4) of clause of the Finance Bill, 1968 which clause has, by virtue of declaration made under the Provisional Collection of Taxes Act, 1931 (16 of 1931), the force of law, the Central Government hereby exempts aluminium in any crude form falling under sub-item (a) of Item No. 27 of the First Schedule to the Central Excises and Salt Act, 1944 (1 of 1944), and aluminium manufactures falling under sub-item (b) of the said Item 27, from so much of the special duty of excise leviable thereon under sub-clause (a) of clause aforesaid as is equivalent to the speical duty of excise leviable at Rs. 120.00 per metric tonne.

Nothing contained in this notification shall apply to any aluminium manufacturers in respect of which the exemption contained in the notification of the Government of India in the Ministry of Finance (Department of Revenue & Insurance) No. 121 67-Central Excise, dated the 14th June, 1967, is availed of.

(Notification No. 32/68-C.E., dated 1-3-1968.)

14.3. There has been general complaint that the revised excise duties are very high resulting in high price owing to the increase from about 10 per cent of the price to about 25 per cent.

15. Selling System & Selling Prices

15.1. There is no uniformity in the distribution arrangements of the various companies engaged in the manufacture of primary metal and semis. The Indian Aluminium Company has four branches

in different parts of the country and conducts its sales through the depots. In some cases distributors and stockists were also appointed and a discount of 3 per cent given to them. Ingots, rods, wires, wire bars and billets are sold direct to consumers which account for about 98 per cent of sales. The remaining 2 per cent is undertaken through the stockists and distributors. The Hindustan Aluminium Corporation also has four zonal offices and stockists tool. Most of its sale is made directly. In the case of stockists the commission of one to two per cent is paid. Madras Aluminium Co. also makes direct sales but owing to recession it has now opened certain sales depots at various centres. Owing to the shortage of E.C. grade aluminium distribution control was exercised by Government but it has been withdrawn this year. Now there is no control either on distribution or price. No complaints have been made to us with regard to the selling system or about the availability of aluminium except by the Development Commissioner for Small Scale Industries on behalf of small scale units who find the availability of sheets and circles for utensil manufacture inadequate. No specific data with regard to the complaints for any particular region or area were however furnished to us.

15.2. *Selling prices* : Selling prices of aluminium products during the previous two years and June 1968 as intimated to us by the manufacturers of primary metal as well as manufacturers of semis are given in Table 15.1 on the next page.

15.3. These have remained steady or have shown a downward trend as can be seen in the case of introduction of rebate by one manufacturer. Since the last inquiry prices went up till beginning of 1967 when they had a tendency to come down and in the case of most of the manufacturers it registered a fall. This was due mainly to surplus availability of aluminium in the country as a result of heavy imports. But the manufacturers of aluminium semis are not satisfied even with the present level of prices and argue that compared to the c.i.f. prices of the imported material these are higher.

TABLE—15·1

Selling prices of aluminium products during December 1966 December 1967, and June 1968

Sl. No.	Name of the manufacturer	Item	Unit	Selling prices as in Dec., 1966	Dec. 1967	June '68	Remarks
1	2	3	4	5	6	7	8
					Rs.	Rs.	
(i)	Indian Aluminium Company	(*i*) *Virgin ingots 99·5 % minimum purity*					
		(a) E. C. Grade	Tonnes	4 090	4,090	4,090	*A rebate of Rs. 600/- per tonne was allowed. The rebate reduced to Rs. 450/- from April, 1968.
		(b) Commercial	Tonnes	4.070 (Jan.67)	4,070	4,070	
		(ii) *Aluminium Sheets*					
		Common alloy flat sheets					
		(a) 20 SWG or 0·91 mm.	Tonnes	6,130	6,130	6,130	However, due to severe competition, discounts amounting to as much as over Rs. 300/- per tonne had to be given additionally. (June 1968.)
		(b) 18 SWG or 1·22 mm.	Tonnes	5,950	5,950	5,950	

	(iii) *Aluminium Circles*					
	(a) Common alloy sheared circles 20 SWG or 0·91 mm over 279 mm to 406 mm.	Tonnes	5,990	5,990	5,990	
	(b) 18 SWG or 1·22 mm over 279 mm to 406 mm.	Tonnes	5,880	5,880	5,880	
(ii) Hindustan Aluminium Corporation.	*Virgin ingots* 99·5% *minimum purity*					
	(a) E. C. Grade . .	Tonnes	4,400	4,150	4,150	@There is a cash discount of Rs. 150/- per tonne.
	(b) Commercial grade	Tonnes	4,400	4,100	4,100	
(iii) Aluminium Corporation of India.	Ingots . . .	Tonnes	4,000	3,950	3,950	
	Sheets . . .	Tonnes	5,000	5,700	5,600	
	Foil . . .	..	N.A.	N.A.	N.A.	
(iv) Madras Aluminium Company.	Ingots . . .	Tonnes	4,535	4,600*	4,600*	
(v) India Foils Ltd. . .	(a) Aluminium Foils .	Kg.	10·55	10·55	10·55	
	(b) Teachest lingings .	Set.	0·90	0·90	0·90	
	(c) Container sheets ·	Kg.	9 90	9.90	9·90	
(vi) Rashtriya Metal Industries Ltd.	*Sheared Circles* (a) 22,20,18 SWG of dia. up to 14".	Tonnes	6,650	7,457	7,150	
	(b) 22, 20, 18 SWG of dia. 19" to 24".	Tonnes	6,792	7,600	7,300	

1	2	3	4	5	6	7	8
					Rs.	Rs.	
(vii)	Devidayal Metal Industries.	(i) Aluminium Sheets Common: alloy flat sheets with gauge over 0·90 mm to 1·25 mm.	Tonnes	7,125	8,125	7,625	
		(ii) Aluminium Circles:	Tonnes	8,000	9,000	7,125	
		(a) Common alloy sheared circles with gauge over 0·90 mm to 1·25 mm and size over 279 mm to 406 mm.					
		(b) Common alloy punched circles with guage over 0·90 mm to 1·25 mm and size over 279 mm to 406 mm.	Tonnes	8,000	9,000	7,125	
(viii)	Popular Metal Works & Rolling Mills.	Aluminium Sheets/circles	Tonnes	7,000	7,200	6,900	
(ix)	Mysore Premier Metal Factory.	Aluminium circles 25 ordinary 16G to 24SWG 4″ to 18″ dia.	Kg.	7·30	7·75	7·75	

16. Cost of production and Estimates of Fair Ex-works Prices

16.1. Our Cost Accounts Officers have examined the cost of production of ingots produced by the Indian Aluminium Co. Ltd., at its two smelters at Hirakud and Alupuram and by Hindustan Aluminium Corporation Ltd., at Renukoot for the year 1957. Costs of selected varieties of sheets and circles as well as foils produced by Indian Aluminium Co. Ltd., at its Belur and Kalwa Works have also been examined. We have discussed the data with the representatives of the companies and have framed our estimates for the future. As the two companies desire that the details of their costs should be treated as confidential, we are sending the reports of our Cost Accounts Officers as a separate enclosure to this Report. The factors taken into account in our estimates for the future are indicated in the subsequent paragraphs.

16.2. The nature of data available for computation of costs being different for the two units, the composition of the figures shown under different heads in the costs or estimates are not comparable with each other. For example, in one case under the head 'wages' the incidence of wages of all workers in the factory is shown whereas in the other case the incidence of only the direct wages is included. Juxtaposition of such figures in a comparative table can only be insleading. Hence in the comparative tables of costs and estimates exhibited in this Report, the costs under different detailed heads have been added together so as to render them more or less comparable.

16.3. *Production :* The following table indicates the actual production levels achieved during the period selected for costing *viz.*, year ended 1967 and that estimated for future in respect of the two companies and for the different items.

TABLE 16·1

Comparative production levels

	Indian Aluminium Company Ltd.		Hindustan Aluminium Corporation Ltd.	
	Actuals 1967	Estimate for future	Actuals 1967	Estimate for future
	Tonnes	Tonnes	Tonnes	Tonnes
1	2	3	4	5
(i) Alumina (Calcined)	64,220	70,000	65,472	135,000
(ii) Aluminium Ingot .	34,307	37,675	43,614	60,000
(iii) Rolled Products (Sheets & Circles).	15,127	18,000	8,969	12,000
(iv) Foils (Foil Rolling Mills).	1,537	1,800	..	..

16.4. In the case of Indian Aluminium Company, the production has been taken at capacity levels for all products, whereas for Hindustan Aluminium Corporation, Alumina production has been taken at 90 per cent of the capacity in view of the fact that the processing plants have certain deficiencies due to the quality of bauxite received from different areas. The company felt that it could achieve only about 80 per cent of the capacity but after discussions with the Industrial Adviser, D.G.T.D., we have adopted 90 per cent as an optimum level and have prepared our estimates on this basis. In regard to ingots, capacity level has been assumed. As regards Rolling Mills of Hindustan Aluminium Corporation, based on the availability of ingots and the pattern of production, a level of 12,000 tonnes has been adopted in our estimates. Foils are produced only by one company.

16.5. *Alumina* : In the case of Hindustan Aluminium Corporation bauxite is obtained from a subsidiary company at contracted rates (besides a small portion mined by the unit itself) whilst in the other case bauxite is mined departmentally. The transport of bauxite involves a long haulage by rail in one case and comparatively a shorter rail transport in the other. The alumina produced by Indian Aluminium Company is transported to the smelters located far away from the Alumina plant involving additional freight charges before being converted into Ingots. In the other case, since both the Alumina plant and Smelter are located as an integrated unit in one place, such transport costs, bagging and loss in transport (about 1 per cent) are not incurred. By and large, the transport cost of bauxite in one campany is offset by the transport etc. costs of alumina by the other. The proper stage for comparison of costs is, therefore, at the site of the Smelters including any loss of material in transit. Table 16.2 shows our estimates of cost (excluding depreciation) of alumina for 1964 inquiry, the actual costs for the costed period 1967 and our estimates for the future.

16.6. Besides bauxite, the other main material used in the production of alumina is Caustic Soda forming a bulk of the cost of Alumina. The usage of this material has been found satisfactory depending on the processes adopted in individual units. The other materials used were lime, filter cloth, soda ash and starch which formed a minor portion of the costs. The conversion charges compare well in the estimates. By and large, the costs for alumina at the two units may be considered reasonable.

16.7. *Ingots* :

16.7.1. In estimating future costs, the production as stated earlier has been taken at capacity levels. Normal grade increments to staff and workers have been provided and provision has been made for additional hands where considered necessary to handle the additional production estimated for future compared to that in 1967. The cost of stores materials has been taken at current prices. Economies due to larger estimated production have been properly

TABLE 16.2

Cost of Production of Alumina

(Cost per tonne)

Name of Firm / Details	Indian Aluminium Co. Ltd.			Hindustan Aluminium Corporation Ltd.		
	Commission's estimate in 1964	Actuals 1967	Estimate for Future	Commission's estimate in 1964	Actuals 1967	Estimate for Future
(A) Production of Calcined Alumina (Tonnes)	60,000	64,220	70,000	40,000	65,472	135,000
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
(B) Cost of Production :						
(a) Raw Materials . . .	177	186	202	262	289	298
(b) Conversion charges (including bags)	163	199	218	198	219	214
(c) Railway Freight & transit loss .	73	97	83	..	..	..
Weighted Average cost (Excluding Depreciation).	413	482	503	460	508	512
Delivered Cost to Smelters:						
(i) Alupuram	475	538	581			
(ii) Hirakud	382	426	456			
WEIGHTED AVERAGE .	413	482	503			

reflected in the costs. Table 16.3 shows the costs of production of Ingots as estimated during 1964 inquiry, the actuals for 1967 and our estimates for future.

16.7.2. One peculiar feature noticed in our study related to the non-availability of alumina in sufficient quanties to meet the requirements of the smelters of Indian Aluminium Company. The capacity of its alumina plant is only 70,000 tonnes whereas the hot metal capacity is 38,000 tonnes requiring about 74,600 tonnes of alumina. The shortfall is proposed to be met by imports and this has been provided in the estimates. Even assuming for a moment that no imports would be permitted, the delivered cost of alumina to Alupuram Works from any other indigenous producer having surplus capacity would be more or less the same and is not likely to vitiate the costs.

16.7.3. The Indian Aluminium Company generally casts ingots through holding furnace by which method it can control and ensure uniform composition of its ingots for fairly large batches. In this process a small quantity of metal is lost. Adjusting for this the net ingot production has been estimated at 37,675 tonnes per annum.

16.7.4. In making the estimates for future, suitable provisions have been made for grade increments, gratuity, and additional hands where considered necessary for handling additional production over 1967. The cost of stores and other materials have been taken at current rates and the usages have been adopted at practically the same levels as in 1967 with suitable minor alterations where considered necessary. Adequate provision has been made for pot lining and start-up expenses and the life of pot linings have been based on the trends obtained during the latest 3 years.

16.7.5. The materials from a major operation of the costs *viz.*, about 50 per cent of which alumina accounts for about two-thirds. The other items are Cryolite, Aluminium Fluoride, Fluirspar, Soda Ash, Anthracite Coal, Petroleum Coke, Soft Pitch etc. During cost discussions on the advice of the Indistrial Adviser of the DGTD, it was decided to adopt the usage of Cryolite in the ratio of 20 per cent being imported and 80 per cent to be purchased

TABLE 16·3

Cost of Production of Aluminium Ingots

(Cost per Tonne)

Name of Firm / Details	Indian Aluminium Co. Ltd.			Hindustan Aluminium Corporation Ltd.		
	Commission's Estimate 1964	Actuals 1967	Estimate for Future	Commission's Estimate 1964	Actuals 1967	Estimate for Future
1	2	3	4	5	6	7
(A) Production of Ingots (Tonnes) .	30,104	34,307	37,675	22,000	43,614	60,000
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
(B) Cost of Production :						
(a) Raw Materials . . .	1,178	1,438	1,607	1,332	1,658	1,605
(b) Power	392	379	434	360	797	857
(c) Other conversion charges . .	430	564	644	418	412	451
(d) Total	2,000	2,381	2,685	2,110	2,867	2,913
(e) Depreciation . . .	341	320	238	617	939	503
(f) Excise Duty on Ingot (Absorbed in costs)	..	131	114	..	..	(—) 43
(g) TOTAL COST . . .	2,341	2,832	3,037	2,727	3,806	3,373
(h) Contingencies (5% on d) . .	100	..	134	105	..	146
(i) Return	469	..	504	603	..	606
Ex-Works Price .	2,910	..	3,675	3,435	..	4,125

Break-up of Total Cost ('g' above) :						
(i) Alupuram Works . . .	2,553	2,937	3,323	..	..	..
(ii) Hirakud Works . . .	2,235	2,728	2,804	..	..	..
WEIGHTED AVERAGE .	2,341	2,832	3,037	2,727	3,806	3,373
WEIGHTED AVERAGE FOR BOTH COMPANIES	3,132	..	3,951			

indigenously. Similarly, in the case of Aluminium Fluoride, 50 per cent would be imported and 50 per cent is to be met from indigenous production. For the prices of these indigenous products, a reduction of 25 per cent on the indigenous selling price in view of possible economies in future resulting from increased production and off-take may be adopted. Estimates have been built up taking these factors into account and also the usage of these two materials at 0.03 tonne each. In regard to the other materials the prices and usages were considered normal depending on the types of pots in usage. For pot lining, however, the standard quantities of materials as furnished by the companies were adopted which conformed practically to the actual achievements. The variations in costs between 1964 and 1967 were mainly due to devaluation and changes in the wages levels and prices of stores. By and large, the costs of ingots compare well between the two companies, except for power, which is high at Renukoot due to higher rate of power purchased from U. P. Electricity Board.

16.7.6. Hirakud and Alupuram Smelters were getting power at specified rates till the beginning of 1968. Recently the respective Eelctricity Boards have considerably enhanced the power cost (33-1/3% for Alupuram effective from 1-6-1968 *vide* Kerala State Electricity Supply Surcharge Order 1968) and 15 per cent duty for Hirakud from 1968 as per the Agreement. The result has been that Alupuram cost have gone up by about Rs. 99 per tonne of ingot and in the case of Hirakud the increase in power cost has been absorbed by the higher estimated production. The overall variation for Indian Aluminium Company in the estimate for power covering both the Smelters is about Rs. 55/- per tonne of ingot over 1967.

16.7.7. *Depreciation :* This has been provided at income tax rates on the written down value of the fixed assets including allowances for the multiple shifts worked. Provision for additions required as claimed by the units were scrutinised by the Industrial Adviser to DGTD and was found to be reasonable. The depreciation element for Indian Aluminium Company has come down by Rs. 82 per tonne in the estimate compared to the actuals in 1967. For Hindustan Aluminium Corporation, there has been considerable

reduction due to larger volume of estimated output. The depreciation in the case of the latter company is higher by Rs. 265/- per tonne of ingot due to the plant being new and the comparatively higher initial costs and depreciation in earlier years.

16.7.8. *Excise Duty :* Governmnt have granted tax credit at 25 per cent to this industry and the benefit will accrue on the excess production attained over 1964/65 levels. While imposing excise duty on aluminium products, Government desired that the producers of ingot should absorb the excise duty at Rs. 250/- per tonne which should not be passed on to the consumers. Taking this as well as the tax credit grossed up the net absorption in the estimated costs would be about Rs. 114/- per tonne in one case and there will be an advantage of about Rs. 43/- in the other due to larger quantum of production over the base year 1964/65.

16.8. *Sheets and Circles.*

16.8.1. Table 16.4 shows the actual costs during the year 1967 and the future estimates for certain varieties of sheets and circles.

16.8.2. As on c.i.f. data relating to imports are available, this statement can be taken to show only the variations in costs between 1967 and those estimated for future. The Indian Aluminium Company maintains detailed cost data relating to each group of rolled products whereas no such data were available at Hindustan Aluminium Corporation. Even production figures 'gauge-wise' and 'size-wise' are not available. It is essential that this company should maintain adequate records of production of individual gauges etc., so as to enable a comparison with other units. No abnormality in the cost of production of sheets and circles was noticed at Indian Aluminium Company's Belur Works.

16.9. *Foils :*

16.9.1. The foil mill was commissioned in 1965 and has been rapidly increasing its production of foils. Foils are made from "Foil-stock" which is a rolled product from

TABLE 16.4

Cost of production of sheets and circles (packed) at the Indian Aluminium Company Ltd.

(Cost per Tonne)

Type of Metal	Common Alloy						Magnesium Alloy	
Items	Flat Sheets		Sheared Circle (Size over 279 to 610 mm)		Punched Circle (Size over 102 to 292 m.m.)		Flat Sheets	
Details	Actuals 1967	Estimate for future	Actuals 1967	Estimate for future	Actuals 1967	Estimate for future	Actuals 1967	Estimate for future
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
(i) Metal Cost(including melting loss and depreciation on metal)	3,130	3,223	3,133	3,226	3,132	3,225	3,130	3,223
(ii) Conversion Charges . .	1,560	1,651	1,446	1,529	1,419	1,500	1,847	1,951
(iii) Depreciation . . .	203	141	109	75	114	79	155	108
(iv) Total Cost . . .	4,893	5,015	4,688	4,830	4,665	4,804	5,132	5,282
(v) Contingencies . . .	..	244	..	238	..	236	..	259
(vi) Return . . .	..	789	..	715	..	716	..	778
Fair-Ex-Works Price . .	..	6,048	..	5,783	..	5,756	..	6,319

TABLE 16.5

Cost of production of selected varieties of Aluminium Coils manufactured by the Indian Aluminium Co. Ltd.

(Cost per Tonne)

Details	Milk Strip Plain		Milk Strip Converted Tagger Plain				Capsule Plain	
	Actuals 1967	Estimate for future	Actuals 1967	Estimates for future	Actuals 1967	Estimate for future	Actuals 1967	Estimate for future
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
1. Foil Stock (including depreciation on ingot and rolling mills *less* credit for scrap)	4,884	4,969	5,241	5,344	4,838	4,925	5,183	5,282
2. Conversion Charges . .	2,305	2,403	3,961	4,188	1,684	1,750	2,414	2,151
3. Depreciation . . .	818	505	1,529	943	537	327	1,107	682
4. Total Cost . . .	8,007	7,877	10,731	10,475	7,053	7,002	8,704	8,475
5. Contingencies . . .	..	369	..	477	..	334	..	390
6. Return	..	1,557	..	2,226	..	1,329	..	1,838
Fair Ex-works Price .	..	9,803	..	13,178	..	8,665	..	10,703

its Belur Works in Calcutta. The yield of foils was about 56 per cent from foil-stock. The items produced are broadly grouped under (i) Plain; and (ii) Converted. Under converted group comes additional materials such as, lacquer printing, colour printing (several colours upto a maximum of seven colours) and reinforcement, etc. A few of the items are shownin Table 16.5 with a view to making a comparison with c.i.f. prices.

16.9.2. There is only one item of import from West Germany in 1967 and this does not give any precise data which may assist in comparison with a particular category of the indigenous product. Here again, were faced with the problem of assessing the quantum of production in the absence of adequate information. The cost in the table could, therefore, only be viewed as of comparative data between actuals of 1967 and estimate for future.

16.10. *Contingencies :* To provide for any unforeseen contingency, we have allowed a margin of 5 per cent on works cost without depreciation, particularly because of the fact that costs have been based on capacity levels of production. The industry, however, claimed 10 per cent pointing out that the prices of materials, stores, power duties etc. are going up consistently and the exact quantum in most cases were unpredictable at this stage. However, we consider that a rate of 5 per cent would be adequate.

16.11. *Return :* We have allowed a margin of return of 15 per cent on capital employed. (Capital employed covering average written down values of fixed assets for the estimated period *plus* working capital equivalent to 6 months' cost of production excluding depreciation). We have satisfied ourselves that this margin would be adequate to meet the normal commitments for statutory bonus, interest, taxation, and payments of reasonable dividends.

16.12. For arriving at the fair ex-works prices of sheets and circles, contingencies and return have been allowed in the same manner as for ingots. The return allowed includes return on the quantity of aluminium ingots required for the production of sheets and circles. Similar calculations have been made in respect of foils.

16.13. It is important to bear in mind that the fair ex-works prices computed for ingots, sheets and circles and foils are for the purposes of arriving at the quantum of protection. They do not include selling and distribution expenses, and, therefore, cannot be taken as the fair price at which the products should be available to the consumer.

17. C. i. f. prices and comparison between fair ex-works prices and c.i.f. prices and landed cast ex-duty

17.1. The data regarding c.i.f. prices and landed costs of aluminium ingots and foils which we have collected from the Collector of Customs, and primary producers are given in Appendix VI. After discussions at the public inquiry and with the producers, Industrial Adviser, D.G.T.D., we have adopted the following prices for comparison with the fair ex-works prices of indigenous products.

Details	Date	c.i.f. price Rs./Tonne	Source of Imports
(a) E.C. trade 99·7% purity . .	26-2-68	3,662	U.S.A.
(b) Coloured and bright foils . .	16-10-67	18,210	W. Germany.

17.2. The c. i. f. cost of ingots from various sources varied from Rs. 4340 to Rs. 3662 and Indian Aluminium Company has reported that its recent import was at the price of about Rs. 3637/-. The c.i.f. price it was stated, was coming down considerably.

17.3. No detailed specification is given for import of foil this is just stated as "coloured and bright"—and it is difficult to compare with indigenous product. This item also, it is stated is not allowed to be imported in India except for specialised specifications and limited quantities which cannot be indigenously produced.

17.4. We are, therefore, left with the alternative of comparing only the ingot costs with the indigenous producers. Table 17.1 shows the comparison between the future fair ex-works price of domestic aluminium ingot and the c.i.f. price and landed cost of corresponding imported product.

TABLE 17.1

Comparison of c.i.f. and fair ex-works prices

	Rs./Tonne
(a) C.I.F. price of Ingot	3,662
(b) Clearing charges @1%	37
(c) Landed cost excluding duty (a+b)	3,699
(d) Fair ex-works price (weighted average of both indigenous producers).	3,951
(e) Difference between fair ex-works price and landed cost ex-duty (d—c).	252
(f) Difference as a percentage on c.i.f. . . .	6·8%

18. Measure of protection

18.1. There is a trend perceptible in the international market not only of lowering prices in order to push sales in the export market but also of a general fall in the prices of aluminium. It is, therefore, unlikely that the disadvantage of the indigeneous industry may decrease in future. The protection enjoyed by the industry today is——

(i) through quantitative restrictions of imports and

(ii) protective rates of duty.

Had the fair ex-works prices remained at the level at which these had been determined in the course of the enquiry in 1964, the quantum of protection through tariffs would have been sufficient to restrict imports where it was only a question of consumer choice. But two factors have intervened. These are (1) gap real or imagined between indigenous availability of the metal and its requirement (2) increase in the domestic cost of production leading to corresponding increase in the fair ex-works cost. Since the domestic production was not considered adequate liberal imports were allowed in 1966, the real impact of which was felt in 1967 by which time the channels of imports were wide open. Since most of these imports were being made on the assump-

tion that the metal was needed in the country to fill the gap between the requirement and availability, the domestic industry would not have been affected had this assumption proved to be true. However, since these expectations did not materialise, competition between the domestic industry and that of the exporting countries ensued. This had to a certain extent a depressing effect on the industry. While the reduction in the prices is in iteslf a welcome event it cannot be argued that substantial imports and the outlay of foreign exchange that was spent for the purpose was justified. The impact of liberalised imports on the domestic market demonstrated to a large degree the need for maintenance of parity between the landed cost and the Indian ex-factory price through tariff, which is the only protection left in this situation to the industry. We are not in a position to suggest perpetuation of quantitative restrictions on imports except as dictated by the need for conservation of foreign exchange and maintenance of balance of payments. The protection to the industry would be adequate if the requisite degree of protective duties are introduced.

18.2. The figures in paragraph 17 indicate that the indigenous ingots still suffer from a price disadvantage of 6.8 per cent compared to the imported onces. The exsisting protective duty is 20 per cent *ad valorem* but the effective rate is 5 per cent less since the imports are allowed only for manufacture of ACSR or AAC which attracts a concessional rate of 15 per cent *ad valorem*. Although the production in this industry has considerably increased since our last inquiry, the price disadvantage still exists. Schemes of substantial expansion of existing units and for establishment of new units have already been licensed by Government and they are expected to be commissioned in the course of the enext two years. As their capital costs and depreciation would be high, we do not propose any downward revision of the existing rate of protective duty. We, therefore, recommend that protection granted to ingots, bars, etc. covered by I.C.T. Item No. 66(1) should be continued for a further period of 3 years ending 31st December, 1971 at the existing rate of duty of 20 per cent *ad valorem* exclusive of the surcharge and the countervailing excise duty.

18.3. As regards sheets and circles, strips and foils covered by I.C.T. item No. 66(a), the existing rates of protective duty may be continued for a further period of three years ending 31st December, 1971.

19. Acknowledgements

We express our thanks to the manufacturers, their associations, importers, consumers and representatives of Government departments who assisted us in the conduct of the inquiry and who have furnished to us useful information in connection with this inquiry.

M. ZAHEER
Member

K. T. MERCHANT
Member

S. SUBRAMANIAN
Member

P. V. GUNISHASTRI
Secretary

BOMBAY :
Dated 9th September, 1968.

APPENDIX I

(*Vide* Paragraph 4.1)

List of firms, bodies and Government Departments to whom the Commissions Qestionnaires and letters were issued and from whom detailed replies or memoranda were received.

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*Indicates those who replied in detail

@Indicates those who are not interested or are not dealing in the product.

A. PRODUCERS

*1. Indian Aluminium Company Ltd., 31, Chowringhee Road, Calcutta-16.

*2. Aluminium Corporation of India Ltd., 7, Council House Street, Calcutta-1.

*3. India Foils Ltd., 11, Sooterkin Street, Calcutta-13.

*4. Rashtriya Metal Industries Ltd., Kurla Road, P.O.J.B. Nagar, Andheri, Bombay-59.

*5. Mysore Premier Metal Factory, 124, Mint Street, Madras-1.

*6. Devidayal Metal Industries (Private) Ltd., P. O. Box No. 6215, Gupta Mills Estate, Bombay-10.

7. Metal Rolling Works Private Ltd., 104, Sion-Matunga Estate, Sion, Bombay-22.

*8. Popular Metal Works and Rolling Mills, Sion, Bombay-22.

*9. Hindustan Aluminium Corporation Ltd., Industry House, 159, Churchgate-Reclamation, Bombay-1.

10. Tendulkar Industries (private) Ltd., Stadium House, Veer Nariman Road, Churchgate, Bombay-1.

11. Diwan Shah & Sons Private Ltd., Jagadhri (Punjab).

12. Sardar Aluminium Factory, G. T. Road, Shahdara, Delhi.

*13. Madras Aluminium Co. Ltd., "Jayalakshmi", Race Course, Coimbatore.

14. Hooseni Metal Rolling Mill Private Ltd., Atlas Mill Compound, Reay Road, Bombay-10.

15. N. M. Metal Industries, 20, Dadiseth Agiare Lane, Bombay-2.

16. Shree Bhagwan Metal Rolling Mill, Govind Nagar, Chinchali Rly. Gate, Malad East, Bombay-64.

*17. Eastern Smelting and Rolling Mill, Old Agra Road, Near New Kurla Mills, Kurla, Bombay-70.
18. Bombay Metal Industries, 61-C, Currey Road, Bombay-13.
19. Agarwal Metal Works Private Ltd., Rewari.
20. Sri Mahesh Metal Works, Madanganj, Kishangarh.
21. Vummidiar Mfg. (Private) Ltd., 162, Mount Road, Madras.
22. Leos Mercantile Corporation, 25 Bank Street, Bombay-1.

B. PROSPECTIVE PRODUCERS

*1. Bharat Aluminium Co. Ltd., F-41 N. D. S. E. Part-I, New Delhi-3.
*2. J. K. Industries Pvt. Ltd., 7, Council House Street, Calcutta.
3. Jeewanlal (1929) Ltd., Crown Aluminium House, 23, Brabourne Road, Calcutta-1.

C. PRODUCERS ASSOCIATIONS

*Indian Non-Ferrous Metal Manufacturers' Association India Exchange, India Exchange Place, Calcutta.

D. IMPORTERS

*1. Aluminium Hindustan Private Ltd., 2, Jessore Road, Dum Dum, Calcutta.
*2. Alcan Asia Limited, 41, Chowringhee Road, Calcutta-16.
3. Jeewanlal (1929) Ltd., Crown Aluminium House, 23, Brabourne, Road, Calcutta-1.
4. Lallubhai Amichand Private Ltd., 225/7 Tardeo Road, Bombay-7.
5. Madras Electrical Conductors (P) Ltd., Arcot Road, Madras-26
6 G & P M Fogt Co. Pvt. Ltd., 1, Park Mansion, Park Street, Calcutta-16.

E. CONSUMERS

*1. Jeewanlal (1929) Ltd., 31, Netaji Subhas Road, Calcutta-1.
2. Lallubhai Amichand Ltd., 225/7, Tardeo Road, Bombay-7.
*3. Aluminium Industries Ltd., Kundara. (Kerala State) .
4. Electrical Manufacturing Co. Ltd., 136, Jessore Road, Calcutta-28.
5. Indian Cable Co. Ltd., 9, Hare Street, Calcutta-1.
*6. Hindustan Aircraft Ltd., Hindustan Aircraft, P. O. Bangalore.
7. Hindustan Motors Ltd., 8, India Exchange Place, Calcutta.
*8. Controller of Stores, North Eastern Railway, Gorakhpur.
*9. General Manager, Southern Railway, Headquarters Office (Stores Branch), Aynavaram (Perambur), Madras-23.
*10. Controller of Stores, Western Railway, Churchgate, Bombay-1.

*11. Alu Capsules Private Ltd., I. C. House, Dougall Road, Ballard Estate, Bombay-1.

*12. Godfrey Phillips India Ltd., Chakala, Andheri, Bombay-58.

*13. Golden Tobacco Co. Private Ltd., Tobacco House, Vile Parle, Bombay-57.

*14. Imperial Tobacco Co. of India Ltd., 37, Chowringhee, Calcutta-16.

*15. Lipton (India) Ltd., 9, Western Street, Calcutta-13.

16. Teachest and Plywood Traders Association, P-11. Mission Row Extension, Calcutta.

17. Indian Galvanishing Co. Ltd., 21, Netaji Subhash Rd, Calcutta-1.

18. Hyderabad Allwyn Metal Works Ltd., Sanatnagar, Hyderabad-16.

@19. James Warren & Co. Ltd., 31, Chowringhee Road, Calcutta-16.

*20. Metal Box Co. of India Ltd., Barlow House, Chowringhee, Calcutta-20.

21. Jay Engineering Works Ltd., Post Box No. 2158, Calcutta.

*22. Zenith Tin Works Private Ltd., Clerk Road, Mahalaxmi, Bombay-11.

23. Textool Company Ltd., Ganpathy, P. O., Coimbatore-6.

24. Tata Iron and Steel Co. Ltd., Bombay House, 24, Bruce Street, Fort, Bombay-1.

25. Textile Machinery Corporation Ltd., Belgaharia, 24 Parganas, (W. Bengal).

@26. S. A. Ramajayam & Bros., 3/488, Mint Street, Madras-3.

27. V. Gopalakrishna Chettiar and Co., 39, East Chitrai Street, Madurai-1.

*28. India Pistons (Private) Ltd., Huzur Gardens, Sembiam, Madras.

29. All India Non-Ferrous Metalware-Manufacturers' Association, Liberty Building, Marine Lines, Bombay-1.

30. India Aluminium Products, P-11, Howrah Bridge, Approach Road, Calcutta-1.

@31. Narsidas Morarji, Utensils Merchant, Porbandar.

32. Greentose Corporation (India), 37, Strand Road, P.O. Box No. 713, Calcutta-1.

33. Power Cables Private Ltd., P. O. Box No. 4, Kalyan.

*34. Indian Smelting and Refining Co. Ltd., Industry House, 159, Churchgate Reclamation, Bombay-1.

35. V. Nagamncickam, 8, Muniyappan Covil Street, Gugsi, Salem-1.

*36. Light Metal Works, Now Sun Mill Compound, DeTisle Road, Bombay-13.

37. The Chief Mechanical Engineer, U. P. Govt. Roadways Central Workshop, Kanpur.

*38. The Aluminium Industries Ltd., Hirakud (Orissa).

*39. Hindustn Brown Boveri Ltd., Boron Boreri House, 264-65, Dr. Annie Besant Road, Bombay-25.

40. Anam Electrical Manufacturing Co., Kadiam. (East Godawari District).

41. The Indian Aluminium Cales Ltd., 6, Ratendone Road, New Delhi-11.

42. National Screw and Wire Products Ltd., 51, Stephen House 4, Dalhousie Square, East, Calcutta-1.

43. Aluminium Cables and Conductors (U. P.) Private Ltd., 47, Hide Road, Extension, (Off Transport Depot Road), Calcutta-27.

44. Binani Commercial Corporation, 58, Strand Road, Calcutta.

45. Sahebgunge Electric Cables Ltd., 49, Palace Court 1, Kyd Street, Calcutta-16.

*46. Jaipur Metals and Electricals Ltd., Jaipur.

*47. Premier Metal Works, Industrial Estate, Vijayawada (A.P.)

48. Dharamendra Wire Industries, Ambewadi, Kalachowki, Parel Tank Road, Patharkhana, Bombay.

49. Asian Metal Industries, Samrat Silk Mill Compound, Vikhrollia, Bombay-79.

50. Patel Wire Industries, Prop. India Metal Traders, 92-94, Kika Street, Bombay-4.

51. Super Metal Works, Factory: 17/D, Sitafrlwadi, Mazagaon, Bombay-10.

*52. Amritlal Harjivanlal & Co., 156-D. Shroff Wadi, Mount Road, Bombay-10.

53. Ramkrishna Metal Works, Ramkrishnawadi, Railway Road, Bhandup, Bombay-78.

54. Prem Industrial Corporation, 70, Godown Street, Madras-1.

55. Indian Aluminium Cables Ltd., Ghaziabad (U.P.).

@56. Kothari & Sons, Oriental Building, Post Box No. 267, Madras-1.

57. E. M. C. Works Ltd., 251, N. P. C. Lajpat Nagar, Kanpur.

*58. Shamsher Sterling Cable Corporation, Vaswani Mansions, D. Vatcha Road, Bombay-1.

*59. The Industrial Development Corporation of Orissa Ltd., Bhubaneshwar.

@60. Assam Small Industries Development Corporation Ltd., Gauhati.

61. Prem Industrial Corporation, Bhaskar Bhuvan, Khadia Char Rasta, Ahmedabad-1.

62. Andhra Cable Co. Ltd., Rashapati Road, Secundrabad.

63. Indian Cable Industries, Bombay Poona Road, Pimpri (Dist. Poona).

*64. Shri Mahesh Metal Works, Madanganj, Kishangarh.

65. Madras Electrical Conductors (P) Ltd., Arcot Road, Madras.

*66. Aryan Industries, Station Road, Umrath. (Gujarat).

67. Electrical Transformers and Equipment Co. Ltd., 7-1-60, Dharamkaran Road, Amirpet, Hyderabad-16.

F. CONSUMERS AND MERCHANTS ASSOCIATION

*1. Andhra Chamber of Commerce, Andhra Chamber Building, 272/73, Nagappa Naick Street, Madras-1.

*2. The Southern India Metal Distributors' Association, 127, Mint Street, Madras.

@3. All India Non-Ferrous Metal Industries' Association, Liberty Building, Marine Lines, Bombay-1.

G. RAW MATERIAL MANUFACTURERS

*1. The Phosphate Co. Ltd., 14, Netaji Subash Road, Calcutta.

2. East India Distillers & Sugar Factories, P.B. No. 12, Madras-1.

*3. The Fertilizers and Chemicals, Travancore Ltd., Udyogamandal P. O. Alwaye, Kerala.

*4. Jayshree Fertilizers and Chemicals, India Exchange, Calcutta-1.

*5. Premier Fertilizers Ltd., 150-1, Mount Road, Madras-2.

*6. Adarsh Chemicals and Fertilizers Ltd., Udhna, Surat Dist., Gujarat.

@7. Chemafumes (P) Limited, Devakaran Nanjee Building, 17, Horniman Circle, Bombay-1.

@8. J. G. Patel, Dalaipara, Sambalpur, Orissa.

*9. Navin Fluorine Industries, Bhestan (Via Udhna), Distt. Surat.

*10. India Carbon Ltd., 6, Old Post Office Street, Calcutta-1.

*11. Graphite India Ltd., 14, Netaji Subhas Road, Calcutta-1.

12. Nunmati Refinery, Indian Oil Corporation, Gauhati.

*13. Assam Oil Co., Digboi P. O., Assam.

*14. Koyali Refinery, Indian Oil Corporation, Jawahar Nagar P.O., Baroda.

*15. Barauni Refinery, Barauni P. O., Monghyr Dist., Bihar,

H(a) GOVERNMENT DEPARTMENTS

*1. The Director General of Technical Development, Udyog Bhavan, New Delhi.

*2. Ministry of Steel, Mines and Metals, Department of Mines and Metals (Metals Section), Udyog Bhavan, New Delhi

*3. Central Water & Power Commission, Bikaner House, Shahajan Road, New Delhi-11.

4. Planning Commission, Yojana Bhavan, Parliament Street, New Delhi.

*5. The Development Commissioner, Small Scale Industries, Nirman Bhavan, New Delhi.

*6. The Indian Standard Institution, Manik Bhavan, 9, Mathura Road, New Delhi.

7. M. M. T. C. of India Ltd., Express Building, Mathura Road New Delhi-4.

*8. Council of Scientific and Industrial Research, New Delhi.

*9. Geological Survey of India, Calcutta.

*10. Indian Bureau and Mines, Nagpur.

*11. National Metallurgical Laboratory, Jamshedpur.

*12. Collector of Central Excise, Bombay.

*13. The Collector of Customs, Bombay.

*14. The Collector of Customs, Calcutta.

*15. The Collector of Customs, Cochin.

*16. The Collector of Customs, Madras.

@17. The Collector of Customs, Jamnagar.

@18. The Collector of Customs, Kandla.

*19. The First Secretary (Commercial) to the Embassy of India, 2107, Massachusetts Avenue, Washington & D. C. U. S. A.

20. The Minister (Economic) to the High Commission of India in the U. K., India House, Aldwych, London W. C. 2. (United Kingdom).

*21. Counsellor (Commercial) to the Consulate General of India, 6, Frankfurt/Main, 33, Kaiserstrasse, West Germany.

*22. The First Secretary (Commercial) to the Embassy of India, 11-Go, No. 22 Chome, Kundan, Minani, Cliyoda-ku, Tokyo, Japan.

*23. The First Secretary (Commercial) to the Embassy of India, No. 2, Rue Codot de Manroy, Paris 9-C, France.

*24. The Second Secretary (Commercial) to the High Commission of India in Canada, 200, Maclaren Street, Ottawa-4, Canada.

H(b) STATE GOVERNMENTS

1. The Chief Secretary to the Government of Andhra Pradesh, Hyderabad.

2. The Chief Secretary to the Government of Assam, Shillong.

*3. The Chief Secretary to the Government of Bihar, Patna.

4. The Chief Secretary to the Government of West Bengal, Calcutta.

5. The Chief Secretary to the Government of Gujarat, Ahmedabad.

6. The Chief Secretary to the Government of Jammu and Kashmir, Srinagar.
7. The Chief Secretary to the Government of Kerala, Trivandrum.
*8. The Chief Secretary to the Government of Madhya Pradesh Bhopal.
*9. The Chief Secretary to the Government of Madras, Madras.
*10. The Chief Secretary to the Government of Maharashtra, Bombay
*11. The Chief Secretary to the Government of Mysore, Bangalore.
12. The Chief Secretary to the Government of Orissa, Bhubaneshwar.
13. The Chief Secretary to the Government of Punjab, Chandigarh.
14. The Chief Secretary to the Government of Rajasthan, Jaipur.
15. The Chief Secretary to the Government of Uttar Pradesh, Lucknow.
16. The Chief Commissioner, Delhi Administration, Delhi.
17. The Chief Commissioner, Himachal Pradesh, Simla.

H(c) DIRECTORS OF INDUSTRIES OF STATE GOVERNMENTS

1. The Director of Industries, Government of Andhra Pradesh Hyderabad.
*2. The Director of Industries, Government of Assam, Shillong.
3. The Director of Industries, Government of Bihar, Patna.
*4. The Director of Industries, Government of West Bengal, Calcutta.
*5. The Director of Industries, Government of Gujarat, Ahmedabad
6. The Director of Industries, Government of Jammu and Kashmir, Srinagar.
*7. The Director of Industries, Government of Kerala, Trinvadrum.
8. The Director of Industries, Government of Madhya Pradesh, Bhopal.
9. The Director of Industries, Government of Madras, Madras.
10. The Director of Industries, Government of Maharashtra, Bombay.
11. The Director of Industries, Government of Mysore, Bangalore.
*12. The Director of Industries, Government of Orissa, Bhubaneshwar.
*13. The Director of Industries, Government of Punjab, Chandigarh.
14. The Director of Industries, Government of Rajasthan, Jaipur.
15. The Director of Industries, Government of Uttar Pradesh, Lucknow.
16. The Director of Industries, Delhi Administration, Delhi.

17. The Director of Industries, Government of Himachal Pradesh, Simla.

*18. The Director of Industries, Haryana, Chandigarh.

H(d) STATE ELECTRICITY BOARDS

1. The Calcutta Electricity Supply Corporation Ltd., Victoria House, Chowringhee Square, Calcutta.

*2. Madhya Pradesh Electricity Board, Jabalpur.

*3. Mysore State Electricity Board, Office of the Chief Engineer (Electricity), Post Box No. 15, Bangalore-1.

4. Kerala State Electricity Board, Post Box No. 65, Trivandrum.

5. Chief Engineer Electricity, Government of Orissa, Orissa State Electricity Board, Bhubaneswar.

*6. The Chief Engineer, Maharashtra State Electricity Board, Merchantile Bank Building, Mahatma Gandhi Road, Bombay-1.

@7. Kanpur Electricity Supply Administration (U.P.) State Electricity Board), Kesa House, 14/71, Civil Lines, Kanpur (U.P.).

8. Tata Hydro-Electric Power Supply Co. Ltd., Post Box No. 192, Bombay-1.

9. The Superintending Engineer (Technical Electrical), Madras State Electricity Board, 157, Mount Road, Madras-2.

10. The Chief Engineer, Andhra Pradesh State Electricity Board, Khairadabad, Hyderabad (A.P.).

11. The Chief Engineer, Punjab State Electricity Board, Patiala.

12. The Chief Engineer, Assam Government Electricity Board, Shillong.

13. The Chief Engineer, Bihar Govt. Electricity Board, Patna.

*14. The Chief Engineer, Gujarat Government Electricity Board, Ahmedabad.

15. The Chief Engineer, Jammu and Kashmir Government Electricity Board, Srinagar.

16. The Chief Engineer, Rajasthan Government Electricity Board Jaipur.

17. The Chief Engineer, Uttar Pradesh Government Electricity Board, Lucknow.

18. The Chief Engineer, Himachal Pradesh Government Electricity Board, Simla.

19. The Chief Engineer, Delhi Administration Electricity Board Delhi.

APPENDIX II

(*Vide* Paragraph 4·2)

Statement showing the list of factories visited by the Commission and its Officers

Sl. No.	Name of the unit	By whom visited	Date of visit
1	Hindustan Aluminium Corporation Ltd., Renukoot.	Shri M. Zaheer, Chairman .	25-6-1968.
2	Indian Aluminium Co. Ltd., Calcutta, (Head Office).	Shri V. S. S. Rajan, S.C.A.O. .	17-6-1968 to 27-6-1968.
3	Indian Aluminium Co. Ltd., Rolling Mills, Belur.	Shri V. S. S. Rajan, S.C.A.O. .	28-6-1968.
4	Indian Aluminium Co. Ltd., Aluminium Smelter at Alupuram, Kerala State.	Shri V. S. S. Rajan, S.C.A.O. .	1-7-1968 to 3-7-1968.
5	Indian Aluminium Co. Ltd., Foil Mills, Kalwa, Thana.	Shri V.S. S. Rajan, S.C.A.O. .	19-7-1968.
6	Hindustan Aluminium Corporation Ltd., Renukoot.		
	Both Alumina and smelter (for ingots, sheets, etc.).	Shri S. R. Mallya, C.A.O. .	19th June, 1968 to 24th June, 1968.

APPENDIX III

(*Vide* Paragraph 4.2)

List of persons who attended the Commissions public inquiry on 20th August 1968.

Sl. No.	Name(s) of the representative(s)	Organisation represented
1	2	3
A. *Producers*		
1	Shri D.D. Mackay	Indian Aluminium Co. Ltd., 31, Chowringhee Road, Calcutta-16.
2	,, A. L. Sabharwal	
3	,, D. K. Baheti	
4	,, T. F. D. Simmons	
5	,, S. K. Basu	
6	,, G. Dutt.	
7	,, T. C. Saboo .	Hindustan Aluminium Corpn. Ltd., P. O., Renukoot, Distt. Mirzapur, (U.P.).
8	,, A. K. Agarwal	
9	,, N. J. Balani .	
10	,, S. P. Shorewala	
11	,, K. K. Bhasin*	Aluminium Corpn. of India Ltd., 7, Council House Street, Calcutta-1.
12	,, S. Singhania .	
13	,, K. R. Ranganathan	Madras Aluminium Co. Ltd., 'Jayalakshmi', Race Course, Coimbatore.
14	,, S. Sunder .	India Foils Ltd., 11, Sooterkin Street, Calcutta-13.
15	,, M. D. Mundhra .	Rashtriya Metal Industries Ltd., Kurla Road, (P. O.) J. B. Nagar, Andheri, Bombay-59.
16	,, K. K. Kapur**	Davidayal Metal Industries, P.O. Box No. 6215, Gupta Mills Estate, Bombay-10.
17	,, S. S. Aggarwal	
18	,, V. K. Aggarwal	

*Also representing Indian Non-Ferrous Metal Manufacturers Association.

**Also representing All India Non-Ferrous Metal Industries Association.

1	2	3
A. *Producers*—contd.		
19	Shri G. T. Shah	Metal Rolling Works Pvt. Ltd., 104, Sion Matunga Estate, Sion, Bombay-22.
20	,, N. M. Shah	
21	,, S. L. Bhambri	Popular Metal Works & Rolling Mills, Sion, Bombay-22.
22	,, S. P. Bhambri	
23	,, S. K. Deshpande	Eastern Smelting & Rolling Mill, Old Agra Road, Near New Kurla Mills, Kurla, Bombay-70.
24	,, B. G. Vakharia	
25	,, K. V. Shah	Light Metal Works, Delisle Road, Bombay-13.
26	,, V. K. Joseph	
27	,, H. A. Kayami	Hooseni Metal Rolling Mill Pvt. Ltd., Reay Road, Bombay-10.
28	,, I. K. Sanghvi	Sanghvi Metal Corporation, 1348, Shivaji Nagar, Poona-5.
B. *Prospective Producers*		
29	Shri P. M. Menon	Bharat Aluminium Co. Ltd., F. 41, New Delhi South Extension Part-1, Ring Rd., New Delhi.
C. *Producers' Association*		
30	Shri K. K. Bhasin*	Indian Non-Ferrous Metal Manufacturers Association, India Exchange, India Exchange Place, Calcutta-1.
31	,, G. Subramanyam	
D. *Importers*		
32	Shri G. S. Warrier	Alcan Asia Ltd., 41, Chowringhee Road, Calcutta-16.
33	,, D. D. Mello	Aluminium Hindustan Pvt. Ltd., Jessore Road, Dum Dum, Calcutta-28.
E. *Consumers*		
34	Shri R. G. Shah	Lallubhai Amichand Ltd., 225/7, Tardeo Road, Bombay-7.
35	,, S. N. Nayar	Aluminium Industries Ltd., Kundra, (Kerala State).
36	,, P. M. Joseph	
37	,, S. S. Manian	

*Also representing Aluminium Corpn. of India Ltd.

1	2	3
E. *Consumers*—contd.		
38	Shri H. R. Vakil	Indian Cable Co. Ltd., 9, Hare Street, Calcutta-1.
39	,, P. S. Rao	Godfrey Phillips India Ltd., Chakala, Andheri, Bombay-58.
40	,, S. M. Bhagat	Zenith Tin Works Pvt. Ltd., Clerk Rd. Mahalaxmi, Bombay-11.
41	,, A. A. Barodawala	
42	,, S. V. Krishnamoorthi	India Pistons (Pvt.) Ltd., Huzur Gardens, Sembiam, Madras.
43	,, S. N. Agarwal	Indian Smelting & Refining Co. Industry House, 159, Churchgate Reclamation, Bombay-1.
44	,, S. P. Pinto	
45	,, P. K. Reddy	Anam Electrical Mftg. Co., Kadiam, (East Godavari Dist.).
46	,, C. B. Modi	Hindustan Brown Boveri Ltd., Brown Boveri House, 264-65, Dr. Annie Besant Rd., Bombay-18.
47	,, Rajanna	
48	,, N. B. Shah	Power Cable Pvt. Ltd., P.O. Box No. 4, Kalyan.
49	,, R. M. Antia	The Tata Hydro Electric Power Supply Co. Ltd., P. B. No. 192, Bombay-1.
50	,, K. K. Kapur*	All India Non-Ferrous Metal Industries Association, Liberty Bldg. Bombay-1.
51	,, O. P. Bhatt	
F. *Raw Material Manufacturers*		
52	Shri R. S. Abbis	Graphite India Ltd., Durgapur
G. *Govt. Departments*		
53	Dr. P. Dayal	Directorate General of Technical Development, Government of India, Udyog Bhavan, New Delhi.
54	Shri A. Krishnan	Ministry of Steel, Mines and Metals, Department of Mines and Metals, (Metals Section), Udyog Bhavan, New Delhi.

*Also representing Devidayal Metal Industries (Pvt.) Ltd.

1	2	3
G. *Govt. Departments*—contd.		
55	Shri R. N. Gandhi	The Development Commissioner, Small Scale Industries, Nirman Bhavan, New Delhi.
56	,, K. K. Mehan	
57	,, T. V. Thadani	Central Water and Power Commission, Bikaner House, Shahjahan Road, New Delhi-11.
58	,, S. D. Kushare	
59	,, S. Srinivasan .	The Indian Standards Institution, Manik Bhavan, 9, Mathura Road, New Delhi.
60	,, H. H. Tata .	Collector of Customs, Bombay.
61	,, G. M. Murdeshwar.	Collector of Central Excise, Bombay.
62	,, P. M. Naik .	Director of Industries, Govt. of Maharashtra, Bombay.
H. *Others*		
63	Shri S. N. Mishra	The Chief Engineer, Maharashtra State Electricity Board, Mercantile Bank Bldg., Mahatma Gandhi Rd., Bombay-1.
64	,, N. K. Nene	
65	,, G. T. Mansukhani	

APPENDIX IV

(*Vide* Paragraph 13·1)

Imports of Aluminium for the period 1964 *to* 1967

(Quantity in Tonnes; Value in lakh Rs.).

Sl. No.	Item	1964		1965		1966		1967	
		Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
I.	*Aluminium and Alloys Unwrought*—								
1	Aluminium ingots . .	2,149	56·34	2,573	69·23	3,915	139·65	21,609	889·98
2	Aluminium unwrought n.e.s.	..	..	1,297	30·46	2,590	91·35	4,082	183·01
3	Aluminium alloys unwrought.	..	..	82	4·99	55	5·67	110	11·41
	TOTAL I .	2,149	56·34	3,952	104·68	6,560	236·67	25,801	1084·40
II.	*Aluminium and Alloy worked*—								
1	Bars and rods . .	16,371	474·06	13,425	401·53	12,964	483·58	16,950	824·70
2	Hard drawn bare aluminium conductors ACSR*	..	..	2,204	61·84	263	7·51	..	..
3	Hard drawn bare aluminium wire-solid.	55	2·02	233	6·68	..	..	..	..
4	Aluminium wire n.e.s. .	512	13·40	839	23·92	490	20·48	2,397	108·21

5	Aluminium bars, rods etc. others.	1,490	56·42	719	29·93	1,464	69·02	2,022	101·48
6	Circles	97	3·38	155	4·33	160	7·25	160	9·46
7	Plates, sheets etc. of Aluminium others.	804	28·82	589	23·50	260	18·52	369	25·35
8	Aluminium foil for teachest lining.	126	1·86	12	1·77	9	1·57	48	7·49
9	Other Aluminium foils .	123	7·46	178	11·79	69	15·84	114	17·32
10	Aluminium Power . .	143	7·08	203	8·89	128	9·52	227	18·57
11	Tubes, Pipes, Blanks etc. of Aluminium.	285	19·37	249	16·29	138	11·29	299	39·09
12	Fittings for tubes and pipes	..	..	11	1·61	15	1·64	15	4·17
	TOTAL II .	20,006	613·87	18,817	592.08	15,960	646.22	22,601	1155.84
	TOTAL of I AND II .	22,155	670·21	22,769	696·76	22,520	882,89	48,402	2240·24

*Converted figures.

APPENDIX V

(*Vide* Paragraph 13.4)

Exports of Aluminium for the period 1964 *to* 1967

(Qty. in tonnes; Value in lakh Rs.)

Sl. No.	Item	1964		1965		1966		1967	
		Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
I.	*Aluminium and Alloys unwrought :*								
1	Aluminium ingots . .	2064·87	40·80	0·07	0·01	388·00	10·03	223·19	7·75
2	Aluminium unwrought n.e.s.	..	..	0·08	0·01	..	..	0·31	0·05
3	Aluminium alloys unwrought.	..	..	1·74	0·15	14·74	1·06	..	..
4	Others	26·90	1·26	0·74	0·21	..	..	..	..
	TOTAL I .	2091·77	42·06	2·63	0·38	402·74	11·09	223·50	7·80
II.	*Aluminium and alloy worked :*								
1	Circles	202·96	6·84	62·79	2·00	..	..	30·87	1·41
2	Foil aluminium for tea-chest lining.	2·00	0·10	6·46	0·41	0·02	0·01	102·42	9·54
3	Foil and leaf excluding tea-chest lining.	10·30	0·68	36·05	3·03	48·34	4·38	6·37	0·53

4	Pipes and tubes . .	1·43	0·34	2·06	0·09	0·45	0·10	2·03	0·44
5	Sheets, plates and strips .	32·60	1·07	29·45	1·47	9·73	0·43	1·10	0·05
6	Bars and rods . .	..	..	114·66	2·49	67·73	2·18	22·57	0·96
7	Hard drawn bare Aluminium Conductors ACSR*	..	..	170·86	4·47	415·41	12·31	329·18	14·23
8	Hard drawn bare aluminium wire solid.	..	..	351·36	8·65	115·19	3·92	111·99	4·87
9	Aluminium wire n.e.s. .	0·60	0·[illegible]	10·75	0·30	243·13	7·18	51·61	2·37
10	Aluminium bars, rods etc. others.	15·04	1·78	27·77	0·98	35·59	1·89	182·12	10·15
11	Fittings for tubes and pipes	..	..	..	..	0·66	0·05	..	..
	TOTAL II .	264·93	10·83	812·21	23·89	936·25	32·45	840·26	44·55
	GRAND TOTAL I & II .	2356·70	52·89	814·84	24·27	1338·99	43·54	1063·76	52·35

*Converted figures.

APPENDIX VI

(*Vide* Paragraph 17.1)

C. i. f. prices and landed costs of imported aluminium products

(Rs. per tonne)

Sl. No.	Source of information	Origin of import	Date of import	Type and specification	c.i.f. price	Customs duty	Clearing charges	Landed costs
				I—ALUMINIUM INGOTS (ITEM No. 66(1)).				
1	Collector of Customs, Bombay.	U.S.A. .	18-12-67	E.C. grade 99·7% purity.	3728·53	15% +Rs.1020	..	5320·42
		Do.	26-2-68	Do.	3662·39	Do.	..	5252·86
2	Collector of Customs, Madras.	U.S.A. .	31-5-67	..	4040·00	20% +Rs. 1140	22·00	5950·00
		Norway.	25-10-67	E.C. grade .	4340·00	15% +Rs. 1020	22·00	6010·00
		Canada.	14-11-67	Do.	4070·00	Do.	22·00	5700·00
3	Collector of Customs, Cochin.	Canada	29-4-67	E.C. grade 99·6% Bis. Alloy.	3919·39	15% +Rs. 360	20·00	4905·33
		U.S.A.	9-5-67	Do.	4051·69	Do.	20·00	5041·88
		Canada	20-6-67	Do.	4093·63	20% + Rs. 620	20·00	5571·28
		Canada	27-9-67	Do.	4051·69	15% +Rs. 1020	20·00	5718·09
		Canada	28-9-67	Do.	4093·03	Do.	20·00	5765·81
		Canada	14-2-68	Do.	3803·63	Do.	20·00	5431·67
4	Indian Aluminium Co., Calcutta.	Canada	..	Conductor grade	4050·00	..	..	..
				II—ALUMINIUM FOILS, STRIPS, ETC. (I.C.T. ITEM No. 66(a)).				
1	Collector of Customs, Bombay.	W. Germany.	16-10-67	Foil coloured and bright.	18210·00	27½% +Rs. 2400	..	25626·43

GIPN—S2—1 T. C. Bom./69—14-8-400.