



सत्यमेव जयते

# REPORT

1964-65

MINISTRY OF STEEL & MINES  
(DEPARTMENT OF IRON & STEEL)

## CONTENTS

	PAGES
1. Organisation	1
2. Production	1
3. Availability and Distribution of steel	2
4. Imports and Exports	3
5. Prices	4
6. Hindustan Steel Limited	5
7. Rourkela Steel Plant	5
8. Bhilai Steel Plant	7
9. Durgapur Steel Plant	10
10. Bolani Ores Limited	11
11. Alloy Steels Project	11
12. Central Engineering & Design Bureau	12
13. Recruitment	12
14. Training	13
15. Incentive Bonus	13
16. Labour (Wage Boards)	14
17. Coal Washeries	14
18. Basic Refractories Plant	15
19. Bokaro Steel Project	15
20. Mysore Iron & Steel Limited	17
21. Steel Industry in Private Sector	18
22. Prospects for the future	20

## ORGANISATION

Consequent on the re-organisation of the Ministries in June, 1964 this Department became a part of the Ministry of Steel & Mines. The Department deals with the Iron & Steel (Control) Order, 1956, import and export of iron and steel, Steel Works in the public and private sector, steel rolling mills and the ferro alloys industry. Besides functioning as the administrative Department for the Hindustan Steel Limited, Bokaro Steel Limited, and the Hindustan Steel Works Construction Limited, it has also been entrusted with the work relating to the establishment of new Steel Plants in the Public Sector.

The Department has one attached office, namely, that of the Iron & Steel Controller with the head office at Calcutta and three regional offices located at Bombay, Madras and Delhi. The Iron & Steel Controller is responsible for the administration of the Iron & Steel (Control) Order, 1956, issue of licences for the import/export of iron and steel and for the bulk purchase of steel. The Iron and Steel Controller also acts as Chairman of the Joint Plant Committee which has been constituted for the receipt and planned distribution of indents for supplies of steel from domestic production and the planning of rolling programmes on the main producers of steel in respect of controlled and decontrolled items of iron and steel. A monthly bulletin called "Iron & Steel Control Monthly Bulletin" is published by the Iron & Steel Controller. This gives detailed information regarding the production of iron & steel, import and export of steel, distribution of iron & steel and other details of interest to the traders and consumers of iron and steel. With the de-control of certain items of iron & steel and the winding up of the Steel Equalisation Fund with effect from 1st March, 1964, work at the head office at Calcutta has come down to some extent resulting in some reduction in staff.

## PRODUCTION

Production of iron and steel during 1964 was as under :--

### 1. Production of saleable Pig Iron.

Producer	(In tonnes)	
	1963	1964
TISCO	8,651	8,342
IISCO	217,212	213,519
Rourkela	112,906	73,253
Bhilai	395,336	371,787
Durgapur	420,639	416,243
Orissa Ind. Dev. Corpn.	19,904	34,147
Acme	9,375	8,058
TOTAL	1,184,023	1,125,349



Exports during 1964-65 (up to December, 1964) were as follows:—

Categories	(Quantity in tonnes & Value in '000 Rs.)	
	Quantity	Value
Finished Steel	36,061	16,206
Scrap	314,678	39,299
	<b>Total</b>	<b>350,739</b>
		<b>55,505</b>

During the year the establishment of two associations was taken up. The Metal Scrap Trading Corporation was formed to develop the export possibilities of Ferrous Scrap after catering to the requirements of indigenous furnaces. The Board of Directors of this Corporation includes six representatives of Domestic Consumers of Scrap, six of Scrap Exporters, and six of the Minerals & Metals Trading Corporation.

A Steel Exporters' Association has been registered to encourage and assist exports of steel. The Association will include two representatives of Government, one representative of the Joint Plant Committee, one representative of the Steel Re-rolling Mills Association, three representatives of the Main Producers, three representatives of Exporting firms and two representatives of billet re-rollers.

### PRICES

In accordance with the decisions taken on the recommendations of the Raj Committee, price and distribution control was withdrawn with effect from 1st March, 1964 on all categories of iron and steel other than pig iron, billets, tin bars and flat mild steel categories. The Joint Plant Committee, including representative of the main producers on the Railways determine the prices of those categories which are produced and supplied by the main producers. The Steel Re-rolling Mills Association have also announced prices at which their members will supply decontrolled categories of steel produced by them. On 26th December, 1964 Government withdrew price and distribution control on tinplates including waste/waste, and, with effect from the same date, the producers of tinplate announced the prices at which they would sell tinplate produced by them.

The prices of controlled categories announced on 1st March, 1964 continued substantially in force for most of the period under review. There were some adjustments in the prices of tin bar, tinplate (before decontrol), billets and galvanised sheets partly as a measure of rationalisation and partly to cover increases in prices arising from higher incidence of excise duty or sales-tax. Consequent on further increases in the excise duties on controlled categories of iron and steel announced on 27th February, 1965 and 5th March, 1965, a revised schedule of prices was notified on 6th March, 1965.

Government are going ahead with the scheme to introduce the Indian Standards Institution's Certification Marks Scheme on categories of iron and steel. The scheme is likely to be introduced from 1st April, 1965 and most of the producers have taken out licences from the Indian Standards Institution for this purpose. Basically, the scheme contemplates that the bulk of steel sold by producers will carry with it a certificate certifying its chemical and physical composition and properties in accordance with standards laid down by the Indian Standards Institution.

*General.* During the year under review one meeting of the Iron and Steel Advisory Council and two meetings of the Steel Standing Committee (Trade) were held.

### HINDUSTAN STEEL LIMITED

During the year under review the activities of the Company covered the operation of the three one million tonne Steel Plants at Rourkela, Bhilai and Durgapur, and the Coal Washeries at Dugda, Bhojudih and Patherdih, the setting up of the Alloy Steel Plant at Durgapur, as well as the expansion of three Steel Plants at Rourkela, Bhilai and Durgapur to 1.8, 2.5 and 1.6 million tonnes capacity respectively.

*Organisation.* There were no organisational changes during the period under review, except that the Fertilizer Plant at Rourkela was transferred back to the Hindustan Steel from 1st May, 1964, and, with the formation of Bokaro Steel Limited, the Bokaro Steel Project Unit of Hindustan Steel Limited is in the process of being wound up.

During the year under review further amounts were drawn from Government towards the subscribed share capital so that on 31st December, 1964, the subscribed share capital of the Company stood at Rs. 5,100 million. The amount of Loans drawn from Government remained unchanged at Rs. 3,571 million. An amount of Rs. 178.55 million was paid to Government as interest on Government loans during the year under review.

### ROURKELA STEEL PLANT

*Production.*—The details of production from April to December, 1964 in Rourkela are as follows:—

	(In '000 Tonnes)
Coke Total (Dry) .. .. .	783
Iron (Hot Metal) .. .. .	712
Steel Ingots .. .. .	701
<i>Saleable Steel:</i>	
Semis .. .. .	2
Finished .. .. .	488

Total production during 1964-65 is likely to be 0.98 million tonnes of iron (hot metal), 1.0 million tonnes of steel ingots and 0.72 million tonnes of saleable steel *i.e.*, full rated capacity of the plant.

The following table shows the percentages of achievement on rated capacity of the Plant, for the year ending 31st December, 1964 :—

Coke	83%
Hot Metal	90%
Ingot Steel	94%
Saleable Steel	92%

The progress of the Plant has been particularly heartening considering the set-back to production which arose following the civil disturbances in March, 1964.

During November, 1964 the Blast Furnaces had a record output of 97,045 tonnes and the Steel Melting Shop had a record out-put of 100,590 tonnes. The L. D. Convertors gave 67 blows on 29th November, 1964 producing 4,162 tonnes, thus establishing a new record.

The production of tested material to total saleable steel was 64% in Rourkela during 1963-64. This is an improvement over the previous year's performance.

The production in the Fertilizer Plant continued to be less than the rated capacity. The Government of India have appointed a Technical Committee to recommend steps necessary to be taken or achieving full production in this Unit. An interim report of the Committee was received in the third week of January, 1965 and is under examination by Hindustan Steel Limited. The final report of the Committee is expected to be received by the end of April 1965.

*Sales.*—Steps were taken during the year to reduce accumulations of stocks as well as to book more orders for the Pipe Plant. Despatches showed an upward trend.

*Expansion.*—Erection of Sintering Plant was completed, and Civil Engineering Works are progressing satisfactorily in other major units. The Sintering Plant was commissioned on the 28th February, 1965. The Steel Melting Shop and other auxiliary units are scheduled to be commissioned by March, 1966 while the other production units under the expansion scheme are scheduled to be commissioned during 1966-67. Tenders for an Ore Beneficiation Plant are under consideration.

Planning Report for the Fourth Plan has been on the basis of the expansion of Rourkela to 2.5 million ingot tonnes.

The project Report for the present expansion of the Plant was prepared entirely by the Central Engineering and Design Bureau and the work is now in progress under their overall supervision. The project Report for the further expansion of the Plant has also been taken up by them.

*Mines & Quarries.* Barsua Iron Ore Mine worked to 62% of its capacity and 67% of the target during the period under review. Supplies were drawn from the Minerals and Metals Trading Corporation, and also from December, 1964 from Kiriburu. Lime Stone requirements for the blast furnaces were met from the plants' own mines at Purnapani.

The requirements of Steel Melting Shop Grade Limestone were met from Satna.

*Township.* By the end of 1964, 13,546 houses were constructed and further expansion of the housing programme is in hand.

*Foreign Technicians.* The number of foreign technicians in the Plant on the operation and maintenance side in April and in December, 1964 was 214 and 95, respectively.

*Industrial Relations.* During the year under review, the Hindustan Steel Workers Association, affiliated to the Indian National Trade Union Congress, was recognised at Rourkela. This led to an improvement in the Labour Management relations in the Plant. An agreement was reached with the Union on a number of points including the revised production incentive scheme.

The Standing Orders for Rourkela, which were certified in 1963, but were pending with the appellate authorities on an appeal preferred by the Workers, were finally disposed of by the appellate authorities. They have been statutorily enforced with effect from 9th January, 1964.

A revised grievance procedure has been brought into force from 19th December 1964. Industrial Relations continued to be satisfactory in the Plant during the year under review. The Emergency Production Committees continued to function in the Plant.

During the period under review a 270 bed hospital at Rourkela started functioning. Medical and other welfare facilities were provided on a liberal scale as in the past, to the employees and their families.

#### BHILAI STEEL PLANT

*Production.*—The details of production from April to December, 1964 in the Bhilai Steel Plant are as follows :—

	(In '000 Tonnes)					
Coke Total (Dry)	..	..	..	..	..	949
Iron (Hot Metal)	..	..	..	..	..	947
Steel Ingots	..	..	..	..	..	841
<i>Saleable Steel :</i>						
Semis	..	..	..	..	..	158
Finished	..	..	..	..	..	491

There was a steady improvement in production in the Plant. The following table shows the percentage of achievement on rated capacity of the Plant for the year ended 31st December, 1964 :—

Coke	98%
Hot Metal	114%
Ingot Steel	113%
Saleable Steel	103%

The Merchant Mill had a record production of 27,502 tonnes in September, 1964 and the Blooming Mill a record production of 89,633 tonnes in December, 1964.

Production during 1964-65 is likely to be :—

	(In Million tonnes)
Pig Iron Total (Hot Metal)	1.26
Pig Iron for Sale	0.33
Steel Ingots	1.15
Saleable Steel	0.91

The proportion of tested material to total saleable steel was 72% in the Plant during 1963-64. This is an improvement over the last year's performance.

*Sales.*—Despatches showed an upward trend.

*Expansion.*—The following units were commissioned on the dates shown against each :—

(i) Fourth Coke Oven Battery	.. .. .	20-9-1964
(ii) Open Hearth Furnace No. 7	.. .. .	3-11-1964
(iii) Slag Granulation Plant	.. .. .	3-11-1964
(iv) Fourth Blast Furnace	.. .. .	8-12-1964

Most of the other units are scheduled to be commissioned by December, 1965, while the Wire Rod Mill is scheduled to be commissioned by March, 1966.

*Further Expansion.*—The expansion of the Plant beyond the 2.5 million tonnes to approximately 3.5 million tonnes of steel ingots within the Fourth Five Year Plan is under consideration. As there has been an acute shortage of Pig Iron in the country at present, it has been decided to instal, as the first stage of expansion, the iron making facilities during the Third Plan itself. The following units will comprise this expansion scheme :—

- (i) The installation of the Sixth Blast Furnace of 1719 M<sup>3</sup> capacity.
- (ii) 7th Coke Oven Battery and 4th Sinter Plant together with the required services and ancillary facilities.



The Detailed Project Report of the Sixth Blast Furnace and ancillary facilities has been prepared by the Design Cell at Bhilai. The Government of the USSR have agreed to provide Soviet assistance for this Project. The Soviet Organisations will arrange for the supply of main equipment and will also render necessary technical assistance for installation of the Sixth Blast Furnace and ancillary facilities under the Indo-Soviet Credit Agreement of February, 1961. A portion of the equipment will be manufactured at the Heavy Machine Building Plant at Ranchi for which the components required will be supplied from the USSR. Necessary action to place the orders is being taken.

*Mines & Quarries.*—The entire Iron Ore requirements of Bhilai were met from the captive mines at Rajhara. The Mine worked to 91% of its capacity and 95% of the target during the period under review.

The Nandini Limestone Quarry worked to 69% of its capacity and 98% of target.

Plans are in hand to develop the semi-mechanised mines at Jharandhalli and to expand production at Rajhara to meet the additional requirements of Iron Ore required for the 2.5 million tonnes Expansion. The development of Dalli Mines will also be taken up as an ultimate source for meeting the requirements of further expansion.

The captive mine at Chandidogri produced 96 tonnes of Flourspar from April to December, 1964. With this and previous stocks the Plant was able to meet its entire needs of Flourspar.

*Foreign Technicians.*—The number of foreign technicians in the Plant on the operation and maintenance side in April and December, 1964 was 35 and 21, respectively.

In addition to this, there were 298 foreign technicians associated with the expansion programme at the end of December, 1964.

*Township.*—The Plant has so far built nearly 13,000 houses. Besides, this 2,000 tubular sheds have been constructed for temporary employees. In the Mines about 2,000 quarters have already been constructed.

*Industrial Relations.*—The certified standing orders are lying in appeal before the Industrial Court, Madhya Pradesh. A decision is still awaited.

The Emergency Production Committees have continued to function.

A 275 beds hospital is functioning. Medical and other welfare facilities were provided on a liberal scale as in the past, to the employees and their families.

## DURGAPUR STEEL PLANT

*Production.*—The details of production from April to December, 1964 in the Durgapur Steel Plant are as follows:

	(In '000 Tonnes)
Coke Total (Dry)	1,065
Iron (Hot Metal)	999
Steel Ingots	748
<i>Saleable Steel</i>	
Sems	182
Finished	357

The production during 1964-65 is likely to be 1.34 million tonnes of iron (hot metal), 0.47 million tonnes of foundry iron for sale, 1.0 million tonnes of steel ingots and 0.8 million tonnes of saleable steel.

There was a steady improvement in production in the Plant. The following table shows the percentages of achievement on rated capacity of the Plant for the year ending 31st December, 1964:

Coke	101%
Hot Metal	104%
Ingot Steel	98%
Saleable Steel	88%

Sporadic but frequent labour troubles in the various sections of the rolling mills during June to September, and in the Coke Ovens during August, affected the production in these units during the respective months.

Durgapur's production of Steel Ingots and Merchant Mill products during May, 1964, was the highest achieved so far, being 111% and 141% of rated capacity respectively.

The proportion of tested material to total saleable steel was 72% in Durgapur during the year 1963-64. This is an improvement over the last year's performance.

*Sales.*—Steps were taken during the year to reduce accumulations of stocks, and despatches showed an upward trend.

*Expansion.*—Tenders and orders for the Civil Engineering Works for non-turn key jobs have already been awarded except for the rail weigh-bridge. Contracts for the erection of the structural steel works have already been awarded. Tippler No. 1 was commissioned during the year under review.

All the major units such as the Coke Ovens, Blast Furnaces, Skelp Mill, Sintering Plant etc. under the Expansion Scheme, are scheduled to be commissioned on various dates during the period March, 1965 to July, 1966.

*Mines & Quarries* - Bolani Ores continued to meet the major portion of the Iron Ore requirements of the Plant.

*Foreign Technicians* - The number of foreign technicians in the Plant on the operation and maintenance side was 81 and 73 in April, and in December, 1964 respectively.

*Township* - Nearly 12,000 houses have been constructed. The employees of the Alloy Steels Project will also be accommodated in the Steel Plant Township.

*Industrial Relations* - The Plant experienced certain labour troubles during May to September, 1964. There were illegal stoppages of work in certain Sections of the Plant which affected the production to some extent. Labour relations, however, improved in the latter part of the year and a number of agreements were arrived at between the Labour Union and the Management. A revised procedure for enquiring into the grievances of workers was also brought into force.

During the period under review a 230-bed hospital at Durgapur started functioning. Medical and other welfare facilities were provided on a liberal scale as in the past, to the employees and their families.

#### BOLANI ORES LIMITED

To supply iron ore to Durgapur Steel Plant a new mine has been developed at Bolani in the Gua region of Orissa where ore deposits are extensive and rich. For the development and operation of the mine, a company called Bolani Ores Limited has been set up in which the Government of India hold 50.50 per cent and the Orissa Mineral Development Company 49.50 per cent of the shares.

The first phase of development to produce 1 million tonnes of ores has been completed. The supply of ore to the Durgapur Steel Plant started in April, 1960. The monthly rate of supply of ore to Durgapur during the year works out to about 1.20 lakhs tonnes.

Bolani Ores have finalised a programme for expansion of the mines to meet the increased requirements of the Durgapur Steel Plant after expansion to 1.6 million tonnes.

#### ALLOY STEELS PROJECT

The inability of the indigenous fabricators to keep to their commitments in regard to the fabrication of steel structurals, and difficulties regarding the drawings required for fabrication affected erection work during the period under review.

The first unit of the Plant, the Steel Melting Shop II, was commissioned on 23-1-1965.

A revised time schedule has been prepared, according to which all the major units are expected to be commissioned by the end of 1967. The Bar Mill and forge shop are, however, expected to be commissioned in 1966 itself.

During the Fourth Plan Period, it is expected that the capacity of the Alloy Steels Project will be further expanded to 0.30 million tonnes of ingots.

### CENTRAL ENGINEERING & DESIGN BUREAU

During the year under review the Bureau was strengthened further. The present strength is 434 consisting of 146 Engineers (including 11 Foreign Experts, 18 Graduate Engineers, 86 Design Assistants and the rest being other categories of Staff).

The Project Reports for the expansion of the Rourkela and Durgapur Steel Plants from one million to 1.8 and 1.6 million tonnes, respectively, were prepared entirely by the Bureau, and the expansion of these Plants is now in progress under their overall supervision.

The Bureau have prepared, during the period under review, the Technical Specifications and Drawings for the Selective Crushing Plants at Rourkela and Durgapur, the preliminary report with lay-out Drawings for the setting up of experimental ovens with stamp charging facilities for using various varieties of coal, the feasibility study of a Vacuum De-gassing Unit for producing rail steel at Bhilai, and a feasibility study for adoption of Computers in the Steel Melting Shop at Rourkela. They have also collected data for the long range planning of and worked out the requirements of manufacturing capacity for the Iron & Steel Industry upto 1975-76.

The Project Reports for the further expansion of the Durgapur Steel Plant and Rourkela Steel Plant to 3.0/3.5 and 2.5 million tonnes, respectively, have also been taken up by them.

Steps are being taken to recruit and train additional Engineers to strengthen the organisation further.

### RECRUITMENT

Recruitment continued of Graduate Engineers, Artisans and Senior and Junior Operative trainees to meet the requirements of expansion as well as for replacement of those promoted to higher positions. A few experienced

personnel were also recruited. The figures given below will indicate the recruitment made at different levels in 1964—

Capacity	Number
(i) Graduate Engineers	148*
(ii) Junior Officer trainees (non-technical)	26
(iii) Other executive posts	95
(iv) Senior Junior Operative trainees, artisan trainees and trainees for other non-supervisory posts	730

\*Including 3 for Bokaro Steel Limited.

†Including 7 for Bokaro Steel Limited.

An organised and paid in-plant scheme of student engineers was started in 1964. Under this scheme 160 student engineers were given practical training in the Steel Plants, during the 8 weeks of the summer vacation of 1964. These student engineers will be given the second phase of their training in the steel plants during the summer vacation of 1965. Besides, another batch of student engineers will be recruited for the first phase of training during the same period.

The programme for recruitment in 1965 includes recruitment of more than 200 Graduate Engineers and a number of Artisans and Senior and Junior Operatives to meet the requirements of expansion of the Steel Plants.

### TRAINING

The Technical Institute at Durgapur Steel Plant was almost fully established during the period under review. The number of trainees at the three Institutes at the end of November, 1964 was 1789. In addition to this, 450 trainees of the Alloy Steels Project, 1 Foreign National, 5 Government of India's trainees, 12 Craftsmen trainees, 253 trainees under the Apprentices Act and 48 trainees of other agencies were also on training in the Institutes at the end of November.

The stabilization of Training Facilities in the Steel Plants greatly reduced the need for training abroad. During the period under review, 76 persons were sent abroad, including those meant for the Expansion Units.

The Management Training Institute at Ranchi continued to conduct programmes for the middle management personnel of the Company, and also undertook some special programmes to meet specific needs for development of technical as well as non-technical officers.

### INCENTIVE BONUS

The production incentive scheme, formulated in 1961 was revised in February, 1964. More employees, whose efforts could be identified and linked with increased production have been brought under the scheme. Bonus earning has been delinked from the performance of steel making units and



linked with the efforts of individual units. Wage factors have been introduced for the products of finishing mills and where feasible, in primary mills as well. The Scheme has been implemented in full in all the Plants with the consent of the Union in each Plant. However, the delinking from steel ingot production and introduction of wage factors have been agreed to by the representative union in principle in Bhilai and the changes will be introduced in due course.

#### LABOUR (WAGE BOARDS)

In 1964 the Central Wage Board for Iron & Steel Industry recommended a Second Interim Relief of Rs. 8 - to all the workmen drawing a basic salary of Rs. 500 - or less a month and recommended that the First Interim Relief of Rs. 10 - and the Second Interim Relief of Rs. 5 - should be merged with the Dearness Allowance. The recommendations, which have been accepted by the Government have been implemented by the Hindustan Steel Limited.

The Wage Board for the Iron Ore Mining Industry and the Limestone and Dolomite Mining Industries have also recommended Interim Relief to the workmen in these Industries. The recommendations have been accepted by the Government and implemented by Hindustan Steel Limited.

#### COAL WASHERIES

The availability of good quality coking coal in the country is limited. It is, therefore, necessary to upgrade the quality of metallurgical coal for use in the steel plants and thus conserve the country's scarce resources of good quality metallurgical coal. This is sought to be achieved by:—

- (i) washing the metallurgical coals to reduce their ash contents, and
- (ii) using more weak or semi-coking coals by blending with the fully coking coals.

In pursuance of this policy Hindustan Steel Limited installed four coal washeries at Durgapur, Dugda, Bhojudih and Patherdih. These washeries are in addition to the coal washeries at Jamadoba, West Bokaro and Lodna in the private sector and the one at Kargali, put by the National Coal Development Corporation in the public sector.

The Durgapur Washery which was commissioned in April, 1960 is a part of Durgapur Steel Plant and supplies washed coal to this plant only. During the period April, 1964 to January, 1965, 0.88 million tonnes of raw coal was processed.

Dugda Washery is located in the Hazaribagh district of Bihar and has been in operation since December, 1961. The Washery is designed for an annual input capacity of 2.4 million tonnes of raw coal. In 1964 the washery processed about 0.95 million tonnes of raw coal. The washed coal was supplied to Rourkela and Bhilai Steel Plants.

Bhojudih Washery is situated in the Purulia district of West Bengal. The first stage of the Washery with an annual input capacity of 1.2 million tonnes of raw coal was completed in October, 1962. Its expansion raising the annual input capacity to 2.0 million tonnes of raw coal has also been completed in October, 1963 and the integrated unit is in operation since then. During 1964 the Washery has processed about 1.24 million tonnes of raw coal. The washed coal was supplied to Tata Iron & Steel Company Limited and the Rourkela Steel Plant.

Patherdih Washery is located in the Dhanbad district of Bihar. The Washery has been designed with an annual input capacity of 2.0 million tonnes of raw coal. The Washery has been completed in September, 1964 and is presently going through a period of adjustment. Coal was put through the washery in December, 1964 and it is now expected to commence regular operation after the initial period of adjustments is over.

To meet the requirements of the expanding steel industry, it has been decided to instal a second coal washing plant with an annual input capacity of 2.4 million tonnes at Dugda. A contract for the design, erection and supply of the plant was awarded to M/s Roberts and Schaefers Company of USA in May, 1963. The plant is expected to be completed by the end of 1965.

#### BASIC REFRACTORIES PLANT

The feasibility of setting up a refractories plant at Bhilai for supplying refractories to the steel plants is under consideration. The Russian Consultants have been commissioned to prepare a Detailed Project Report. The Report is due in April, 1965. A final decision on the Project will be taken after the receipt of the Report.

#### BOKARO STEEL PROJECT

In May, 1964, the Government of USSR agreed to finance the first stage of the integrated Bokaro Steel Plant. Negotiations were held with the USSR Government about the scope of such assistance and our keenness to complete the Project on a priority basis was emphasised. The USSR Government appreciated our anxiety to complete the Project with the utmost expedition and a team of Soviet specialists headed by the Director of 'Gipromez' came to India in August, 1964 for an on-the-spot study of the project, and further technical discussions with the Indian authorities. The team left for USSR after signing a project assignment with Bokaro Steel Limited on the 13th October, 1964. The Project assignment is the basis on which the Soviet design organisation 'Gipromez' will prepare the detailed project report.

An Indo-USSR Agreement was signed on the 25th January, 1965, between the Government of India and the Government of the USSR for co-operation in the construction of an integrated iron and steel works at Bokaro.

The Agreement provides for the construction of a modern steel works at Bokaro, with a capacity of 1.5 to 2 million tonnes with provision for expansion to 4 million tonnes.

The Government of the USSR are extending a credit up to 190 million roubles (about Rs. 100.5 crores) for the purpose of meeting the foreign exchange cost of the plant. The credit has been extended on terms and conditions similar to those made available for Bhilai. It bears an interest of 2.5 per cent and is repayable in twelve years.

The Agreement envisages that Bokaro, like Bhilai, will be Indian built, with such assistance of Soviet specialists as the Indian organisations may require for the construction, erection and commissioning of the plant. It also envisages that the Soviet organisations will assist in the training of Indian specialists and workers both in the USSR and in India.

The Agreement further provides that the Indian and the Soviet sides will promote the maximum participation of Indian organisations in the designing of the works, and in the supply of equipment and materials. It is expected that compared to Bhilai, Bokaro will use a larger share of Indian equipment. Both the Ranchi plant and other Indian plants like the Heavy Electricals are expected to contribute significantly to the construction of Bokaro. While the design and construction of facilities outside the works will be entirely an Indian responsibility, the Indian organisations will participate in the design and drawing work for a number of units within the plant. The exact scope is to be determined after the detailed project report is ready.

According to the Agreement the Soviet organisations are to prepare within nine months a detailed project report for the construction of a 4 million tonne plant at Bokaro.

Bokaro plant will produce hot and cold rolled strip and sheet and galvanised sheets. These are products in which there is acute shortage today. The mill complex consists of a 1250 mm Slabbing Mill, capable of rolling ingots over 30 tonnes and 2000 mm wide Continuous Hot and Cold Rolling Mills. Steel is to be made by the basic oxygen converter process. Iron is to be made in 2000 cu.m. blast furnaces which will be among the largest in Asia. It is also envisaged that the plant will incorporate the latest technological developments in steel production and a large-scale use of automation.

The Agreement also stipulates that the Soviet organisations are to supply such equipment as is not available in India during the period 1966 to 1969. The commissioning of the plant early in 1970 will contribute in a significant manner towards meeting the capacity target of 16.5 million tonnes set for the steel industry in the Fourth Plan period.

A contract was signed on 6th February, 1965 by the representatives of Bokaro Steel Limited and "V/O Tjazhpromexport" for the designing work in connection with Bokaro Steel Plant at a negotiated price of Rs. 66 million.

Meanwhile, action to progress Bokaro is being pursued. Orders worth Rs. 13 million for earthmoving equipment have been placed with the USSR in connection with the preliminary site reclamation work. Land acquisition is proceeding smoothly. About 12,500 acres of land will have been acquired by February, 1965. Enabling works like survey and investigations are under way. The construction of the township, provision of water and electric supply facilities and railway siding have been taken up. Construction of a 50 roomed hostel, 300 temporary quarters, 50 blocks of labour hutments etc. are nearing completion. Orders have been placed with the contractors for construction of 1,000 permanent houses. For the construction of the Garga dam which will supply water for construction and meet the requirements of the township, tenders are being invited by Bokaro Steel Limited. It is proposed to build a dam at Fenughat with a capacity to supply 900 cusecs of waters to meet Bokaro's operational requirements. The dam will be built by the Bihar Government out of loan assistance from the Centre. According to present estimates, the dam would be completed by 1970-71, but sufficient water (about 100 cusecs) would be available by the time the plant is ready for operation.

The construction of the plant will be partly entrusted to a new Company set up in the public sector by the name of the Hindustan Steelworks Construction Limited.

#### MYSORE IRON AND STEEL LIMITED

*Steel Expansion Scheme.*—The erection of machinery to increase the capacity for steel ingot production from 45,000 to 1,00,000 tonnes has been almost completed. The first unit in the programme was commissioned on 22-1-65. The entire expansion programme is expected to be completed very shortly.

*Alloy Steel Conversion.*—In connection with the programme to switch over production to alloy and special steels, an agreement for a loan of DM 60 million (Rs. 71.42 million) from the West German Government to meet the Foreign Exchange cost of equipment was signed in October, 1964. Orders for a major portion of plant and equipment have been placed. For the balance, tenders have been invited. The conversion is likely to be completed by 1967-68.

*Expansion of Pig Iron making capacity.*—To correct the iron imbalance that would arise after Mysore Alloy steel production gets under way, the Government have approved a substantial expansion scheme raising capacity by about 1,20,000 tonnes of pig iron per annum. The German Inter-Ministerial Committee for Capital Aid has accepted this project for credit financing and has also authorised the 'Kreditanstalt' to enter into a direct loan agreement with Mysore. The plant is taking necessary steps in this regard.

## STEEL INDUSTRY IN PRIVATE SECTOR

*Tata Iron & Steel Company Limited*—The Company has achieved the rated production of 1.5 million tonnes of saleable steel. They submitted certain proposals to Government for the import of balancing equipment and facilities to enable them to maintain this rate of production. These proposals were approved by Government.

*Indian Iron & Steel Company Limited*—The Indian Iron & Steel Company Limited submitted proposals for steel expansion aimed at increasing the production of steel ingots from 1 million tonnes to 1.3 million ingot tonnes per annum in the first phase. The scheme has been approved by Government, and Indian Iron & Steel Company have been permitted to approach the World Bank for arranging a loan to cover the foreign exchange cost.

*Pig Iron.*—In order to bridge the gap between demand and supply of foundry grade pig iron, the Government have approved so far a total capacity of about 2.50 million tonnes in the private sector. Some of the earlier licences have not fructified yet. Since some of the other applicants have been granted letters of intent comparatively recently, it is expected that the bulk of the capacity will bear fruit only during the Fourth Plan Period.

*Wire.*—A total capacity of 3,02,782 tonnes was licensed under the Industries Act for the manufacture of wires of all types. Out of this a capacity of 14,076 tonnes has been revoked as these units did not register satisfactory progress. The effective licensed capacity is therefore 2,88,706 tonnes of which actually 2,05,300 tonnes has been installed. This will meet the requirements of mild steel wire as well as special wires like tyre-bead, electrode-core type, alloy steel and special quality wires.

Besides, units which do not attract the provisions of the Industries Act have been sanctioned under the Steel (Control) Order. These medium-sized units account for a total capacity of 86,740 tonnes.

Consequent upon the relaxation of the provisions of the Steel (Control) Order in April, 1960 small wire-drawing units can be set up from indigenously secured plant and raw materials without any permission from the Iron and Steel Controller. Such units have come up in different States and by and large account for a capacity of about 1,50,000 tonnes.

Taking into consideration the capacity under the above categories it is felt that a capacity matching the estimated demand of 5,00,000 tonnes for the Third Plan has already been licensed/approved. Planning for the Fourth Plan is being considered and the tentative estimates of demand are of the order of 9,00,000 tonnes of wires of all types.

*Ingots/Billets.*—In view of the shortage of billets experienced by the re-rolling mills, it was envisaged that about 2,00,000 tonnes of steel ingots/billets for the industry should be provided by small electric-furnaces. A:



capacity of about 70,000 tonnes is already in existence. By the end of March, 1965 with the commissioning of some more new units a further capacity of about 20,000 tonnes would be in production. A capacity of about 90,000 tonnes which has already been cleared for Capital Goods licensing is also likely to come up by the end of the Third Plan. However, keeping in view the need for licensing to meet the Fourth Plan requirement and the slow progress of the smaller furnaces sanctioned earlier, three units wishing to adopt the latest Continuous casting processes with an annual capacity of 40,000 tonnes each were issued letters of intent during 1963-64 in the northern, western and eastern regions. The scheme for the eastern region has been given up by the party licensed. The others have been cleared in principle from the import angle. In addition, a letter of intent has also been granted for a Concast unit with an annual capacity of 1,00,000 tonnes to be put up in the State Sector in Madras. Besides, a Unit in Bombay has been allowed to expand its ingot capacity by the adoption of the concast process to match its re-rolling capacity, which is handicapped due to shortage of billets.

It was felt that before undertaking further licensing for the Fourth Plan requirements of ingots/billets the position should be reviewed so that more realistic estimates of demand would be available. The work has been undertaken by an Inter-Ministerial Committee, and its findings are expected to be available shortly.

*Re-rolling Industry.*—The estimated requirements of re-rolled sections at the end of the Third Plan are about two million tonnes. Keeping in view the capacity already in existence, it was considered that the scope for further licensing was very limited. Also taking into account the restricted availability of billets, a capacity of about 1,50,000 tonnes was sanctioned during 1961-62 in regions which were underserved. Most of these units are now in production and those which remain are expected to be commissioned shortly. Shortage of billets has necessitated the continuance of a ban on further licensing of rerolling capacity both in the medium and the small-scale sectors. The relaxation permitting the setting up of small rerolling units was withdrawn in April, 1963.

The present billet entitlement of the rerolling units was fixed on the basis of their production during 1960-61 when billets were freely available. There have however been numerous representations that the basis adopted does not reflect the true capacity of the units. After careful examination, it has been decided to constitute a Technical Committee to go into the question of reassessment of capacity of re-rollers—both billet as well as scrap-based—and also other problems relating to the industry. The personnel of the Committee will be announced shortly.

*Tinplates.*—The demand for tinplates by the end of the Third Plan and the Fourth Plan has been estimated at 2,61,000 tonnes and 5,24,000 tonnes

per annum (including 50,000 tonnes for exports) respectively. The capacity booked so far is 4,50,000 tonnes of which 1,40,000 tonnes has been commissioned.

In addition to the capacity of 4,50,000 tonnes booked so far, a *second* 1,50,000 tonnes electrolytic line at Rourkela Steel Plant is proposed to be set up during the Fourth Plan. Therefore, in all, a capacity of 6,00,000 tonnes per annum would be set up in the private and the public sectors by the end of the Fourth Plan.

### PROSPECTS FOR THE FUTURE

The Fourth Plan development programme for iron and steel is being formulated. The capacity targets proposed for 1970-71, are 16.5 million tonnes of steel ingots with a production target of 14 to 14.5 million tonnes; 4 million tonnes of foundry grade pig iron; and 0.5 million tonnes of rolled tool, alloy and special steels.

To achieve the capacity for steel, it has been decided to expand the existing steelworks—both in the public and private sectors to the extent feasible. It is considered that from a total capacity of 8.9 million tonnes in the Third Plan period, they may be expanded to a total capacity of 13.5 million tonnes in the 4th Plan period. To meet the balance of the requirements it is proposed to set up at least one new steelworks in addition to Bokaro. Depending on the availability of resources, one of the new steelworks may be constructed only up to pig iron stage, and thus serve as a base for further development in steel in the Fifth Plan period. It is considered that for reasons of strategy and transport, these new steelworks should be located in areas away from the existing areas of concentration. Accordingly feasibility studies for location of new steel plants have been conducted in the Goa—Hospet and Bailadila—Visakhapatnam region. The feasibility reports on these areas as well as the detailed project report for a steel plant in the Neyveli—Salem region are being evaluated in order to take decisions about setting up the new steelworks.

Considering that the present capacity for production of foundry grade pig iron is of the order of 1.2 million tonnes, additional capacity of 1.8 million tonnes would have to be created to achieve the target of 4 million tonnes. It is proposed to achieve the target by licensing more capacity in the private sector and by setting up a few blast furnace complexes in different regions of the country. Feasibility studies have been commissioned for deciding locations for these furnaces. Possibilities of improved preparation of raw materials and introduction of technical improvements to increase production from the blast furnaces are also being studied.

The capacity for production of tool, alloy and special steel by the end of the Third Plan period is expected to be 3,42,000 tonnes. To achieve

the 4th Plan target for special steel, it would therefore be necessary to create additional capacity of 1,58,000 tonnes. The possibilities of expansion of the Alloy & Steel Project, Durgapur, and licensing of additional capacity in the private sector, are being studied in this connection. The requirement of raw materials (ferro-alloys) for the production programme for special steel is also being examined.

In the development programme for steel, efforts would be made to meet the requirements of plants and equipments from indigenous sources to the maximum extent possible.