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OFFICE OF THE INDUSTRIAL ADVISER



FIRST REPORT

OF

D STEEL (MAJOR) PANEL

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INTRODUCTORY

I. Terms of Reference.—In pursuance of the Government of India's policy of expediting the industrialisation of India, the Department of Planning and Development appointed several Panels to prepare plans for post-war development to be carried out within a period of 15 years by stages. The Iron and Steel (Major) Panel was one of these and was constituted towards the end of January 1945. Its terms of reference were contained in the following Special Directive :—

- (i) To examine the feasibility of attaining the steel target for the first five years period which was provisionally fixed by Government at $2\frac{1}{2}$ to 3 million tons.
- (ii) To examine the scope and development of the manufacture of all categories of steel including alloy steel, special steels, tool steel, fabricated and structural steel, forgings and castings and of products such as tubes, tinplate, wire nails, screws, nuts, bolts, etc.
- (iii) To advise on the suitability of the site or sites for the erection of a new plant or plants on the basis of the information available about raw materials, power, labour, water supply, etc., after taking into account Government's policy regarding the regionalisation of Industry.
- (iv) To estimate the approximate capital cost of the plant or plants to be installed and the approximate cost of operation in producing finished steel economically during the first five years of the Plan.
- (v) To examine the approximate value of the plant and machinery which it will be necessary to import from abroad and the possibility of using the maximum amount of material and labour available within the country.
- (vi) To examine the extent to which such raw materials as flourspar, spelter, tin, etc., will be required from abroad.
- (vii) To examine the present Railway Rates Structure in its application to the Steel Industry.
- (viii) To examine the advisability of forming a Federation of Iron and Steel Manufacturers and to indicate the line on which such an organisation should function in the interests of the Industry.
- (ix) To examine the advisability of setting up a Unitary Sales Organisation in order that the Industry as a whole may be able to distribute its products economically both in internal and external markets.
- (x) To examine the necessity of setting up an Iron and Steel Control Board to safeguard consumer's interests.

A Supplementary Directive was issued in April 1945 adding the following term of reference about the Re-rolling Mills :—

To consider the question of the place of the Re-rolling Industry in the future and to make such recommendations as may be deemed necessary for the organisation and rationalisation of the Re-rollers.

A General Directive was also issued to all the Panels calling for recommendations on 12 points, of which the following have a direct bearing on the investigations to be conducted by this Panel :—

- (2) Whether the industry should be under Government ownership either on grounds of national interest or because private capital is unlikely to take it up, and if so, whether it should be wholly or partly managed by Government.

- (3) In the case of industries to be developed other than under State ownership, the capital required for such development, whether the whole of it is likely to be available by public investment and, if not, the extent to which Government assistance may be required.
- (4) The extent to which technical advice from abroad may be necessary.
- (7) The nature of the assistance required from Government in the form of protective duties, bounties, research grant, expert advice, etc.

Paragraph (7) was subsequently modified by the issue of the following explanatory instructions by the Industrial Adviser to the Government of India :—

"One of the points on which Panels are expected to make recommendations is the nature of the assistance required from Government in the form of protective duties, bounties, research grants, etc. The question has been raised whether this item calls for a detailed investigation by Panels on the degree of protection required and recommendations thereon. What is required from the Panels is only a broad indication that protection would or would not be required by an Industry and not detailed recommendations which should be left to the Tariff Board to determine. It would not therefore, be necessary for Panels to investigate the costing of individual firms or to make any other elaborate investigation of the conditions of particular firms for the purpose but to base their recommendations on the broad facts of the Industries with which they are concerned."

- (8) If the Industry is to be under private ownership and management, what controls, if any, should be exercised by Government ?
- (9) What should be the organisation of the different units of the Industry, e.g., should there be an Industrial Association ?
- (11) Should the Industry cater for the export market ?

II. *Proceedings of the Panel.*—The Panel held its first meeting in Calcutta on the 19th February 1945 and between that date and the submission of the report altogether 48 meetings were held.

Questionnaires were issued to the following :—

- (i) To the Governments of the 11 major provinces, 3 Commissioners' Provinces, Government of H. E. H. the Nizam's Dominion and the Mysore State and to the Resident, Eastern States Agency.
- (ii) To the Primary Producers of iron and/or steel.
- (iii) To the Re-rolling Mills Industry.
- (iv) To 30 Structural Engineering Firms.
- (v) To 22 Ship-building and Ship-repairing Firms.
- (vi) To 4 Railway Wagon Building Firms.
- (vii) To manufacturers of Alloy Steel, Tool Steel, Special Steel, Castings, Tubes, etc.
- (viii) To manufacturers of Tinplate.
- (ix) To 5 Refractory Manufacturers.
- (x) To 52 Indian and European Chambers of Commerce in the country.

In addition to the above questionnaires, individual communications were addressed to the principal Departments of the Government of India, whose post-war schemes were likely to involve the consumption of Iron and Steel.

Oral evidence of the following important witnesses was also taken :—

- (1) Sir George Morton and Mr. F. W. A. Carpenter of Messrs. Bird & Co.
- (2) Mr. N. C. Bird of Messrs India General Navigation and Railway Co. Ltd.

- (3) Representatives of the Indian Re-rolling Mills Association.
- (4) Representatives of the Indian Merchants Chamber of Commerce, Calcutta.
- (5) Mr. H. D. Townend and Mr. Ainscough of the Tinplate Co. of India Ltd.
- (6) Mr. P. R. Balakrishnan, Mr. D. V. Krishna Rao and Mr. N. S. Sankariah on behalf of the Mysore Iron and Steel Works.

Informal discussions also took place with the Directors of Messrs. Guest, Keen Williams Ltd., Messrs. Lahiri and Majumdar of the B. N. Railway and Mr. Hill, Director of the Government Ordnance Factories.

The Chairman of the Panel had informal discussions with the Government of Mysore, the Government of Madras and Mr. S. M. Dhar, Development Commissioner, Bihar.

On the 20th February 1946, the Panel in accordance with the General Directive issued to them had a Conference with Representatives of the Provincial and State Government and their Industries Committees.

The Panel also visited jointly and severally the following Works :—

1. The Tata Iron & Steel Co. Ltd., Jamshedpur.
2. The Indian Iron & Steel Works at Kulti.
3. The Steel Corporation of Bengal at Burnpur.
4. The Mysore Iron & Steel Works, Bhadravati.
5. Mukand Iron & Steel Works, Bombay.
6. Indian Hume Pipe Co., Bombay.
7. Bhartia Iron & Steel Works, Calcutta.
8. National Iron & Steel Co. Ltd., Belur.
9. Metal & Steel Factory, Ishapur.
10. Mukand Iron & Steel Works, Lahore.
11. Steel & General Mills Ltd., Moghulpura.
12. Laul's Rolling Mills, Chhéhhatta, Amritsar,
13. J. K. Iron and Steel Co., Cawnpore.
14. Singh Engineering Works, Cawnpore.
15. Cawnpore Rolling Mills, Cawnpore.
16. Tinplate Co. of India Ltd., Jamshedpur.
17. Indian Steel & Wire Products, Ltd., Jamshedpur.
18. Ordnance Factory, Ishapore.
19. Ordnance Factory, Cawnpore.

We have given in the Appendices to this Report information regarding the current output of iron and steel in statistical tables made available to us by the courtesy of our colleague Mr. F. Parr.

III. *Scope of Inquiry*.—It may be not out of place to mention here that though the Panel was precluded from going into the question of the quantum of protection necessary to expand the industry in the post-war period, the scope of the inquiry entrusted to it is far wider than that if any previously undertaken by any Tariff Board. The main purpose of the appointment of the Panels was to fix the targets which should be aimed at during the first five years of the plan and to report how best they could be achieved. Special terms of reference to this Panel, however, covers many problems relating to the future expansion of the Industry and therefore the Panel had to deal with questions which never arose before or were never referred for inquiry to any Tariff Board or any other

authority in the country. Though the Panel had not the same organisation as a Tariff Board nor the same authority to call for documents and evidence, it has done its best to secure whatever information it was possible to collect, and though it may not be complete, it would be found to be adequate for such recommendations as the Panel has been able to make on the various points under reference.

IV. *Publication of Report.*—We presume that this Report will be published in due course by the Government, and before any action is taken upon the Panel's recommendations the Government will consider the advisability of consulting the Industry.

V. *Personal.*—The Chairman and Members of this Panel desire to place on record that notwithstanding the fact that they are directly connected with those concerned in the bulk production and consumption of iron and steel on a considerable scale, they have been left complete freedom for the expression of their own personal views in this Report; and that in consequence, these views must not be understood to reflect in any sense the views of those interests with whom they are associated. In these circumstances, therefore, all concerned are entitled to approach the Panels' recommendations in the same way as they would if its members had not had such associations.

VI. *Appreciation.*—We desire to express our appreciation of the ability and efficiency which our Secretary, Mr. K. C. Cooper, brought to bear in the discharge of his duties. Before this Panel was formally constituted, he prepared a note containing valuable factual information and statistics relating to the whole Iron and Steel Industry. The work involved in the preparation of this note was insignificant compared to the burden thrown upon him by our investigations which was more difficult, complex and prolonged than we had reason to believe when we were first invited to serve on this Panel. Mr. Cooper has proved himself equal to every demand made upon him in spite of the fact that he was simultaneously Secretary to two other Panels. We have benefitted much by his advice and criticism.

CHAPTER I

ESTIMATE OF THE DEMAND FOR IRON AND STEEL

I—STEEL

1. In planning the development of the iron and steel industry in this country the most noteworthy feature which strikes us is that the consumption of iron and steel has declined at the outbreak of the second World War in 1939 as compared to that at the outbreak of the first World War in 1914. In Table No. 1 below is given the consumption of iron and steel in India during the period separating the two World Wars.

TABLE NO. I

Year	Total Production*	Imports	Consumption
1914	Negligible	1,293,000	1,293,000
1929	400,105	1,251,558	1,651,658 —
1933	483,212	327,642	810,854 —
1934	556,049	332,065	888,114 —
1935	600,239	373,665	973,904 —
1936	603,905	453,666	1,057,571
1937	624,438	366,545	990,983 —
1938	702,620	374,266	1,075,886
1939	781,678	280,417	1,062,095 —

*Based on Ingot production less production of steel castings, less 30 per cent wastage.

2. In compiling the above Table we have taken the ingot production in the country and deducted therefrom the production of steel castings and 30 per cent. being the over-all wastage in rolling finished steel from ingots. Our object in so doing is to eliminate the danger of the same figure being calculated twice over, as has happened until recently in the case of most of the estimates made of local production, wherein a large percentage of semi-finished steel has been included in the production of primary producers and also in the production of finished products made out of the same semi-finished steel. For instance, in many of the estimates, the production of tin bar by the Tata Iron and Steel Co. Ltd., appears as semi-finished steel and the production of tin plate from the same tin bar also appears as finished steel. Again, the billets supplied to Re-rollers though included in the production of semi-finished steel of the Tata Iron and Steel Co., Ltd., have also been shown separately as finished products when re-rolled. Therefore with a view to greater accuracy we have only taken the ingot production of the primary producers and arrived at the production of finished steel by taking an over-all yield of approximately 70 per cent.—a yield percentage accepted throughout the Industry.

3. The figures as given in the Table disclose what can only be described as a lamentable feature in the industrial expansion of India, if, as is not uncommonly done, steel is considered a barometer to indicate the industrial growth of a country. In 1914, the consumption of iron and steel, which was almost wholly imported, amounted to about 1,293,000 tons. Fifteen years ago it rose to 1,651,658 tons, thereby revealing an increase of about 27 per cent on the consumption in 1914, but by 1933 the consumption dropped by 50 per cent. to 810,854 tons, this being the period of world depression. By 1936 some improvement was noticeable when the figure of a million tons per annum was reached at which figure the consumption of steel during the four years preceding the War remained approximately stationary, thus revealing a decrease of 25 per cent. as compared to the consumption in 1914. The significance of these figures can best be realised, if account is taken of the phenomenal growth of population during the last 22 years along with the reduced consumption during the same period.

4. *Present and immediate post-war demands*.—It is not easy to make any precise estimate of this demand, as the consumption of steel during the six years of war is no criterion by which to judge the actual civilian demand. Practically all the steel produced within the country or imported was used for war purposes, with the exception of a negligible proportion allocated for direct civilian use. In any estimate we make of the demand during this immediate post-war period, we must make some assessment of the unsatisfied demand of the six war-years, and add the figure to that of the pre-war consumption. As is shown in Table 1, the latter amounted approximately to 1,000,000 tons per annum. If we were to treat the whole of the unsatisfied demand as the equivalent of this tonnage, the back-log would amount to $5\frac{1}{2}$ to 6 million tons, but it would be unreasonable to consider such a figure, because the back-log would have reference mainly to replacements, renewals, and to some small projects, which might have been postponed during this period. For this reason, we think that an estimate of 50 to 60 per cent. might be nearer the mark.

5. How far the pre-war demand will be revived or the unsatisfied demand will become effective in the near future will depend on many uncertain factors, the most dominating of these being the price at which steel will be sold. It may be that a substantial reduction in this may stimulate the demand for steel far beyond the capacity of the domestic industry to satisfy it. On the other hand, unless the prices are stabilized without undue delay at levels which the consumer is convinced are the lowest at which he can expect to buy steel, there is the risk that he may defer his purchases in the not unreasonable expectation that any downward trend, which may have begun, might still continue. It is not improbable that if the price in India is pitched at a lower level than that of imported steel that circumstance alone may help to slow down the demand and confine its consumption to the most unavoidable purposes until it can be met more cheaply by steel of local manufacture. On the basis solely of pre-war and existing conditions the demand for steel in the immediate future cannot be more precisely estimated than by adding the pre-war average figure of 1,000,000 tons to so much of the back-log as may remain unsatisfied at any particular moment.

6. *Future demand*.—But the demand that we have to estimate, is not that mentioned above which is based on reasonably foreseeable circumstances, but that which the not easily predictable conditions of the future may be expected to create. That future in its turn can hardly begin so far as any new major works is concerned, much earlier than 7 years after the initiation of the project. As this period may seem too long, we shall give briefly our reasons for this opinion.

7. Apart altogether from the uncertainty of securing in time so much of the plant as must be in any case imported from overseas, the problems to be solved before it can be created, completed and brought into operation are far more complicated than they would appear at first sight. It is presumed that a new major plant will be built on an entirely new site which will provide for the housing of labour and the construction of an industrial town and also for the establishment in its vicinity of many subsidiary or cognate industries. This would involve the acquisition of land accompanied by the displacement of and resettlement of the population. Considerable delay would therefore occur before any work can be done on the site. One of the most difficult problems will be the supply of civil engineering facilities. A major works with a designed ultimate capacity of one million tons will require the fabrication of steel of the order of forty thousand tons, for which facilities are not likely to be available in the vicinity of the site. There are quite a number of large engineering firms, but most of them have their shops in the large ports, particularly in Calcutta. The capacity of Structural Engineering Firms in Bengal is limited and probably does not exceed 90,000 tons per annum. With the calls which may be made on these shops by many of the projects forming part of the post-war development plans, it is doubtful whether more than a small percentage of the existing structural fabrication capa-

city can be made available for the new steel works, and the erection of special shops close to the site, even if practicable, may prove to be dilatory and expensive.

8. If the difficulties mentioned above prove less formidable, there are others which have to be surmounted. Thousands of tons of bricks and refractory materials will be needed for the construction and maintenance of coke ovens, blast furnaces, steel melting and reheating furnaces. Even now the position as regards these is far from satisfactory and the suppliers of these materials can barely cope with the demand for them in time.

9. If the target in view is to be attained, provision has to be made for a supply of additional 3 million tons of coking and gas coal. Even if metallurgical coal now used for non-metallurgical purposes is diverted to the Iron and Steel Industry, the gap caused by such diversion must be filled up by raising other coal. Similarly, arrangements will have to be made for the necessary quantity of iron ore. In this case new localities may have to be tapped where the conditions of labour and transport may be less favorable than for raising more coal. In both cases a considerable amount of new machinery for raising and handling the mined material may have to be locally made or imported.

10. Finally, there is the question of transport both during the construction and after the completion of the steel plant. Every ton of steel involves the transport of at least five tons of materials, raw and processed, in addition to the distribution of the finished product. Such facilities as exist may prove wholly inadequate and unless the provision for their extension is undertaken in advance and the arrangements completed, the actual production and distribution of iron and steel on the contemplated scale cannot profitably materialise.

11. For these reasons, We believe that no plant of economic size for the manufacture of iron and steel with auxiliary services can reasonably be expected to be erected and brought into operation within at least five years from the inception of a scheme for its construction. Another two years at least must be allowed for the training of labour and the surmounting of teething troubles before anything approaching the rated output of the plant can be realized.

12. It must be fairly clear from our observation that the estimate of the future demand, to be of any use for our purpose should take into account the conditions which may develop during the years following the expiration of a period of about seven years from now. Such an estimate cannot, in a world of rapid changes and so liable to be affected by the aftermath of the war, be any thing more than an approximation intended merely to serve as a guide. Considering that the whole industrial development and the satisfactory execution of the schemes of post-war planning largely depend on the expansion of the Iron and Steel Industry, the output of iron and steel must be increased in anticipation of the demand and should not be made to wait until such demand has, in fact, been created. Such a period of waiting would involve a further delay of five to seven years which cannot be in the interest of the country. There may be some risk involved in providing for supply in anticipation of demand. But balanced against the advantage of materials being available when required, the risk may be regarded as negligible and must be undertaken in the light of Government's industrial schemes approved or under contemplation.

13. The post-war factors which we must take into account in order to arrive at a reliable estimate may be considered under the following main heads :—

1. Post-war Development Schemes of both the Central and Provincial Governments.
2. Equipment for the post-war Armed Forces—Land, Sea and Air.
3. The export of iron and steel to regions east of Suez and to countries fringing on the Indian and South Pacific Oceans.

14. *Assessable potential demands—Post-war Schemes*:—Soon after the constitution of this Panel, we formally addressed the principal departments of the Government of India, the Provincial Governments, some of the major Indian States who, from our knowledge of the mineral resources of the country, might be interested in the large scale production of steel. We have also obtained from some of the Provincial Governments copies of their Post-war Reconstruction Plans. With one or two exceptions, the information supplied by most of the departments of the Governments of India and of the Provincial Governments is not such as could be of much practical use to the Panel. The Reconstruction Plans also are not very helpful. But these are scarcely matters for surprise, as most of the schemes are incomplete or in a nebulous form. Until they are all in the final stage, examined by the appropriate authorities and coordinated, they can furnish little valuable data for a reasonably accurate estimate of the quantity of iron and steel, which their completion or the subsequent maintenance of the plants or works built in pursuance of them may require. In the light of such information as has been furnished by some of the consuming departments and the general picture of the future developments envisaged in the public documents, it is not impossible to get a general idea of the nature and the extent of the demand which it may be reasonable to expect, on the assumption that some if not all the schemes which are contemplated, will in due course materialise. We should be justified in entertaining the hope that whatever form the future government of the country may take, it will accept in principle the ordered development of the country's industries including agriculture, communications, transport, power, housing and social services to mention only a few of the objects which form part of every scheme sponsored by Government or private agencies. All these will require large quantities of iron and steel in some form or the other.

15. We shall now deal, where possible, with the principal consuming departments in the light of the figures supplied by them or in view of the projects which are under consideration.

16. *Railways*. The programme of the Railway Board so far as it has been made public consists of the rehabilitation of railway equipment to make up the wear and tear caused by the War, improvement of transport and construction of about, 5,000 miles of new lines. In an estimate which is described as very rough, their post-war requirements for these purposes are stated as follows :—

	Tons per annum
(i) <i>Track—</i>	
(a) Rails and Fastenings	150,000
(b) Sleepers—Iron	95,000
Steel including Keys, etc.	85,000
(c) Spikes, bearing plates, etc.	18,000
(ii) STRUCTURAL STEEL FOR BRIDGES, BUILDINGS AND ROLLING STOCK (Construction and maintenance)	190,000
(iii) Wheels, tyres and axles, tubes, springs, etc.	80,000
Total Steel	473,000
Pig iron	95,000
or roughly Steel	500,000
& Pig iron	100,000

17. The pre-war demand was in the neighbourhood of 200,000 tons per annum. The additional demand for steel (excluding pig iron), therefore, is approximately of the order of 300,000 tons. Subject to the availability of finance labour and engineering facilities, this figure may be regarded as conservative. It does not take into full account the amount of rails and other materials that will be required for the annual renewal of about 1,500 miles of track alone, taking the average life of rails at 30 years. It also does not take into account the probable electrification of some of the main lines and extension of others beyond the first target of 5,000 miles over 10 years nor the building of steel roll-

ing stock nor the general duplication of tracks over very large portions of the main lines, to give only a few instances.

18. *Agricultural Department of the Government of India* :—

For the manufacture of agricultural implements	per annum.
For construction work	250,000 tons
	203,000 „

These estimates appear to be on the high side, but can be realised, if a sufficient number of mechanised plants are erected for the mass manufacture of agricultural implements and at the same time some standardisation in their shapes, size and weight is introduced. To serve the same purpose different kinds of implements are at present made for different areas or provinces. Where cheapness is an essential consideration, this is a wasteful method of production.

19. *Electrical Commissioner, Government of India*.—The requirement of the Hydro-electric and Thermal Power projects which have met with the approval of the Commissioner have been estimated at 60,000 tons per annum. In view of the large schemes of electrification in conjunction with the irrigation in many cases, this estimate appears to err on the conservative side. The construction of hydro-electric works all over India including power-houses, hydraulic works, sub-stations and thousands of miles of transmission and distribution lines should, we imagine, absorb much larger quantities of iron and steel and their products than the above figure suggests.

20. *Road Department of the Government of India*.—This Department's estimate of its requirements have been stated at 10,000 tons per annum. We are at some loss to understand a figure as low as this, considering the programme of road making both Central and Provincial, which has been announced from time to time involving the construction of 18,000 miles of National Highways alone. These must involve the building of some major and many small bridges, culverts, etc. all requiring the use of steel. We are in no position to make a closer estimate, but we think that when the schemes have been more fully prepared, their completion will require far larger quantities of iron and steel products including machinery for the construction and maintenance of roads.

21. We have so far not succeeded in eliciting any information from the Posts & Air or Education and Health Departments and we have received only a brief account of the War Department's requirements. These four Departments have schemes of rehabilitation, reorganisation and expansion which should absorb substantial quantities of iron and steel products. We propose giving our views later on the War Department's requirements on general grounds and in relation to such declarations of policy as have already been made by the Army authorities in connection with the future constitution of India's Armed Forces.

22. *Provincial Government*.—The replies from the Provincial Government do not disclose any clear basis on which we can build a reliable estimate of their requirements. Nor are the reconstruction plans in such detail as to permit of extracting from them the information necessary for this purpose. But if we allow an increase of 200,000 tons per annum after seven years in the consumption of iron and steel by the Provincial Governments and public bodies within their territory, it should prove to be a conservative figure.

23. We shall now make some attempt to consider other directions in which consumption of iron and steel may be expected to develop if their supply is available and even if some of the major schemes are partially made effective by Government or private enterprise or by a combination of both.

24. *Shipbuilding*.—Here we are not concerned with the policy relating to the operation of the carrying industry which it is solely for the Government to regulate. But we must take into account the declared policy of the Government of India to encourage the establishment of a shipbuilding industry by private

enterprise and also by setting up a Government shipyard, if necessary for building both mercantile and naval vessels. A Shipbuilding Panel is already at work and until its report is completed we are not in a position to make any estimate of the quantity of iron and steel this industry may be expected to consume. But we cannot ignore some general considerations relating to an industry, which in other countries has been in normal times one of the largest consumers of iron and steel.

25. In per-war days the production of plates alone in Great Britain was $1\frac{1}{2}$ million tons per annum and represented about 15 per cent of her total output of finished steel. It is not unreasonable to assume that the bulk of this production was used in her shipyards in addition to large quantities of structural and other shapes forming part of the raw materials. In the U. S. A. and Japan too a very large percentage of their output was devoted to this industry. India in proportion to its importance, its vast coast line and the extent of its foreign trade, owns a negligible percentage of shipping tonnage compared to other countries. Public opinion has been insistent on India possessing a mercantile fleet commensurate with her Seaborne Trade and the Government of India have definitely declared their intention to take effective measures to remedy this serious defeat in the country's industrial structure. To what extent the proposed shipyards will develop, it is not easy to foresee. But it can scarcely be doubted that in the very near future steps will have been taken which should create a new demand for substantial quantities of plates, structural shapes and other forms of iron and steel. This is as far as the mercantile marine is concerned.

26. As regards the Royal Indian Navy, very little information is available about its strength or composition. It has been stated that during the war some expansion of its strength had taken place. Notwithstanding this, it would seem inevitable that further expansion of the shipbuilding and repairing industry will be required adequately to meet the protection of India's coast lines. For this purpose we are of the opinion that substantial quantities of steel will be required.

27. *Inland water transport.*—In addition to ocean going ships which may be built, there is a wide field for the construction of river craft with steel keels including small steamers, barges and boats for use on many of the rivers and large canals, which will require considerable tonnages of iron and steel. There is already a Commission appointed by the Government of India charged with the duty of investigating the possibility of improving and extending the inland waterways. The Government of Bengal has included in its plan two schemes "which aim at keeping 20 important trade-routes clear of shoals and otherwise navigable throughout the year. Four of these routes have been classified 'National Waterways' which when improved will facilitate communication between important trade centres in this Province and those in Bihar, the United Provinces and Assam. The remaining 16 projects include the resuscitation of some of the decadent rivers of Central Bengal and the old Brahmaputra in the Mymensingh district." These schemes are estimated to cost during the first Five year plan about $4\frac{1}{2}$ crores.

28. Other Provinces such as the Punjab, Bihar, Assam, Orissa and Madras have projects of a similar nature for developing their inland waterways.

29. *Other consuming industries.*—Among the new industries are the manufacture of motor cars and air-craft of which small beginnings have already been made. Both of these will require many classes of ordinary and alloy steels. But a very large contribution may be made by a more extensive development of the manufacture of articles of daily use. Among these may be mentioned furniture, cans for petroleum products and for the preservation and transport of oils, fish, fruit, vegetables, milk products and the like, and cooking and other household utensils, cutlery, etc. Housing—particularly of labour, both

industrial and agricultural—schools, hospitals and public and private institutions may also be specially mentioned. There is a large field for the erection of pre-fabricated cottages with the use of blast furnace slag partly mixed with cement and reinforced with steel when necessary. Produced on a large scale on mechanised plants, they will lend themselves to cheap construction, transport and erection.

30. We do not wish to over-burden our report by going into all the industries which are under investigation and which if established will absorb very large quantities of iron and steel products. But the following list of the most important industries, the development of which is now being considered by the Government of India, will give some idea of the future consuming interests.

Iron and Steel (Primary).

Iron and Steel (Subsidiary) dealing with hollowware, hardware, scientific instruments, etc.

Shipbuilding and Marine Engineering,

Heavy Chemical Industries.

Refractories and Ceramics.

Electro-chemical industries.

Non-ferrous metal industries.

Machine tools.

Electrical Machinery and Equipment.

Light Engineering Industries.

Industrial Plant and Machinery.

31. *Equipment of the armed forces...* We have already dealt with the future Indian Navy, as a consumer of iron and steel. The Government of India have declared their intention to undertake the construction of aircraft. It may be presumed that in consonance with the general policy of enabling India to undertake her own defence the manufacture of combatant aircraft in the country will be included in the scheme.

32. It is the equipment of the land forces, however, that will require the largest quantities of iron and steel and their alloys in many forms. We have no indication of the future strength of the land forces though it has been recently stated that it would be of about the same order as before the war. The two principal Government Ordnance factories, one at Ishapore and the other at Cawnpore, are said to have a capacity between them of about four thousand tons of steel per month. If the policy recently declared of rapidly Indianising the personnel of the army is carried to its logical conclusion, as we have no reasons to doubt that it will be, and its equipment is manufactured in India with Indian labour and raw materials, it is difficult to believe that about 50,000 tons of steel will be all that will be required. It is possible that owing to the termination of the war earlier than had been anticipated a good deal of surplus arms and ammunition and other equipment may be available for use in the next few years but, as we have tried to show, no iron or steel will be available for the manufacture of armaments for about seven years after the actual inception of a scheme to augment the supply. By that time the remnants which might have been left to us at the termination of the war will have been exhausted or become obsolete. In this view of the matter both from the military point of view and that of the development of the iron and steel industry, it is of vital importance that the army authorities should now state what their future requirements are likely to be for the equipment and maintenance of the army. It would also help, if it was possible for us to know what contribution India might be expected to make towards the equipment of the armed forces of the Commonwealth.

33. *Exports.*— Another factor which has an important bearing on the future expansion of the iron and steel industry in India is the effect of the war on the main producing and exporting countries. For some time to come many countries in the west and in the east will find it more difficult to export on the same scale as before, whilst the demand for iron and steel in those countries remains far in excess of the supply. The costs of producing the kind of steel in which we are interested are so high in the U. S. A. that in spite of their excessive capacity, it is doubtful whether without 'dumping', they can successfully keep India out of any export market within her economic sphere.

34. In the matter of the export of iron and steel India holds geographically a unique position. Between Northern Europe and Australia she is the only large scale producer with the exception of South Africa whilst further east Japan will, it is presumed, no longer be in the field as an exporter. In an industrialised India a large and remunerative domestic market is an invaluable advantage by which the works costs and overheads are reduced in the development of an export market.

35. Since the first ton of iron and steel was cast in India, more than thirty years ago, she has exported some 8 to 10 million tons of iron to Europe including Great Britain and some of the continental countries, and to the U. S. A. in spite of heavy tariff barriers and to Japan which was the largest single consumer of Indian Iron. This was due to two very important circumstances. First, her advantages in natural resources are so great that she produced the cheapest iron in the world and of superior quality in spite of the handicap that she was not able to make all the by-products or sell such of them as she made at remunerative prices and reduce thereby the costs of saleable iron to the same extent as other countries were able to do. Secondly, she produced in the past more iron than could be absorbed in the country until quite recently when the position altered owing to the expansion of her own steel industry and the increased domestic and war demand which consumed the exportable surplus.

36. As regards steel, the conditions for export have been nearly as favourable as for iron, since the Tata Iron & Steel Company's plant attained its optimum output five to six years ago. In some of the earlier years the need for protection had arisen not so much because the casts were higher than in the exporting countries but because the Continental steel was exported at prices which left to the producers little or no margin for depreciation or profit, if indeed they fully covered the works costs. Even Great Britain was compelled to levy heavy protective duties on Continental imports since 1931-32, though a couple of years later, in case of certain categories of steel products India was able to dispense with protection so far as British steel was concerned, while in the case of the remaining categories only the revenue duty was retained. It was also necessary that a pioneer works of the greatest national importance should be placed on solid financial foundations and should by its success attract more capital into the industry. This necessitated a high margin in the selling prices for depreciation and return on investment. Results have justified the wisdom of this policy. The Steel Corporation of Bengal was incorporated in 1937 and soon after the outbreak of the war in 1939 she cast and rolled her first ingot. Throughout the six years of the War this infant company supplied all her steel at the same prices as her very much older sister. The success of these two companies coupled with prospects opened up by the aftermath of the war has made it desirable and necessary to take measure for a further large scale expansion of the industry.

37. It may well be asked why, if the circumstances have been so favourable as these, India had not exported steel as well as iron. The answer is very simple. India has had no surplus of steel. On the contrary before the war a considerable quantity of it had to be imported. But the real reason is to be found in the

prices which were far more remunerative at home owing to the protective duties added to the freight on foreign steel than they would have been abroad.

38. By the courtesy of the Tata Iron & Steel Co. Ltd., we have been able to have access to their pre-war works costs from which it is evident that India produced during the pre-war period perhaps the cheapest iron and steel in the world. We have no information in our possession which we can use as a Panel for the purpose of comparing Indian with foreign costs, but the impression we have gathered particularly in view of the known low costs of pig iron production is that they would be higher than those in India.

39. There is at present no reliable evidence of the comparable rises in the general level of prices here and abroad, particularly in respect of the principal raw materials or in the wages of labour. But if they are represented in percentages, the Indian costs may appear to be still more favourable. For instance, a hundred per cent rise here and abroad will show a wider gap than before. It is not necessary for us to speculate on the course of future costs but unless some catastrophic changes take place in the level of the prices of raw materials and in the wages of labour and thereby India loses all or most of her natural advantages, the odds must be held to be in favour of the Indian industry both at home and abroad.

40. Though we have no direct evidence, the prices of the principal raw materials and of the finished products which ruled in the U. S. A. in 1938-39 leave little room for doubt that the works costs in that country were substantially higher than those in Great Britain. As for the Continent of Europe, nothing can be definitely said. It is true that continental steel was exported to Great Britain, India and other countries at low rates. That circumstance is no proof that the prices of Continental steel corresponded with the works costs or represented selling prices including the usual overheads and profit on investment. Japan was the largest single purchaser of Indian pig iron and judging by the price paid for it and the transport charges, it is a legitimate inference to draw that the small quantities of iron and steel products which were exported to India were sold at prices which could barely have covered the works costs.

41. Though we have discussed at some length the potential export market for India, we do not intend to suggest that any attempt should forthwith be made to capture or get a substantial footing in that market. It will be contrary to the economic interests of the country to seek an external market before the industry has satisfied the domestic demand and a definite exportable surplus or a state of over-production has been created. India will be in no position even to satisfy the local demand fully for a considerable period of time. Without creating an artificial shortage of iron and steel resulting in pushing up prices within the country and retarding its industrial development, exports will not be possible. If undertaken prematurely from profit motive alone by producers or dealers, it should be the duty of Government to take measures to counteract such activity. Only the dire necessity of importing food stuffs or some other commodity indispensable for the daily existence of a people can justify the export of articles of national importance. We cannot foresee any time when India is likely to be permanently exposed to what may be described as a national misfortune, if it arose in that form. Our purpose in emphasising the existence of a potential export market was to indicate an alternative outlet to which India may have recourse, in the unlikely event of the supply exceeding the demand during the initial years of the contemplated expansion of the industry. At the same time, we proposed to draw the attention of the Industry to the desirability of creating the organisation and the capacity necessary for it eventually to win a share of the markets in those countries, which are likely to depend on foreign imports for their requirements of iron and steel and which geographically are so situated as to be more easily accessible to India than other exporting countries.

42. In dealing with the estimate of steel, We have taken into account the quantity of iron that is required as its principal raw material, but it is also the raw material for other products such as iron castings and we are, therefore, dealing separately with the consumption of iron for these purposes hereunder.

II—DEMAND FOR PIG IRON

43. The local consumption of iron presents more or less the same feature as that of steel. It has with slight variations remained static since 1931, as the following figures will show :—

	11800	11300	Total
	Tons	Tons	Tons
1931	100,000	27,000	127,000
1988-39	110,003	20,975	130,978

The average consumption per annum during the three years preceding the War was 132,000 tons. To these figures must be added about 10,000 tons sold by the Mysore Iron & Steel Works. About half the quantity was used in the manufacture of Railway sleepers, about 25,000 tons in that of pipes and fittings and the remainder in that of miscellaneous castings. During this interval the exports of iron, rose from about 296,000 tons to 480,000 tons, the average exports per annum during the three years preceding the War being 541,000 tons.

44. It will be seen that the local consumption of foundry iron is on a relatively small scale. By far the largest quantity is used in the manufacture of sleepers, pipes and fittings. According to the estimate of the Railway Board, the demand for foundry iron for sleepers, etc. is expected to be in the region of 100,000 tons per annum, during the next five years. With the initiation of many of the post-war schemes dealing with housing, sanitation and other social services, the demand for cast-iron pipes and fittings for water works drains, rain water, etc. must rise appreciably. Machinery is manufactured at present on a very small scale. If this industry is properly developed, it will require many varieties of iron castings. A very large percentage of the raw materials for the manufacture of internal combustion motor and diesel engine consists of ordinary or alloy iron. Sugar mills and cement factories also require heavy castings. If or alloy iron. Sugar mills and cement factories also require heavy castings. If rolls and housings for steel rolling mills are made on a larger scale than at present in this country, they will consume considerable quantities of iron. Floor plates for factories, gates, street lamp-stands, road and garden rollers, drain and man-hole covers, spun pipe, telegraph posts, house cisterns, pumps and many household utensils, lend themselves for manufacture as iron castings. It is not possible to make a precise estimate of the quantity which may be required for these and many other purposes, but a total of about 300,000 tons including the pre-war consumption of about 140,000 tons may not prove to be an excessive figure to adopt for our purpose.

45. *Feasibility of target*— We will now make an attempt to assess in approximate figures the present and future consumption of iron and steel. For this purpose we estimate that the normal pre-war consumption of steel including local production and imports shall continue, if not on an increasing scale owing to the heavy backlog of demand, at least, on the same pre-war basis.

	Tons. (per annum)
Average pre-war consumption of steel	1,000,000
Estimate of the Department of Agricultural for the post-war Agricultural Plan —	
(a) For manufacture of agricultural implements	250,000
(b) For construction work	205,000
Estimate of the Railway Board for their post-war programme	800,000
Estimate of the Electrical Commissioner to the Government of India for Hydro electric and other schemes	60,000
Estimate of the War Transport Department for Road building schemes.	10,000
Estimate of increase in consumption in various provinces.	200,000
	<u>2,025,000</u>
Pig Iron	<u>300,000</u>

Railway Board's total demand for steel is 500,000 tons, but we have excluded 200,000 tons being their normal approximate pre-war consumption.

46. It may be noted that we have not taken into account the heavy backlog of demand which runs into nearly $5\frac{1}{2}$ to 6 million tons and which remained unsatisfied during the pendency of the war. As indicated before, we consider that 50 to 60 per cent of this demand might be revived during the first period of the Plan, but it being difficult to assess its volume per annum, we have entirely ignored it in the above estimate.

47. In addition, as we have explained, there is a potential demand which, though it cannot be accurately assessed, is likely to be an expanding one and unless there is a total or substantial failure of all contemplated Government and private projects, much heavier than the above figures suggest. We are satisfied, taking into account all the circumstances and looking seven years or so ahead, that the attainment of the Government's proposed target of increasing the output of steel by about a million and a half tons per annum is both feasible and desirable in the national interest. In this view, we have the practically unanimous support of all Indian Chambers of Commerce and such of the European as have replied to the *questionnaire* issued by us to all Chambers of Commerce. Most of the consuming industries, and the producers have also been in general agreement with it. Most if not all, of the Provincial Governments and, among major Indian States, the Government of Mysore share our views.

48. Before concluding this Chapter, we would emphasise what we have already stated in an earlier paragraph. For a rapid industrialisation of India, no industry at present is comparable in importance with the Iron & Steel. It must therefore, in our opinion, be at the top of the highest priority list in any final scheme which may be prepared. To the extent to which any of the projects materialise, there is likely to be a shortage of iron and steel and it is essential that no time should be lost in promoting the construction of new Works. If private capital shows any unnecessary shyness in coming forward promptly, Government should not hesitate to undertake the task. Supply must in this case anticipate and not wait on the demand.

CHAPTER II

PROBABLE REASONS FOR LOW CONSUMPTION OF IRON & STEEL

49. In Chapter, I, we have given some figures to show how small the consumption of iron and steel has been and how it has remained static in the region of a million tons per annum on an average for the last 30 years. During this period ending in 1937 the world production of ingot steel rose from about 60 million to over 130 million tons per annum. Practically, every steel producing country shared in the increase almost in the same proportion. It is therefore worthwhile attempting to examine the causes or circumstances which may account for so unfavourable a position in India compared with other countries.

50. In every industrialised country the development of consuming and processing industries has normally responded to or brought about the expansion of the production of iron and steel, and *vice versa*. Such has not been the case in India. The poverty of the country, judging by the *per capita* income of Rs. 65 per annum, the predominantly agricultural economy, the relatively slow progress made by industry and its consequential slow development have been factors which have contributed their share in bringing about a stagnation in the demand for iron and steel, though the population of the country increased by 30 millions during the period under review. It cannot be denied that quite a number of new industries have been established and old ones extended but the volume and value of production have been small relatively to the size of the country and its population, whilst even for the satisfaction of its demand for articles of common use it has had to depend on foreign sources of supply. There has been a wholesome and growing reaction against this

industrial backwardness, one of the results of which has been the anxiety and the eagerness on the part of the Government to improve matters by rapid and intensive industrialisation of the country. For this purpose preparations are being made to introduce schemes of post-war development, which are now under investigation by many Panels, some of which have been mentioned by us. Until the materialisation of some of these schemes, we cannot expect any substantial advance in the use of iron and steel.

51. Besides these general factors there are others connected with the industry which may have contributed and may continue to contribute towards restricting the use of iron and steel. They deserve some examination as their removal or mitigation may bring about a more repaid expansion of the Industry.

52. In all poor countries the price factor plays an important part in the development of the demand for any commodity in common use. But it is by no means easy to ascertain how for the consumption of any articles is affected by the price at which it is sold at any particular moment. Though the price factor may be an important one, it may not necessarily be decisive. Generally speaking, however, it is a fair statement to make that in India perhaps more than in any other country, a continuous rise in prices or their continued maintenance at a high level or their frequent fluctuations may have an adverse effect on the consumption of any commodity. Conversely, the lowering of prices and their maintenance at low and steady levels may have a stimulating effect on the demand. But neither proposition invariably holds true in India any more than in other countries, for there are many factors which may effect the demand one way or the other, irrespective of the prices of any commodity. There is, however a presumption in favour of the inference that the price factor may be responsible for the reduction or restriction of the use of some at least of iron and steel products. This particularly applies to galvanised sheets, the consumption of which during the last 30 years show a substantial reduction according to the following figures :—

1914	.	.	.	.	.	.	.	.	274,759
1927-28	.	.	.	.	.	.	.	.	888,000
1932-33	.	.	.	.	.	.	.	.	115,000
1935-36	.	.	.	.	.	.	.	.	150,000
1936-37	.	.	.	.	.	.	.	.	153,000
1937-38	.	.	.	.	.	.	.	.	112,000
1938-39	.	.	.	.	.	.	.	.	193,000

53. After having recovered partially in 1935-36 and the following year from the worst year of the last depression, *viz.*, 1932-33, the consumption dropped in 1937-38 even below that of 1932-33. This reduction may be explained by the substitution of cheaper materials by the users, of whom by far the largest number consists of agriculturists. If this is the case, the cause is easily inferable.

54. To give another instance, the Railways have utilised other substitutes of steel for sleepers. It may be that there are other reasons for there so doing, but it would be difficult to assume that if it had been possible to offer steel sleepers at competitive prices, they would not have used them on a much larger scale, in preference to the cast iron or the wooden. For similar reasons the Hume and the asbestos pipes have most likely been substituted for the iron and/or steel pipes on an increasing scale.

55. We do not, however, propose to multiply instances or to speculate on the real or supposed causes which might have affected, or the part played by prices towards restricting the demand in the past. We are concerned rather with the future and it is sufficient for us to indicate that the prices of steel have been high for a series of years and that if they continue to remain at such high levels indefinitely, there is a strong probability which cannot be ignored that in view of the slender purchasing power of the Indian consumer, the demand for steel may fall short of expectations. The price of steel has a cumulative effect

57. In Table No. 2 are given the prices which by agreement were to be paid by the Government to the Main Producers with effect from the last October 1939 for War requirements. The base prices fixed under the contract were accepted as the prices Prevalent in India at the time and as corresponding more or less to the *c.i.f.* duty paid landed prices of imported steel. The prices were liable to revision every six months and were increased or decreased in proportion to the rise or fall in the Works costs. The contract was to remain in force for the duration of the war.

58. Similiar arrangements were made for the supply of steel for civilian use for which somewhat higher base prices were payable, which continued throughout the war. In Table No. 3 are the commercial prices which prevailed during the six years preceding the war and six years of the war. In this Table we have selected rails for tested steel and a few of the typical products for untested. Before the war, the latter formed by far the largest portion of the steel sold. The prices of tested steel were generally Rs. 5 to Rs.10 per ton higher than those for untested.

59. It will be observed that during the six years preceding the war, the commercial prices had risen on an average by 50 to 60 per cent. and that during the war years there was a further similar increase.

60 As regards the prices paid for the products of the Re-rollers during the war, it will suffice for us to say at this stage that they were paid in inverse ratio to what was considered by the Government as their efficiency and they were therefore incomparably higher than the prices paid to the main producers. Billets were also supplied to them at prices below those paid to the local producers or for the imported billets. This made the prices for the rolled products ostensibly lower than they actually were. But in the end loss on these transactions had to be made good by the consumers.

61. This, however, is not the whole picture. In February, 1943, the basic prices were increased on an average by Rs. 30/40 per ton by the Iron & Steel Control to create an Equalisation Fund. In September, 1945 this Fund amounted to nearly two crores of rupees. The money collected was partly utilised for the following main purposes, *viz.*—

- (1) to allow the Re-rolling Mills to function by supplying them with billets at a uniform price of Rs. 150 f.o.r. destination. This price was far below their actual cost ;
- (2) to allow for an increase in the retention prices of the primary producers by reason of an increase in actual operation cost in accordance with the first war contract ; and
- (3) to pay compensation to the Re-rolling Mills which were closed down, on care and maintenance basis.

62. On top of these prices the consumer in the up-country markets had to pay the railway freight from the nearest port as before, rather than from the works from which the material was despatched. This, for instance, resulted in the payment by the consumer in Punjab of a price approximately Rs. 50 per ton higher than that paid by the consumer at the port.

63. It cannot be denied that having regard to the scarcity of steel caused by the requirements of the war and owing to the unavailability of foreign steel no equitable distribution would have been possible without an organisation such as the Iron & Steel Control. At the same time, it is to be recognised that the machinery which had to be employed for the purpose was expensive. In addition to the employment of extensive staff, higher commissions had to be paid to dealers, stockists and others than before. It is not easy to estimate to what extent the prices were affected by these circumstances. But there can be little doubt that, considering the relatively small quantity of steel released for civilian use, the addition to the prices must have been substantial.

64. Before we pass on the discussion of the other matters, we would like to emphasise that the rise in the prices during the war, it is understood, corresponded with the actual increase in the cost of production due to the rise in the prices of coal, rates of wages, higher freights, A. R. P. and various other charges for which the producers were not responsible. The prices prevalent before the war were believed to be world prices which the producers were entitled fully to claim. In fact, however, the prices claimed were lower. Before and upto the beginning of the war the prices of steel to B. S. S. were lower than those of imported British steel and appreciably below this level again when it was sold as "untested" steel in competition with Continental. It has been publicly recognised that during the war Indian prices both for war and commercial purposes were generally far below those prevalent in the U. K. and the U. S. A. But it does not seem to have been sufficiently realised that, if as it has been understood the original war contract prices were the equivalent of the prices prevalent just before the war, the prices received by the producers throughout the war continued to be no more than the pre-war.

65. There is another aspect of the price structure to which we would like to refer. A reference to Table No. 3 will show that the prices were liable to serious variations corresponding before the war to changes in the import prices and during the war to rises in the costs of production. These variations especially in a country like India, are not conducive to the steady purchase of steel by consumers. Longterm projects cannot be made with confidence if prices are liable to such serious and frequent changes as are disclosed in the Table. It is impossible to say to what extent the demand for steel might have been affected by reason of these variations, but it is not unreasonable to attribute some at least of the deterrent effect to this cause. Before the war, in Great Britain, prices were maintained at fixed levels for specific periods to the advantage alike of the producer and the consumer. It is not suggested that the adoption of such a course in India was deliberately avoided by the Industry. Any attempt to adopt it would have completely failed, as the circumstances which made it possible in England simply did not exist here. A few years after the appointment of the Import Duties Advisory Committee and the definite adoption of the policy of protection of the Steel Industry by the British Government, imports were permitted only under licence and only to the extent to which the domestic supply fell short of the demand. On the other hand, until the war, imports were never controlled in India. Prices, therefore, were liable to be disturbed and had to follow the course dictated by the circumstances governing import prices coupled with the shortage of supply due to the inability of the domestic industry to keep pace with the demand. If our proposals, which we make in another Chapter, for the control of imports are accepted, one of the most disturbing elements in the price structure and impediments in the way of the growth of the demand for steel will be subdued, if not eliminated.

66. There were other causes extraneous to the Industry which contributed to the increase of prices simultaneously with the imposition of the protective duties by the Act of 1934, an excise duty of Rs. 4 per ton on ingot steel which was equal to at least Rs. 5 per ton on saleable steel was imposed on local steel whilst a countervailing import duty of one and a half times the excise duty or Rs. 6 per ton was levied on foreign steel. This was in the absence of any internal competition, transferred to the consumer by the manufacturer under ordinary economic law. The imposition of these duties, which raised the price of the products of a protected key industry still higher, could hardly be regarded as a commendable measure whatever the revenue considerations might have been which inspired it. Steel enters into so many industries that any increase in its price is bound to restrict its usage and have a deterrent effect on the industrial expansion of the country.

67. After the outbreak of the war, a surcharge of 20 per cent. on the total of the import and excise duties was levied on iron and steel. As the war contract and commercial prices were based on those prevalent as at September 1939, the manufacturers did not benefit by those surcharges. But to the extent to which foreign steel was imported for civilian use, the surcharges must have raised the prices to the consumer to the full extent of the surcharged amount.

68. It is worthwhile examining perhaps how much higher a price the Indian consumer of steel, with his relatively lower purchasing power, has had to pay than the consumer in the large producing and exporting countries with much higher purchasing power and higher standards of living. Let us assume for the sake of illustration that the works costs, the overheads and the return on investment are the same in these countries as in India. As the selling prices were determined in India before the war, they included approximately the following additional amounts which would not normally form part of the selling prices in the exporting countries.

Before the War

	Per ton Rs.
1. Freight, insurance and landing charges	15 20
2. Protective duties varied per ton according to product and country of origin	10 60
3. Excise duty or countervailing import duty	5 6

During the War

	Per ton Rs.
4. In addition to the above, surcharges to the total of 2 and 3	20 (per cent)
5. Equalisation fund surcharge	30 40
6. Part of the A. R. P. expenditure	Not known
7. Excessive cost of Distribution	Not known

69. Considering how low the average works costs of the Tata Iron and Steel Company were before the war, the extra burden thrown on the Indian consumer compared to the foreign consumer must have varied from 50 to 100 per cent. over the works costs by reason of the incidence of items 1, 2 and 3 above-mentioned. It is not a matter for surprise therefore that the consumption of steel in India has remained at such a low level. The poorer Indian consumer can hardly be expected to use steel to the same extent as the foreign consumers, if the price he has had to pay was not only higher relatively to his means but also higher than the prices at which the foreign consumer could buy it in his own country.

70. Another cause which may largely be responsible for the low Indian consumption is to be found in the cost of distribution. Finished steel is sold at a price f.o.r. destination. For this purpose the railway freight chargeable to consumers on steel products is calculated from the nearest port to destination and added to the f.o.r. works price. This has had the very odd result that theoretically the subsidiary companies located next door to the producers' works were chargeable with the freight from Calcutta to the works, while a consumer in Calcutta or at any other port obtained Indian steel from the works free of any freight. As a consequence, the ports which were not necessarily the largest potential consumers became the main distributors of both indigenous and imported steel. In the following Table we show how the prices so fixed affected the consumption of steel in the interior of India.

TABLE No. 4

Average despatches of steel (excluding rails and semis consumed by subsidiaries at Jamshedpur) for the three years 1937-38 to 1939-40 from Tatanagar Tons 458,100

	Tons	Freight paid (lakhs)	Freight received (lakhs)	Difference in lakhs
Calcutta and Bengal	176,230	16.97	1.06	15.91
Bombay	70,213	16.85		16.85
Madras & Presidency	45,178	13.85	4.87	8.48
Rangoon	24,564	5.28		5.28
Karachi	21,514	5.70		5.70
	337,699	58.15	5.93	52.22
Average freight paid		Rs. 17 per ton		
Average freight received		Rs. 1.5 per ton		
Rest of India	120,401	52.03	50.80	1.23
Total	458,100	110.18	56.73	53.45
Rest of India :-				
Average freight paid		Rs. 43.4 per ton		
Average freight received		Rs. 42.3 per ton		
<i>All despatches</i>			458,100 tons	
Average freight paid				Rs. 24.03
Average freight received				12.38
Difference				11.95

71. From the above Table it will be seen that the despatches to the ports were three times those to the rest of India. The consumer at the ports was subsidised partly by the manufacturer and partly by the rest of India to the tune of over Rs. 52 lakhs per annum or about Rs. 15.5 per ton. By reason of the freight alone the consumer in the rest of India had to pay about Rs. 40 per ton more than the one at the port. The Punjab was the worst off of all the consuming centres, for the freight on steel despatched to that Province averaged in the neighbourhood of Rs. 50 per ton. The United Provinces came next with an average freight of about Rs. 30 per ton. When it is borne in mind that, generally speaking, the consumer at the ports and their neighbourhood should have a higher standard of life and better means than the one in the interior, such disparity in prices must naturally depress the consumption of steel in the interior. Considering that the combined population of the Punjab and the United Provinces is about 75 millions, the despatch to them of a little over 60,000 tons is almost incredibly small, whilst the determination of the consumption *per capita* of the remaining 60,000 tons of steel by the rest of India would involve very minute arithmetical calculations.

72. Similar considerations will apply to the finished products made out of the semis supplied by the Tata Iron & Steel Company to the Re-rollers. In both cases proximity to the works conferred little benefit on the consumer. The manufacturer was also handicapped because, as we have already shown, he had to sell three quarters of the steel despatched at or through the ports in competition with imported steel which involved a difference to the manufacturer on an average of more than Rs. 15 per ton. Provision was made by the Tarriff Board in fixing the fair selling price to recover for the producer about Rs. 8 per ton. There is no evidence to suggest what proportion of the remaining difference of Rs. 7 per ton was shared between the manufacturer and other consumers of steel, though the probability is that the whole had been recovered from the latter.

73. We have left out of account other contributing causes for the rise in the price of iron and steel which were due wholly to the conditions created by the war not because we regarded them as insignificant but because some of them might not be permanent and most of them were common to all the industries, both manufacturing and agricultural. Among the most important of these may be mentioned the rise in the cost of living and the general level of wages, shortage of raw materials, dislocation of all forms of transport accompanied by a sharp increase of freights, high taxation and the general inflationary tendencies. In any attempt which may be made to ascertain how far, if at all, a reduction in the prices of iron and steel is practicable, the assessment of the effects of these causes may prove to be difficult but will no doubt have to be undertaken and they will have to be given their due place in calculating or revising the costs and prices so that neither the consumer nor the Industry is made to suffer unduly.

74. From an examination of the causes which might have been responsible for the consumption of iron and steel in India and its failure to share in the growth of the world demand during the course of more than a generation, it is clear that without serious error the explanation cannot be found in any one single factor. It will be as futile to argue that no matter how low the prices the consumption would have remained static because of the lack of general industrialisation, as it would be to say that it was entirely due to high prices. The position is still more untenable if it is suggested that prices did not at any time reduce, increase or keep static the demand for iron and steel. Just as the causes are complex and inter-connected so will be the remedies which it may be necessary to apply if they are to be even partially successful. No single agency can evolve or apply a complete or comprehensive remedy. Any action taken to this end must be the result of whole-hearted co-operation between the Industry, the Government, the tax-payer, the consumer and the investor.

75. So far as the Industry is concerned, it has not seriously denied that the prices today are high. We believe that it will be willing to take steps to bring about their reduction. It is not for this Panel, nor is it within its purview, to express any opinion as to whether they permit of any and, if so, what reduction, or as to whether their maintenance at their present levels is justified. All that we suggest is that prices are high and that they should be related no longer to foreign prices but based on the works costs to which are added *inter alia* :

- (a) a liberal percentage for depreciation and all usual overheads ;
- (b) a rate of profit, which on the one hand would maintain the existing industry in a healthy and financially sound position and on the other would attract the amount of capital which would be required for its rapid development ;
- (c) all direct and indirect charges for sale and distribution which cannot directly be recovered from the consumer : and
- (d) an adequate margin to stabilize prices at levels which will not necessitate frequent alterations.

76. These are matters which lend themselves to examination and appropriate action by the industry itself. On its failure to do so the Government may appoint for this purpose a Tariff Board, or some other independent body, on which no steel interests are directly represented.

77. In an Industry of such supreme importance as this, we should deprecate and indeed be opposed to the adoption by the Government of any of the war-time methods for the fixation of prices. What might have had some war-time justification would have serious consequences if carried into peace-time economy. We refer particularly to the "cost plus" method of fixing price for individual units. No price fixation can be accurate or just to the Industry or

the consumer which is divorced from the direct application of the principle above enunciated. The assessment whether of the "costs" or the elements which constitute the "plus" can in most cases be demonstrated to be meaningless, especially in such an integrated industry as the steel. Moreover, it has not seldom been proved to be a premium on inefficiency. The higher the costs the higher the "plus," and human ingenuity has been unequal to the task of devising any machinery which without, or even with, an intolerable amount of Government interference and all the delays incidental to the official management of industry, has proved satisfactory when this method has been applied.

78. We have indicated in this Chapter the extent to which the Government has been responsible for the increase in prices. In latter chapters we shall deal with the larger questions of policy including protection and Railway freights. It is not generally realised that in the manufacture of iron, without which no production of steel is possible, the cost of coal constitutes approximately 40 of the total works costs. In the manufacture of steel the percentage is about half of this figure because the works costs are higher. Since the war, the price of coal has risen from below Rs. 7 to about Rs. 14 per ton at the pit-head. As from 2 to 2.25 tons of coal are required per ton of steel, this resulted in adding Rs. 15 or Rs. 16 per ton to the cost and the selling price. Of this, about half was due to the direct action of the Government and their Railways in the shape of a surcharge of 20% on the freight, Rs. 1.40 cess for coal production, Rs. 0.40 per ton cess for labour welfare and sundry other small levies. No other industry has been so seriously affected by these increases as the steel industry for we do not think that any other industry uses so large a proportion of coal. The wisdom of a policy of raising revenue solely from the consumer in furtherance of projects intended to contribute towards social services or promoting the good of the community is doubtful. It would have been more equitable if the revenue had been derived from general taxation, for after all it is the taxpayer who eventually benefits by the industrialisation of the country, which is accelerated by the cheapness of coal and steel. We cannot be too emphatic in expressing our opinion that it is a short-sighted policy to load the price of coal with burdens which may more evenly spread if transferred from the consumer to the taxpayer, where the present and the future of the country as a whole is concerned.

79. It is also essential that, apart from the rationalisation of the coal industry which is barely even in sight, steps should be taken to control and stabilise the prices of coal, if it is intended that other industries should be controlled under the contemplated planned economy. Violent fluctuation in the price of coal, particularly where an essential industry such as steel is concerned, it is likely to be a bigger disturbing factor in the planned development of the country than perhaps any other. The conservation of metallurgical and other superior grades of coal and the prevention of its waste are under investigation by a special committee and important as these questions are from the point of view of this industry, we do not propose to discuss them here.

80. Finally, we would like to add a few words about the part that the capitalist and the industrial managements are expected to play in shaping the industrial destiny of the country. Whilst they must look to and indeed be able to secure the assistance and co-operation of the Government in its proper and legitimate sphere and also adequate safeguards by way of protection where necessary, they in their turn are expected to mobilise all their resources of wealth, enterprise and the will and ability to take responsible risks attendant on all new business. Whilst the profit motive as a valuable incentive to exertion cannot and ought not to be eliminated from human activities, it should not in these days be permitted to exercise so dominant an influence on them that nationalisation of industries may be considered by the people a better alternative than private enterprise. We are sure that given favourable conditions the future industrialist is capable of rising to occasion and undertaking those vast schemes of develop-

ments in which industries including the steel have so much to contribute towards the advancement of the general good. The foundation of national defence, industrial expansion and the means of creating the wealth cannot be better laid than on steel and the many steel consuming industries we have mentioned.

CHAPTER III

REGIONALISATION OF THE IRON AND STEEL INDUSTRY—HOW FAR PRACTICABLE

81. The Government of India have declared that they wish to bring about better balance between agriculture and industry. They have felt that there has been too much centralisation of the principal industries in the larger towns and in one or two provinces. They are, therefore, of the opinion that as far as possible new industrial establishments under the 15 year Plan should be regionalised when possible. This point has been referred to us in paragraph 3 of our special directive which runs as follows:—

“To advise on the suitability of the site or sites for the erection of new plant or plants on the basis of the information available about raw materials, power, labour, water supply, etc. after taking into account Government's policy regarding the regionalisation of industry”

82. It must be admitted that this policy is sound when it can be carried out. In India, it is essential that every part of it should share in its general industrialisation and some of the immense agricultural population should be absorbed in the industries and trained for technical work also. Agricultural labour wages have lagged far behind even the low levels of industrial. Such regionalisation may furnish a partial solution of the problem in so far as it may tend to equalise wages and thus raise the general standard of living. There are, however, certain circumstances inherent in some industries which make their regionalisation difficult, if not impossible, unless several essential conditions are fulfilled. The Iron and Steel Industry is one of these.

83. It is of paramount importance that in this country, more so than in any other, iron and steel should be produced and sold to the consumer at the lowest possible price. Cheap production requires that it should be effected on the largest scale consistent with economic considerations, while the processes and the raw materials to be used lend themselves economically to such production.

84. For the manufacture of mild steel, with which we are mainly concerned in this investigation, the smallest economic unit under modern conditions has to be in the region of 500,000 tons of iron and 400,000 tons of finished steel. But in order to ensure the best results, it should be so designed that ultimately its capacity can be doubled. A smaller unit will not permit the inclusion of a blooming mill, an essential and costly part of the equipment of a modern steel plant. Such a mill can not be operated economically on a smaller quantity of iron got steel. Nor would it be possible for a smaller unit to realise that degree of mechanisation which is essential to economy arising from the reduction in the number of men and the possibility of the employment of unskilled labour trained easily to operate machines designed for such labour. We, in India, are particularly short of expert and technical labour, the deficiency of which can be largely made up by the employment of the largest single units for each process or productive department. A blast furnace, for instance, with a capacity of 1,000 tons per day will not necessarily need a larger technical staff on the operational side than one with a capacity of 100 tons per day. In some departments, such as the melting shops, where there are several units simultaneously in operation and each one of them requires its own manning, the employment of larger units with the same number of men as would be required by each of the smaller units will obviously effect much saving in labour costs. In the mills and in the administrative departments the difference may be more pronounced.

85. There are other considerations which make smaller units undesirable. Each day, as it passes, adds to the amount of the maintenance and repairs required to ensure consistent efficiency. Even a few hours interruption due to a sudden breakdown may involve a serious loss if immediate repairs or replacements cannot be effected. The breakdown of a single constituent unit may bring the whole plant to a standstill, as for instance one in the power house. For these reasons, a properly equipped workshop has to be provided, also chemical, physical and metallurgical laboratories and various auxiliary services. Most of these facilities will be required even for smaller units though on a somewhat reduced scale, but normally they will be more expensive than such a unit can afford. Again, whether a unit is small or large, housing, hospital and other amenities for labour have to be provided. If they are to conform to the conditions of work which the industrial labour of the future even in India is expected to need, a town will have to be built with all usual amenities which in order to be cheap will have to be on a scale too big or too expensive for the labour population of a small unit.

86. The process to be applied for the cheap production of the kind of iron and steel which we are considering has not received the careful examination it requires from those who have emphasised the advisability of regionalising this Industry. The normal process which has been worked economically and with success in large units throughout the world is the smelting of iron ore with coke to produce iron in large blast furnaces, and the conversion of it into steel in large furnaces fired with gas or coal or other direct fuel, or in converters where the Bessemer process is possible, or by the combination of the Bessemer with the open hearth and/or the electric furnace. The essential condition is that the iron should be cheap and made in large quantities with coke.

87. Iron ore and limestone, two of the other indispensable raw materials, are found in many parts of India which are far removed from the sources of coking coal. Of this coal at out 1.75 tons are required per ton of finished steel in addition to about half a ton more of steam and gas coal. The latter is available in, or not too far from, the areas in question. In order to make up the lack of coking coal, alternative processes are suggested which we propose to examine briefly.

88. *Charcoal Iron and Open Hearth Steel.*—This process has been tried with success for many years at the Mysore Iron and Steel Works, but it has proved too expensive, except in the immediate neighbourhood, to resist the competition of the major works, in spite of the freight advantage the situation of the Mysore Works possesses. Charcoal iron is purer than any iron at present made in India and is a very valuable material for special iron product or for making steel for special purposes. Unfortunately the market in India is not sufficiently large to absorb even the small output of the works, which has to be sold at the same prices as ordinary basic iron or steel. The costs are high because even at pre-war prices the charcoal cost about Rs. 24 against Rs. 8 to Rs. 9 per ton of coke at the major works. This practically destroyed the freight advantages it had as regards iron. In order to recover the ground lost at this stage, the manufacturer of steel was introduced by the Open Hearth process using 50 per cent outside scrap with its own iron, and small rolling mills were installed to roll the steel. Owing to the small output, the works costs are high while the capital charges per ton are excessive compared to those of a major works. After the iron stage, coal is required for the ingot as well as the rolled steel and it has to come from the coal fields bearing a very high freight. One ton of charcoal requires approximately four tons of wood. The quantity of charcoal therefore cannot be increased easily and the conversion of a charcoal works into any sizable economic unit is a physical impossibility, as has been found to be the case in all countries where this process is employed.

89. *Charcoal and Electric Iron for Steel.*—In order to bring the costs down by increasing the output both of iron and steel with the same quantity of charcoal it is proposed to instal at the Mysore Iron and Steel Works at least one electric furnace with a rated capacity of about 42,000 to about 60,000 tons per annum. The quantity of power required per ton of iron may vary from about 2,400 to about 3,000 k. w. hs. Cheap power has been promised at $\frac{1}{10}$ of an anna per unit. It may result in reducing the works costs appreciably and if the local market and its neighbourhood can absorb the whole quantity, as is not unlikely if the general demand for steel develops according to our expectations, the manufacture may prove to be less unprofitable than it would otherwise have been. As a pioneer works where processes entirely new to this country were introduced and developed, which may serve the country better in the future, when the normal processes become more expensive than now, it has some claim to special assistance to enable it to survive. But so long as we need good and cheap steel and can make it otherwise, we do not recommend the adoption of this process in any other part of India.

90. *Electric Iron and Electric Steel.*—This process is still more uneconomic than the mixed process described above. In addition to the 2,400 to 3,000 k. w. h. for the iron, it would need some 600—800 k. w. hs. for the ignot and perhaps 100—150 k. w. hs. for the rolling mills. In addition, it would need about 800 lbs. of coal or charcoal per ton of steel in the electric and reheating furnaces. The unit will necessarily be a small one and, for the reasons explained, uneconomic. The steel will be too expensive and its quality will be wasted if used as mild basic steel.

91. *Electric Steel Made from Scrap.*—There are quite a number of small electric furnaces operating wholly on scrap in different parts of the country. In so far as they confine their manufacture to steel for castings or other special qualities of steel, they are a useful adjunct to the steel industry provided that there is a market which they can economically serve. We have no proposals to make as regards these units except that they are a very expensive medium to produce a substitute for mild steel and as such, they have no future and deserve no encouragement.

92. We do not wish to elaborate this line of argument too much for stressing an obvious point, but it is well to remind those, who advocate the regionalisation of the industry by the adoption of such processes, of one very serious difficulty. If cheap steel, which we need, can only be made in a large unit of a million tons of ultimate capacity, about two-thirds of the hydro-electricity available in the whole country will be used up by a single unit. Moreover, this can be done only under the almost impossible condition of the concentration of most of the generating stations in one area. Even so, such a unit would require about 400,000 tons of charcoal or coal. In any event, we scarcely see any strong justification for wasting hydro-electricity, so badly needed for other purposes, on projects for the expensive manufacture of products of superior quality, which are not required and have to be sold in competition against products which can be more cheaply and economically made otherwise.

93. There are other processes, to which reference has been made in the reports of geological and other experts, which have been stressed in the representations from some Provincial Governments and also from other sources. But there are no grounds on which we can accept them as feasible solutions of our problem or as fulfilling the one essential condition that they should be capable of operation on a sufficiently large scale to be economic and to provide us with the cheap iron and steel we need. What is still more significant is the fact that no country in the world has adopted of choice any of these processes, if iron or steel could be manufactured by the normal processes or where costs were a consideration.

94. We have therefore come to the following conclusions :—

1. that the regionalisation of the Industry in its primary form by the adoption of other processes is at present neither feasible nor desirable in the national-interest ;

2. that, for our immediate purpose, the orthodox which has been developed and worked with coking coal throughout the world for tonnage iron and steel is the only alternative ;

3. that the first new plants should be erected in those areas where all conditions taken together are the most favourable ; and

4. that in the meanwhile, intensive geological and metallurgical research should be carried out both by Indian and foreign experts to discover new sources of the principal raw materials, particularly coking coal and iron ore in other localities with a view to ascertain their suitability for the manufacture of iron and steel on a large scale in economic units.

95. The Iron and Steel Industry, it is needless to emphasise does not mean only their production from the primary raw materials. It also includes the processing of iron and steel made by the primary producers into further products. The manufacture of agricultural implements including mechanical appliances, is one of the most important of these, from the national point of view. Mechanised units of reasonable size can be established in many parts of the country to manufacture these implements and appliances. Then again, there seems to be a future for the canning industry. Large quantities of cans and containers will be required for packing tea, coffee, preserved fruit, fish, vegetables, edible oils, ghee, butter, fats, also for tobacco, cigarettes, kerosene, petrol, lubricants and many other articles for human or industrial uses. Tin plates and sheets can be supplied from the major works for making these cans or containers in factories established in those localities where they are likely to be used. Also, it may not be impossible, if ultimately a continuous strip mill is established on a favourable site, to supply strip to other localities for the manufacture of sheets as well as tin plate. This will be in accordance with the practice in other countries where, though some major producers of strip possess their own finishing mills. In this way costs are reduced for the major producers and also for the subsidiary industries. There are many other major and minor industries using iron and steel, which can be established in different parts of the country. Among these may be mentioned structural engineering, shipbuilding, armament, iron and steel castings, pipes, motor cars, railway rolling stock, fittings, bolts, nuts, wire nails, safes, locks, furniture, cutlery, haberdashery, etc. It is in this way that the Iron and Steel Industry can be most economically regionalised. With the establishment of such consuming industries as these is tied up, as we have explained, also the expansion of the parent Industry.

96. *Research on Raw Materials.*—Though we have come to these conclusions, we do not wish it to be understood that the development of this Industry is to be confined for ever or indefinitely to those areas which at present appear to be the most favourable for this purpose. We are now concerned only with a short term programme which can be carried out within the first period of the 15 year plan. If our target is to be realised within this time, we must use those resources which have been proved, which are available or which can be made available without avoidable delay. The period in view does not leave us sufficient time to search, experiment on and exploit new materials. It will be a great pity to construct a plant merely in order that a locality, which has little or nothing in its favour except the reports of geologists, may have an Iron and Steel Industry irrespective of its economic failure or success. It will be worse still if the development of the Industry, where it is immediately possible, is postponed until other localities have had time to make out a good case in their favour. It must be remembered that unless India continues, in spite of every effort on the part of all

concerned, to remain Industrially very much where it is, the potential market for iron and steel in the next 10 or 15 years should be several times the present target. Even this first and limited scheme of development will take five to seven years for its fruition. In the meanwhile, more energetic steps should be taken than has been the case so far to prevent waste particularly of metallurgical coal and for the most intensive research, exploration and experiments on a commercial scale for the discovery of suitable raw materials, especially metallurgical coal.

97. In order to expand and ensure the permanence of the Steel Industry, which is so dependent on coke, the first duty of the Government is to take every effective step possible to prevent the use of coking coal for purposes other than metallurgical. It is estimated that every year the Railways, which are the largest single consumers of coal, waste in their locomotives about 2 1/2 million tons of coking coal alone. This waste can and ought to be stopped at once by compelling them to use other forms of fuel or to substitute, where possible, electric locomotion. The stoppage of this wastage alone will provide immediately almost enough coal for our present target. All the railway collieries which contain coking coal, now that they belong to the Government should be worked for the benefit of the metallurgical industry. All exports of coking coal and its distribution should be controlled. In the case of metallurgical coal this is more necessary than in any other. The prices should also be stabilised without throwing an undue burden on the consumers by means of a subsidy from general revenues, if necessary. In another chapter we have suggested how the Iron and Steel Industry can be helped and this kind of wastage remedied to some extent by changes in the railway freight structure.

98. Though the adoption of some of the measures mentioned above may alleviate the position, they will not be adequate for our future requirements of metallurgical coal. Geological, metallurgical and chemical researches on an intensive scale should be simultaneously undertaken not only to find new sources but on the method for adopting to metallurgical purpose coal which so far has been declared to be unsuitable. Attention has been concentrated almost wholly on the requisite quality of coal which will lend itself to coking in modern by-product coke oven. There is no doubt that where coal is available in its more or less natural form or reduced to such form by pre-treatment, washing, blending and other means, this is the best and the most economic process. All this can be, and some of it is being done on a commercial scale on modern plants in India. Even for this process a great deal more is necessary, particularly in the direction of the pre-treatment of coal in the works and at the collieries.

99. There is, however, another direction in which we think it is desirable to undertake an investigation. It is possible that in the last few years and especially during the war, progresses other than by the use of the by-product coke oven have been invented and developed for coking what are regarded as weakly coking coals or coals possessing only some coking characteristic. The U. S. A. and the United Kingdom, Germany and latterly the U. S. S. R. are the principal countries where developments on these lines are believed to have taken place. The first step, therefore, that suggests itself to us is for the Government of India or such of the Provincial Governments as are interested in this Industry to establish contact in these countries with experts or companies who have specialised in the manufacture of plant and machinery for the carbonisation of coal and all aspects of its metallurgical uses. It may also be advisable to make arrangements for our technical experts to visit these countries and get practical experience and knowledge of the operation of such plants and machinery. Large quantities of different grades of coal showing coking characteristics may have to be sent abroad for testing and proving on a commercial scale, after they have been tested at the Fuel Research Institute or elsewhere and found to possess *prima facie* possibilities. This will involve the expenditure of large sums of money which should not be beyond the capacity of these Provinces which have a stake in the success of such

researches or that of the Government of India. From the national point of view no money can be spent to better purpose.

100. A good deal of research may be required to find in commercial quantities the right type of iron with as few impurities as possible. Uniformity of quality is an essential factor of its serviceability for the production of cheap and good pig iron. Except in these areas which have been tapped, the information is not complete enough to embark immediately on large projects with safety.

101. Other important raw materials, where more research is required, are silica and dolomitic used as a refractory. These are expensive items here not only because of their prices but because of insufficient knowledge as regards their quantity for metallurgical uses. They prolong the melting time, cause more frequent interruptions by breakdowns and thus reduce the output. There is also a good deal of room for improvement in the quality and still more so of the quantity of refractory and other bricks.

102. All this exploratory work can and ought to be done in the interval which, as we have stated, must elapse before the new works now proposed can be erected and brought fully into operation. It will then be time enough to consider whether regionalisation of the primary industry can be carried any further.

CHAPTER IV

NUMBER OF UNITS AND SUGGESTED LOCATION

103. The present production of finished steel of all classes, including that produced in the Ordnance Factories and in electric and other small furnaces and steel rolled from scrap, cannot be estimated at more than about 1,200,000 tons per annum. When the Steel Corporation's Duplex Plant comes fully into operation, about 200,000 tons will have been added to this quantity. A surplus of about 150,000 tons of pig iron over and above what may be used in the manufacture of steel may normally be left for castings and other iron products.

104. In Chapter I we have estimated that the demand for iron and steel after a period of about seven years, which must elapse before any new major works can be built and expected to approach its initial rated output 500,000 tons should be in the region of $2\frac{1}{2}$ to 3 million tons. We have emphasised at the same time that the realisation of this target is dependent on the materialisation of at least some of the major schemes now under investigation.

105. In so far as our estimate may be realised there is likely to be a shortage on this basis of $1\frac{1}{2}$ to $1\frac{3}{4}$ million tons which required to be made up. Before considering the number of units to be erected to make good this defect, it may be convenient to take into account the contribution which the existing units may be expected to make towards the realisation of this object.

106. The Tata Iron & Steel Company Limited state that, "they have prepared a scheme of expansion which can be completed within 5 years and can increase the total production of finished steel to about one million tons per annum." This will mean an addition of about 150,000 tons to their peak output. The Steel Corporation of Bengal is less definite though it claims that "its plant is capable of expansion by the installation of certain additional equipment, for which building accommodation now exists, to yield a production of 800,000 tons of steel per annum." We cannot assume that in the light of our recommendations and the estimate of the demand this Company may not, during the period under consideration, expand its output by about 200,000/300,000 tons.

107. The Mysore Iron & Steel Works have a small scheme for increasing their output of finished steel by about 30,000 tons per annum.

108. There is another source from which it may be possible to draw temporarily several thousand tons of rolled steel per annum. This is the Govern-

ment Ordnance Factory at Ishapore, which we have had an opportunity of visiting. The following items of its equipment are of interest from our point of view :—

1. Two Open Hearth Furnaces.
2. One Lamberton reversing 28" two high rolling mill.
3. One 10" Rod mill manufactured by the Brightside Foundry Co., Sheffield.
4. Necessary services and auxiliary equipment.

109. *Open Hearth Furnaces.*—These two furnaces have a nominal capacity of 25 tons each and are used for making acid steel for ordnance purposes. By changing the lining they can be converted at a small cost into basic furnaces. With a suitable charge of pig iron which will have to be supplied and maximum use of locally produced scrap, each one of these furnaces should give on a conservative estimate from 1,250 to 1,500 tons per month. The Mysore Iron & Steel Works, which have a Demag furnace of similar capacity, claim an output on an average of 2,500 tons per month. There is also space for the erection of two more furnaces along side the others at Ishapore. It is difficult to say what precisely the erection of two new furnaces including auxiliary equipment may cost but in our opinion an estimate of Rs. 15 to 16 lakhs may not prove to be far off the mark. This addition will rise the capacity of the melting shop between 60,000 and 72,000 tons per annum.

110. *Lamberton rolling mill.*—This mill was installed in 1939-40. Its capacity is said to be 6,000 tons per month of rolled sections. It can, therefore, at least roll this quantity of billets from ingot and with some little expenditure on more handling and other facilities it is possible that it may do more. But even with no increase of capacity it will be able to handle the increased output of ingot steel and roll it into billets for which there is likely to be a greater demand than the major works be able to meet in the immediate future.

111. *The Rod Mill.*—This mill is a Brightside product. It may also need some more auxiliary and handling equipment. Its capacity is said to be about 450 tons per month. It is possible that if its production is confined to the rolling of concrete rods for which there is likely to be a greater demand than there is equipment in the country to roll, it may produce more. But if it does not, it will fill a gap which may otherwise have to be filled by imports. These, even if available may cost more and delay some of the schemes where urgent concrete work is involved.

112. We believe that if arrangements can be made for the supply by the major works of the necessary quantity of pig iron at a reasonable price, billets and rod can be produced at a cost which may not compare unfavourably with that of the other works. In any event, they should be well below the imported prices of these products for a considerable time. The situation of the factory is favourable for the distribution of the products for which there is a demand in Calcutta and its immediate vicinity.

113. We understand from the pronouncements made by the Government from time to time that they are anxious to retain the trained personnel at the Ordnance Factories and so reduce unemployment. They are also willing to make available for civilian use such of the equipment of these factories as can be adapted to this purpose. Any addition that can be made for the increase in the production of steel at the Ishapur factory will be a most welcome medium through which the civilian requirements can be met.

114. The investment involved is so small that it should present no difficulty. It will be a productive investment which will pay for itself under reasonable management while an increase in the steel capacity is an advantage of some value from the defence point of view. It is not suggested that the

arrangement should be permanent. It is intended merely to fill a gap in the supply of steel until a major works has been erected or until the Government requires the plant for their own use, whichever is earlier. If the Government do not feel disposed to incur expenditure for any extension of the capacity of Ishapur, the Selling Organisation might find it an economical proposition to advance the money and receive the additional quantity of steel products which might otherwise have to be imported at higher prices. Spread over a period of five years the incidence may not amount to more than a few rupees per ton. We hope that in view of the immediate necessity for increasing the available supply of steel both the Government and the army authorities will see their way to accept our suggestion.

115. The products will be marketed through the Selling Organisation and such retention prices paid as may be agreed upon.

116. We have also had an opportunity of visiting the New Ordnance Factory in Cawnpore. Both by its distance from the sources of all the principal raw materials and its present somewhat inadequate equipment it does not lend itself as well as the Ishapore Factory for the manufacture of steel for civilian consumption and we are therefore not including it in our proposal.

117. Even if all these works develop in the next five years or so on these lines, there is still a probable shortage of more than one million tons per annum which would make desirable the installation of at least one major plant with an initial capacity of 500,000 tons rising eventually to one million. If, on the other hand, no appreciable expansion of the existing units takes place and if the demand keeps pace with our estimate, the desirability of the erection of a second unit of similar size needs no special emphasis. We propose therefore to recommend two sites for the erection of new units.

118. Lest anyone should by any misunderstanding suppose that we are making any final choice as regards the location of the new plants, we would like it to be definitely understood that our recommendations are only exploratory and that they are not intended to be accepted by anyone as more than suggestions worthy of consideration during the preparation of concrete projects. The selection of actual sites is a task which this Panel is hardly qualified to undertake. It must be left to Consulting Engineers associated with competent geologists, metallurgists and other technical experts. These agencies can be selected and employed only by the promoters of schemes for the installation of new plants.

119. There are certain conditions which must be substantially, if not completely, fulfilled by every site before it can be selected as suitable for a major iron and steel works with an ultimate rated capacity of a million tons per annum. There may be circumstances also which may make the selection of one of several sites preferable to any other of them, even if the merits of each of them may be apparently similar.

120. The conditions referred to may be briefly described as follows :-

1. It is seldom clearly realised that water plays as important a part in the economic and successful operation of a major steel works as almost any of the principal raw materials. In India, where even relatively large rivers run practically dry during 2 to 3 months preceding a normal monsoon and the flow of water for several months is on a diminishing scale for a longish period, the problem is not easy of solution. It is still less so, when there is a partial or total failure of the monsoon. The works therefore must be situated near a supply of water which is perennial and is abundant for all purposes. The quantity of water required for circulation is about 200 million gallons per day and in a tropical country it will be unsafe to assume a quantity less than ten million gallons for daily make up. In addition, about 5 million gallons may be required for town use per day. These requirements may be still larger, if any subsidiary

or auxiliary industries, especially chemical, are established in the immediate neighbourhood.

2. Proximity to the principal raw materials of which the quantities required per ton of finished steel are approximately as follows :—

	Tons
Coking coal	1-75
Other coal	0-50
Iron ore	1-66 (60 p.c. iron content)
Limestone and other fluxing material	0-75
Refractory materials	0-25
	4-91 tons.

The sources of the supply of these materials should have been already worked or be easily workable and their quality and the extent of their deposits previously proved on a commercial scale. The ascertained supply should be sufficient to last at least fifty years or more for the average production per annum of one million tons of steel. As we have already explained, this is a short-term programme and time is not available for elaborate research to find, prove and exploit new sources.

3. Good communications are indispensable, especially by the existing railway system without involving any considerable main line extensions and consequential delay in the transportation of raw materials and the distribution of the finished products. Absence of transshipment and the availability of alternate means of transport by river or road may prove to be valuable advantages in view of the large schemes of road and river development now under investigation both by the Central and the Provincial Governments.

121. We have carefully studied all the materials supplied to us by the Provincial Governments and some of the Indian States where the existence of certain essential raw materials has been claimed on the surveys and reports of experts. But we are unable to find any reliable evidence, except in Bihar and Western Bengal, upon which we can definitely recommend the feasibility of erecting a major iron and steel works as part of the first five year programme. For our purposes, this area may be considered as one, though under administrative arrangements it happens to fall within two Provinces. There are already two major works, one in South Bihar and the other in West Bengal, practically on the fringe of the former Province. If our recommendations were to be based wholly on economic considerations, we should have little hesitation in proposing that this was the only area, preferably Bihar, to which the expansion of this industry should be confined, at any rate for a considerable period and until such time as any other area had been found with comparable, if not equal, possibilities. National planning, however, cannot be built on purely economic considerations and for that reason we think that there is a strong case for selecting another area where the conditions, though less favourable in the immediate future, may justify the erection of a major unit. This is in the Central Provinces and Berar.

We shall now proceed to discuss the possible sites.

BIHAR

122. The ideal site for a large iron and steel works is one which with an abundant and perennial supply of water is in close proximity to the workable sources of both iron ore and metallurgical coal. The availability of cheap water transport for raw materials and for the finished products is an additional and valuable advantage. There is no part even of Bihar where all these conditions are concentrated in a small area. But practically no part of this Province is so

unfavourably situated, with regard to any of these conditions, as to be entirely excluded from consideration. We must, therefore, look for a site which on the whole reasonably fulfills all the essential conditions and which, if it has some relative disadvantage, makes up for it by some advantage not possessed by any other site to the same extent. Though we have stated that the regionalisation of this industry is possible only on a limited scale, the site of the new works should not be so near any of the existing works as to reduce the scope for regionalisation still further without a demonstrably strong reason. It is in the light of these observations that we purpose to examine the relative merits of three of the several sites which have been suggested.

123. *Ramgarh*.—This site has the advantage of being within a very few miles of the West Bokaro and the Karanpura coal fields. But it has no appreciable advantage in this respect over the Indian Iron & Steel Company's works as far as coking coal is concerned, whilst it is much further away from the Ranigunj coal field for other coal. It has a slight advantage over this company in the matter of iron ore, but compared to the Tata Iron & Steel Company Limited, it is very much further away. As a centre for the distribution of the finished products it will practically serve the same areas as the other two works and perhaps not quite so well. But it is practically ruled out for the present by the inadequacy of its available water supply which for an iron and steel works, as we have already explained, may amount to 200 million gallons for circulation and about 15 million for daily make up. We consulted the Government of Bihar and we quote the following extract from its reply :

"The site is, however, ruled out on the ground of water supply. A factory at this site is expected to interfere with the supply of water lower down to the Central Fertiliser Factory and the Grid power station at Sindri in the Jharia coalfields, which have the claim on the water of the Damodar."

The problem of the water may be solved if and when the Damodar Valley Development scheme has been completed. This may take years and for our present plan we cannot take it safely into account.

124. *Rourkela*.—This site is not mentioned by the Government of Bihar. It is in an undeveloped area and is situated in Gangur State on the outskirts of Bihar. Its main advantage is said to be the reported existence of good iron ore. Its water supply, it is suggested, may be provided by damming the river Koel. It is situated at a distance of 180 miles from the coal fields of Bihar. As a centre for distribution it is less favourably situated than Tatanagar and much less so than another site which we are recommending in the Central Provinces.

125. *Mokameh-Monghyr Area on the Ganges*.—We consulted the Government of Bihar with reference to the selection of a site on the south bank of the River Ganges between Patna and Monghyr. It agrees with us in our opinion that, considering all relevant conditions, this part of Bihar is most favourably situated for the erection of a new large steel works. The site suggested by the Government within this area is in the vicinity of Kiul and Jamalpur Junctions on the E. I. R. main line. We have also been told that there will not be any difficulty in acquiring about 20,000 acres, which is not too large a piece of land for a major works,

126. The site is within 100 miles of the Giridhi coalfield, where coking coal is available and about 10 miles from Jharia and Ranigunj. In this respect it has no appreciable disadvantage when compared to the Tata Iron & Steel Company Limited, even if no source nearer to the site is discovered later. For iron ore it is definitely much further away than the Tata Iron & Steel Company Limited and about 100 miles farther than the mines of the Indian Iron & Steel Company. But it is much more favourably situated than either of these two works for lime stone, of which about 1,400 lbs. are required per ton of

steel. Good quality limestone is available within a distance of about 90 miles close to the River Sone. We have been advised that this can be transported by water for a considerable part of the year along the Sone and Patna canal and all the year round along the Ganges. In another respect a works erected on this site will have distinct advantages over the existing works. Large quantities of silica in the shape of both sand and bricks are required and excellent quality of silica is found almost next door at Monghyr from where it is now taken for use or for making silica bricks at refractory brickworks situated lower down in Bihar or West Bengal. A new brickworks established at or near Monghyr will result in considerable economy in the cost of this important auxiliary material,

127. As has been stated in the letter of the Government of Bihar, this area lies within the range of the electric power scheme in the coalfields and the Damodar valley, which the Government has under contemplation. Normally a major iron and steel works will produce most of its electric power from the surplus gases released in the processes of manufacture. However, an alternate course of supply is desirable in cases of emergency. Also, if cheap power is available it may be used for special classes of electric steel and alloys. With an abundant supply of good silica in the neighbourhood, the manufacture of ferro-silicon, for instance, may become a commercial proposition.

128. The situation of the works on the banks of the Ganges will confer upon it some advantages which no other site possesses in equal degree and which are not, in fact, enjoyed by either of the existing works. Water for processing purposes for this or any other industries, which may be established in the neighbourhood or for human use, will present here no problem of any kind. The construction of large reservoirs, dams and barrages over rivers is not only an expensive addition to the capital and maintenance costs but not seldom involves controversial problems of riparian and other rights without necessarily providing the same facilities as a large perennial river.

129. A far more important advantage than even the abundance of water for all industrial purposes, that this site possesses over any other, is the facility of using water transport both for the incoming raw materials and consumable stores and the distribution of the finished products. Even though this ancient high waterway has been badly neglected, it is still navigable on the upper reaches right up to Buxar and even beyond and in the other direction right down to Calcutta direct through the Hooghly during the monsoon and through the Sunderbans all the year round. In the evidence given by the India General Steam Navigation Company it is stated that throughout the year barges tugged by steam boats can haul upto 2,000 tons of cargo at a time between Mokameh and Calcutta. Moreover, the Ganges and the Brahmaputra with their many tributaries constitute the main highways for direct communication for practically all the region on the northern and eastern parts of Bihar and Bengal and practically the whole of Assam right upto the frontiers of Burma. This high waterway also connects these regions with the port of Chittagong which is a convenient seaport for exports to Burma and the coastal-areas of the whole of India. As we have already explained in a paragraph on "Inland Water Transport" in Chapter 1, the advantages possessed by this site for riverine transport will be increased several times, when the projects visualised in the post-war plan of the Government of Bengal and the proposals expected to be made by the special Commission appointed by the Government of India have materialised. Indeed, we should be justified in looking forward to a time when these rivers are made navigable all the year round not only for much bigger river craft than now seems possible but even for small sea-going vessels. It is not a pleasant reflection to make on our communications that with so many large rivers India is perhaps the only important country of the world that has no inland port other than the over-congested one of Calcutta on the Hooghly.

130. With the development of water transport, particularly in this part of India, a nascent industry may develop into a major one. This is the construction on a large scale of steel barges, boats and even moderately sized steam boats and tugs. No site can be more convenient or economical for the establishment of this industry than one near an iron and steel works on the banks of a navigable river.

131. There is another aspect of the question which is also in favour of this site. It may sound somewhat premature to talk of or provide for another war when we are barely out of the last. But our experience has shown the folly of imagining any foreseeable time when war may be regarded as a contingency never to be provided against. It is well therefore for those who are planning for the future to have the foresight to establish atleast one major works from which it may be possible to transport materials or weapons by water in an emergency. Even the erection of a major armament works, in the vicinity of the source of its principal raw materials and separated from the vulnerable coasted by 200 or 300 miles may as a vital matter of the country's defence be considered a ground by itself for the selection of a site on this river.

132. There is also another feature of transport to which we would refer. Besides occupying a position from which it is served by the broad gauge main lines of the E. I. R. in all directions, this site provides both for military and civilian uses, just across the Ganges on its northern bank from Monghyr, a complete system of metre gauge railways. These serve practically the whole of the north of the United Provinces, Bihar, Bengal, over the Oudh and Tirhut and other railways to the north and west and over the metre gauge section of the Bengal Assam Railway regions right upto the borders of Burma. If the projected new rail and road bridge across the Ganges is built near Mokameh or Monghyr, materials by a direct route and without transshipment may be carried from the works to any part of these regions served by the metre gauge system. In the alternative, it can always be taken by boat from the south to the north bank at a trifling cost. At present these railways cannot be used for the transport of iron and steel from either of the existing works without transshipment and involving, not seldom, roundabout route.

133. Incidentally, it is worthwhile mentioning that until quite recently the value of slag as a cheap material for road making and the construction of prefabricated cottages and other light buildings was not sufficiently realised and it had to be dumped disfiguring the countryside. With cheap river transport this can be converted into a valuable and marketable asset, particularly in Eastern Bengal and Assam, where a large programme of road construction and housing of plantation labour is under preparation.

134. It has been stated that even if the advantages of cheap water and other means of transport are admitted, the demand for steel in these areas is so small that little benefit may be derived from them. This is simply begging the question. The population of these areas runs perhaps into a hundred million which has not been able to use iron and steel because it had not so far been sold at a price within its means for which the cost of transport may be not a little responsible. In any event, it can hardly be denied that those parts of the market which are now served from the more distant works may have nearer source of supply and that other markets which have been neglected can be developed.

135. Finally, there are people—fortunately only a few—who would object to the construction of a works here, because it is in the earthquake zone, where there have been now and again violent shocks. If this argument were to be seriously accepted it would disqualify for further industrialisation practically the whole of northern India right upto Quetta, while Japan, Italy, Spain, Switzerland and some parts of U. S. A. would still have remained without many

major industries. If there is any such risk, no reasonable man will refuse to take it, especially if other conditions are as favourable as those described by us.

THE CENTRAL PROVINCES AND BERAR

136. Before the final selection of a site was made for the pioneer works of the Tata Iron and Steel Company Limited nearly 40 years ago, this Province was regarded as the one in which the beginning of this industry was to be made. But the project did not materialise because it was found too far away from the sources of coking coal in Bihar and also because there was less reliable information than now as to the deposits of good iron ore available. More accurate data are now available as regards the workable deposits of the latter. The position as regards coking coal, however, still remains obscure. There are better grounds for believing that more geological and metallurgical research may succeed in finding reasonably good coking coal or in being able to coke, by the employment of new processes, coal which at present does not lend itself to coking. In the meanwhile, circumstances have so changed that it is considered advisable in the national and larger interests to spread out this key industry when possible, even if coking coal has to be brought from a considerable distance, to places where the other conditions we have mentioned in an earlier paragraph are favourable, and the possibility of securing in the not distant future, coking or cokeable coal is not ruled out. This definitely is the case of the Central Provinces and Berar.

137. In the original communication received by us from the Government of these Provinces, Balharshah near Chanda was recommended as a site for a new works. After carefully considering the Government's proposal we wrote suggesting that for various reasons, particularly its long distance of over 800 miles from the Bihar coalfields and its less favourable location as a centre of distribution, the vicinity of Raipur appeared to us to be a better area. In the light of the valuable information supplied to us in subsequent correspondence we are confirmed in our opinion and the Government itself agrees with us on the whole, though it suggests a site near Bilaspur as an alternative. The two sites recommended are both in the same area. The one nearer to Raipur is at Tilda, 23 miles further north and 492 miles from Calcutta. The other one is at Bilha, 10 miles south of Bilaspur and 457 miles from Calcutta. There is not much to choose between these two sites, as the raw materials for both are to be drawn from practically the same sources and the difference of distance is almost negligible. Tilda is farther away from Tatanagar and nearer to the port of Vizagapatam by some few miles than Bilha. The traffic to Vizagapatam has to pass through Raipur in either case and as Raipur is a junction through which the B. N. R. branches off in several directions, it has some little advantage over the Bilaspur sites. As we are not fixing the exact location, we are giving in the appendices of this Report the full and detailed information supplied to us by the Government of the Central Provinces relating to both the sites.

138. All the conditions mentioned by us are substantially fulfilled by both the sites except that relating to coking coal. This will have to be brought from Bihar only a distance of about 400 miles. Excluding surcharges, the freight at the present railway rates will amount to Rs. 6 per ton. This compares with the freight of about Rs. 2-13-0 paid by the Tata Iron & Steel Company Limited and about Rs. 1-6-0 by the Steel Corporation of Bengal. As about 1-3/4 tons of this coal will be required per ton of steel, the disadvantage in this respect will amount to about Rs. 5-10-0 per ton of steel compared to the Tata Iron & Steel Company Ltd. and about Rs. 8-4-0 per ton compared to the Steel Corporation of Bengal. Such an increase in the manufacturing costs is a handicap which may be regarded as serious, if it adds an equivalent amount to the price payable by the general consumer of steel. But this handicap has with it some compensating advantages in the matter of distribution of the finished products.

A work situated here will be more than 300 miles nearer than Tatanagar and about 450 miles nearer than Burnpur for all those markets south of Raipur, practically in the whole of the Peninsula and to the west right upto Bombay, whilst those to the north of Raipur will perhaps be nearer by some 200 miles. The port of Vizagapatam will also be about 200 miles nearer by rail for exports by sea. But the present policy of steamship companies, we are given to understand, is to charge the same freight from Vizagapatam as from Calcutta to the principal ports south of Vizagapatam or to Burma. If this is true, the distance by rail being about half from Tatanagar or Burnpur the total rail-cum sea freight may give an advantage to these works over Raipur. Whether the steamer companies will continue or will be allowed to work on the same basis, we do not claim to know. But if any undue preference is given in this way to one locality over another, it is a matter for Government to resolve.

139. The minimum freight on finished steel is '1 and the maximum 38 of a pie per maund. But its incidence varies often from station to station or according to distance or competition by alternate means of transport. It is therefore not possible to assess the advantage Raipur may have in respect of the freight on finished steel which may be offset the disadvantage in respect of coal. But looking at the question by and large, the disadvantage may prove in practice to be smaller than it appears at first sight ; or by a redistribution of the market there may be no disadvantage at all.

140. If our proposals about the reduction of freights, particularly on coking coal, are accepted, the situation for Raipur will be very much improved even if, as is likely, the same concessions are given to the other works.

141. It is, however, in the matter of iron ore that the sites in the Central Provinces are in one respect not so well off as Jamshedpur. The distance from the suggested mines to the works is on an average about 50 miles more, which is negligible, but a new railway line will have to be constructed over a distance of about 40 miles from Drug. We understand that there is already a project for the construction of such a line. Otherwise, a special line may have to be built by the B.N.R. There is also the fact that these mines have so far not been worked and a considerable amount of equipment, appliances and labour will have to be arranged for.

142. It has been stated that good quality limestone is being worked within a distance of about 20-40 miles and about 1400 lbs. of it are required per ton of steel, the saving in freight will be appreciable compared to either of the existing works. This will also apply to manganese ore, though the quantity used per ton is small. In respect of dolomite, fireclay and silica, the information is inadequate. But we have no reason to think that for these materials taken together any one of the old or new works will have decisive advantages over any other of them.

143. We have purposely avoided entering into any meticulous calculations as to the precise advantages or disadvantages of particular locations in relation to the existing major works or those which may be erected hereafter. This Panel is not constituted or equipped for the purpose of carrying out investigations, which can more appropriately be done by those who may be directly interested in promoting the erection of new works. It is sufficient for us to indicate possibilities, which in our opinion are promising and calculated to be the means of realising the Government's object of expanding the industry. Whether the manufacture of iron and steel is cheaper in one place than in another is hardly the sole criterion by which the decision is to be made. It is rather the consideration whether the dispersal, where possible, of the centres of production is in the interest not only of the consumer but also in that of the country. From the national point of view there is little doubt as to the soundness of the idea, as it would contribute towards creation of a new industrial

belt across the continent of India. As regards the consumer, it is difficult to be so confident. But from a practical point of view, it stands to reason that the existence of several works situated at long distances from one another and the consuming markets should in the result lead to the cheapening of steel by reducing the cost of distribution. In any event if industrialisation of the country is the object in view and if it is dependent on the expansion of this industry, as indubitably it is, no useful purpose is served by too rigorous an adherence to pure economic considerations.

144. Before closing this chapter, we feel it advisable to note briefly the facilities possessed by other Provinces for this Industry, which may have to be taken into account when any further expansion is contemplated at some future date.

145. *Bengal*.—We must make it clear at the outset that we make no difference, as far as this Industry is concerned, between Western Bengal and Bihar, which geographically and economically form a single unit though administratively they are divided. It is true that by far the largest number of the subsidiary engineering industries of India is located in Bengal and that its consumption of steel is greater than that of any other Province. But on the other hand, there is already one steel works in existence in Bengal and the principle of regionalisation and dispersal as far as practicable would make it undesirable to establish another in close proximity to it if there is an alternative site available. Further, a new steel works, if established in Northern Bihar, will benefit Bengal to practically the same extent as if it were in Bengal itself. For these reasons it is unnecessary to deal with the claims of Bengal in greater detail.

146. *Orissa*.—The Orissa Government has suggested Padampur as a possible site for a steel works. Padampur is on the River Mahanadi in the Sambalpur district and is about twelve miles from Jamga railway station on the B. N. R. main line from Calcutta to Bombay. The site, therefore, has potentially good communications and an ample and perennial water supply, thus fulfilling two of the conditions we have laid down. As regards raw materials, limestone and dolomite are available in the immediate vicinity on the opposite side of the river and fireclay is obtainable in the neighbouring Rampur area. Coal is also available from the Rampur mines for steam and probably for gas purpose, but coking coal would have to be obtained from the Asansol district about 270 miles away. There are certain small scattered deposits of iron ore in the Sambalpur district of an average iron content of 55 to 60 per cent, but the works would probably have to rely for the bulk of its requirements on the richer and practically inexhaustible supplies of Singhbhum, involving a haul of about 140 miles.

147. It will thus be clear that this Province is not as favourably situated in respect of ore as the Central Provinces; while in respect of coking coal it falls between two stools; for it is neither near enough to the coalfields to obtain cheap coal nor far enough away from the existing works to secure the object of dispersal or any appreciable freight advantage in respect of the finished products. For these reasons, the site will not serve our present purposes as advantageously as either of those recommended by us. It should, however, be borne in mind for any future scheme of expansion. In the meanwhile its resources of iron and coal should be further investigated.

148. *Madras*.—Iron ore deposits are to be found in this Province in the neighbourhood of Salem and also in the Kurnool District. A certain amount of inferior coal and lignites are also available, but coking coal would have to be brought all the way from Bihar, a distance of over 1,000 miles. Any selected site must, therefore, necessarily be on the broad gauge system to avoid transhipment. In view of this and the necessity for an abundant water supply and

hydroelectric power to keep the use of coal to a minimum, the best available site would be near Mettur dam. This would be about 60 miles from the main deposits of magnetite iron ore in the Salem region and about 20 from a smaller deposit. A further point is that these ores have only a 35 per cent iron content and a very large silicon content so that they would have to be crushed and concentrated by means of electromagnets before use in the blast furnace. The cost of production, already high because of the freight on coal, would thus be further increased. Other requisites such as limestone, dolomite, magnesite etc. are available in the neighbourhood, but in our opinion the establishment of a works in this Province would not at present be an economic proposition.

149. The normal pre-war annual demand for steel in this Province was about 70,000 tons, which is expected to rise to 100,000 in the post-war years. It has been suggested that a small unit might be established to make steel in electric furnaces by the use of charcoal in place of coke. Our views on these methods of manufacture have already been expressed.

150. *Punjab*.—It is stated that there are deposits of good quality iron ore near Jogindarnagar in the Punjab, but these have not been worked in recent years. Coal suitable for making hard coke is also said to have been discovered near Jammu and steam coal, limestone and fireclay are also said to be available. It is clear that much further investigation into the suitability of these raw materials and the feasibility of using them will have to be carried out before any concrete scheme is framed. Hence our immediate purposes cannot be served by this Province.

151. The normal pre-war demand of this Province was about 35,000 tons of steel per annum and a 50 per cent increase is expected in the post-war years. Besides this there has been a small demand for alloy steel, which has been imported to manufacture cutlery, surgical instruments, machine tools etc. The Punjab Government has suggested that until a larger scheme can be framed, two or three small electric furnaces of $\frac{1}{2}$ ton or 1 ton capacity should be installed to cater for this demand. We need not reiterate the objections we see to the adoption of such a course.

152. *Bombay*.—There are said to be some iron ore deposits in the Ratnagiri district, but the quality is unanalysed and the quantity unascertained. No coal of any kind is known to exist in the Province nor limestone of suitable quality nor are dolomite and magnesite available. In these circumstances it is obvious that in spite of the large demand for steel in this Province and the consequent saving of freight on the finished products, no steel producing works can economically be established here as the Province has no natural advantages.

153. *Hyderabad State*.—We have been somewhat handicapped in considering the claims of this State by the fact that we received no formal information on its resources or projected schemes until we met its representatives for the first time in New Delhi at our conference with the Governments of the Provinces and Indian States on the 20th February 1946. We were given there a verbal outline of its projects, and on March 16th we received a written communication on the subject. We were at this time revising the final draft of our Report. We have however given the matter very careful consideration and are of opinion that there are no grounds for altering our previously formed conclusion. As, however, H. E. H.'s Government state that they are treating their project seriously and as the scheme has reached a more advanced stage than those of other Governments, we feel it advisable to explain at some length our reasons for not considering Hyderabad State a suitable choice for the location of a plant.

154. There are stated to be large reserves of iron ore in Bastar State and coal said to be suitable for electric smelting in the neighbourhood of Godawari, which would also provide water and hydro-electric power. We are told that H. E. H.'s Government are prepared to build a hydro-electric power station from which

would be supplied 150,000 K. W. which they estimate, would be required for a steel plant of 4530,000 tons capacity if the electric process is used. We think that the actual requirements would be nearer 200,000 K. W. It is also proposed to build a balancing thermal plant of 40,000 K. W. to provide a continuous supply. The whole scheme forms part of a major plan under the Hyderabad Godawari Valley Authority for the development of industries, including minor industries dependent on iron and steel.

155. The disadvantages are, first, that new railway lines will have to be constructed to the iron ore reserves in Bastar State as well as in the proposed site of the steel works and power station. The survey work for this is stated to be almost complete, but the construction is estimated to take 2½ years or more. We have further not been given any indication of the time it will take to construct the enormous hydro-electric station with its hydraulic works and installation of equipment, transmission lines, substances, etc. We are told that the steel works should be ready for production in five years if no serious international crisis arises. But we seriously doubt whether this is possible. In Chapter III we have given our reasons for thinking that the construction and bringing into operation of the iron and steel plant alone may take 5 to 7 years, and with all the additional engineering work involved in the hydro-electric plant and the railways we think it most likely that the period will be considerably prolonged. As we pointed out to the representatives of H. E. H.'s Government at the conference on the 20th February 1945., this Penal is only concerned with a programme of expansion which can be carried out within the first five years of the 15-Year Plan. Therefore we have no choice but to recommend the location of the plants in those areas where large units of a capacity of 400,000 tons per annum, capable of being eventually doubled, can be most expeditiously erected and economically and successfully worked by the known and tried processes of the bulk production of iron and steel.

156. More important still is the question of costs. We have been given no indication of the rate at which electricity is to be supplied, nor can we say what its cost is likely to be if all the usual overhead charges and interest on the investment are taken into account. In the case of another works where it is proposed to smelt iron in an electric furnace a rate of 1 of an anna has been promised, but even at this rate we think that the iron will prove to be much more expensive than it is where it is smelted with coke in a large blast furnace.

157. We find it stated in the communication that H. E. H.'s Government has been "assured after expert examination on reports to hand that the cost of smelting to produce pig and the cost of producing finished steel products in Hyderabad are such that they will compare very favourably with the prices of pig and steel in India today." It may prove to be a serious miscalculation if the costs are judged in relation to the war time prices of today and we feel bound to take precaution of advising H. E. H.'s Government of the importance of not judging of the prospects solely by the criterion of the present prices. Some undertakings which were projected during or soon after the First World War in the expectation that the prices then prevalent would be realisable in subsequent years were, in the actual result, brought perilously near disaster. We do not pretend to foretell future prices. But we think that much risk may be involved in assuming their continuance at their present levels and that the experience of the past may be repeated more or less. For this reason we had rather that the probability of the future costs of production of the new units were the standard by which the economic soundness of the proposition should be judged. For this purpose we would invite the attention of H. E. H.'s Government to the estimate we have made in Chapter V, of the works costs of iron and steel to be produced in a new unit. In the absence of any knowledge at present as to the exact site of the new plant we have assumed it to be no less favourably situated than either of the existing major

units in relation to the cost of the transport of coal mainly. Subject to such adjustment as may be necessary, but which may to some extent be reduced in amount by a more favourable situation with reference to the cost of distribution, the estimate of the works costs which has been made from actual experience and results may prove to be helpful. It is also of some interest to note that pig iron was being produced at the net works costs varying from Rs. 18 to Rs. 22 per ton before the war. If the estimates made by H. E. H.'s experts correspond more or less to those made by us both for the iron and the typical steel products, the project should be free from one of the difficulties. We have no idea of the cost of the contemplated plant including the hydro-electric installation, but we have no doubt that in considering the price at which the products could be sold due allowance has been made for the normal overheads and profit.

158. We cannot emphasise too strongly that what India needs is cheap steel in large quantities and quickly. As we have stated elsewhere, we have been unable to find any instance where electric iron and steel have been manufactured on the scale contemplated, especially where cheapness was an essential consideration or where it could be secured by the adoption of the usual bulk production methods. While we are entirely in favour of establishing in different part of India the subsidiary and secondary industries dependent on iron and steel, we consider that it is a better economic proposition for these industries to buy the iron and steel from where they can be more cheaply manufactured than to attempt to manufacture them locally by far more expensive methods. We would further point out that these industries will also require considerable quantities of electricity, which will be a further strain on the resources of the hydro-electric power station.

159. There is one other point which has been mentioned as an advantage in favour of the Hyderabad project as against the one in the Central Provinces. This is that the former unit will be in the most southerly position. We hardly think that such an advantage, if it really is one, is decisive. On the contrary, we are rather inclined to think that a plant almost in the centre of India is more desirable. The site recommended by us is an exceptionally good centre of distribution not only for the south through Vizagapatam and the railway lines but for central northern and western parts of India.

160. There are also one or two business aspects of the question to which we would like to refer, for they might lead to complications if no clear understanding is arrived at to resolve the conflict of interest which may arise between the different units of production. If, as is contemplated, some measure of control is to be established over the Industry including the fixation of prices and its organisation as a whole, how far can the works in the Hyderabad State be expected to fall into line with the other works? Will a unitary Selling Organisation, if formed, embrace the production and distribution of the whole output of the projected works? If, on the other hand, there is no control and the Iron and Steel market is left open to both internal and external competition, will the conditions of such competition be equal between presumably a state-aided organisation and others privately owned? These and many other questions will need very careful consideration by appropriate authorities at the proper time.

161. It is not our object to suggest that the erection of a plant of the size we have in mind should never be undertaken in Hyderabad. The main point that we wish to make is that for this short term scheme of expansion and in view of the economic considerations, which we have detailed, it is not a project the immediate under-taking of which we can, with confidence, recommend.

CHAPTER V

I. ESTIMATE OF THE COST OF AN ERECTED PLANT

162. It is a part of our reference to make an estimate of the cost of a plant of an economic size. We have stated that such a plant should have a capacity of not less than 500,000 tons of ingot and about 400,000 tons of finished steel. The plant should from the first be so designed, laid out and equipped that this capacity can be approximately doubled at a later stage. The task of making any estimate of the cost is not an easy one even when conditions are normal, which they are far from being at present. Much will also depend on the kind of products that it is proposed to manufacture, a problem which would require the closest examination before any project is actually launched. Under present conditions it is idle to expect any precise estimate of the prices of plant and machinery. Even when these are obtainable, the deliveries promised can seldom, as to time, be depended upon and the prices are sometimes quoted with a 'rise and fall' clause in the contract. Moreover if our proposals are accepted and acted upon by either the Government or private agency, it will take a considerable time before a well-considered project can be prepared and the necessary amount of capital raised or guaranteed. No practical purpose, therefore, can be served by any endeavour on our part to base our estimate on such meagre evidence of present prices as is available. We, therefore, propose to make an estimate based on prices current before the outbreak of the present war.

163. The Tata Iron and Steel Company Ltd. built and completed a new Blast Furnace in 1940 and several new batteries of Coke Ovens of which the last one was completed in 1941 with a by-product plant. Between 1937 and 1939 the Indian Iron and steel Company Ltd. built a new power house, a gas cleaning plant with two gas holders, and other auxiliary equipment for the supply of services to the Steel Corporation of Bengal Ltd. It also built a new battery of 30 coke ovens. The Steel corporation of Bengal's plant was designed in 1937 and brought into operation at the end of 1939. This plant originally consisted of :

3 Tilting Open Hearth Furnaces—nominal capacity 225 tons.

1 Active mixer, nominal capacity 600 tons. This can be converted into an Open Hearth Furnace with a nominal capacity of 250 tons when and if necessary, at a small cost.

1 40" Blooming Mill.

1 34" Mill for Rail, heavy sections, billets and sheet war.

1 18" Mill.

Sheet Mill, nominal capacity 100,000 tons. All necessary auxiliary equipment.

Housing and other amenities for labour.

The capacity of the Blooming Mill is 800,000 tons or more, and that of the Finishing Mills without extension about 400,000 tons.

164. In 1942 one Stationary Open Hearth Furnace of the nominal capacity of 90—100 tons was added. Since then a Duplex plant consisting of two converters with building and space for a third and a 900 ton Mixer have been erected and have recently commenced operation. The ingot capacity now is about 700,000 tons, per annum if the active mixer is converted into an Open Hearth Furnace.

165. A 10" Mill is expected to be brought into operation at an early date.

166. Here therefore we have some material on which a reasonably reliable estimate can be made for a plant in capacity corresponding to that of the Steel

Corporation of Bengal Ltd. on prewar basis and an estimate of the Blast Furnace plant to provide the necessary quantity of iron and other services on the prices of units built by the Tata Iron and Steel Company Ltd. and the Indian Iron and Steel Company Ltd. The ingot capacity is, as we have stated, about 700,000 ton and the finished products capacity about 400,000 tons, whilst the blooming mills capacity is far in excess of either. Upon such examination as has been possible for us to make, we believe that pre-war cost of such a plant erected would have been about Rs. 12-13 crores excluding collieries, ore mines, working capital, financial charges prior to the commencement of operations and starting expences.

167. What a new plant will actually cost can only be ascertained at the time project is formulated. Judging by the general evidence available, the prices of plant and machinery in Great Britain had risen by about 70 to 80 % over pre-war levels, in 1945 and it will be unsafe to assume a smaller rise for our purposes. We accordingly adopt as a working figure a cost of Rs. 22 crores. There is some published evidence of the cost of some war time plants erected in the U. S. A. None of these plants correspond in capacity or the kind of products manufactured with the kind of plant we are considering. But speaking generally, our estimate per ton of ingot capacity is comparable with the U. S. A. cost.

168. It is estimated that about 40-50% of the total expenditure would probably be incurred in India. It is difficult to say to what extent the increase in the Indian cost would correspond to that in Great Britain. But it is known that the prices of steel, of which many thousand tons would be required for the manufacture locally of parts of plant, machinery and equipment and for the construction of buildings, have not risen here in the same proportion as in Great Britain, nor has the cost of fabrication. It is probable also that when the dislocation and confusion caused by the war have somewhat ceased to operate to the same extent as before, there may be some downward tendency in the level of prices. The recent proposal by the Finance Member to reduce the revenue duties on plant and machinery and raw materials may also help. But we are not prepared to make any prophesy as regards the prices which may prevail when the time arrives for launching any project and can only adhere to our estimated figure.

169. It is not our purpose, nor is it one of our functions to prepare any hard and fast scheme embracing the exact products, the manufacture of which should be undertaken by any new works, or to offer technical advice on the exact type of equipment it should possess. There are matters the decision on which can best be left to those who promote and finance any project and their Consulting Engineers and Technical Advisers. We propose only to put forward propositions which in the light of the demand which may be anticipated may be considered by them in the preparation of their own scheme. We shall also make suggestions as to the general type of equipment which, in our opinion, might help to give effect to such propositions if they are in the main acceptable to them. One word of warning, however, we would like to give. Any scheme which may be decided on should be prepared in close co-operation and consultation with the industry. Apart from the benefit of the advice which it may be able to give from its practical experience and knowledge it is important to avoid any duplication or overlapping not justified by the demand.

170. For reasons explained by us in Chapter III on Regionalisation we must assume that the pig iron will be made in modern blast furnaces with coking coal. We shall also assume that the steel will be made in basic Open Hearth Furnaces. Whether the normal Duplex process or some modified form of it should be combined with Open Hearth or the Electric Furnace or both are also points which should be left for decision by the promoters and their advisers.

171. We suggest that the first plant should be erected in the Central Provinces. It must be equipped to manufacture the usual mild steel products in general demand, excluding for the present rails, heavy sections, plates and sheets. The normal equipment of such a plant for the production of 400,000 to 450,000 tons of saleable products should consist of the following :—

1. Two Blast Furnaces with a nominal capacity of, 1,000 tons per day which can be increased, if necessary, to 1100 tons per day. It may be advisable to provide an extra stack which, when one of the furnaces is under repair, may use its equipment and thus serve as a Blast Furnace. In this way provision can be made at a small extra cost for securing without interruption about 720,000 tons of iron all the time.
 2. Coke Ovens to produce the requisite quantity of coke with a complete by product plant.
 3. Gas cleaning and distribution equipment including gas holders.
 4. Power plant and electricity distribution.
 5. Melting shop with a nominal capacity of 600,000 tons of ingots.
 6. Blooming mill with reserve capacity for subsequent extensions, if and when necessary.
 7. Continuous Billet Mill.
 8. Medium Section Mill, preferably 18"—21".
 9. Continuous Merchant Mill.
 10. Rod, hoop and bar mill, 10"—12".
 11. Water services.
 12. Roads, railway tracks and rolling stock.
 13. All auxiliary and ancillary equipment and appliances.
 14. Foundry for ingot moulds, other iron castings and for steel castings ; also a fully equipped repair shop.
 15. Laboratories, Offices, housing and amenities for labour.
172. These are the main items. There will be many more which no doubt will be included by the technical advisers. Perhaps it will be well to remember that no major iron and steel plant is so built that at any time it can be said that nothing further is required.

173 We do not propose to make any estimate at this stage of the further cost which may have to be incurred in the event of any extension of the capacity being undertaken. But if the initial plant is laid out and equipped with this possibility in mind, the extra expenditure will be appreciably smaller than in the first instance.

II. ESTIMATE OF THE OPERATING COSTS

174. If the task of making any estimate of the cost of the new plant is a difficult one, that of making any estimate of the probable operating costs is still more difficult. To make even a reasonable estimate we must have more stable conditions than exist today, as regards the prices of raw materials, particularly coking coal, the wages of labour, the prices of imported stores, railway freights and many other items which go to make up the works costs. But there is another difficulty in our way. Until the exact location of the plant is determined and some reasonable estimate can be made of the cost of transport of all the raw materials, no reliable estimate of the works costs of pig iron, which is after all the basis of steel making, can be made.

175. If we are to make an estimate of the works costs as defined by successive Tariff Boards from the inception of the policy of protection, of individual projects

we can only make it on the assumption that the site of the new plant will not be situated more unfavourably than that of either of the existing major works in relation to all the principal raw materials taken together. This assumption is necessary mainly, if not wholly, upto the pig iron stage. When the location of the plant is finally decided on and the estimate of the cost of transport and the prices of the raw materials are tolerably well ascertainable, it will not be difficult to make the necessary adjustments in the works costs of the pig iron or of its steel derivatives. We must also assume that there will be no serious rise in the levels of wages applicable to this industry and also that by the time new plant begins to function all the war time allowances and emergency payments will have ceased to be effective.

176. On these assumptions we make the following estimate of approximate works costs* and the tonnage of each product :

Product	Production per annum (Tons)	Works costs per ton
Pig iron	720,000	Rs. 32
Ingots	600,000	52
<i>aleable Products</i>		
Medium Section Mill	150,000	82
Merchant Mill	150,000	75
Rod, hoop and bar Mill	90,000	85
Billets	80,000	58
Total	470,000	
Surplus Pig Iron	100,000	
Average works costs		Rs. 76 per ton,
Average yield		78 per cent,

177. This is not a Tariff Board enquiry for determining the measure of protection. It is therefore not necessary for us to ascertain, nor is it within the purview of our terms of reference to go into the questions of the fair selling price which the works should receive. But it will be observed that the capitalisation per ton of finished product is about 70 to 80 % above pre-war. The hypothetical operating costs as assumed by us, on the other hand, are lower than those of the existing works as may be expected from a plant completely modern and mechanised. Nevertheless, they are higher than those before the war owing to the rise in the prices of coal, other raw materials and stores and also the level of wages. In these circumstances it may be supposed by the investor that he may not be able to sell his products at prices which may prevail at the time the new plant is brought into operation. Until more reliable data are available about the advantages or disadvantages arising from the location of the plant in relation to the works costs of pig iron, prices of coal and other raw materials and labour and of the actual levels of selling prices than prevalent, no practical proposal as a safeguard against such a contingency is possible. In what we believe to be the unlikely event of such a contingency arising, it is covered by the suggestions put forward by us in paragraph 213 of Chapter VII and paragraphs 224 and 225 of Chapter VIII.

The works costs include the cost of the labour employed and of the power and material used together with the expenditure incurred on the supervisory staff. It excludes the overhead charges consisting of :-

- (a) Depreciation ;
 - (b) Interest on working capital ;
 - (c) Agent's commission, head office charges, etc. ;
 - (d) Selling expenses, and lastly, Manufacturers' profits
- (Vide Tariff Board's Report - 1927.)

III. A SECOND PLANT

178. *Plate and Continuous Strip Mill*—In order, to realise our target, the erection of at least one more plant in addition to the one already recommended will be necessary. If it is to be built and completed within the time fixed for the first part of the 15 year Plan, it should be located in Bihar and, preferably on or near the southern bank of the river Ganges. We have very fully discussed the reasons for the selection of a site in this locality and it is unnecessary to repeat them here.

179 In dealing with the other plant we have excluded from its present equipment the production of rails, heavy sections, plates and sheets. There is sufficient capacity for rails in the two existing major plants and unless the demand for rails develops more rapidly than we have reason to anticipate, no immediate extension of capacity is necessary or desirable. But we must anticipate a bigger demand for the other products than the equipment at present available can cope with, and provision for their manufacture should be made on this second plant.

180. This plant should have the same initial capacity upto the ingot stage, but instead of the Rolling Mills there proposed, it might be planned as follows :—

One combined Slabbing and Blooming mill.

One Continuous Plate and Strip Mill.

A Heavy Section Mill, which may be installed at the beginning or may be added at a later stage.

The auxiliary and ancillary equipment and appliances will be of the same order as in the other case with some modifications.

181. This plant, its equipment and layout should also be so designed as to make its extension up to 800,000 tons of finished products eventually possible. In order to get the full advantage of the slabbing and blooming mill as also of the continuous strip mill, this expansion must sooner or later take place.

182. The plate mill will roll plates of almost any thickness, though normally they are not likely to exceed $1\frac{1}{2}$ " down to one eighth of an inch. The heavier plates will be 96" to 102" wide. The width of the strip should be capable of a maximum of not less than 48" or 54", though in the more advanced countries the recent tendency has been to make them 72" wide. The initial output will be in the neighbourhood of 400,000 tons of plates and/or strip.

183. It is difficult to make any precise estimate of the cost of the plant, but without the heavy section mill it may be in the region of 25 crores, excluding of course finishing mills for cold rolled tin plate or sheets. Ordinary sheets can be rolled on the existing type of finishing mills but not tinplate. Though opinions differ the strip can be used for welded tube.

184. The question that we have now to consider is whether in the present state of the development of the steel industry such an expensive type of equipment is desirable. Regarded merely as a business proposition from the point of view of immediate return on investment, the answer may perhaps be in the negative. But such a question is irrelevant when we are taking steps towards developing this key industry to a stage when it can meet all the present and future demands of India. No country which has become or intends to become as India intends to do, a steel producing and consuming country on a large scale can achieve its purpose without increasing its range of products and adopting the most up-to-date processes and equipment for the purpose. Without the production on an extensive scale of what are generally described as flat products, the scope of the establishment of secondary and consumer goods industries is

very limited. The plant, if it is to be built, will take, as we have stated, 5 to 7 years before it can be completed and reaches economic production. For armaments, shipbuilding and many other heavy industries, which must in the near future form part of our industrial organisation, plates are an essential raw material and their supply should be provided well ahead of the time when they are needed.

185. The obsolete method of manufacturing tinplate must give way to modern process, as in every other advanced country, by the time the new plant is ready. We shall need superior grades of tinplate for canning edible food and other purposes. If we are to make motor cars and many household articles, we shall need superior grades of sheets. If we are to wait for every thing until the demand for it is in actual sight, the chances of our having most things are far from bright. We must therefore encourage the installation of equipment for the manufacture of these products either in the vicinity of the new plant by the erection of finishing mills or preferably in other parts of India with a view to the much desired dispersal of secondary industries.

186. There is also an alternative method of disposing of the contemplated output of hot strip. Both the major works can use the strip on their finishing mills, dispensing with sheet bar and roughing mills. In this way they can between them release approximately 350,000 tons or more of ingot steel which can be absorbed by the Steel Company's billet mill and any finishing mills which either company may be advised to erect and so make the range of their products more varied and flexible. The Tinplate Company of India Ltd. may consider the adoption of this new process. Such a development will be a contribution of signal importance from the point of view of the advancement of the industry.

187. The materials at our disposal do not permit us to make any estimate of the operating costs of the products. But until we lose the natural advantages which we possess for the manufacture of cheap iron and steel, there is no reason to suppose that in undertaking the manufacture of these products we should be at any disadvantage compared to other countries. In any event, a beginning has to be made and now is the time for it.

CHAPTER VI

RAILWAY FREIGHTS

188. In a country of great distances like India the Railways can make or mar the Iron & Steel Industry. The cost of transport of the raw materials required and of the distribution of the finished products forms a very high percentage of the prices on which iron and steel can be sold to the consumer. How high a toll is levied on the Industry by railway freights will be realised from the following figures relating to the Tata Iron & Steel Co. Ltd. They refer to net freights, i.e. after the deduction of recoveries of freight on finished products.

Year	Freight Rs. (in lakhs).
1936-37	155.97
1937-38	165.71
1938-39	180.24
1939-40	239.98
1940-41	280.12

This represented an average incidence of about Rs. 30 per ton of steel, and before the war, probably amounted to 20 per cent, or 25 per cent of the average selling price ex-works. Since the war the incidence of freight per ton of steel has been considerably higher.

189. Amongst the manufacturing key industries of the world perhaps steel requires the largest tonnage of raw materials per ton. In order to explain what this means, we give the following figures of raw materials required:—

Coking coal	.	.	.	1.75 tons
Other coal	.	.	.	0.50 tons
Iron ore	.	.	.	1.66 (60 per cent of iron content)
Limestones & Other fluxing material	.	.	.	0.75
Refractory materials	.	.	.	0.25
Consumable stores of all kinds	.	.	.	0.20
			Total	5.11 tons

In addition to this one ton of saleable steel is to be transported.

190. Taking into account the fact that the initial capacity of a new Iron & Steel Works should not be below half a million tons to be ultimately increased to one million tons per annum, it is clear that eventually the traffic to be handled would amount to 6 million tons per annum. It is difficult to say exactly what the average railway lead may be for the raw materials, but it is estimated that judging by the localities in which they are found, it would be about 150 miles. As regards the finished product the lead may be anything from 300 to 400 miles. The total traffic, therefore, would run into about 1,200 million ton miles per annum. From any railway's point of view this should be considered a very attractive proposition and indeed it has been found to be so in India. One would therefore expect that if there is any industry in which the Railways ought to be particularly interested, it is the Steel Industry. It is not denied that in the past they have been very helpful from their own point of view as well as that of the industry. But that happened to be at a time when the industry was established in localities where most of the raw materials were found in close proximity to one another. The demand for steel was relatively so small that the location of the industry within a small area did not prove to be a serious handicap. But the problem presents itself in a somewhat different form to-day. Geographically unequal distribution of industries has been so pronounced that the Government has come to the conclusion, and in our opinion rightly, that as far as possible any locality which presents reasonably good conditions for the setting up of an industry should be encouraged to establish such an industry. This proposition, as we have explained in another chapter, cannot apply in its entirety to this industry, but its application is possible to a limited extent, if the policy of the railways governing freight rates is modified.

191. It is now necessary for the Railways to look upon the question from a wide point of view than in the past. The whole of the railway system practically now belongs to the State. The State has declared its intention to accelerate the industrialization of the country and to build up a wide-spread industrial organisation. Though the complete relationship between the management of the railways and their owners has changed, the principles on which the Railways are still supposed to run remain practically the same. Even these economic laws which may be regarded as immutable have been brought so much under control that their operation can be arrested, retarded or accelerated to suit the changing needs of the world. But the out-worn doctrines on which the freight structures were built in the past remain for all practical purposes the same as they were before. They still look upon railway management as an instrument mainly for the purpose of earning as much profit as possible irrespective of its bearing on the general advancement of the country. Unless the outlook of the railways is changed and brought into line with the declared policy of state, it is not likely that the pace of industrialisation, particularly so far as this key industry is concerned, will be very much accelerated.

192. The directions in which we think that some radical change of policy is necessary, have already been indicated by us to the Railway Board. But the reply we have received to our letter does not appear to us to be helpful, though it is admitted that the door has been kept open for further negotiation with or consideration by, individual Railway administrations. The main points mentioned in the correspondence on which a revision of Railway policy on freights is suggested may now be briefly discussed.

193. *Freights on Coking coal.*—As we have stated, about $1\frac{3}{4}$ tons of coking coal are required per ton of finished steel. This is, after labour, perhaps the largest single item in the works costs. Coal is classified under a single heading as fuel and the same rate is charged whatever its purpose or quality. But there is a fundamental difference, which needs over-due recognition, between coal used for coking and for the purpose of smelting iron in blast furnaces and the same or other coal used for steam raising or some other purpose. There is no substitute at present known for coking coal in smelting iron on a large scale, though there are substitutes for coking coal into non-metallurgical uses. It is true that special telescopic rates have been fixed for the transport of coal. But this policy has resulted in the wastage of good coal where cheaper coal could have been used. Though we are not immediately concerned with freights on what may be called non-metallurgical coal, we are definitely of the opinion that wastage of coking coal for steam raising may be prevented by raising the freights on it for the general public so high as to make its use uneconomic, and by the railways abstaining from the use of the coal in locomotives. At the same time, coal used for blast furnaces only and for no other purpose should be classified separately and a much reduced rate of freight charged upon it.

194. We are recommending the erection of a major Iron and Steel Works in the Central Provinces, situated about 400 miles from the coal-fields of Bihar. We have proposed, without any success so far, that the freight on coking coal taken from this area to the Iron & Steel Works in the Central Provinces should not exceed '06 pie per ton. Similar concession may have to be given to the other companies already established which may result in a reduction of revenue. We believe that this loss may be outweighed by the additional revenue which the Railways will derive from the long distance haulage provided by the new Works. It is also possible that another major Iron & Steel Works may be established in Bihar, perhaps a hundred miles away from the coalfield further north. In that event the iron ore required for the new works in Bihar or even for the existing works at Kulti and Burnpur may be brought from the Central Provinces, where ore of good quality will be available within a short distance of the works. This will create a double traffic for about 400 miles of the total distance, which may be in the neighborhood of about 500 to 600 miles. The possibility of getting this double traffic for about two-thirds of the distance, at any rate, is one of which Railways apparently do not take account. This we consider unsound from the point of view of any transport economics. Wherever there is double traffic—by sea, rail or air—the transport companies must and generally do take that factor into account in fixing the freight rates. It has however been suggested that the wagons which convey coal are not suitable for bringing back iron ore or *vice versa*. We do not think that the adaptation of the railway wagons for both purposes should present any serious technical difficulties which cannot be got over by necessary modifications in the design of the wagons. Coking coal or ore for the purpose of making iron and steel are both purely and simply raw materials and of equal importance; for without the one the other has no value for this purpose. Upto the first 600 miles the freight on iron ore at a flat rate is lower than on coal, because the telescopic rate for coal starts at a higher rate than the flat rate for the ore and does not drop below the latter until that distance is exceeded. For this reason the pro-

jected site for the new works will not derive much advantage from the telescopic rate as the distance from it to the coalfields in Bihar is 400 miles.

195. Iron ore by itself has no value unless it is used for making iron or steel. It is, therefore, of advantage from the Railways' own point of view, that a material which will not otherwise be used and will not give them any traffic should be made usable on a larger scale in conjunction with coal.

196. One reason by a separate classification is objected to by the Railways is that in their opinion such a concession would be contrary to Section 42-A of the Indian Railways Act, 1890, because it would amount to giving undue preference which could not be justified. We fail to understand how it can amount to undue preference if all users of blast furnace coal are treated on the same footing. There might be some force in this contention if, for instance, the same concession was denied to the existing works. But even here the difficulty, if it exists, may be got over by the application of another principle which is a favourite one with Railway Administrations both when they grant and when they refuse a concession. This is the principle by which such rates are charged as the traffic can reasonably bear. This must refer to the particular traffic and not to general traffic. The new traffic which is offered to the Railways cannot reasonably bear as high a freight as is charged under the existing schedule. Indeed it is possible that the existing rates may prove to be so high that no new traffic can be created. We maintain, therefore, that the Railways' objections have little validity in view of the special circumstances which exist and which they ought to take into account. We should imagine that any Railway run even on purely business considerations would go out of its way to offer facilities which would in the long run, if not immediately, add to its revenues and to its profits.

197. In fact, if it is generally laid down by the Railways that these facilities will be offered to any new industry of the kind we are considering, it will materially help the development of new industries. The suggestion put forward sometimes is that when or after a new works has actually been projected, it should start negotiations with the railway administration concerned. No new enterprise can be started on the mere hope that the Railways will subsequently grant concessions on a proper case being made out. On such an assumption as this very little capital will be forthcoming. In this instance, we have put to the Railways one concrete case on which they should be in a position to tell us approximately what they propose doing. It may be a hypothetical case in the sense that no actual project has been prepared, but the preparation of such a project cannot be undertaken in the absence of some more definite promise from the Railway Administration that the freights would be so reduced as to make the project a feasible one.

198. Another direction in which a revision of the railway rates policy is overdue is the application of the telescopic rates, even in the few cases where they are applicable. The various Railway systems are now the property of the Government, but they seem to be managed as if their artificial spheres, which were created in the past still remain fully in operation. Formally, perhaps, there was some justification for each different Railway charging the telescopic freight at a higher rate again as the traffic entered its own section from what is termed a 'foreign' railway. But there is no question of 'foreign' railways now and there seems to be no justification at all for not charging a through telescopic rate from the point where the traffic originates up to the point where it terminates, irrespective of the number of systems over which it passes. Some traffic, to which the telescopic rate is applicable, has to begin with a higher rate as many times as it passes from one railway system to another. It is difficult at times even to calculate what difference there would be between the total freight thus charged and the freight charged on the telescopic basis over the wide distance.

199. In the case of some raw materials the incidence of the freight becomes simply prohibitive. If magnesite, for instance, is brought from Salem to Burnpur or Tatanagar, it has to pass through several ailway systems. The same applies to iron and steel products which have to go over long distance, such as those between the main steel works and the Punjab, South India, Western India, etc. It appears that the Railway reduce their frieghts or charge a through telescopic rate when there is competition between them and alternative means of transport such as rail-cum-sea, or sea alone, or rail-cum-river. or river alone, or between rail and road, but seldom, if ever, otherwise.

200. The consumption of iron and steel, as we have shown, has been on a vey restricted scale. Heavy Engineering and Processing Industries have not developed, particularly in the interior of India, because of the heavy freights. So far as the Processing Industries are concerned, the disparity in freights on the finished products and the semifinished products is so great that the Processing Indutries cannot be established in areas situated at long distance from the main sources of supply. There is some difference between the freights on pig iron and semi-finished steel and those on finished steel. Bnt the difference is not great as to make it profitable for a Processing Industry using pig iron or steel to establish itself in the interior of the country. Though we do not suggest that pig iron and semi-finished steel should be put exactly on the same footing as unprocessed raw materials, we recommend that there should be an appreciable difference between the rates charged to pig iron and semi-finished steel and those charged to finished iron and steel products.

201. There is also a case for considering lower freights for train loads than for wagon loads. The change will be particularly helpful where raw materials are carried over long distances for immediate use.

202. It may be that the acceptance by the Railways of some or all of the proposals which are indicated in broad outline by us may involve the Railways in some temporary loss of revenue for a few years. But it is a matter of history that the probability of Railways being run at a loss has never in the past prevented the Government from launching upon schemes which on a long view appeared to be in the interests of the country. Any loss that may be incurred by any particular railway or by the whole railway system through such concessions would form a very small percentage of the general revenues derived by the Government from the Railways. But whether the percntage is large or small, Railways being the property of the state can no longer be regarded as a purely commercial proposition quite independent of the effect which such commereialisation may have on the country's development as a whole. Wherever the Railways are owned by the State they are expected to regulate and do in fact regulate their freight policy to help the development of those industries which need special assistance. It is not suggested that any particular industry should be subsidised in this way by the manipulation of freights. Far from it. What we insist upon and in this we are sure we have the support of a majority of the public, is that the time has come when the Railway administration should not be entirely divorced from wider considerations of policy affecting industries. In that view of the matter, if the Railway Board does not of itself bring its policy into line with that of the Government, it is undoubtedly the duty of the Government to step in and lay down principles by which the Railways will be bound and which they must administer in as liberal a spirit as possible.

CHAPTER VII

DISTRIBUTION OF IRON AND STEEL, ORGANISATION AND CONTROL NECESSARY FOR THE PURPOSE

203. In this chapter we propose to deal with matters covered by the following terms of the Special and General Directives issued by the Government:—

(1) *Special Directive*:—

8. To examine the advisability of forming a Federation of Iron and Steel Manufacturers and to indicate the line on which such an organisation should function in the interests of the Industry.
9. To examine the advisability of setting up a Unitary Sales Organisation in order that the Industry as a whole may be able to distribute its products economically both in internal and external markets.
10. To examine the necessity of setting up an Iron and Steel Control Board to safeguard Consumers' interests

(2) *General Directive to all Panels*:

7. The nature of the assistance required from Government in the form of protective duties, bounties, research grant, expert advice, etc.

This was subsequently interpreted to mean that the Panel was not to go into the quantum of protection required but merely to report whether any protection was required.

8. If the Industry is to be under private ownership and management, what controls, if any, should be exercised by Government.
9. What should be the organisation of the different units of the Industry, *e. g.* should there be an industrial association?
11. Should the Industry cater for the export market?

204. It is also relevant to refer here to the communique dated 22nd April 1945 issued by the Government of India on their future industrial policy from which we quote the following passage :—

"In a planned economy it is impossible to do without controls. Government consider that such controls should be the very minimum required. They propose that apart from licensing, control should be undertaken to achieve the following objects :—

- (iii) To prevent excessive profits to private capital. In the case of private undertakings, subject to free competition, it would be a mistake to discourage enterprise by undue restrictions of profits. The risks to such enterprise are considerable and if industrialists are to bear the losses they must also be permitted to reap the profits.

In the normal course the tax system may be expected to prevent any excessive accumulation of profits. Where, however, conditions of free competition do not exist and as a consequence excessive profits accrue, special steps should be necessary. This can only be considered on the merits of each case as it arises.

- (iv) To ensure the quality of industrial products in the interest of both internal and external markets. It is of the utmost importance to ensure good quality for the internal as well as the external markets. This involves standardization of products and administrative machinery to enforce standardization".

205. All the questions referred to us are expressly or by implication closely inter-related and we propose to deal with them together but not necessarily in the order in which they have been stated above.

206. The Government of India have themselves announced that if planned economy is to attain any measure of success, it is impossible to do without controls. The controls will call for sacrifices in different degrees from the Government, the investor, the producer, the consumer and the taxpayer. Such will be particularly the case where the establishment, development and the ex-

pansion of key industries of supreme national importance, to which the Steel Industry beyond any question belongs, are concerned. The machinery for the exercise of any inevitable control without complete socialization must be so devised that whilst it involves the least interference with private enterprise and the normal channels of business, it does not demand from any of the parties above-named a sacrifice out of proportion to the benefit derived, or by the community at large.

207. Apart altogether from the general considerations applicable to all industries under a system of planned economy, there are special circumstances at present surrounding the Iron and steel Industry, which by their very existence demand the adoption of measures involving its control and regimentation. The first direction in which action may be necessary is to ascertain in such manner as may be considered expedient whether, as has been suggested in another Chapter, the prices are higher than are adequate for the maintenance and development of a healthy industry, and if they are so, to determine to what extent they can be reduced and kept at pre-determined levels consistent with the interest of the producer and the consumer alike.

208. We have already pointed out that India has produced, and there is reason to hope that she will continue to produce, perhaps the cheapest iron and steel in the world. But owing to the circumstances which have also been explained, the Indian consumer has not derived all the advantages arising out of cheap raw materials. While he has the satisfaction of knowing that Indian enterprise and ability have been able, through his sacrifices, to create and build up a great national industry and have made him independent of foreign supplies to a very large extent, he has not had the benefit of cheap production. We have already endeavoured to outline and analyse the various causes that have contributed towards the establishment of high price levels. The number of such causes shows that no single remedial measure of control or regimentation will prove to be effective. Any voluntary or Governmental action to be taken will have many phases and will have to be far reaching. It is impossible for us to deal with in minute detail. We, therefore, propose to deal mainly with the general principles on which it may be taken.

209. We have already suggested in paragraph 75 that the internal prices should no longer be related to foreign but to the local costs of production including a liberal amount of depreciation and return on investment which would not only maintain a healthy industry but also attract the enormous capital which its expansion will require. The same principle hitherto followed, by which internal prices were in effect determined by the internal costs, will apply. When protection was granted, adequate duties were imposed to bring up the foreign prices to the level which was regarded as fair for the domestic industry. Circumstances may be proved on investigation to have so changed that the fair selling prices may require to be regulated in the absence of counteracting economic conditions. We accordingly recommend that some investigation should be undertaken with a view to determining the fair selling prices of iron and steel.

210. Whatever machinery is devised, we do not think that it should take the war time form of the Iron and Steel Control though there is no doubt that it proved itself a serviceable war organisation. But with the termination of the war its utility as a whole is fast disappearing and will soon cease to have any relevance to existing condition. It may be retained as a temporary necessity. In that case, it should be reduced to a simple and inexpensive machine with limited scope. Its statistical department which has been operated under the Steel Commissioner and the Iron and Steel Controller should be retained with such modifications as the changing post-war conditions may require. Further, its scope and activities should be expanded to provide for the collation of statistics of production, distribution, exports and imports of iron and steel

and to make such statistics available to the Government, the producer, the consumer and the public at large.

211. Next in importance to the desirability of determining and maintaining the prices of iron and steel at the levels aimed at is the question of distribution. Some machinery must be set up for the purpose of securing an adequate supply and equitable distribution of iron and steel throughout the country at such determined prices. This machinery should consist of a single marketing organisation including the primary producers, both existing and future and representation of so much of the recognised Re-rolling Industry as fulfils the conditions laid down by us. The main functions of such an organisation should be as follows:—

- (a) To be responsible for the sale and distribution of all iron and rolled steel produced in whatever form and of whatever quality including scrap and defectives- which have a saleable value.
- (b) To ascertain in advance the requirements of the country for iron and steel including billets and semis and to provide that there shall at no foreseeable time, be a shortage of these products. Apart from the inconvenience or loss to the consumer which such a shortage may cause, there will be the risk of creating or encouraging a Black Market which should be eliminated at any cost.
- (c) In the next few years, and until the competition and coming into production of a new major works there is a strong probability of the domestic production being appreciably unequal to the demand. The deficit should be estimated well in advance and arrangements made to import the required quantity from the most favourable source available at this time. This may involve the total prohibition of free imports, and make every import subject to a licence issued by such authority as may be appointed for the purpose.
- (d) So long as imports continue to be necessary the imported materials should be sold and distributed along with the indigenous by the Selling Organization. Whilst individual purchases of bulk production goods must not be allowed to interfere with the central purchasing arranged by the Selling Organisation. so far as finished materials, particularly of special quality, are involved, it should be the aim of the Selling Organisation to recognise the usual channels of trade and to enable the consumer wherever possible to buy from the source which he prefers. In such cases the importer should be made responsible for furnishing to the selling organisation such data as may be required to provide proper statistical information.
- (e) In order to reduce the cost of production and thereby the prices to the consumer, it is essential that the constituent units shall themselves arrange their rolling programme so that each one of them gets those products to roll which it is best equipped to roll and duplication should as far as practicable be avoided. Despatches should be made from the nearest source of supply whether the product is locally produced or imported, subject to the consideration of the freight payable to destination.
- (f) All products should be sold at a price *ex-Works* plus the freight to the destination from the Works and not as hitherto from the ports. Alternative means, where more economic, of transport by sea, river or road should be taken into account. In such a country as India it is not possible to wipe out geographical disadvantages by charging the same freight to every destination. But it is possible to mitigate them by creating a freight structure which compels no

consumer to pay a higher freight than, say, Rs. 30 per ton, and which does not permit any consumer to escape paying any freight at all, as has been the case in the past where the principal ports were concerned. While no consumer should be wholly deprived of his geographical advantage with reference to the location of a producing unit, it is of vital importance that iron and steel should be brought within the reach of that body of consumers in the distant markets as well as of those consumers in the more favourable areas. The expansion of the demand for iron and steel must result in the lowering of costs by making it possible to construct and operate the largest and the most economic units of productions. There is no better way perhaps of bringing about such expansion than by a cheaper distribution of the products to large and heavily populated areas which were either precluded from their use or had to use them on a very limited scale. The processing and fabricating industries which are now confined mainly to the ports may also be established in the interior of the country. This may help partially to regionalise an industry which is otherwise not amenable to the process so far as its primary form is concerned, owing to the principal raw materials not being available in proximity to one another except in particular localities.

- (g) As we have elsewhere suggested, the Indian iron and steel industry should organise itself on a scale sufficiently large to enable it to win a share in the markets geographically within its reach and particularly in countries where these products are not manufactured, though the demand for them is likely to be fairly extensive. But it should be in no hurry to export. Its first duty is to supply the whole demand of the country and no profit motive should be allowed to deviate it from this obvious and necessary purpose. In order that no artificial shortage of these materials may be created by dealers or speculators the strictest vigilance will be required and to make it effective all exports should be undertaken by the Organisation or permitted only under licence from the Government granted after previous consultation with the Organisation.
- (h) As indicated by the Government of India in their communique, the consumer both at home and abroad should be assured of good quality. In this industry that assurance can be given much more easily perhaps than in any other. All the iron and steel produced so far by the primary producers can be and, we have good ground for starting, has been normally made in conformity with British Standard Specifications, though most of the same steel has had to be sold as "untested" in competition with Continental Steel. Indirectly such sales have ensured to the benefit of the poorer consumer. But no effort should be spared by the Sales Organisation to maintain and, where necessary, guarantee the prescribed standards. This will be all the more necessary where exports are concerned.

Grave complaints have sometimes been made in the export markets against variation in quality or its deterioration or lack of uniformity, resulting in the loss or diminution of business, in the case of many agricultural, manufactured or processed products exported from India. In several exporting countries exports of many products are forbidden without a guarantee that they conform to certain specified standards. The reputation of Indian steel should not be allowed to be damaged here or abroad like that of the Continental steel of indifferent quality made expressly for the poorer markets.

How far the Re-Rolling Mill should be made to conform to specified standards will require careful investigation and no little vigilance in their enforcement.

- (i) For the protection of the consumer against unscrupulous dealers and black marketters, it is essential that the widest publicity should be given to the current prices of iron and steel products. They should not be liable to frequent alterations or variation merely by reason of any increases or decreases in the costs of production. No action should be taken unless such increase or decrease exceeds, say, 5 per cent or any other reasonable figure which may be fixed.

CONSTITUTION OF THE ORGANISATION

212. We have indicated in broad outline that action should be taken to determine the prices at which iron and steel should, in future, be sold and the desirability of setting up an organisation for their distribution including also imports and exports. We have also suggested the principal functions and duties which this organisation should be charged to perform. But we do not recommend that the Government itself should *ab initio* take any action in relation to prices or set up its own distribution organisation to carry out the functions and duties which we have proposed for such an organisation. The major iron and steel industry, as it is constituted today, consists of three primary producers, the Tata Iron and Steel Company Limited, the Steel Corporation of Bengal Limited (working in association with the Indian Iron and Steel Company Limited), and the Mysore Iron and Steel Works. We believe that the Industry is under such management and has such experience that it may well be left to prepare a scheme in which it undertakes and agrees to perform those obligations, functions and duties which otherwise may be imposed on it or performed by the Government itself. The Industry has sufficient experience of the methods and the principles applicable to the determination of costs and prices and there is no reason why after a close and careful examination of the question, it should not achieve the same result as any independent body appointed by the Government. We believe that it is sufficiently alive to its responsibilities to the investor, the consumer, the Government and the tax-payer to be able to put forward and carry out efficiently proposals which should meet with general approval.

213. It is comparatively an easy matter to fix with reasonable accuracy the Works costs and the fair selling prices of iron and steel products when there is a single large unit of production or several of comparable sizes and similar standing experience and equipment so that the quantum of protection can be so fixed that none of them gets more or less than is considered adequate for it. But because in the present case the units are of unequal sizes, standing and equipment, the assumption of uniform costs and level of selling prices for comparable may present some difficulties. It should however be possible for the organisation to find some solution of the problem as it arises, which, whilst it prevents the accrual of excessive profits on the one hand, makes possible the earning of reasonably equal rates of profit on the other to all in proportion to the capital, earning or replacement value of the equipment. When another and totally new large unit is erected and brought into operation, then same problem may arise in a still more acute form. If new works are to be encouraged, it should be the duty of the organisation to devise from the beginning some uniform system of costing and determination of fair selling prices which may make the investor feel confident that he will not be exposed to, what may appear to him, unfair competition on the part of the older and financially stronger units. Where there is free competition no such special provision is necessary, for the investor enters the business with his eyes open and takes competition as part

of the ordinary business risks. But when a scheme is based on the elimination of uneconomic competition from within or without it cannot be worked satisfactorily without some departure from the normal conditions by which prices are governed if left to themselves.

214. The Industry should also be trusted to set up a marketing organisation on which the various interests mentioned by us are represented and to carry out the principal duties enumerated in para 211. Before the war the two major companies had a selling organisation which, in our opinion, performed its duties satisfactorily and a new organisation may be formed somewhat on the lines of this earlier one with such modification as may be required in the light of our proposals and subject to some such limited control as is indicated in this Chapter.

215. Any scheme which may be prepared by the Industry for fixing prices and for distributing the products should be submitted to the Government for approval. If such a scheme is not submitted or if, when submitted, it does not meet with the approval of the Government, then there may be no other alternative than complete Government control and the sale and distribution of iron and steel by the Government, at prices fixed and controlled by the Government, after such enquiry as may be necessary for the purpose.

THE EXTENT OF CONTROL

216. There is in this Industry, as in many others operated on a large scale by relatively few units with great financial resources, a tendency to form combinations which virtually resolve themselves into a monopoly of the whole Industry or some part of or product of it. Planned economy necessarily implies that unnecessary overproduction should be avoided, and any organisation which may be set up should be charged with the duty of undertaking its prevention. But in order that the natural development and expansion of the Industry may not be left solely to the discretion of any organisation that largely represents the Industry itself, it is important that whatever the form of the organisation, provision should be made for the exercise of extraneous control by some authority specially created for this purpose. The erection of any new works whether for primary or secondary production should not be allowed without a license duly issued by such authority. If the application is made by any other person than the distributing Organisation, the Licensing Authority should consult that Organisation before the license is granted. It must be provided that no license shall be unreasonably refused without the right of appeal to some higher authority. Stringent safeguards must be provided also against the use of the licensing power for the purpose of stifling healthy competition or of defending obsolete plants against the encroachment of more modern and efficient units.

217. If the Industry organises itself and prepares a scheme acceptable to the Government, the control may take a fairly simple form including *inter alia*.

1. An authority to issue licenses (a) for imports, (b) for exports, and (c) for the construction of new or the extension of the existing units of production. Provision should be made for an appeal against the refusal of a license without reasonable cause.
2. The submission by the Organisation both to the Government and to the public of schedules of prices fixed or variations made therein at such intervals as may be prescribed.
3. Supply of information by the Organisation concerning profits earned, dividends paid, depreciation set aside by the constituent units and any other particulars of information which may be required by the Government.

4. The maintenance of a statistical department similar to that now operating under the Iron & Steel Control with authority to compel the submission by the parties concerned of subh figures including those relating to prices and in such form as may be prescribed by the Government in consultation with the Organisation. Reports of this Department should be printed, published and sold to the public
5. Provision for an enquiry into the operations, activities and expansion of the Industry when the Government deems it necessary or at such intervals as may be prescribed.
6. As the recognition by the Government of such an Organisation will in practice create a virtual monopoly even though controlled, the protection of the public will demand some machinery to enquire into and report to the Government on legitimate complaints against favouritism or any of its activities which may be injurious to the public interest. In Australia the Tariff Board is authorised to deal with such complaints as:

"that a manufacturer is taking an undue advantage of the protection afforded by the Tariff, particularly (1) by charging unnecessary high prices for his goods, or (2) by acting in restraint of trade to the detriment of the public, or (3) by operating in a manner that brings with it the levying of unnecessarily high prices upon the consumers of his goods."

This precedent may well be followed by the Government of India when a permanent Tariff Board is appointed. In the meanwhile, some temporary expedient may be found for the performance of similar duties.

MODIFICATION OF GOVERNMENT POLICY

218. Whatever form the future organisation and control of the industry may take, *i.e.*, whether by the Government or voluntary action, if the Government desires that the target which it has in view is to be realised in the shortest possible time it will have to modify its own policy in several directions indicated below:—

(1) We have already stated that there is at present no foreign competition against which any protection is needed. The primary producers of iron and steel have dispensed with the necessity for the continuance of protection and have thus vindicated its original grant. The Government would be justified, on the facts of the case as they now exist in removing all protective duties. But in our opinion it would be a serious mistake. Unfair foreign competition, at present dormant, may wake up suddenly at any moment and the industry should not be exposed once again to the risks which brought it to the verge of the collapse in its earlier days. Important as is this consideration, far worse consequences may follow the removal at this time of protective duties by creating uncertainty and fear in the mind of the investing public, on which the expansion of the Industry is dependent. We, therefore, suggest that the better course for the Government to follow is to retain the duties on the Statute Book and all the machinery provided for their levy or variation. The Industry should be declared to be a protected one and so long as there is no evidence of any foreign competition injurious to the Industry, the levy of these duties should be suspended. Controlled imports, if freed from this burden, should lower the average prices and thereby help to cheapen steel which, as we have emphasised, is an essential condition precedent to its more extensive consumption,

(2) The Excise duties (and the countervailing import duties) should be abrogated at the earliest moment possible. An Excise duty on a protected article of vital national importance does not appear to be a source of public reve-

nue to which recourse should be had save in very exceptional circumstances which do not exist at present. Besides, its retention will substantially defeat the purpose for which it is proposed that domestic selling prices should be fixed with reference to domestic costs of production.

(3) The heavy burden of taxation, particularly that of the Excess Profit's Tax and the high rates of Income Tax and surcharges on the earnings of all industries has had a crippling effect and the high level of the latter taxes may jeopardise future schemes of industrial expansion, unless steps are taken in the direction of alleviating such burdens. It is very questionable whether the enormous capital required particularly by this Industry for its expansion will be forthcoming if taxation is maintained at the present level with simultaneous reduction in prices. The only other alternative will be the promise of a higher degree of protection necessarily involving the maintenance of higher prices. This in its turn may seriously affect the consumption of iron and steel, which it is our purpose to expand, and defeat the object of Government by retarding, instead of accelerating, the growth of the Industry and thereby make the target aimed at difficult, if not impossible, of attainment.

(4) The Equalisation Fund and all surcharges made at present by the Iron and Steel Control should be abolished.

(5) All war stocks of iron and steel should be acquired by the Government and handed over to the Selling Organisation for disposal in such a way as to cause no unnecessary dislocation of prices or interruption of production.

(6) Necessary legislative powers should be taken by the Government in order to implement by executive action, when practicable, any arrangements which may be made after the expiry of the Defence of India Rules under which the Industry is at present controlled.

219. One justification of the policy of protection is that after the Industry has been established and has dispensed with the necessity for its continuance, Internal competition will keep down prices and the consumer will thereby reap the benefit of the sacrifice he had previously made to enable the Industry to be established behind the tariff wall. This has happened in the Match, Sugar, Cotton Textile and other protected Industries. In this Industry, so far as its primary form is concerned, internal competition cannot take place and compel a reduction in prices. The operating units, as we have explained, have to be so large to be economic that there cannot be enough of them, especially at the present stage of industrial development, to preclude an open or disguised combination eliminating all competition. Foreign competition may help at times to keep the prices down, but we are creating conditions in which the Industry is expected to be free from any foreign competition. In these circumstances some external control is not only necessary but inevitable and may have to be permanent. In the absence of such control the direct consumer may suffer and consuming industries dependent on cheap iron and steel may require protection against foreign competition by the imposition of compensatory duties. It may not be unreasonable even to suggest that in the long run it may be cheaper to subsidise to some extent the primary producers to enable them to supply their iron and steel which are no more than the raw materials of these industries, at as low a price as possible, than to grant such compensatory protection.

220. This brings us at once to the question of the control of the whole group of those subsidiary or secondary industries which require iron and steel from the primary producers as their raw materials. Planned economy necessarily involves control of prices, production and distribution and includes the avoidance of uneconomic over-production where possible. We have made proposals which are intended to give effect to such control with reference to the whole Industry. They are necessary so long as there is a scarcity of iron and steel or their products which cannot be met from indigenous sources or by

imports except at prohibitive prices and until conditions remain unfavourable for promoting internal competition. As soon, however, as the domestic production of the basic materials has reached a stage, when it can adequately meet the expanding demand or foreign materials can be imported without injuring the basic industry, the control should be relaxed and gradually abolished so far as these other industries are concerned. It can never be in the national interest to maintain controls which result in making a whole industry or any part of it the close preserve of some special interests, which by accident or other circumstance were first in the field. Nor would it be conducive to the promotion of efficiency, incentive or enterprise, if no newcomer is to be admitted into the industry except on proof that he can come in without pushing some one out of it. Planned economy may have been achieved at too high a price, if it results in creating or perpetuating vested interests, which may become so powerful that the expansion of industry cannot take place otherwise than in accordance with what they may dictate when the consumer is left to their mercy as regards prices or quality.

221. For these reasons, it will be necessary to warn all those interested in these industries, when any controls are introduced, that they are not to regard them as permanent and intended to give them a monopoly of the manufacture of any product or group of products. Internal competition between major and minor units should be permitted, rather than be prevented, so long as it is not accompanied by practices or methods, which are unfair or calculated to destroy a rival and afterwards to exploit the consumer. It will not be beyond the resources of legal machinery no promise should be made by the Government to protect major or minor industries against internal competition.

RE-ORGANISATION AND RE-EQUIPMENT

222. Whilst we have recommended that the Steel Industry should be allowed to organise itself in such a way as to minimise its control by the Government, we do not wish it to be understood that the conferment upon it of this valuable privilege carries with it no corresponding obligations. Apart from the wear and tear caused by the war on practically all the units functioning at present, many of them have been in operation for so many years that, if they have not become obsolete, they must certainly be obsolescent. India needs cheap iron and steel. Cheapness must not arise merely from the cheapness of labour and raw materials; it must also arise from the installation of up-to-date plant and equipment and their maintenance in a state of efficiency at all times. The first duty of the Industry therefore is to examine the condition of all the units and discard those which are definitely found to be obsolete. For this purpose, large sums of money will be required and also a great deal of expert assistance. Both of these should be within the means of both of the units concerned. We should strongly emphasise that the modernisation of existing units—productive, non-productive and auxiliary alike—must be given absolute precedence over any scheme for their expansion. Of no less importance are measures calculated to reduce waste of labour, coal and other materials, wherever practicable. Even if the adoption of such a course involves delay in the increase of output by the existing units, it will be more than offset by the reduction in cost which may be expected to follow. We do not refer to any particular units or organisation, but to the whole Industry. We wish merely to point out the fact that many, if not most of the units, were constructed perhaps 20 to 25 years ago or even earlier and have been in continuous operation and that some of them have more than completed their useful life. A patch here and there enables any machine to carry on almost indefinitely, but at a cost, and this cost may be higher than may be worth paying for the kind of work it is called upon to perform or the consumer should be made to bear.

223. We have proposed the setting up of a licensing authority. This authority, if constituted, we presume, will also license existing units both

major and minor. Before issuing a license, it should make it its duty to examine whether and, if so, what renovation or replacement they require. Some arrangements may have to be made for securing the services of competent Consulting Engineers to give technical and expert advice to this Authority.

CHAPTER VIII

PRIVATE CAPITAL, PROTECTION AND CONTROL OF PRICES

224. We have recommended the immediate erection of at least one major plant with an initial capacity of 500,000 tons of ingot steel eventually to be increased to one million tons. If the demand for steel keeps pace with our estimates, the erection of a second plant of similar size is recommended in the near future. It has not been possible for us to make a precise estimate of the capital expenditure which may be required for each one of these plants. But unless there is a sharp decline in the prices of plant and machinery, it is doubtful whether the initial capital required in each case will be less than 20/25 crores of rupees. If the private investor judges his prospects by the conditions now prevalent, there is little doubt that all the capital required will be forthcoming. The Industry has shown good financial results before, since and during the war; the money seeking investment has been abundant, whilst the prices of iron and steel have maintained attractive levels from the investor's point of view. These are circumstances which under normal conditions would instantly have attracted as much capital as a promising industry might need.

225. The conditions, however, are not normal and they might militate against the chances of attracting private capital to the Industry. That the industry has been successfully established and has dispensed with the necessity for the continuance of protection so far as its primary form is concerned are facts which ought to inspire confidence. But there is already an atmosphere in certain exporting countries, which is not unlikely to create a fear in the mind of the investor that though the imports of iron and steel may have practically ceased and though their prices are at present high enough to give adequate protection to the industry, foreign competition may revive at any time. We have therefore proposed that the industry should be declared a protected one and that the existing protective duties should remain on the statute book, though kept in abeyance until their imposition becomes necessary. If this proposal is accepted, it might make the investor somewhat more confident than he is otherwise likely to be. But the acceptance of even our proposal will not have the desired effect to the fullest extent, unless the principles are defined by which the Government will be guided, when the time for the reimposition of tariffs arrives. There are no recognised principles which the Government invariably follow in according or continuing the grant of protection. The Government have promised that before long their policy will be formulated and that a permanent Tariff Board will be appointed to give effect to that policy on liberalised principles. So far no announcement has been made. Undue delay in the formulation and declaration of Government's policy may defeat the attainment of their target in so far as it may depend on private capital and enterprise. We are not concerned with the general policy of the quantum of protection but as we are required to report whether protection for this industry in any form is needed or not, we are justified in recommending the adoption of appropriate action to clarify the attitude Government intend to take in respect of this question. No one can now predict the conditions which may exist when the projects are completed several years hence and production has commenced. It is, therefore impossible to say precisely what degree of protection may be required or what form it may have to take. But some assurance on the following lines may be given with advantage :—

(a) That such assistance or protection will be accorded in such form as may be necessary to enable the new works to realise a selling price, which

would include all the usual works costs plus a reasonable amount and return on investment, which at the time may appear to be consistent with the development of the works and expansion of the industry.

(b) There is an apprehension in the public mind that the prices of plant and machinery which are very high, may decline much more rapidly than is anticipated and the value of the property may thereby depreciate. In order to allay this kind of fear, it may be expedient for the Government to advance about 1/3 of the capital on debentures carrying no higher rate of interest than the rate at which Government normally is able to borrow public money, or guarantee the interest and repayment of principal secured by such debentures. Provision, in the selling price to be fixed may be made for the redemption of this loan within a period of say 15 to 20 years so that, when the debentures are paid off and there is a corresponding depreciation in the value of the assets, it can be met without writing down the capital. If there is no such depreciation the value of the assets, will be higher than the capital which is an object always to be aimed at in the financial structure of any business organisation.

(c) The average rate of dividend may be further reduced, thereby reducing the selling price also, if preference shares—in which Government's participation though not desirable may be necessary—are issued to the extent of about 25 per cent of the total capital investment carrying a rate of interest not exceeding 4 per cent.

(d) In fixing the selling price regard will have to be had to the disparity which may exist at the beginning between the works costs of the older works and the new works and also their varying investment per ton of output. It is not easy to suggest what form this should take, nor is it necessary so long as the Government make it clear that this factor will be taken into account.

226. Even if assurances on these lines are given they may not be adequate in the new conditions under which the industry is expected to function in the future. We refer to the intention of the Government to bring it under control. We have made some proposals to define the scope of such control and the manner in which it is to be exercised. But whether it is direct Government control, or, as we have suggested, indirect through voluntary action on the part of the industry itself, its very imposition and the probability of its permanent maintenance or, at any rate for an indefinite period may make private capital flight shy of the industry unless it is so exercised that the investor will regard it rather as a help than an embarrassment.

227. The immediate object which the Government appear to have in view is the control of prices. This may be, if taken at the right time, a necessary first step in any planned economy. We have also expressed the view that the trend of prices has been in the direction of high levels. We have discussed the causes which collectively may have contributed to bring about this result. We have recommended their examination with the view of eliminating or mitigating the effect of such of the causes as may have been due to expediency or temporary war conditions. Nevertheless, there is strong case for the maintenance of the selling prices at the present levels. Nor is there any reliable means by which it can be definitely stated what the reduction ought to amount to without a very careful examination. There is a likelihood of the supply being short of the demand in the absence of any unforeseen circumstances which disturb business activities generally. But the moment there is any immediate reduction in the selling prices, the consumer may withhold purchasing, as has been the actual experience of the Iron and Steel Control since the reduction effected in July 1945, in the hope that the prices may come down still more that it might be of advantage for him to wait longer. On the other hand, dealers or speculators might get hold of whatever iron and steel they could get at reduced prices in the hope that they might be able to sell them later at a profit

when in the absence of cheaper imports or considerable improvement in the domestic production there was a shortage of supply and a consequent rise in prices. Both these possibilities therefore are to be avoided. Unless there is satisfactory evidence in any particular case that the benefit of any immediate reduction in the selling prices will be passed on to the consumer and not to the dealer or speculator, we are of the opinion that no useful purpose will be served by any immediate reduction in the general level of selling prices.

228 There is another reason why no reduction should be made for the present in the prices. As we have already explained it is not easy to estimate the exact extent of the demand for iron and steel in the immediate future. All that we can reasonably say is that, other things being equal, the supply will fall far short of the demand. This being so any measure which may help to stimulate the demand and absorb the available steel for non-essential purposes is to be avoided. There are vast schemes of development under consideration and some are ready for execution in the immediate future, for which iron and steel will be essential materials. Some of these have been recently mentioned by the Finance Minister in his Budget Speech, as also by the Provincial Governments. Immense quantities of iron and steel will be required for these schemes and for the construction of buildings and parts at least of the plants and machinery for new works and factories, which, it is anticipated, will have to be erected as part of the first Five Year Plan. Until we are in possession of fuller information about priorities which will have to be accorded in some order to the various schemes including the establishment of new or the extension of the existing industries and of the quantities of the iron and steel which should be provided or reserved for them, it will be unsafe to lower the prices and divert into non-essential channels materials which we may soon require for essential national purposes. If any substantial reduction of prices proves feasible the first claim to its benefit must be that of the immediate or short term post-war projects of national importance. Even if there is some risk of a temporary accumulation of stocks, it is worth taking if we are to avoid delay in the completion of the projects, especially as any shortage of domestic materials cannot be made good in time or economically from foreign sources.

229. This is not, however, to say that no immediate action should be taken to bring about at the appropriate time such reduction as may be possible consistently with the interest alike of the consumer and the industry. Before any effective action can be taken, the Government should undertake an examination of the causes which may have contributed towards the rise in prices. We have discussed the most important of these fully in Chapter II, while dealing with Prices, partly in Chapter VII while dealing with Control and also in Chapter VI while dealing with Railway Freights. Broadly speaking they fall under the following categories :—

- (1) Due to the imposition of the Excise and countervailing import duties and surcharges on them prior to the War.
- (2) Due to the control of production, distribution and prices of all iron and steel products ; the creation of the Equalisation Fund by levying a surcharge of Rs. 30 or Rs. 40 per ton and the employment of expensive administrative machinery to meet war conditions etc.
- (3) Due to excessive taxation mainly Central and partly Provincial.
- (4) Due to the costs of production and distribution, effected by the increase of railway freights and surcharges, control of the production, distribution and prices of coal and the levy of various cesses, surcharges, etc.

The examples given above are illustrative and not exhaustive.

230. After having ascertained the causes and assessing the extent of the burden imposed by them on the industry, the Government should consider how far they can be wholly or partly eliminated. Some of them such as those falling under categories (1) and (2) may permit of immediate elimination but other of them, such as those in categories (3) and (4), may involve a more prolonged investigation and more complicated inter-departmental action both by the Central and the Provincial Governments. But any delay arising from this circumstance should not affect any action which Government may find it expedient or desirable to take in regard to the elimination of the causes under categories (1) and (2), which are amenable to immediate treatment.

231. Simultaneously with the investigation on the lines indicated above, the industry may be called upon to state whether, any and, if so, what contribution it can make towards the reduction of prices. If, as we have proposed, it is allowed to put forward a scheme, we have reason to believe that such a scheme will be prepared and submitted without delay to the Government and that it may be found by the Government to be acceptable. Should it fail to do so, it would be open to the Government to take upon themselves the task of ascertaining and fixing fair prices payable to the manufacturers in accordance generally with the principles, the application of which we have recommended in Chapter II and Chapter VII after an enquiry by the Tariff Board or other independent body on which no steel interests were directly represented.

232. When all the data have been collected showing the maximum reduction possible in every direction, it will be time enough to bring the reduced prices into effect provided again that the Government are satisfied that the benefit of the reduction will be passed on to the consumer and that the prices can be maintained at reasonably steady levels thereafter.

233. If it is found that the selling prices maintained at the existing levels are higher than the manufacturers' retention prices, the excess thus collected should be put into a new Price Stabilisation Fund. All monies standing to the credit of the present Equalisation Fund, the abolition of which we have recommended, should after all its liabilities have been discharged, be transferred to the new Fund. If and when a Sales Organisation is constituted, all the assets and liabilities of the Fund should be taken over by the Price Stabilisation Fund. It will be inadvisable to deplete this Fund prematurely. On the contrary, the policy should be to allow its resources to accumulate until they are equal to meeting the demands which may be made upon the Fund by the functions it is intended to perform. These functions should be clearly defined and limited to the following objects.

234. *Stabilisation of the selling prices:*—As we have pointed out in Chapter II there have been serious, frequent and almost violent fluctuations in the past in the selling prices of iron and steel more especially the latter. This has had a deterrent effect on the consumption of these products. One of the factors which contributed more than any other was the distributing element of the variation in the prices of imported steel by which the domestic prices were governed before the war. If our proposal that the domestic selling prices should no longer be related to foreign but based on the local costs of production plus the usual overheads and profit, this undesirable obstacle to stabilisation will be removed. The control of imports which forms part of our proposals will facilitate the process of stabilisation. India is in one respect more fortunate than perhaps most countries. The sources of the principal raw materials are either largely owned or are under the control of the principal primary producers or owned or controlled by the Government and in any event the prices of the materials themselves are not dependent on world conditions which in other countries affect seriously their internal prices. The imposition of control is in itself the first and the most effective method which will make the task relatively easier for India than for other countries.

235. The stabilisation of the prices of all manufactured iron and steel products even if desirable as an ideal is not a practical proposition and is not recommended. But the stabilisation of the prices of the primary products which are raw materials of other industries or are required on a large scale for the execution of long term schemes of development both public and private must now be recognised almost as a condition precedent to the industrial advancement of the country. Similarly, such products as galvanised sheets which at one time were used on a far more extensive scale mainly by the poorer agricultural classes and for which again there appears to be a bright future, should be brought into the scheme of stabilisation and their prices fixed and maintained at as low a scale as is economically possible.

236. *Mitigation of the burden of freights*.—We have given some illustrative figures in Chapter II to show how excessive railway freights paid by the consumers of iron in the interior of the country have limited the use of iron and steel and prevented the expansion of the demand for them. The disparity between the freights paid by the distant parts of the country and the principal ports was largely responsible for the diversion to the ports of no less than $\frac{3}{4}$ of the dispatches of certain products in common use. We have made some proposals with a view only to mitigate, as it is not possible to remove wholly the disadvantage from which the poorer consumer in the interior suffers by comparison with the one at the ports whose standards of living and the purchasing power may be presumed to be higher. The Price Stabilisation Fund may profitably be utilised for the purpose of effecting more equitable distribution of the burden of transport with due regard to the needs of the different and distant markets of this country, in view of the desirability of the dispersal of processing and steel consuming industries which are now confined to a few localities.

237. *Financing of stocks*.—Scarcity or shortage of iron and steel has been a fruitful source of profiteering on the part of dealers, stockists and other distributors and prices have been frequently disturbed with detrimental effects on consumption. Every effort should be made to prevent such disturbance by adequate stocks being kept in the possession or under the control of any sales organisation which may be created.

238. *Financing of imports*.—If, as is anticipated by us, the demand for iron and steel develops, there is a probability of an appreciable shortage of iron and steel until such time as the productive capacity of the country is increased by the erection of new works. This, as we have estimated, may take about seven years from the inception of any project. In the meanwhile it may be necessary to import the requisite quantity from foreign sources. These imports will not only need substantial finances but may necessitate some subvention from the Price Stabilisation Fund to average the selling prices if, as is not unlikely, the foreign prices are higher than the domestic.

239. In suggesting the financing of stocks and imports through the medium of the Price Stabilisation Fund we do not intend to convey that all the normal channels through which this business is done should be completely closed. The employment of stockists, dealers and importers should not be discontinued but brought under control to the extent to which it may be required for the protection of the consumer and the maintenance of prices at such levels as may be fixed by the appropriate authority.

240. In addition to the objects mentioned in paragraphs 234—9 above, the Price Stabilisation Fund may be used for any other purpose consistent with the interest of the producer and the consumer, which the Government may declare a legitimate charge on the fund. As the amount involved may run into some crores machinery for auditing the accounts and their scrutiny will be provided.

241. The Iron and steel Industry has in India, as in some other countries, become the pulse of the industrial securities market and most well-meaning action on the part of the Government or even of the industry itself, if sudden or precipitate, may have far reaching consequences on the investment of new capital. We do not know what reduction in the price levels of iron and steel may be feasible as a result of the investigations proposed by us. But assuming that it is substantial and brought into effect at any time without reference to the trend of prices of other commodities a general downward tendency may also develop even though it may be desirable to arrest it in the general interest. Moreover, if in bringing about the reduction of prices a big demand is made on the profits of the industry, it is certain to have an immediate and a deterrent effect on the investor, especially if with a diminished margin of profit he is expected to submit his activities to Government Control.

242. We have made an endeavour to impress upon the Government the desirability of giving all appropriate assurance to the industry both existing and future to protect it against foreign competition if and when it arises and also to avoid any precipitate action which might have the effect of discouraging private capital from coming forward and financing the new projects. If our recommendations are substantially accepted by the Government, we are re-commended to hope that private capital and enterprise will be forthcoming. But if our hope is not realised, national interest will demand that the Government themselves shall undertake the projects outlined in our Report. A key industry such as this, on which practically the whole industrial structure of India is to be built, cannot be made to wait on private capital or enterprise, if it is not sufficiently interested in the development of the country to subordinate the profit motive to the country's general welfare.

243. Whether any projects which may be decided on are to be executed by private or Governmental agency or by a combination of both, Government will have to provide many facilities to expedite their completion. The examination and co-ordination of all the schemes forming part of the Fifteen Year plan will necessarily involve much delay and not a few difficulties from conflict of interest. This industry is of such vital importance for almost any scheme which may be finally adopted as part of the national programme, that it should have precedence over any other and should be treated by itself. Its expansion must be regarded as inevitable and the sooner it is undertaken the quicker the Government's desire of the rapid industrialisation of the country will be realised. Having decided on its immediate expansion it will also be necessary for the Government to ensure its priority for securing the requisite finance and foreign exchange, importation from overseas of the plant, machinery and equipment which cannot be manufactured locally, and adequate shipping facilities. At home, arrangements will have to be made for the supply of all the raw materials for the construction of the plants buildings, etc. and also for the manufacture of the auxiliary raw materials required in the process of manufacturing iron and steel.

244. The provision of coking coal is a problem which will require the closest attention. As we have suggested in paragraph 97, the quantity of coking coal required for the present target can be made available forthwith by ordering the Railways to substitute other kinds of coal for steam raising, for the coking coal now being used by them in their locomotives. There is no certainty that in the absence of some pressure by the Government, the owners of the best coking coal mines will be ready to meet this new demand in time. In such a case the promoters of the new project may not be confident that no difficulty at the last minute will come to prevent the plants from being brought into operation. It is also essential that the localities, from which the coal is to be drawn, should be definitely known in order that the necessary transport facilities may be arranged in time and any new railway lines which may

appear to be required may be laid down and completed. This will also apply to the communications to be provided for the transport of iron ore and other raw materials. The question of railway freights is another of those problems which would require to be resolved at an early date before any new project can be taken in hand. We understand that the whole structure of railway rates is, or is likely, to be under examination by the Railway authorities. It may be quite a long time before the investigations are completed and any tangible results are known even if they cover the special need of this industry which we have no reason to think will be the case. We would, therefore, suggest an immediate examination by the Railway Board of this question on the general lines indicated by us and where higher considerations of policy may be involved by the Government of India themselves.

245. It is inconceivable that any prudent body of business men, who may be interested in these projects, will embark on them without first securing the services of competent Consulting Engineers with knowledge and experience of the latest developments in the technique, processes and equipment of this industry in the most advanced countries of the world. It is not impossible that the services of some of the most eminent among these can only be secured through the Government of their countries to which no private individuals may have easy access. It may consequently be necessary for the Government of India to use their offices for securing their services. Also, it would be a wise course on the part of the Government to arrange in advance for the technical training of qualified young Indians both in the works of the makers of the plants and in the most up-to-date of the iron and steel works in foreign countries. This industry has been functioning here for about 35 years and should be able to provide a considerable amount of reasonably welltrained personnel for operating the plants while facilities also exist for the training of young Indians. But to keep the technical knowledge up-to-date and to remain in contact with the developments in the more advanced countries, a continuous stream of trainees will require to be recruited in India and sent for training abroad for many years to come. It is to be hoped that the number of technicians and skilled and unskilled operatives will be smaller from the beginning in the new works than has been possible in the past.

CHAPTER IX

The following is a summary of our main conclusions :—

246. *Current Production.*—The present production of finished steel of all classes including that produced in the Ordnance Factories and in electric and other small furnaces and steel rolled from scrap cannot be estimated at more than about 1,200,000 tons per annum. When the Steel Corporation's Duplex Plant comes fully into operation, about 200,000 tons will have been added to this quantity. A surplus of about 150,000 tons of pig iron over and above what may be used in the manufacture of steel may be normally left for casting and other iron products.

247. *First post-war Target.*—If we were to estimate the future on the pre-war demand for iron and steel, except perhaps in the case of iron castings, the above quantity may be just adequate for our requirements. Such an estimate will be in our opinion misleading. The erection of a new complete iron and steel plant of an economic size will take at least five years under reasonably favourable conditions. Another two years will probably elapse before it approximates its rated output. We have, therefore, to look at least seven years ahead and make an estimate of the probable demand at the end of that period. For this purpose we must take into account the estimates given by such of the principal consuming departments of the Government of India who have been in a position to do so and the Provincial Governments

in relation to their post-war development plans. We must also make allowances for the demand which cannot be assessed in terms of tonnages at present, but is potential and likely to arise. We believe that on this basis India will be in a position to absorb an extra tonnage of a million to a million and a half of iron and steel at the end of a period of seven years from now and that the Government's target of increasing their output to $2\frac{1}{2}$ to 3 million tons is both feasible and desirable. We would like to emphasise that the realisation of the target is largely to depend on the materialisation of some at least of the many major schemes now under investigation. In this view we have the unanimous support of all the principal Chambers of Commerce both Indian and Europeans.

248. In so far as our estimate may be realised there is likely to be a shortage of iron and steel before any new works is built and is in production. This may be partly met by—

- (a) the completion of the Tata Iron & Steel Company Ltd.'s short term programme of adding 150,000 tons to their present output;
- (b) the Mysore Iron & Steel Works extending its production by about 30,000 tons in accordance with its plan ;
- (c) the Ishapore Ordnance Factory contributing 60/70,000 tons with the addition of two more furnaces and producing basic instead of acid steel for the time being. The addition may cost 15/16 lakhs which, if Government do not provide, may be found by the Selling Organisation ;
- (d) the Steel Corporation of Bengal undertaking and carrying out a scheme of expansion of another 200,000/300,000 tons of finished steel.

249. *New Plants to achieve target.*—The smallest economic unit for the production of iron and steel under modern conditions would have an initial capacity of not less than 500,000 tons of ingot and 400,000 tons of finished steel and so designed that the ultimate capacity can be approximately doubled. Even if the existing steel producers undertake to increase their output in the next five years by 500,000 tons it is desirable to establish a new unit immediately with an initial capacity of 500,000 tons and an ultimate capacity of a million tons of ingot steel per annum. If the demand keeps pace with our estimate, then it is desirable to set up a second steel works of similar capacity.

250.—*Regionalisation.*—Every ton of finished steel requires the transport of five tons of raw materials. Owing to the narrow geographical limits within which the existence of the principal raw materials is confined and the necessity of erecting large units for the purpose of producing the cheapest iron and steel, the regionalisation of this industry in its primary form is neither feasible nor is in the public interest. But the regionalisation of steel processing and consuming industries is not only possible but desirable. Such industries will include some Re-Rolling Mills which will be dealt with in our Second Report and mechanised plants for the manufacture of all descriptions of agricultural appliances and implements, cans and containers furniture, window frames, household appliances, bolts, screws, nuts etc. Among larger industries are Structural Engineering, Housing, Shipbuilding, manufacture of Heavy Machinery, Motor Cars, River Craft, Armament and Equipment for the Armed Forces. If a continuous Plate and Strip Mill is established, even relatively small units for the manufacture of sheets and tin-plates are economically possible in the larger centres of consumption. These are but a few instances where regionalisation is practicable.

251. *Location of new plants.*—If the target is to be realised in the shortest possible time, the new plants can be located only in those Provinces where sites fulfilling the following among other conditions are available ;—

- (i) Possession of an abundant and perennial supply of water. It is estimated that a plant of the type indicated above will require about 200 million gallons per day for circulation and about ten million for daily make up on an average in addition to about five million gallons for town use per day. The requirements may be larger if any subsidiary or auxiliary industries, particularly chemical are established in the immediate neighbourhood.
- (ii) Proximity to the sources of supply, already worked or easily workable, of the principal raw materials, particularly metallurgical coal, iron ore of good quality as free from impurities as possible, lime stone suitable for fluxing and various refractory materials. The quality of these materials should have been previously proved on a commercial basis and not merely deducible from reports of geologists, as the period within which the works are intended to be built is too short both for experiments on a large scale as to their serviceability on a commercial scale and feasibility of their immediate exploitation.
- (iii) Good communications especially by existing railway system without involving any considerable main line extensions and consequential delay both for the transportation of raw materials and the distribution of the finished products.

252. We have carefully studied all the data presented to us by the principal Provincial Governments and Indian States where the existence of most of the raw materials has been claimed on the surveys and reports of geologists and other experts. But except Bihar and Western Bengal there is no part of India where a major iron and steel works can be built and brought into operation within the period we are considering, except perhaps the Central Province which appears to have the best immediate claim to the establishment of one such works. In this Province a site at or near Tilda between Raipur and Bilaspur substantially fulfils most of the above conditions except that at present no workable deposits of metallurgical coal have been discovered, much less worked. Until an intensive geological research has brought to light workable deposits or metallurgical research has made possible the coking of such grades of coal as are being or can be economically worked, a coke or coking coal may have to be brought from Bihar or West Bengal, a distance of about 400 miles. Having regard to the excellent main line communications which already exist and the availability of other raw materials, we believe that the transport of coke or coal over this distance will present no insuperable economic or technical difficulties. Moreover the site now recommended in this Province may prove to be a more convenient centre for distribution to the whole of the Peninsula and considerable regions to the west and north than any site in Bihar or Bengal. Accordingly, we recommend the erection of one of the works in the Central Province and another one in Bihar on or near the South bank of the Ganges near Jamalpur when circumstances justify its erection, as already explained by us, as part of the first five year programme of post-war development.

252. The sites recommended by us are not to be regarded as more than worthy of consideration during the preparation of concrete projects. The actual selection must rest with the promoters of the schemes and their technical advisers.

254. *Cost of an erected plant*—In the present uncertain conditions governing both foreign and domestic prices it is not possible to make a

precise estimate of the cost of an erected plant. Upon such fairly reliable materials as we have been able to collect, a plant erected in India before the war with an initial capacity of about 400,000 tons of finished steel and so laid out and designed as to permit its further expansion to double this capacity would have cost 12-13 crores of rupees. This cost excludes, collieries, ore mines, working capital, financial charges prior to the commencement of operations and starting expenses.

255. Judging by the prices prevalent abroad, particularly in the United Kingdom in 1945, it will be unsafe to assume a lower increase in the cost of such a plant than that of 70-80%. The cost will vary with the kind of products to be rolled. A plant for the manufacture of medium and light sections, merchant products, rods, hoop and bars will cost about 22 crores, while a plant with a continuous plate and strip mill about 25 crores excluding the charges mentioned in paragraph 254.

256. The choice of the products to be manufactured and the type of equipment must be left to the promoters and their technical advisers. But any scheme which may be decided on should be prepared in close consultation with the existing industry in order to avoid unnecessary duplication or overlapping.

257. *Railway freights*—We are in no position to consider whether Railway freights generally are so high as to impede or discourage the industrialisation of the country. But we are satisfied that if freights, the prices of metallurgical coal and the wages of labour continue to show a simultaneous rise, India may before long be deprived of the advantages which have enabled it to produce the cheapest iron and steel in the world.

258. As palliatives and not as remedies we suggest the following :—

(i) If it is a fact, as we understand it to be at present, that the minimum freight rates on the Railways are based on one way traffic without taking into account the return traffic on part or whole of the system on which it is carried, then in the event of a new steel works being established in a locality from which ore can be brought in the same wagon in which coal has been brought to that locality, that factor should be taken into account in fixing the rates of freight applicable to the total traffic.

(ii) A distinction be made between coal for blast furnace despatched to iron and steel works and coal used for other purposes. Appreciably lower freights should be charged on the former than on the latter.

(iii) If the iron and steel industry is controlled especially with reference to prices, there is a strong case for the control of the price of Blast Furnace coal.

(iv) Every possible measure should be taken to prevent the use of such coal for other than metallurgical purposes by Railways and other consumers. One method of partially achieving this object will be the levy of such high freights on such coal as to make its use for non-metallurgical purposes wholly uneconomic.

(v) In order to prevent the concentration of processing industries in certain areas the freights on pig iron and semi-finished steel should be substantially below those payable on finished steel.

259. *Incidence of freights*.—It is not possible in a vast country like India so to distribute iron and steel as to even out completely the prices for consumers irrespective of their distance from the main centres of production. But if the consumption of iron and steel is to be developed it is necessary to mitigate some of the disadvantages from which the distant markets such as those in the Punjab, the United Provinces, South India and etc. have suffered.

260. For this purpose, we suggest the following changes in the future price structure of iron steel :—

(a) The products should be sold at a price ex-works plus the freight from the works to destination and not as hitherto from the nearest port to destination.

(b) No consumer should be made to pay a higher freight than a reasonable minimum such as about Rs. 30 or so per ton.

(c) No consumer should be wholly free from the liability to pay freight, as has normally been the case at the main ports.

(d) No consumer should be wholly deprived of his geographical advantage in relation to the centre of production.

261. Such a price structure will involve some sacrifice from those who have been more fortunate than others in the past, but they will be in the long run compensated if by promoting the use of iron and steel it is possible for the industry to reduce the costs and with them the prices.

262. *Control of the Industry.*—As the Government of India themselves have declared, it is impossible in a planned economy to do without controls and some circumstances exist in this industry which apart from this general consideration make their introduction in some form desirable in the general interest. The main directions in which such controls may be required are as follows :—

(a) Regulations and stabilisation, as far as it may be practicable, of the prices of iron and steel which have progressively risen and have been liable to frequent changes during the last 12 years or more.

(b) On a long view, it will be in the interest of the industry and of the consumer, if these prices are not related to foreign prices but based on the domestic works costs, to which should be added *inter alia*—

(i) a liberal percentage for depreciation and all usual overheads

(ii) a rate of profit, which on the one hand would maintain the existing industry in a healthy and financially sound position and on the other would attract the amount of capital which would be required for its rapid development ;

(iii) all direct and indirect charges for sale and distribution which cannot directly be recovered from the consumer ; and

(iv) an adequate margin to stabilise prices at levels which will not necessitate frequent alterations.

(c) In order that the domestic price structure may not be disturbed by foreign prices, imports of iron and steel should be prohibited except under a license duly issued for the purpose.

(d) To prevent an artificial shortage of iron and steel in order to take advantage of higher prices in the export markets, export should likewise be forbidden except under a license.

(e) As a safeguard against uneconomic over production or the development of the industry on wrong lines the construction of new units of production should be permitted only under license.

263. *Selling Organisation.*—The creation of a Selling Organisation which includes all the primary producers, both existing and future and some representation of so much of the Re-Rolling industry as is reorganised and fulfils the conditions laid down by us should be charged with the performance of following duties *inter alia*—

(a) Sales and distribution of all iron and rolled steel products, produced in whatever form and of whatever quality including scrap and defectives which have a saleable value at prices fixed with the approval of the Government,

(b) To import from the most favourable source such quantities of iron and steel as may be necessary to meet the demand for them in time to prevent any shortage of supply.

(c) To develop an export market in those areas where geographical or economic conditions are most favourable, if and when local production is in excess of local requirements.

(d) To maintain a good standard of quality for all iron and steel both at home and abroad.

264. *Methods of control (proper).*—It is suggested that any control, the general nature of which is indicated above and which in the interest of the public may be considered desirable to introduce, should not in the first instance be exercised by the Government itself. The major iron and steel industry today consists of three primary producers, viz., The Tata Iron & Steel Co. Ltd., the Steel Corporation of Bengal (working in conjunction with the Indian Iron & Steel Co. Ltd.) and the Mysore Iron and Steel works. The experience, status and management of these organisations justify our confidence in their ability and willingness to prepare and submit for Government's approval a scheme under which they form a Selling Organisation somewhat on the lines of the Tata-Scob Agreement, fix prices and agree to undertake and perform those and other functions, obligations and duties mentioned above, which otherwise may be imposed on them or performed by Government itself. If no such scheme is prepared and approved by the Government, there may be no other alternative than direct Government control including sale and distribution of iron and steel at prices fixed by the Government after such enquiry as may be deemed necessary for the purpose.

265. If the Industry organises itself and prepares a scheme acceptable to Government, the control should take a simple form and include *inter alia* :—

(i) An authority to issue licenses for (a) imports, (b) exports and (c) the construction of new or the expansion of existing units of production.

(ii) Submission to the Government of such information as it may require relating to the profits made, the dividends paid, the amount of depreciation set aside, and any other particulars with reference to the activities and operations of the industry as may be prescribed.

(iii) Publication of the schedule of prices and variations in them.

(iv) Provision for an enquiry when the Government deems necessary or at such intervals as may be prescribed into its operations, activities, efficiency and expansion.

(v) The appointment of an authority for enquiring into and reporting to the Government on legitimate complaints against favouritism, excessive prices or other activities injurious to the public interest.

(vi) The maintenance of a statistical department with authority to compel the production of figures including those relating to prices in such form as may be prescribed in consultation with the Selling Organisation. Such statistics as are of interest to the public should be printed, published and put on sale to the public.

266. *Protection.*—The following modifications of Government policy is suggested viz :—

(a) The primary producers of iron and steel have dispensed with protection and the need for the continuation of the protective duties does not exist. But foreign competition, though it may remain dormant for some time, may revive at any moment. The Protective duties, therefore, should remain on the Statute Book but their levy should be suspended until such time as their position again becomes necessary and in the meanwhile the industry should be declared a protected one. This is necessary both in the interest of the existing industry and for the purpose of attracting into it the necessary capital for expansion.

- (b) The excise duty should be abrogated at the first possible moment.
- (c) The heavy burden of taxation, particularly that of the high rate of income tax and surcharges, which has a crippling effect on industry, should be alleviated to the maximum degree possible.
- (d) The "Equalisation Fund" and all surcharge at present made by the Iron & Steel Control should be abolished.

267. *Private Capital*.—We believe that the necessary capital to finance the projects suggested will be forthcoming, provided,

(a) the industry is declared a protected one though the levy of existing duties may be suspended until their re-imposition again becomes necessary by reason of foreign imports re-entering the country at prices below those considered fair for the industry.

(b) though the conditions are not at present predictable which may necessitate the grant or continuance of protection when the new plants begin to function, some assurance on the following lines are given :—

(i) that such assistance will be accorded in such form as may be necessary to enable the new works to realise a selling price, which would include all the usual works costs plus a reasonable amount of depreciation and a return on investment, which at the time may appear to be consistent with the development of the works and the expansion of the industry ;

(ii) purchase or guarantee of principal and interest on debentures equal to about 1/3 of the capital ; and

(iii) in fixing the selling price regard will be had to the disparity which may exist at the beginning between the works costs of the older works and the new works and also their varying investment per ton of output. It is not easy to suggest what form this should take, nor, is it necessary as long as the Government make it clear that this factor will be taken into account.

(c) Public confidence is not shaken in the prospects of the industry by an immediate, sudden or precipitate reduction in the selling prices of iron and steel products.

268. If, in spite of the Government giving all the assurances suggested by us, no private capital is forthcoming, the Government themselves must immediately undertake the projects outlined by us, for, a key industry such as this on which the whole industrial structure of India is to be built cannot wait on private capital or enterprise, if it is not sufficiently interested in the development of the country to subordinate the profit motive to the country's general welfare.

269. This Industry is of such vital importance that it should be treated by itself, if conflict of provincial or other interests delays the examination and co-ordination of all the schemes forming part of the 15-Year plan.

270. Having decided on the immediate expansion of the industry, we recommend the following further measures to be adopted by the Government to expedite the fruition of the projects, *viz* :—

(i) to secure priority for the requisite finance and foreign exchange, importation from overseas of the plant, machinery and equipment including shipping facilities ;

(ii) to arrange for the supply of all necessary raw materials for construction of the plant, building etc., and also for the manufacture of the auxiliary raw materials required in the process of manufacture ;

(iii) to ensure the supply of coking coal ;

(iv) to arrange for the necessary transport facilities ;

(v) to revise the Railway freight structure in relation to this industry ;

- (vi) to arrange for securing the services of competent consulting Engineers with knowledge and experience of the latest development in the technique, processes and equipment of this industry in the most advanced countries ;
- and (vii) to arrange in advance for the technical training of qualified young Indians both in factories of the makers of the plant and in the most up-to-date iron and steel works in foreign countries.

271. *Price control.*—Before any effective action is taken to reduce the selling prices, the Government should undertake an examination of the causes which may have contributed to their rise, whether they were due to Government's own action or to other circumstance traceable to war conditions, and take measures to eliminate them. Simultaneously with such examination the industry should be called upon to prepare a scheme indicating the contribution it can afford to make towards this object.

272. After all the data have been collected showing the maximum possible reduction, the reduced prices can be given effect provided that the Government are satisfied that the benefit of the reduction will be passed on to the consumer and that thereafter the prices can be maintained at reasonably steady levels.

273. Serious, frequent and almost violent fluctuations in the selling prices in the past have had a deterrent effect on the consumption of iron and steel. This was largely due to the fluctuation in the import prices of foreign products. With the elimination of this disturbing factor, the stabilisation of prices will be less difficult and measures should be taken to achieve this purpose, in so far as the primary products are concerned.

274. A 'Stabilization of Prices Fund' should be constituted and should be sufficiently large to finance not only the stabilisation of prices, but also—

- (i) the mitigation of the unequal burden of the cost of transport to the more distant markets ;
- (ii) stocks of iron and steel to prevent a shortage of supply which has been a fruitful source of profiteering on the part of dealers, and other distributors with detrimental effects on prices and consequential reduced consumption ; and
- (iii) imports to the extent to which they are not financed by private importers when such are permitted.

275. The selling Organisation should be charged with the duty of administering the fund ; and machinery should be provided for the scrutiny and auditing of the accounts.

276. In our second Report we shall deal with the following secondary and subsidiary industries dependent on the use of iron and steel :—

- (i) Re-Rolling Mills Industry ;
- (ii) Engineering Industries ;
- (iii) Alloy, Tool and Special Steels.

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