E. C. No. 660

ESTIMATES COMMITTEE
(1969-70)

(FOURTH LOK SABHA)

HUNDRED AND TWENTY-SEVENTH REPORT

MINISTRY OF PETROLEUM AND CHEMICALS
AND
MINES & METALS
(DEPARTMENT OF MINES & METALS)
INDIAN BUREAU OF MINES

LOK SABHA SECRETARIAT
NEW DELHI

April, 1970/*Vaisakha*, 1892 (*Saka*)

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CORRIGENDA

Hundred and Twenty-seventh Report of Estimates Committee on Indian Bureau of Mines.

Page 14, (i) line 5: for '82' read '81'
(ii) line 10: for '566' read '565'

Page 55, line 23: for 'will' read 'with'

Page 61, line 1: for 'to' read 'the'

Page 63, line 18: for 'stopping' read 'stoping'

Page 64, line 30: for 'propect' read 'project'

Page 75, last line: for 'pre-~~requisite~~' read 'pre-requisite'

Page 77, line 3 from bottom: after 'the' insert 'data furnished by the mine-owners to the Indian Bureau of'

Page 82, Heading: add at the end '(As in February, 1970)'

Page 83, for Sl. Nos. '6' and '7' occurring for the first time read '5' and '6' respectively.

Page 103, heading: for 'Appendix VII' read 'Appendix VI'

Page 107, line 3: for 'planning' read 'planned'.

CONTENTS

576 (D) LS—1.

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(1969-70)

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Shri T. N. Dhar—*Under Secretary.*

INTRODUCTION

I, the Chairman, Estimates Committee, having been authorised by the Committee to submit the Report on their behalf, present this Hundred and Twenty-seventh Report on the Ministry of Petroleum and Chemicals and Mines and Metals (Department of Mines and Metals)—Indian Bureau of Mines.

2. The Committee took evidence of the representatives of the Ministry of Petroleum and Chemicals and Mines and Metals (Department of Mines and Metals) on the 29th January, 1970. The Committee wish to express their thanks to the Secretary of the Department of Mines and Metals, and other officers of the Department for placing before them the material and information they wanted in connection with the examination of the estimates.

3. They also wish to express their thanks to Shri Umashanker Agarwal and Shri T. R. Goenka, President and Secretary respectively of the Federation of Indian Mineral Industries, New Delhi and Dr. G.G.K. Sastry and Shri P.F. Nugent, President and Secretary respectively of the Indian Mining Association, Calcutta for giving evidence and making valuable suggestions to the Committee.

4. The Committee also wish to thank Messrs. National Coal Development Corporation, Ltd., Ranchi, Fertilisers Corporation of India, (Sindhri Unit), Jodhpur, Singareni Collieries Co., Ltd., Bhadrachelam Road Station, Andhra Pradesh, Hindustan Steel Ltd. Ranchi and Pyrites, Phosphates and Chemicals Limited, Dehri-on-Sone, Shahabad, Bihar, for furnishing Memoranda to the Committee.

5. The Report was considered and adopted by the Committee on the 20th and 21st April, 1970.

6. A summary of conclusions|recommendations contained in the Reports is appended (Appendix VI).

7. A statement showing the analysis of recommendations contained in the Report is also appended to the Report (Appendix VII).

NEW DELHI;
April 27, 1970.
Vaisakha 7, 1892 (Saka).

M. THIRUMALA RAO,
Chairman,
Estimates Committee.

CHAPTER I

INTRODUCTORY

A. Historical Background

Minerals have played an increasing role in the service of mankind ever since the dawn of civilization. The technological advancements have brought gradually into use a number of minerals which were hitherto thrown as waste. The minerals have thus become the life-blood of a nation. It is difficult to think of any advancement in a country without minerals as they are the basic requirement of all the industries whether it may be for the manufacturing of the needle or the aircrafts.

1.2. India has launched upon successive Five Year Plans. Every year a number of mineral-based industries are being set up. Big industries require uninterrupted supply of raw materials of specified quality in bulk.

1.3. On the 10th and 13th January, 1947 a Mineral Policy Conference was held in New Delhi under the aegis of the then Department of Works, Mines and Power to consider the lines on which a National Mineral Policy should be formulated and pursued. Representatives of the Provinces, States, Trade, Commerce, Labour and Mining interests participated in the Conference. There was a unanimous agreement in the Conference about the formulation of such a policy, and for Central Co-ordination and planned development of the country's mineral resources and the establishment of Central machinery for the purpose. To achieve these objects the Government of India decided to constitute a competent technical organization to work in close liaison with the various Ministries and Departments of the Central Government, functioning primarily as an advisory body, and as a result, the Indian Bureau of Mines was set up in March, 1948.

1.4. On the 1st March, 1948, the Indian Bureau of Mines had three officers, including the Director. The first assignment it undertook was the preparation of the Mines and Minerals (Regulation and Development) Act, 1948, the Mineral Concession Rules, 1949, and the Petroleum Concession Rules, 1949. In the beginning of 1950, the Bureau had a strength of 4 officers and 51 members of staff only.

1.5. With the enactment of the Act and Rules referred to above, the Bureau's sphere of work was enlarged considerably. Apart from its purely advisory nature of work, it became necessary for the Bureau to function henceforth as a field and research organization also, to attend to the development and conservation of mineral wealth of the country. The Bureau was thus entrusted with the following functions vide the then Ministry of Works, Mines and Power Resolution No. MII-150(125) dated 19-8-1950:—

(i) Advising the Central and State Governments on all matters relating to the grant of mineral concessions and also on the exploration, exploitation and utilisation of the country's mineral resources;

(ii) Periodic inspection of mines, for effecting the systematic development of mineral deposits, elimination of avoidable waste, and the promotion of improved methods of mining;

(iii) Conducting research on beneficiation of low grade ores and industrial utilisation of minerals and mineral products as well as on mining problems, in collaboration with other research organisations;

(iv) Conducting analysis of ores and minerals in connection with the work of the Bureau, and also for the public as far as time and circumstances permit;

(v) Collection and publication of statistics relating to the mineral production in India, mineral stocks, exports, local consumption, etc., and collection and maintenance of information regarding world mineral production, world mineral trade, foreign mining rules, and other related matters;

(vi) Publication of Bulletins and monographs on investigations relating to mining and the mineral industry;

(vii) Assisting the mineral trade in the marketing of minerals; and

(viii) Undertaking any other function entrusted to the Bureau by the Central Government from time to time.

A New Assignment

1.6. Another organisation in the field is the Geological Survey of India, which has been set up in 1851. At the time the Indian Bureau

of Mines was set up Geological Survey of India was responsible for geological mapping and exploratory drilling calculated to delineate mineralised zones in the country. In 1953, the function "Conducting drilling and other prospecting operations to prove and estimate the workable reserves in mineral deposits and to conduct test mining independently or in conjunction with other Government or private organisations" was entrusted to the Bureau *vide* Notification No. MII-150(221) dated 26|27th February, 1953 and eventually the Drilling and Mining sectors of the Geological Survey of India were transferred to the Indian Bureau of Mines.

1.7. During the period 1948 to 1953 the sanctioned strength of the personnel in the Bureau increased to 32 officers and 114 staff members. Consequent to the Government's decision to set up steel plants under the Public Sector at Bhilai in Madhya Pradesh and Rourkela in Orissa raw materials were required to be found in neighbouring areas. The Bureau was called upon to take up this job. With a view to meet the increased quantum of work and responsibilities an interim expansion scheme was sanctioned in June, 1955. This raised the strength of the Bureau to 117 officers and 1074 members of the staff. This was another turning point in the history of the working of the Indian Bureau of Mines.

1.8. In 1955, it was, however, clarified that the Bureau would conduct drilling and other prospecting operations to prove and estimate workable reserves in Mineral deposits only in areas indicated by Central Government. Accordingly, the Bureau's function mentioned at Serial No. (iii) of the Resolution dated the 26|27th February, 1953 was revised *vide* the then Ministry of Natural Resources and Scientific Research Notifiaction No. 150(167)|55-MIII, dated 24|26th September, 1955 as follows:—

> "Conducting drilling and other prospecting operations to prove and estimate the workable reserves in mineral deposits in areas indicated by the Central Government as areas in which operations preliminary to the opening of mines may be conducted and to conduct test mining independently or in conjunction with other Governments or private organisations in such areas.

1.9. Pursuant to the new role assigned to it, the Bureau carried out detailed proving operations in a number of deposits of iron ore, coal, copper ore, limestone, dolomite, magnesite, pyrites, rock salt etc. Examination of mines for studying their operational details

and identifying their problems was carried out simultaneously. Beneficiation of low-grade or sub-marginal ores from various mines and from the prospects under exploration was taken up in the laboratory.

Further Rationalisation of Functions

1.10. During the Second Five Year Plan period the Bureau's work was further rationalised with distribution of functions among the various technical and other divisions, namely:

1. Mines Control and Conservation of Minerals Division.
2. Mineral Exploration Division, including Prospecting, Drilling, Mining and Workshop Division.
3. Ore Dressing Division.
4. Technical Co-ordination and Administration Division, including Stores Division.

1.11. In order to achieve effective control over unsystematic mining which was prevalent then and to make available quick advice| guidance for mine development, four Regional Offices were started at Calcutta, Ajmer, Nagpur and Bangalore under the Mines Control and Conservation of Minerals Division. The exploration work and data processing and publication work were controlled from the Central Office and the Regional Offices were useful for the work connected with their respective jurisdictions. The ore dressing and mineral beneficiation work was carried out in the only laboratory set up at Headquarters. The sanctioned strength of the Bureau in the Third Five Year Plan period was 392 officers and 2,744 staff members, including technical and class IV staff. This enabled the Indian Bureau of Mines to improve its activity in advising the Government on regional mineral development for indigenous industries and export, suggesting development of specific deposit or mine for reducing the import bill on minerals and metals; conducting a number of detailed explorations on a variety of mineral|ores *e.g.*, copper-ore, lead-zinc ore, gold, magnesite, iron ore, lignite, wolframite, limestone etc.; carrying out mineral beneficiation tests on bench scale and pilot plant scale for leaner grade material available in the prospects and mines.

B. Separation of Exploration Division

1.12. It has been stated by the Ministry that past experience had shown that there was some over-lapping of functions of these two organisations and the operations of the Geological Survey of India

and the detailed proving operations of the Indian Bureau of Mines over the same areas entailed some avoidable duplication of work. The Government considered the question of eliminating such overlapping with a view to rationalise the functions of these two organisations in the best possible manner. It was considered necessary that to achieve most effective results within the minimum time possible, the organisation, which did the geological mapping and delineation of mineralised zones, should also continue the investigations and carry out detailed proving operations so as to ensure continuity of background knowledge, expertise and operation control. After careful consideration of all these matters and in consultation with the Director General, Geological Survey of India and Director, Indian Bureau of Mines, the Government decided to transfer the following from the Indian Bureau of Mines to the administrative control of the Geological Survey of India with effect from the 1st January, 1966:—

(i) All the posts and personnel in the Prospecting, Drilling and Mining Divisions of the Bureau.

(ii) The Workshop and Mineral Technology and Physical Analysis Laboratories along with the posts in these laboratories.

(iii) The posts in the common cadres in the Administration and Accounting Divisions as have been divided on the basis of actual work load. The personnel holding the posts to be allocated to the Geological Survey of India and the Indian Bureau of Mines on the basis of the options indicated by them, the principal guide-line being exigency of public service.

(iv) The equipment, vehicles and stores according to the distribution made on the basis of equipment etc. being required by the organisations.

C. Reorganisation of Indian Bureau of Mines

1.13. Subsequent to the separation of the Exploration Division of the Bureau and merger thereof with the Geological Survey of India it was felt that the functions of the Bureau as they stood at that time were not adequate for achieving the objectives of conservation of minerals and development of mineral wealth of the country consistent with the increasing requirements of industry and export trade. The mining industry, it was felt, was in need of technical assistance and consultancy for scientific development of mines and installation

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(iv) The equipment, vehicles and stores according to the distribution made on the basis of equipment etc. being required by the organisations.

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of modern mining equipment and introduction of modern mining techniques and practices. Important problems of beneficiation and economic utilisation of large deposits of low grade ores also required to be tackled.

1.14. In the context of these requirements a technical committee was set up under the chairmanship of Shri B. C. Mookherjee vide Ministry of Mines and Metals Resolution dated the 22nd July, 1966 to review the organisation and functions of the Indian Bureau of Mines. The assignment of the Committee may be briefly summarised in their own words as under:

(a) to make a critical study of the present functions of Indian Bureau of Mines with reference to their sufficiency or, as the case may be, redundancy and also with reference to the over-lapping, if any, between the Bureau's work and the functions assigned to other sister organisations like Geological Survey of India, Inspectorate of Mines, National Laboratories, etc.;

(b) to review the Bureau's up-to-date performance as well as its organisational structure;

(c) to locate defects, shortfalls and anomalies (i) in the enumeration of its functions, (ii) in the actual performance of its currently listed duties, (iii) in its organisational structure, keeping in view Government's express desire that in future the Bureau should serve as an efficient instrument of public service; and finally

(d) to make recommendations for the removal of the shortcomings and deficiencies found by the Committee in order that the Bureau may in future "Provide systematic guidance, advice and consultancy to the mining industry".

1.15. The Committee had consultations with a large number of mining associations and principal producers of minerals both public and private. They had meetings with important personalities in the field. They also made studies in the working of similar organisations in other countries and had on the spot visits to the sister organisations such as Geological Survey of India and Central Mining Research Institute. This Committee also had the advantage of participation in most of their meetings by Mr. Charles W. Sweetwood, Mineral Attache to the U.S. Embassy.

1.16. With this background of their work and studies the Committee on Reorganisation of Indian Bureau of Mines suggested an overhaul of this organisation. The Committee submitted its report

in 1967. The Government accepted most of the recommendations of the Committee, except particularly those concerning bringing back the exploration Wing (which has been merged with the Geological Survey of India in 1966) and creation of a Mines Board. As a result, the functions of the Bureau have been redefined in June, 1968 as under:—

(i) Providing 'Technical Consultancy' services on payment of fair and reasonable charges to the mining industry, both in the private and public sectors, in connection with appraisal and exploitation of mineral deposits, planning of designs of mines, selection and design of suitable mining equipment, research and preparation of economic flow-sheets for beneficiation and concentration of minerals;

(ii) Well-planned selected inspection of mines for effecting systematic development of mineral deposits, elimination of avoidable waste, promotion of improved methods of mining and reduction of mining costs;

(iii) Conducting research in special mining problems in collaboration with Central Mining Research Station and other research institutions;

(iv) Conducting research on beneficiation of low grade ores and determinative separation of complex ores and the industrial utilisation of minerals and mineral products in collaboration with National Metallurgical Laboratory and other research organisations.

(v) Conducting analysis of ores and minerals in connection with the work of the Bureau, and also for the Mining Industry (in both private and public sectors) on payment of fair charges;

(vi) Collection and publication of statistics relating to mineral production in India, mineral stocks, exports, local consumption etc., and collection and maintenance of information regarding world mineral production, world mineral trade, foreign mining rules and other related matters;

(vii) Publication of bulletins and monographs on investigations relating to mining and the mineral industry; preparation of mineral maps leading to a complete inventory of mineral resources of India; and

(viii) Advising the Central and State Governments on any matter connected with the mineral industry, particularly on the exploitation and utilisation of the country's mineral reserves.

1.17. The Committee note tha tthe functions of the Indian Bureau of Mines, as they now stand, have been evolved through periodic reviews. The Committee note in particular the recommendations made by the Committee on Reorganisation of the Indian Bureau of Mines 1966-67 and feel that with the implementation of the major recommendations of that Committee the activities of the Bureau have been reoriented in the right direction.

1.18. The Committee also note that with a view to eliminate over-lapping in the functions of the Geological Survey of India and the Indian Bureau of Mines, the divisions which had been appended to the latter in 1953 were transferred back to the former in 1966.

1.19. The Committee regret to note that it required Government 13 years to realise the existence of over-lapping of functions between the two organisations. . .. ..

D. Agency for Exploratory Drilling

1.20. The Committee on Reorganisation of the Indian Bureau of Mines recommended a Government owned drilling company in the following words:—

> "The idea of over-lapping inherent in "exploration" being a common feature throughout the business of finding and winning minerals is perhaps largely due to the mistaken notion that any agency which is responsible for exploration at any stage must necessarily own and maintain a large number of drilling rigs and other mining equipment. This may be partially true in the conditions obtaining in India today but is not, so to say, the essence of the matter and is certainly not the case in industrially advanced countries where the normal practice is for any exploring party to have all its drilling and mining done through hired contractors. We recommend that this very sensible practice be encouraged and developed in India also particularly as the present cost of drilling by Government agencies are, due to a variety of reasons which it is unnecessary for our present purposes to elaborate or discuss, abnormally high. We realise that this change-over cannot be brought about over-night and will take time; and till reliable private contractors able to offer competitive bids are available in sufficient number we would advise, purely as an interim measure, the formation of a Government-owned Drilling Company and the transfer to it of all drilling rigs and equipment. This agency, which must of

course be run on commercial lines, can then serve all the three parties concerned with different stages of exploration exploitation including public sector corporations like the NMDC."

1.21. An extract from a note prepared in the Planning Commission for consideration in a meeting held on 23.7.1969 by the Minister of Petroleum and Chemicals and Mines and Metals with the Member (Science) is reproduced below:—

"*** Recently it has been felt that there has been duplication in work sometimes resulting in unnecessary infructuous expenditure for the same item of work and what is worse is that sometimes the exploitation agencies doubt the results of exploration carried out earlier by other agencies. With a view to avoid duplication of exploration work and minimise delays the Government had earlier taken the decision to amalgamate the 'Exploration Wing' of the erstwhile IBM with GSI and this was given effect from January, 1966. However, it is observed that yet the tempo of exploration instead of increasing, for the last few years, as anticipated from this amalgamation has actually tended to come to a halt. The same prospects which were earlier under exploration under the IBM are being continued with less vigour and speed except for a spurt during the first few months. No new important areas have been taken up since 1966 for detailed exploration by the major agencies. There are also proposals to wind up the Exploration Wing of the N.C.D.C., Cement Corporation of India, P.P.C., etc. As a result the time has come when it is felt that a new approach is required to give a stimulus to the exploration activity during the Fourth Plan for Mineral Development Programmes. It is also known that the G.S.I. has become so unwieldy and big with the amalgamation of the Exploration Wing of the I.B.M. that it cannot play a significant role to expedite the mineral exploration programme and concentrate on its normal functions. ***As such, it is felt that a new organisation which may be called "Department or Corporation of Mineral Exploration" may be created so that all the exploration work can be centralised in one organisation which will be responsible for carrying out detailed exploration for all minerals, other than atomic minerals and oil and gas."

1.22. When the attention of the representative of the Ministry was drawn to the above views, he stated during evidence as follows:—

"Very often, the line of demarcation at which the Geological Survey should stop their exploration work and pass it on to the commercial exploiting agency is a matter of some controversy. The reason is, on the one hand, with due regard to the professional reputation, my friends in the Geological Survey would like to drill as much as possible, 200 holes or even 500 holes and make sure of the results more accurately and, on the other hand, the point is that the cost of all that drilling is finally put on to the commercial agency which will take up exploitation work. Supposing the overall drilling cost comes to a crore of rupees—in many cases, the expenditure is that much—that will be the first charge on the commercial agency. Very often, the commercial agency later on comes up and says, "All that is not neecssary for my actual purpose. All I want is a broad idea as to in an area of so many kilometres there is so much reserve. And I would have done a little bit of drilling and started my work. The proving of resources would have gone side by side with exploitation.

Now, this is always a matter of argument. This is a point on which the Planning Commission was also exercised. We are also trying to find out an answer to this as to whether, firstly, the cost of this drilling could not be minimised; secondly, at what point you should stop drilling and pass on the work to the exploitation agency and, thirdly, how the expenditure incurred upto that stage should be divided partly as development expenditure and partly as commercial take-over. These are all the points that are being looked into separately. It is against this background that this note was prepared in the Planning Commission."

1.23. It has also been stated by the representative of the Ministry during evidence that the question of setting up a separate organisation for carrying out drilling and exploratory mining was still under consideration of the Government.

1.24. The Committee note that the subject of creation of a new organisation responsible for carrying out drilling and exploratory mining for minerals other than atomic minerals, oil and gas is under consideration of Government.

1.25. The note prepared in Planning Commission lays stress on increasing the tempo of exploration. The representative of the Ministry, has, however, stated that the two main difficulties being felt with the existing arrangement are the cost of drilling and the point at which the exploring agency should stop drilling and pass on the job to the exploiting agency. The Committee do not think that these difficulties could be solved simply by creating a new agency. The erstwhile Exploratory Wing of the Indian Bureau of Mines was transferred back to Geological Survey of India in 1966 only to avoid duplication. In case, however, it is desired to divest the Geological Survey of India of its drilling functions, the Committee fear that such a step would reduce Geological Survey of India to a mere academic institution. It need hardly be pointed out that a Government-owned drilling company recommended by the Committee on Reorganisation was only as an interim measure pending development of private-owned drilling agencies.

1.26. The Committee, therefore, are of the opinion that the best course for the Government would be to constitute an efficient, cost conscious and economically viable unit within the Geological Survey of India who could take up drilling work in a business-like manner.

CHAPTER II

ORGANISATIONAL SET-UP

A. Set-up of the Bureau

2.1. The Indian Bureau of Mines is at present organised into three Technical Divisions and an Administrative Division. The three Technical Divisions are the Mines Control & Conservation of Minerals Division, Ore Dressing Divisions and Mineral Economics Division. The Administrative Division is named as Administration and Accounts Division. Headquarters of the Indian Bureau of Mines and all the three technical Divisions are located at Nagpur. There are at present 6 regional offices of the Bureau located at Calcutta, Ajmer, Jammu, Nagpur, Bangalore and Goa. It is only the Mines Control and Conservation of Minerals Division which carries out its functions through the regional offices. These regional offices are under the charge of the Regional Controllers of Mines except Goa and Jammu, which are looked after by a Deputy Controller of Mines and an Assistant Controller of Mines respectively.

2.2. A chart showing the existing organisational set up of the Bureau is given in Appendix I.

2.3. The jurisdiction and number of mines under the regional offices are as under:—

Office	Jurisdiction	No. of Mines (1967)	
		Total	Working
1. Calcutta .	Whole of Assam, NEFA W. Bengal, Bihar and Orissa.	1382	684
2. Ajmer . .	Whole of Rajasthan, Gujarat and parts of Madhya Pradesh and Uttar Pradesh.	1085	501
3. Jammu . .	Whole of Jammu & Kashmir, Himachal Pradesh, Punjab, Haryana, Delhi & Part of U.P.	105	75
4. Nagpur . .	Whole of Maharashtra, Andhra Pradesh, major part of Madhya Pradesh, and part of Uttar Pradesh.	1219	725
5. Bangalore .	Whole of Mysore, Madras and Kerala States.	889	553
6. Goa . .	Whole of Goa	800	212
	TOTAL . . .	5,480	2,750

Distribution of functions and staff allocated to various Divisions

(1) *Mines Control and Conservation of Minerals Division*

2.4. The activities of this Division are closely related to and centred round the Mineral Conservation and Development Rules, 1958 which have been framed to regulate scientific and systematic development of mines and mineral deposits in order to maximise economic production of minerals to meet the demands of indigenous industries and export. The main tasks allocated to this division are (i) Inspection of Mines (ii) rendering advice to Central and State Governments on the exploration and exploitation of mineral resources and (iii) Research on mining problems.

(2) *Mineral Economics Division*

2.5. The main occupation of this Division has been (a) rendering advice to Government on grant of mineral concessions and also in such matters as amendment/promulgation of rules and regulations pertaining to mining industry; (b) Collection of mineral statistics relating to production, stocks etc. both in domestic and international fields; (c) publication of statistics, bulletins and monographs; and (d) assisting the Industry in marketing of minerals.

(3) *Ore Dressing Division*

2.6. This Division is responsible for treating the ores/minerals of high grades to reduce or remove the objectionable constituents thereof and for conducting research on the beneficiation of low grade ores/minerals.

(4) *Administration and Accounts Division*

2.7. The items of work handled by his Division are all establishment matters relating to officers of various categories of staff including recruitment, posting, office accommodation, welfare, canteen, accident, Workmen's Compensation Act payments, vigilance and O.&M. work of the Bureau; work relating to the Budget of the Bureau, T.A. claims of the officers and staff, receipt and disbursement of cash and handling of stores of the Bureau.

2.8. Figures regarding the number of posts sanctioned as on 1st September, 1969 in various gazetted and non-gazetted categories in

various Divisions of the Bureau and the number of those among them which were lying vacant, are given below:—

Sl. No.	Nature of Post	Total Sanctioned	Filled up
1.	Officers—Gazetted	118	82
2.	Non-gazetted	3	3
3.	Technical (Class III)	252	178
4.	Non-technical (Class III)	179	158
5.	Class IV	156	145
	TOTAL .	708	566

2.9. Asked why as many as 142 posts remained unfilled it has been stated in reply that in the case of gazetted posts the delay was on account of the time taken in the compliance of various formalities in the procedure prescribed for recruitment through the Union Public Service Commission and Departmental Promotion Committee.

2.10. Delay in filling up the non-gazetted posts has been stated to be mainly in receipt of nominations from employment exchanges. This delay had been accentuated because of the need to make a reference to Central Surplus Cell for obtaining clearance before any recruitment could be effected. Besides, a large number of posts of Technical Assistants for Ore Dressing Division could not be filled up due to lack of experienced personnel as sponsored by employment exchanges.

Statement showing the dates of vacancies of various posts as on 1-9-1969 is given below:—

Designation and Scale of Pay	No. of posts	Date of vacancy
1	2	3
1. Controller of Mines (Rs. 1600—1800)	2	1 from 25-9-68 1 from 2-1-69
2. Deputy Controller of Mines (Rs. 900—1400)	5	1 from 31-1-67 2 from 1-3-69 1 from 14-4-69 1 from 30-8-69

1	2	3
3. Asstt. Controller of Mines (Rs. 400—950)	7	1 from 1-1-66 1 from 23-8-67 1 from 18-11-68 4 from 1-3-69
4. Suptdg. Mineral Economist (Rs. 1300—1600)	1	18-10-69
5. Asstt. Mineral Economist (Int.) (Rs. 400—950)	1	4-12-68
6. Senior Administrative Officer (Rs. 700—1150)	1	1-3-69
7. Dy. Ore Dressing Officer (700—1250)	1	30-8-69
8. Asstt. Ore Dressing Officer (Rs. 400—950)	2	1 from 16-5-68 1 from 22-8-69
9. Chemist (Rs. 400—950)	2	18-11-68
10. Assistant Mining Engineer (Rs. 350—900)	2	18-11-68
11. Mineral Officer (Int.) (Rs. 350—900)	2	1-3-69
12. Mineral Officer (Stat.) (Rs. 350—900)	3	1-3-69
13. Publication Officer (Rs. 350—800)	1	1-3-69
14. Senior Mining Geologist (Rs. 700—1250)	1	30-8-69
15. Junior Mining Geologist (Rs. 400—950)	6	1 from 18-11-68 1 from 4-12-68 1 from 5-12-68 1 from 6-12-68 1 from 9-12-68 1 from 1-3-69
16. Class III (Technical)	17 26 31	October, 1967 November, 1968 February, 1969
17. Class III (Non-technical)	4 17	November, 1968 February, 1969
18. Class IV (Technical)	5 3	November, 1968 February, 1969
19. Class IV (Non-technical)	3	February, 1969

2.11. As regards cases in which the posts were lying vacant since 1966 and 1967 the representative of the Ministry stated during evidence that it was largely due to difficulties in getting the Departmental Promotion Committee into position to look into this or the difficulties in getting recruitment through Union Public Service Commission. He explained that many of these delays were not inside the Ministry because the recruitment is done by the agencies outside this Department. The represntative of the Ministry added:

> "As far as I am concerned, I shall look into this question where posts have been sanctioned, but not filled over a period of three or six months or more and see that where posts have been sanctioned we do our best to get them cleared."

A statement furnished by the Ministry showing the position of gazetted posts required to be filled through the Union Public Service Commission and those to be filled through Departmental Promotion Committee is placed at Appendix II. Statement showing the dates when references were made to the U.P.S.C. and the Central Surplus Cell may be seen at Appendix III.

2.12 The Committee note that while in many cases the reasons for filling up these posts are stated to be beyond the purview of the Department of Mines and Metals, in some cases there has been considerable delay in the Department itself. For instance, the two posts of the Controller of Mines fell vacant on 25.9.68 and 2.1.69 and reference to the Union Public Service Commission was made only on 9.10.69. Similarly the time taken to fill up the two posts of Assistant Controller of Mines which fell vacant on 1.1.66 and 23.8.67 cannot be attributed wholly to an outside agency as the references in these cases were made to Union Public Service Commission on 19-11-68 and 20.12.68 only.

2.13. The Committee also note that no steps appear to have been taken to fill up a number of posts of the Deputy Controller of Mines. The Committee consider such delays as objectionable. Apart from generating frustration among the aspiring juniors the delay must have impeded the work of the Bureau to a great extent.

2.14. The Committee, therefore, urge that immediate steps should be taken to fill up the large number of posts lying vacant at the moment. The Committee would suggest that time limit should be fixed for making references to fill up a vacancy where a reference has to be made to the Union Public Service Commission or the Central Surplus Cell. In any case a post should not be allowed to re-

main vacant beyond three months where the Departmental Promotion Committee has to take a decision.

2.15. The Committee also note that a number of posts were lying vacant in the Bureau as clearance from the Central Surplus Cell could not be received even where a reference had been made some two years ago. As the Indian Bureau of Minies is a technical Organisation, actual implementation of various projects can be expected only when the sanction to the staff is timely and the staff sanctioned is in position. The Committee, therefore, urge that the matter of clearance from the Central Surplus Cell should be taken up at a high level and a workable solution arrived at.

Technical and Non-Technical Ratio

2.16. The strength of technical and non-technical personnel in the Department, as on 1-9-1969 was as under:—

Division	Technical	Non-Technical (including Class IV)	Total
(1) Mines Control and Conservation of Minerals Division.	174	124	298
(2) Mineral Economics Division . .	112	66	178
(3) Ore Dressing Division	80	41	121
(4) Administration, Accounts and Stores	6	87	93
(5) Controller's Office	7	11	18
	379	329	708

2.17. Budgetary ratio between the technical and non-technical categories on account of salaries and allowances was 2.6 : 1.

2.18. Budgetary ratio between the technical and administrative establishments was 9·5 : 1.

2.19. Asked if the existing percentage of non-technical personnel was not high and could not be brought down gradually the representative of the Ministry stated that this figure of 329 included class IV personnel also, like attendants, laboratory and pilot plant attendants and orderlies visiting the officers during their tours and that these personnel were quite essential.

2.20. The total sanctioned strength of personnel in the Bureau as on 1-9-69 and as proposed for the Fourth Plan period in the various categories is given in the following Table:—

Categories	As on 1-9-69	During Fourth Plan
Officers	121	269
Staff—Technical	264	551
Non-Technical	166	518
Class IV	157	412
	708	1750

2.21. The Committee are of the view that the non-technical staff in a technical organisation should be kept to the barest minimum in the interest of efficiency. They, therefore, suggest that while sanctioning posts in future for Indian Bureau of Mines, the Government should ensure that non-technical staff is recruited only when it is absolutely necessary.

B. Training

Practical Training facilities

2.22. Asked what arrangements existed in the Bureau for imparting intensive practical training to the staff, it has been stated in a written note furnished to the Committee:

> "There is no arrangement for imparting practical training through an organised Training Section. However, in-service training is given to all the new entrants in the Department. The newly recruited Officer is put as an under-study to other experienced officers of the Department whether it is for field work or laboratory or other work. After assessing the performance of the officers, he is given independent assignment for which he was recruited."

2.23. The Committee note that a new entrant is put as understudy with an experienced officer before being assigned an independent charge. The Committee are, however, surprised to note that at present no arrangement exists in the Bureau for imparting practical training to the staff through an organised training section.

2.24. The Committee, therefore, suggest that the Government should make necessary arrangements for imparting training to the staff through an organised training section.

2.25. Commenting on the type of men required for the proposed consultancy service in the Bureau the Committee on Reorganisation of Indian Bureau of Mines had recognised the importance of training in the following words:—

> "Infusion of fresh blood in the organisation in the shape of qualified men with actual field experience is as necessary as affording opportunities to existing officers of the Indian Bureau of Mines to gain field experience. The best suggestion we can make for the achievement of this objective is that some mechanism should be evolved for the free interchange of qualified personnel as between public sector corporations like the N.M.D.C. on the one hand and the I.B.M. and possibly also the G.S.I. on the other. This may be a two way traffic for the mutual benefit of both. We recognise that fresh recruitment will be necessary to supplement an available staff even after taking into account such staff as may be obtained on deputation or transfer from public sector corporations. It is essential that all new recruits must not only be chosen on merits but must also be put through intensive course of training preferably in countries where mineral development has made the maximum progress."

In reply to a question as to what means had been adopted to keep the Bureau abreast with the latest technological developments in the world in the mineral development and conservation it has been stated that the Department had no other means than taking recourse to the international publications in this regard. The importance of visiting developed countries or countries having important operating mines and taking training in specific aspects had already been thought of by the Department and the matter had been taken up with the Government.

2.26. A copy of the note prepared by the Department at the initiative of the Minister of Petroleum and Chemicals and Mines and Metals, regarding the necessity of adequate and specialised training in the mining field indicating therein the type of training required in the foreign countries is placed at Appendix IV. Main features of that scheme have been discussed in the following paragraphs with particular reference to the metal mines.

Domination of Coal Mining

2.27. One peculiar feature of the existing training facilities has been the emphasis laid on the teaching of coal mining methods and practices. This development has been the result of the dominant role played by coal in the mining industry in India and relatively larger employment opportunity it offers to the Indian mining engineers. This can be assessed from the fact that although the number of graduate mining engineers already turned out has been 1840 during 1960 to 1968 only about 200 mining engineers are actually employed in all the metalliferous mines put together.

2.28. Under the Mines Act the mining graduates|diploma holders in India must possess one or the other certificate awarded by the Directorate of Mines Safety to be eligible even for the lowest responsible post in a mine. Even to be eligible to appear in these examinations the candidates have to undergo practical training for a period of 2-3 years. Government of India have made arrangements for practical training under the Directorate of Practical Training in the Ministry of Education. The training period is 2 years in the case of graduates and 1 year in the case of diploma holders. Under the scheme the Directorate of Practical training has so far trained 1671 graduates and 1354 diploma holders. Out of 1671 graduates trained by the Directorate only 232 have been trained on the side of Metal Mines while the remaining 1439 trainees belong to the Coal Mines side. Similarly out of 1354 diploma holders only 489 have been trained on the side of Mines and Metals and the remaining 865 on the side of coal mines.

Advanced and specialised training

2.29. Besides the practical training scheme referred to above certain facilities exist for advanced and specialised training under various general and bilateral schemes under Colombo Plan in Colombo Plan countries; under T.C.M. and USAID plans in the U.S.A. and Canada; under bilateral arrangements between India and Poland and Hungary. Government of France also imparts training for Indian mining engineers. Some mining engineers are also reported to have been sent abroad by the National Productivity Council. Details regarding the number of persons so far trained under these schemes, the qualifications of the persons sent abroad for their utility after training are not available. It has been stated that informal discussions with Directorate of Practical Training indicates that the total number of persons trained so far under various schemes is between 200 and 300.

2.30. In addition to these facilities some of the Public Sector Corporations have also made arrangements for the training of their employees. For example some probation mining engineers from the N.C.D.C. were trained in the European and British Coal Mines under N.C.D.C.'s own scheme. H.S.L. also sent some mining engineers for training in the U.S.S.R. and U.S.A. Here again the exact number is stated to be not known.

Recruitments in Metalliferous Mines

2.31. It has been stated that the fresh requirements of mining engineers in the light of the targets laid down for mineral production during IV Plan by various Plan sub-groups on metal mines will be around 300. The requirement of diploma holders is considered commensurate with the restricted admissions effected recently in the institution as a sequel to the recommendations made recently by the Joint Board of Mining Engineering and Training.

2.32. The graduates likely to be available for metalliferous mining industry are also estimated to be around 300 during 1969-73. The out-turn and availability of diploma holders for metalliferous mining industry during 1969 to 1973 will also be of the same order.

2.33. It has been estimated that out of the total requirements of trainees for metalliferous mining 174 graduates and equal number of diploma holders will have to be trained for open cast mines and the remaining number, *i.e.*, 126 in each case will be required to be trained in underground mining. It has been further stated that while adequate facilities for training in open cast mining exist in India adequate facilities for underground mining do not exist in India.

2.34. Another important difficulty in imparting of requisite training in metalliferous mining is the small number of metalliferous mines in the country where any worthwhile training on the modern techniques can be arranged. Even in these mines, it is not possible to acquire training in many aspects where adequate practical training is essential. Project evaluation, design of mines, high-speed shaft sinking and installation of mineral benefication plants, are all spheres of activity in which scope for acquisition of practical training in the mines in India are rather non-existent. There is also no opportunity of acquiring practical training in many mining methods such as the various caving systems requiring and mining wide-ore bodies and very thin ore-bodies. This deficiency it has been stated can be removed only by deputing Indian mining engineers abroad to acquire practical training in the various specific items where facilities in Inida are not available.

2.35. Asked to state how many Indian Bureau of Mines officers had received training in foreign countries in modern mining methods the representative of the Ministry stated during evidence that "Six Officers have so far received training in foreign countries. So many needs are competing for the available foreign aid in this regard and that there is a number that we sponsor and a certain number is accepted in this programme."

2.36. Asked whether the Ministry had at any time formulated concrete proposal for sending personnel from India for advanced training in this particular aspect and whether at any time the Ministry had made a suggestion to the Government in this regard, the Secretary of the Ministry stated as follows:—

> "I am told that the report has just now come which seeks to devise a scheme for over all training inside the country as well, part of it is to send some selected officers abroad. We will look into that."

The representative of the Ministry stated:

> "To supplement what the Secretary was submitting, our exploiting organisations like Hindustan Copper and N.M.D.C., in addition to the Indian Bureau of Mines are deputing officers actually involved in mining of metalliferous; mines. Hindustan Copper is taking up the question of deputation of their officers to copper mines to foreign countries which are similar to Khetri and elsewhere for getting training in the metalliferous mines."

He further stated:

> "Recently, they wanted to form a programme for training of mining engineers in metalliferous mines and we have sent out enquiries both in the western countries and to socialist countries, whether we can sponsor candidates and whether any assistance would be available for this sort of training."

When pointed out that there appeared to be no central control the representative of the Ministry stated that "Each Corporation decides it."

2.37. The Committee note that emphasis has heretofore been laid on the coal mining methods and practices in India on account of the larger employment opportunities it offers to the Indian Mining En-

gineers. Although 1840 graduate mining engineers were turned out during 1960 to 1968, only about 200 were actually employed in all the metalliferous mines put together. The Committee also note that the intake capacity of the training institutions in India is adequate as about 3025 graduate mining engineers and diploma holders have received training in various coal and metalliferous mines of the country since 1961-62.

2.38. The Committee are, however, surprised that the Department of Mines and Metals have no details regarding the number of persons trained under Colombo Plan etc.. The Department of Mines and Metals could not even furnish information to the Committee regarding arrangements made by the Public Sector Corporations like National Coal Development Corporation or Hindustan Steel Ltd. under their own schemes.

2.39. The Committee feel that in execution of training programme of mining engineers, particularly where people are sent abroad for advanced and specialised training, there should be proper planning by the Central Government.

2.40. The Committee feel that it is high time to increase and improve training facilities in metalliferous mines in view of the increasing activities in this field.

2.41. The Committee note that adequate facilities do not exist in the country in some spheres of minnig activity, e.g. project evaluation, design of mines, high speed shaft sinking and pre-mining development work, large concentrated outputs from underground work, training in design and installation of mineral beneficiation plant. There are also no arrangements for acquiring practical training in many mining methods such as various caving systems, resuing and the mining of wide ore-bodies and very thin-ore bodies. The Committee, therefore, urge that early arrangements should be made in a phased and planned manner for training of technical personnel in foreign countries. In this matter full advantage should be taken of the facilities available under various bilateral training programmes and schemes like Colombo Plan, Technical Cooperation Mission and USAID Plans etc.

2.42. The Cmmittee are of the view that full advantage should also be taken of collaboration arrangements to train our engineers etc. They, therefore, suggest that this should be done by invariably attaching a suitable number of trainees to consulting firms—Indian or foreign who are asked to execute any specific project in India so

that technical know-how is built up in India systematically and progressively.

2.43. In this connection the Committee would like to draw attention to the suggestion made by the Committee on Reorganization that a mechanism should be evolved whereby the services of such personnel as have acquired specialised and advanced training in any specific fields can be made available to all the wings of the metal mining industry irrespective of the corporation or organization they may happen to belong.

2.44. The Committee suggest that in case there are no opportunities of training in any of the specific fields referred to above within the country Government should make necessary arrangements for sending the technically qualified personnel to foreign countries for training, so that mining engineers in India are not deprived of the latest technological developments in metalliferous mining in the world.

C. Reorganisation of the Bureau

2.45. As regards organizational set up of the Bureau, the Reorganization Committee had recommended that the Heads of the Indian Bureau of Mines and the Geological Survey of India should be equated, and all the Divisional Heads in the Department should have equal status and pay. The Committee has also recommended increased salaries for the Officers on account of the onerous and important tasks entrusted upon them.

If the recommendation of Reorganization Committee is accepted the proposed functions and the set up of the Indian Bureau of Mines will be as under:—

DIRECTOR GENERAL (HEAD OF THE DEPARTMENT)

Technical Secretary (Joint Director) Planing, Technical Coordination, Forein Mineral Cells, Training etc.)	Senior Administrative Officer (Administration, Accounts and Stores Division

Director, Mineral Conservation and Development (Mines Control and Conservation of Minerals Division).	Director, Mineral Beneficiation Ore-Dressing (Division).	Director, Technical Consultancy Research & Publication (Technical Consultancy Research Division).	Director, Mineral Economics (Mineral Economics Division).

2.46. According to these proposals the Head of the Department will be designated as the Director-General, similar to that in the Geological Survey of India and the Directorate of Mines Safety.

The Heads of Divisions (Technical) under him will be designated as Directors. The work of the existing M.C.C.M. Division which has two Divisions (North and South) will now be divided into two Divisions with different nomenclature wherein, in one, the existing name will continue and for the other, where in addition to some of the existing functions the new function of Technical Consultancy will be included, the name will be 'Technical Consultancy, Mining Research and Publication Division.' The existing functions of the Division will also be sorted out and functions related with and considered complementary to Technical Consultancy and Research will be grouped in the later Division.

2.47. The existing designation of the 'Regional Controller of Mines' will be re-designated as 'Joint Directors.' So also the Superintending Ore Dressing Officer, Superintending Mineral Economist and the Superintending Mining Geologist will be redesigated as 'Joint Director'. Other posts will continue to be designated unchanged. Proposed Distribution of functions among the various reorganized Divisions is given at Appendix V.

2.48. Besides suggesting the Organizational reorientation changes, the Committee on Reorganization of the Indian Bureau of Mines suggested improved pay scales for the officers of the Bureau. In the opinion of the Department the pay scales recommended by that Committee are commensurate with the responsibilities which are shouldered by these officers. In the opinion of the Reorganization Committee the acceptance of these pay scales would be best to counter the exodus of experienced officers to other organizations offering higher salaries for equivalent experience and somewhat similar nature of job. In a written note, however, the Ministry have informed that keeping in view the likely financial impact of accepting these pay scales and possible reaction in other organizations under the same Ministry the pay scales proposed by the Department have been kept lower than those proposed by the Committee. The proposed pay scales compared with the recommended pay scales are as under:

Name of the Post	Proposed Name	Pay Scales		
		Existing	Recommended by the Committee	Proposed now
1	2	3	4	5
(1) Controller, Head of Department (Formerly Director).	Director-General	1800/-2000/-(2250/-)	2500-2750/-	2250 to 2500
(2) Controller of Mines (Head of MCCM Div.)	Director (for all Heads of Divisions)	1600/-1800/-	2000-2500/-	1600 to 2000

1	2	3	4	5
(3) Regional Controller of Mines.	Joint Director (Conservation, Development Research etc.)	1300/-1600/-	1800-2000/-	1300 to 1800
(4) Superintending Mineral Economist.	Joint Director (Mineral Economics).	1300/-1600/-	1800-2000/-	1300 to 1800
(5) Superintending Dressing Officer.	Joint Ore-Director (Ore Dressing).	1300/-1600/-	1800-2000/-	1300 to 1800

Other posts will continue to have existing nomenclature and pay scales.

2.49. Prefacing their proposals regarding the additional requirements for stores, equipments and personnel etc. in the Bureau the Department of Mines and Metals have stated as under:—

"In the discharge of the functions enumerated above and to achieve the objective outlined earlier, a number of adequately experienced mining engineers, mining geologists, chemical engineers, metallurgists, statisticians and other technical personnel are urgently needed in the department. Due to curtailment of sanctions approved in the Third Plan period the Department has suffered a lot in fulfilling its programmes of work. Another factor which has affected the zeal and morale of experienced personnel of the Department is lack of adequate opportunities of betterment of career due to curtailment of sanctions, and non-sanctions of any additional posts, however, essential, during the past three years. As a matter of fact large number of applications are received from Officers and technical assistants for posts outside the Department and some of them have actually left the Department for posts with better opportunities and better pay scales in other organizations under the Central Government and even in the same Ministry. This exodus of experienced personnel must be avoided by providing adequate opportunities in the Department and improving the pay scales as recommended by the Reorganization Committee."

2.50. The Committee note the proposals put forth for the reorganization of the Indian Bureau of Mines which are based on the recommendations of the Committee on Reorganization of the Indian

Bureau of Mines. The Committee hope that the Government will give due consideration to the proposals made for the reorganization of the Indian Bureau of Mines and will ensure that the reported exodus of experienced personnel from the Bureau is stopped as early as possible. The Committee also hope that all efforts will be made to find suitable incumbents for technical posts.

2.51. Asked to state if Government had approved the proposals for reorganization of Indian Bureau of Mines as set out in their Fourth Plan proposals, the Ministry have informed that the Fourth Plan proposals were under consideration.

2.52. Asked if it would be possible to take action for recruitment of personnel and to get equipment in time to achieve the targets laid down and if any action had been initiated already, the representative of the Ministry stated during evidence:—

> "As far as personnel are concerned we do not experience any difficulty. There are some bottlenecks in recruitment procedure and we are trying to see to what extent they can be got over."

2.53. Asked to state the preliminary steps taken with a view to take action for recruitment of personnel and to get equipments in time to achieve the targets laid down in the Fourth Plan proposals, the Ministry have stated as follows:—

> "Preliminary steps taken would mean approval of Fourth Plan proposals and according sanction for the posts and equipment needed during the Plan period so that the recruitment action and purchase of stores|equipment can be carried out in a planned manner after obtaining yearly budget grant in accordance with the proposals. It is proposed to authorise the Controller, Indian Bureau of Mines, in consultation with Finance Ministry, to initiate action to order equipment required for the plan period and also to recruit staff in a phased manner without awaiting yearly sanction."

2.54. It has been stated by the Ministry that the procedural bottlenecks which are generally encountered after creation of a Class I/II post are of following nature:—

(i) In case of new posts for which there are no recruitment rules already the recruitment rules have to be framed

in consultation with the Ministry of Home Affairs, Union Public Service Commission and Ministry of Law and which inevitably take some time.

(ii) If the method of a recruitment to this post is through direct recruitment the requisition has to be sent to the Union Public Service Commission for filling up this post. The UPSC advertises the post and it takes about 4 to 6 months to get the Commission's recommendation.

(iii) On receipt of the U.P.S.C.'s recommendations and after taking approval of the Ministry, the post is offered to the candidates.

(iv) Before the candidate is actually appointed to this post, the character and antecedent of the candidate have to be verified from the Police authorities. The procedural requirement takes on an average 3 to 4 months.

(v) Subject to acceptance of the offer and on receipt of the intimation, the medical examination of the candidate has to be arranged and on receipt of satisfactory medical report, the candidate is asked to join. This takes about 8 months more.

(vi) If the candidate is employed elsewhere, another 2 months or more go before he is actually in position.

(vii) In cases where the Union Public Service Commission recommends names from the unreserved community for posts reserved for the scheduled castes/tribes, an additional procedure to be observed is to get the vacant post dereserved in consultation with the Ministry of Home Affairs before the offer of appointment is issued. The period required to get the post dereserved is about 1 to 3 months.

2.55. In case of recruitment to Class III|IV posts the procedural bottlenecks are:—

"The recruitment rules for these posts, where necessary, are framed in consultation with the Ministry of Home Affairs and Ministry of Law. If the method of recruitment is through direct recruitment, the vacancies are notified to the Central Surplus Cell. If they fail to recommend suitable candidates, the vacancies are notified to the Employment Exchange. In this process, the recruitment is delayed."

2.56. The Ministry feel that the formalities for filling up Class I, II, III and IV posts outlined above are inescapable. However, in case of candidates provisionally selected by the Union Public Service Commission for interview, action is initiated to verify their character and antecedents before the receipt of the recommendations of the U.P.S.C. A proposal to appoint candidates subject to verification of character and medical examination is also under consideration of the Ministry.

2.57. The Committee are of the view that none of the procedural bottlenecks in the recruitment of personnel mentioned by the Ministry is of a character which could not have been overcome by now. Such advance action was all the more necessary in the case of the Indian Bureau of Mines where sophisticated equipment will have to be procured and highly technical and experienced personnel recruited.

2.58. Asked if sufficient powers had been delegated to the Controller, Indian Bureau of Mines making it possible for him to function smoothly and speedily it has been stated:—

> "The existing powers delegated to the Controller appear to be adequate. However, expansion of functions of a Section or Division cannot be made because of controlled budget provision with regard to creation of posts and purchase of equipment.
>
> Smooth functioning can be improved further, if the sanction of personnel and equipment are accorded in phases during the Fourth Plan period instead of year to year because in the existing system recruitment cannot be done in a planned way."

In reply to a subsequent question it was, however, stated:

> "It is proposed to authorise the Controller, Indian Bureau of Mines in consultation with the Finance Ministry, to initiate action to order equipment and also to recruit staff in a phased manner without awaiting yearly sanction."

2.59. The Committee are glad to note that the Ministry propose to authorise the Controller, Indian Bureau of Mines to initiate action for recruitment of personnel and place orders for equipment during the Fourth Plan period.

2.60. The Committee hope that the Ministry have already prepared a perspective Plan for recruitment of personnel and purchase of equipment etc. They, however, suggest that Government should ensure that there is no over capitalisation and arrangements are made for proper maintenance and servicing of machinery and equipment and proper utilisation thereof.

CHAPTER III

A. Mineral Development

Importance

3.1. As already stated in Chapter I of the Report, Mineral development and exploitation has attained a great importance in the modern world for economic development of any country. The importance of mineral industry has been brought forth by the Planning Sub-Group on the Geological Survey in the following words:

> "In both USSR and USA the total value of industrial production has been about 10 times the value of mineral production and the increase in the industrial production has also been 18 times the rate of increase in mineral production. This shows that a small increase in mineral production has an important bearing on the total volume of industrial production and that unless there is a proper development of mineral industries there will be imbalance in the other sectors of the economy."

3.2. It is generally admitted that mineral development and agricultural extension between them can provide adequate cure for India's current economic ills.

Industrial Policy Resolution 1956

3.3. The most important event in the history of mineral development in India was the Industrial Policy Resolution of 1956 wherein minerals have been classified under 2 categories, Schedule 'A' and Schedule 'B'. Coal and Lignite, mineral ores, mining of iron ore, manganese ore, chrome ore, gypsum, sulphur, gold and diamond; mining and processing of copper, lead, zinc, tin, molybdenum and wolfram and atomic minerals are included in Schedule 'A' and all other minerals are included in Schedule 'B'.

3.4. The Resolution lays down that in future development of minerals included in Schedule 'A' is the exclusive responsibility of the State. It does not, however, preclude the expansion of the existing privately owned items, or the possibility of the State securing the co-operation of private enterprise in the establishment of

new units when national interests so require. Whenever co-operation with private enterprise is necessary, the state is required to ensure, either through majority participation in the capital or otherwise, that it has the requisite powers to guide the policy and control the operations of the undertaking. The Resolution further provides that there will be no ban on small private owned units undertaking small scale mining.

3.5. As regards the remaining minerals included in Schedule 'B', the State is expected to increase its participation in their working progressively. At the same time, private enterprise has full opportunity to develop in this field either on its own or with State participation.

Progress since Independence

3.6. The country has made some progress towards the development of mineral industry since Independence. Since the ushering in of the First Five Year Plan in 1951 the number of mines has more than doubled by now. In all, there are 5500 mines under mining leases in the country. Of these, about 2500 to 3,000 mines are in operation every year. A number of Public Sector Undertakings have been set up in the country in implementation of the Industrial Policy Resolution of 1956. India has embarked upon many large projects which are fully mechanised like Hindustan Copper Ltd., Hindustan Zinc Ltd., Iron ore Mines under N.M.D.C., T.I.S.C.O., I.I.S.C.O. Pyrites, Phosphates and Chemicals Ltd., Manganese Ore Mines under M.O.I.L., etc. Mineral production is not only increasing but is steadily getting diversified. An idea of the spectrum of mining activity in this country can be obtained from the fact that it is now producing 40 different minerals like coal, lignite, rutile, lead and zinc ore, bauxite, apatite, asbestos, ball clay, baryte, china clay, diamond, lime-stone, gypsum, magnesite, fluorite, fire-clay, kyanite, sillimenite, steatite and a host of minor minerals.

3.7. Mineral production has increased from a value of Rs. 1,648 million in 1960 to Rs. 2,733 million in 1967. The export of minerals has risen from Rs. 679 million to Rs. 1,127 million in these years.

Shortfalls

3.8. However, the value of imports of minerals has also a rising trend which causes a large drainage of scarce foreign exchange. The import of minerals was valued at Rs. 109 million in 1960, Rs. 335 million in 1966 and Rs. 650 million in 1967.

3.9. While the balance sheet of the export and import of minerals is favourable, this is reverse in the case of costlier metals and alloys. Considering the position of important industrial metals, it is noticed that the country's exports were of the order of Rs. 143 million, Rs. 284 million and Rs. 644 million in 1960, 1966 and 1967 respectively, whereas the import bills for these years were of the order of Rs. 1,582 million, Rs. 1,404 million and Rs. 2,243 million respectively. The rise in value in 1967 it was stated was largely due to the effect of devaluation. Despite the restrictions imposed on the import of metals, which has its contribution in causing recession in the industry, the import bill is ever increasing. This is mainly due to import of base metals and other ferrous and non-ferrous metals and also some essential minerals like phosphates, sulphur etc.

3.10. The Committee have been informed that out of Rs. 2,890 million spent on the import of metals and minerals in 1967 Rs. 1,080 million were spent on non-ferrous metals. In terms of value we had to import copper worth Rs. 410 million, aluminium worth Rs. 220 million, zinc worth Rs. 160 million, tin worth Rs. 114 million, lead worth Rs. 70 million and nickel worth Rs. 35 million.

Remedies

3.11. One of the objectives for industrial development during the Fourth Plan as laid down by the Planning Commission is to bring about conditions within which the maximum utilisation of capacity already built up is achieved. Viewed from this angle there is a lot of scope in some fields like that of base metals where exploitation of indigenous resources has not been able to keep pace with the new discoveries in mineral deposits. Geological Survey has, in recent years, explored and estimated sizeable ore reserves for copper lead, zinc, nickel, aluminium respectively in parts of Singhbhum, Khetri, Agnigundala; Dariba Rajpura belt; Sukinda field; Amarkantak, Phutkapahar, Dhangarwadi and Udaigiri areas.

3.12. Asked to state the reasons for the gaps between the discoveries of mineral resources and their exploitation the Ministry attributed the gaps to the following reasons:—

> "In case of base metals, the mining projects are confined mostly to the underground exploitation of the deposits. The geological details that are required for planning production from underground mines require an accurate assessment of the shape and size and disposition of the ore bodies and their grades. The data in such great details was not available before the exploitation of these deposits

was decided upon and as such the delay in the actual exploitation was inevitable. In other words, it means that the quality and details of exploration required for underground mines are far too rigorous compared to the details required for opencast exploitation of the deposits, resulting in delay in planning and production of underground mines. It has been generally seen that the gap in the case of opencast mines has been much less, as for example, the exploitation of iron ore deposits of Rajhara, Kiriburu, Barsua, Bailadila etc. In order to reduce the gap between the discovery and exploration of mineral resources and exploitation, the qualities and details of exploration are being further improved.

Another aspect, which has influenced this gap between the discovery and exploitation, is the scale of operation decided on the basis of the exploration results.

Attempts are being made to reduce this gap by a more-coordinated approach towards the development and exploitation of the deposits between the exploration and exploitation agencies. In some cases, in this connection, the scaling down of operation has also been considered, as in case of Rakha mines where a modest production of 5 to 7 thousand tons of copper per annum has been planned, though the technical opinion considers the deposit capable of undertaking exploitation which could produce copper upto 34,000 tons per annum.

3.13. The Committee would like to invite attention to their observations on this aspect viz. gaps between the discoveries of mineral resources and their exploitation made in para 3.35 of their Hundred and Twenty-sixth Report. The Committee feel that more concerted efforts will have to be made to fill the gaps between the time of exploration and that of exploitation, in the case of scarce metals if the country is to be relieved of the drain on foreign exchange. This can be achieved through advanced planning and more realistic feasibility reports before the decisions to launch production are taken and by introduction of modern mining techniques wherever possible and economically justified.

B. Perspective Planning

3.14. Asked if there was any organisation that linked up exploration and exploitation closely the representative of the Ministry has stated that there is no single organisation as such in the Government

to watch if exploitation started immediately after the exploration. Exploration and exploitation are done by different agencies. For example, after the copper exploration was over, Hindustan Copper Ltd. was formed for exploitation. Similarly when the zinc survey was over a private company started it. In Andhra the exploration work was being done by the Hindustan Copper. An independent agency might later be set up for exploitation.

3.15. Asked if there was any particular cell in the Ministry to see that the time lag between the location and exploitation of mineral resources is abridged the representative stated that the Department of Mines and Metals was looking to this. In reply to a specific question, the representative stated that there was no particular cell or agency as such which would follow it up. But the sections and Officers concerned with different minerals|metals do the follow up work.

3.16. Asked whether it was not desirable to have a perspective planning wing in the Ministry or the Bureau where planning from Geology to mining could be done keeping the country's future requirements in view, the representative concurred with the suggestion in the following words:—

> "I think it is good to have a perspective planning wing. I shall see what can be done about it. There has to be continuous forward thinking. I think there should be such forward planning unit in the Indian Bureau of Mines. That is the proper place for it. We shall look into it."

3.17. Asked to state if there was at present any working group which had taken up this item and was looking into it the representative of the Ministry stated as follows:—

> "There is no permanent working group as such. But there are two or three agencies. One is under the Planning Commission. They do forward planning for a number of years for the basic industries. Necessarily in some areas the work is much more detailed than in other. The same coverage is not there, anyway in the same detail in respect of all other minerals and so on, as far as the Perspective Planning Division of the Planning Commission is concerned. Secondly, even now a certain amount of this continuity is there in these agencies like Geological Survey of India, Indian Bureau of Mines and so on, which are in constant touch with the Ministry. Thirdly, other than the Ministry or the Department, there is no permanent stand-

ing body in the sense of carrying on the work from day to day.

What happens is that just before each Plan is taken up for formulation, we have, what you call, working Groups appointed. In many cases these are appointed by the Ministry. Of course, this is under the overall control of the Planning Commission because it is responsible for the formulation of the Plan. We appoint working groups. In each of the working groups, there are all the parties interested including the Planning Commission, users and so on. Once they have submitted the Report of the Working Group, the Ministry puts together the Planning Group Report as a whole and then it goes to the Planning Commission. There we have a series of discussions. Once that work is done, the Plan itself is finalised and submitted to Government by the Planning Commission."

3.18. The Committee note that there is no particular cell in the Ministry of Petroleum and Chemicals and Mines and Metals where perspective planning could be done from exploration to exploitation keeping the country's future requirements in view. Nor is there any agency which could see that the time-lag between the location and exploitation stages could be abridged. The Committee feel that the present arrangements of constituting planning groups under the auspices of the Planning Commission on the eve of formulation of a Five Year Plan though useful for short term needs are not at all adequate from the point of view of long term needs.

3.19. The Committee would, therefore, suggest that a permanent agency or Cell should be created in the Ministry which would not only watch the long term needs of the country for a systematic and progressive development of its resources but could also provide a link between the exploration and exploitation stages. This agency can also be utilised by Government for solutions of specific problems as and when they arise.

C. Reservation of Mining Areas

3.20. In a written memorandum from a leading Mining Federation to the Committee it has been represented that:—

"the major obstacle to the growth and production of non-ferrous metals in our country is the decision of the Government to reserve all the important and economic minerals to itself. A very vital economic activity of the private sec-

tor in prospecting and developing of such minerals is thus denied or restricted. This is highly unhealthy and undesirable for the growth and orderly development of the country's mineral resources. This policy of the Government is even affecting adversely the prospecting operations.

Time is ripe for examination of the whole issue objectively in order to find out whether the private enterprise should not be given the initiative as well as the incentive to invest in mineral prospecting and mining in national interest. At a time when we are engaged in the planned and all-round development of economy of the country, we should not follow any dogmatic approach. The criterion should be 'productivity' and efficiency and the best possible way in which the development can be achieved so that we can come out of the shackles of economic under-development as quickly as possible. Excepting the communist countries, in all other important mineral producing countries, this is a field where even an individual has full freedom and incentive to prospect alongwith Government agencies. The discovery of minerals results in profits not only to the discoverer, who may be an individual, but also naturally benefits the nation as a whole. The Federation will very strongly urge upon your Committee that it should demand immediate reversal of the harmful policy of 'reservations' so that the surveyed reserves are allowed to be methodically prospected and mined by the private sector in the interest of rapid growth of Indian mineral industry.

The Federation appeals to the Committee to judge the industry only by its 'performance' and not by the label of 'private sector' or 'public sector' thereon. All discriminations against the private sector and favours to the public sector in mining should be removed, and the sole criterion should be 'producivity', the good of the economy and the advancement of mineral industry."

3.21. Another important mining association presented the case against the policy of reservations in the following words:—

"It has become practice for various Governments in the States and the Centre to reserve large mineral-bearing areas for exploitation in the public sector. This has naturally resulted in considerable disincentive to the private enterprise in coming forward to develop mineral resources. In case of most of these reservations, it is also found that Government have no immediate plans for their exploitation,

but they have reserved the areas on theoretical considerations or on grounds of future needs. While the right of any Government to reserve any mineral bearing area for its own exploitation cannot be questioned, it needs no special mention to appreciate that this step has really resulted in loss of interest on the part of private industry and has provided a convenient tool for the State Governments to refuse grant or renewal of mineral concessions."

3.22. During evidence one of the representatives of the industry complained that it had become almost a fashion to reserve areas not only for existing Public Sector undertakings but also for those which are in the embryonic stage or in the brains of somebody. Some States have started killing the incentive of the private sector by this approach. Unless there is a well thought-out procedure for reservation of minerals for the public sector limited to the existing ones and what can be foreseen within the reasonable future and unless some mineral concessions are given to the private sector there is hardly any scope for the private sector to make any impact on the development of the mining industry.

3.23. When the Ministry were asked to state if the aforesaid position was correct the Ministry stated as follows:—

"According to the Industrial Policy Resolution of 1956, mining and processing of minerals included in the Schedule—'A' *viz.* iron ore, manganese ore, chrome ore, gypsum, sulphur, gold, diamond, copper, lead, zinc, wolfram etc. is the responsibility of the State. Accordingly certain areas bearing iron, manganese, chromite, gypsum etc. have been reserved for exploitation in the public sector, keeping in view both the immediate and future plans and needs of the industry. Besides, certain minerals mentioned in Schedule—'B' of the Resolution, in respect of which the State has to take progressive initiative for development, such as, limestone, dolomite, bauxite have been reserved either, for exploitation in the public sector or for investigations for establishing their potentiality to determine their economic viability for State exploitation. Wherever, a certain area is found to be not fit for state exploitation, the same has been dereserved for the private sector. It has also to be noted that reservation of areas is resorted to not only to meet the current and future requirements of mineral based industries in the public sector, but also on considerations of conservation of the mineral resources which

are a wasting asset. It is also not desirable to lease out fresh areas to private parties, when all the demands could reasonably be met from the areas already under lease. In such circumstances grant of fresh leases would encourage indiscriminate mining of the cream of the deposits, resulting in the depletion of large deposits."

.24. Some facts furnished in this connection by the Ministry as follows:—

Iron and Manganese Ores:

Expert Committees were set up in 1957-58 to facilitate selection uitable deposits of iron and manganese ores in the States known contain such deposits (namely, Orissa, Mysore, Bombay—now harashtra, Bihar, Madhya Pradesh, Rajasthan and Andhra Pra-) for State exploitation. The Reports of the various Com-ees were submitted at different dates during the years 1958—60. principles for the guidance of the expert Committees in selec-mineral bearing areas were laid down by the Government of ia. The Expert Committee for the State of Orissa, which was first (October, 1957) to be set up, however, formulated certain ad principles and criteria for its own guidance. These were:—

(a) The target of production from the area should be of the order of 1.25 million tons annually and it should be mined preferably by complete mechanization. In the case of a few deposits, however, only partial mechanization need be introduced.

(b) The known reserves of iron ore in the area should be at least 75 million tons equivalent to a life of 40|50 years for the mine. In cases where the ore is of high grade and mining not difficult, it may be economical for the State to exploit the deposit containing no more than 50 million tons and if the ore is low grade, deposits containing upto even 100 million tons may not be considered worthwhile for the State to exploit.

(c) Adequate supply of water, availability of cheap and plentiful power, adequate means of communication and transportation, distance of the mine to the consuming centre or to the port of export are equally important factors in determining the suitability of an area for State exploitation.

Criteria mentioned at (a) and (b) could not apply to manganese deposits.

3.25. The Expert Committee, however, stated that each case will have to be decided on its own merits. The above are intended only to be helpful guide lines in selecting mining areas.

3.26. It has been stated that while the above principles were kept in view by other Committees in preparing their reports, the special conditions obtaining in each State concerning mineral occurrence etc., of the areas were not lost sight of *i.e.* even small scattered areas which could profitably constitute a big block worth economic exploitation were also recommended for reservation.

3.27. There is no mention in the reports of the Expert Committee as to the period for which the areas should remain reserved or after what period the need for their continued reservation should be reviewed. However, the Ministry have stated that the reservation has evoked much criticism from the private sector from the very beginning on the ground that the public sector has taken a lion's share. Their contention is that the Central Government should either start exploiting the reserved areas quickly or allow the private sector to work them until such time as the Government will be in a position to take up their exploitation. The matter was accordingly discussed in the meeting of the Mineral Advisory Board held at Bangalore in May, 1963 and the Board recommended that the Government might review the position in consultation with the State Governments and public sector undertakings with a view to assess the possibility of releasing some of the reserved areas which they were not in a position to exploit in the third and fourth Plan periods.

3.28. None of the Governments and Organisations excepting the Government of Maharashtra, is reported to have favoured dereservation; in fact they strongly opposed dereservation. Subsequently certain managanese bearing areas in Maharashtra, the working of which was not considered economical in the public sector were released in June, 1966. Government of Andhra Pradesh are reported to have informed that they were carrying on investigations in some of the reserved areas and would decide after the investigations had been completed. In Mysore some manganese and iron ore areas reserved earlier have been released. Proposals for dereservation of two small areas had also been received from the Government of Orissa. Further dereservation of manganese bearing areas in Maharashtra and other States is under consideration.

(ii) *Copper*:

3.29. Tamapahar area in Singhbhum area has been reserved for exploration by Hindustan Copper Corporation a Public Sector undertaking. Gani and Kalva Copper blocks in Kurnool District of Andhra Pradesh have also been reserved for exploration by Geological Survey of India.

(iii) *Non-ferrous metals (copper, lead & zinc)*

3.30. Geological Survey of India completed a survey of non-ferrous metals in 1964. While their report was still under consideration shortage of non-ferrous metals attracted special attention in 1965 in the context of national emergency. Several small and isolated deposits were accordingly dereserved in accordance with lists prepared by the Geological Survey of Inida in October, 1965 and August, 1967. The remaining areas constituting economic blocks have been kept reserved for State exploitation and revised list of such areas is accordingly being prepared by Geological Survey of India.

3.31. A number of lists of areas thus reserved and subsequently dereserved were also furnished to the Committee. While furnishing these facts the Ministry further stated as follows:—

"Since the reservation of the areas, Central and State Governments and public undertakings had undertaken development of a number of mineral deposits from these reserved areas. Their plans and programmes for a number of years to come are also clearly defined. The demand for the minerals over a period of years has also been projected as indicated in the Report of the Study Group on royalties on major minerals. In these circumstances, questions have been raised whether large areas need be kept reserved even though there may not be prospects in the near future of the Central and State Governments mining them. In considering the desirability of dereserving any area, it will be necessary to keep in view two factors:—

(i) that in the Fourth Plan and also in the subsequent plan periods, State will be required to establish increasingly large number of projects; dependent on certain minerals whose reserves should be assessed; and,

(ii) that it is necessary to conserve the available mineral deposits as they are a wasting asset.

3.32. At the same time, it is also necessary to ensure that mineral deposits do not remain undeveloped when there is a reasonable demand for the mineral products although the State or Central Government may not be in a position to take up in the near future the mining of these deposits. It will also be necessary to consider whether in a given circumstance, it may be more expedient to allow a private sector party to undertake mining within a reserved area.

3.33. In these circumstances, selective dereservation of areas is done keeping in view the following factors:—

(i) such dereservation will not offend the principles of conservation,

(ii) there is a felt demand for additional production of that mineral which could be more advantageously obtained from the private sector;

(iii) it will not conflict with the long term objectives of the Industrial Policy Resolution and the role of the public sector; and

(iv) the deposits are too small or too scattered to be worth exploitation by the State."

3.34. The Committee note that a large number of mineral bearing areas have been reserved in pursuance of the Industrial Policy Resolution. The Committee also note that Expert Committees were appointed in 1957-58 in States to facilitate selection of suitable deposits of iron and manganese ores for State exploitation.

3.35. In this connection, the Committee note that this matter was discussed in the meeting of the Mineral Advisory Board held at Bangalore in May, 1963 and the Board recommended that the Government might review the position in consultation with the State Governments and public sector undertakings.

3.36. The Committee note the policy followed by Government in the matter of reservation of mineral bearing areas as indicated in para 3.33.

3.37. The Committee feel that this matter needs to be more thoroughly examined keeping upper-most the national interest and

preservation of mineral wealth and recommend that Government should after careful consideration draw up a firm policy so far as its attitude on reserved and non-reserved areas is concerned and ensure that the production of minerals increases appreciably and the country becomes self-sufficient in those minerals which are in short supply and which are being imported at present.

CHAPTER IV

MINING INDUSTRY

A. Technical Consultancy Service

4.1. The Committee have been informed by the Ministry that the mineral industry in India is characterised by the preponderance of small producers of minerals, who generally do not employ any trained or technically qualified persons on their mines, inadequate availability of private consultancy, contract drilling and shaft shinking agencies, insufficient facilities for undertaking mineral dressing investigations and absence of 'Custom Mills' and 'Smelters'. Large proportion of mineral production in the country being large bulk-low value mineral commodities like coal, iron ore, limestone etc., the mineral development suffers for want of proper planning and development of appropriate transport, power, water and port facilities requiring considerable expenditure.

4.2. The magnitude of this problem can be assessed from the existence of large number of small mines as outlined below in the statistical data on some of the important minerals:

Mineral	Range of Production (in tonnes)	No. of mines reporting Production	Total Production for the group (in tonnes.)	Cumulative percentage of total Production (in %)
Iron ore	Upto 100,000	253	3,951,682	20.7
	100,000 and above	31	15,116,529	79.3
	Total of all groups	284	19,068,211	100.0
Managanese	Upto 20,000	364	507,303	40.5
	20,000 and above	20	1,069,907	59.5
	Total of all groups	384	1,577,210	100.0
Limestone	Upto 300,000	232	7,310,451	37.3
	300,000 and above	23	12,260,703	62.7
	Total of all groups	255	19,571,154	100.0
Dolomite	Upto 100,000	69	510,133	43·7
	100,000 and above	2	657,189	56·3
	Total of all groups	71	1,167,322	100·0
Gypsum	Upto 10,000	92	226,994	22·7
	10,000 and above	14	807,189	77·3
	Total of all groups.	106	1,034,183	100·0
Mica	Upto 2,000 Quintals	16	133,756	73·6
	2,000 and above	620	47,768	26·4
	Total of all groups	636	181,524	100·0

In this connection, the Committee have been informed that there are instances, where small producers hold leases for large areas of potential minerals in the country. Very little exploratory work has been carried out by the large number of mineowners in the properties held under lease by them. They have also not carried out any systematic laboratory and pilot plant investigations for upgrading the minerals from the properties to bring them into conformity with the requirements prevailing and changing the internal and international markets.

4.3. Despite the fact that India has got long records of mining activity in respect of certain minerals, such as manganese ore, iron ore, chromite ore etc., there are hardly any beneficiation plants for these minerals in this country. As regards iron ore, apart from a washing plant attached mostly to the public sector mines and captive properties and some steel plants, no beneficiation is carried out by any of the lessees and no tests are carried out by any of the private lessees to determine the suitability of the fines (fine ores) rejected in their mines for agglomeration. In chromite mines, practically no tests are carried out for agglomeration of the fine chromite ores or for the beneficiation of some of the leaner grade ores. The above unsatisfactory state of affairs has arisen due to the fact that only 250 mines out of 3,000 metalliferous mines in India have employed mining engineers to guide the mining operations on account of the paucity of contract drilling firms, consultancy firms and laboratories to carry out benefication of ores and minerals.

4.4. This aspect was one of the main terms of reference of the Committee on reorganization of the Indian Bureau of Mines. This Committee felt that there was unquestionably great and genuine need in the country of a strong and competent consulting Division. The Committee on Reorganization of Indian Bureau of Mines has reported as follows:—

> "Without any exception every cross Section of the mining industry we have been privileged to meet during our field investigations was emphatic in its view that the Bureau's *main role* should be that of expert Consultants covering the whole range as well as every aspect of mineral development. Whether they were producers of minerals or representatives of mining associations or Government agencies concerned with mining or acknowledged experts in the line, all were unanimous in their view that the Indian Bureau of Mines should have a well

organized consulting Division and also that consultancy work should indeed be its main business and pre-occupation."

4.5. In view af the existing position of the mining industry in India and in the light of the recommendations of the Committee on Reorganization of the Indian Bureau of Mines, Government have decided that Indian Bureau of Mines should provide technical consultancy service on payment of fair and reasonable charges to the mining industry both in the private and public sectors 'in connection with the appraisal and exploration of mineral deposits, planning and design of mines, selection and design of suitable mining equipment, research and preparation of economic flow sheets for beneficiation and conservation of minerals.' Realising the need and importance thereof this job has been placed on top of the functions assigned to the Bureau. In pursuance of this decision the Indian Bureau of Mines has submitted to the Government a scheme for the Consultancy Service. Main features of the scheme are described below:

Scope and Limitations of the Consulting Agency

4.6. The work of the agency will at the outset be limited to:—

(i) actual conduct of proving operations of deposits amenable to assessment of reserves, grade, size, shape, extent etc., by operations consisting essentially of surface examination of existing excavations and exploratory data, large scale mapping aided by a limited amount of pitting|trenching and surface and underground development and extensive programmes of deep drilling etc. will be excluded. In respect of Bureau's participation in actual work its activity will be limited to the carrying out of exploratory drilling operation (shallow boreholes) and large scale preparation of surface and underground plans;

(ii) conducting petrological and chemical studies on laboratory scale, and ore dressing, beneficiation, concentration and metallurgical tests on laboratory and pilot plant scale to assist in the ultimate marketing of minerals; to furnish appropriate flow sheets on the basis of such tests; to suggest the types and specifications with the attending costs of approximate items of machinery and plant; to indicate, broadly, along with the costs of these equipment, a very

approximate idea of the cost of execution and installation taking into consideration the topography, terrain, accessibility and foundation conditions of the particular site;

(iii) to prepare broad mine plans and lay out; to recommend the choice of mining technique; to specify the number and type of different machines and plants required for mining|exploitations and haulage|transport system from the mine to the rail-head.

4.7. For the sake of background knowledge the Consultancy cell will be an adjunct to the Mines Control and Conservation of Minerals Division (though directly under the proposed Director General) who conduct comprehensive studies of individual mines and group of mines on regional bodies and whose officers are authorised to visit mines under Mineral Conservation and Development Act, 1957.

4.8. The Wing will have two broad sections, namely, Screening Cell and Operation Cell.

4.9. The *Screening Cell,* which will be responsible for processing the requests for consultancy, analysing the nature of the problems and evaluation of the possible workload; adjudging the feasibility of undertaking the work in relation to the availability of resources in terms of men and material; decide upon the priorities in the context of the overall objective of the agency; plan the preliminary field studies where necessary; scrutinise the recommendations of the field parties; and outline the manner in which the problem has to be tackled.

4.10. The *Operation Cell* will be manned by technical personnel possessing requisite expertise for undertaking the actual execution of the variety of field and laboratory operations connected with the problems referred for consultation.

4.11. The proposal for the Fourth Five Year Plan period is of the order of Rs. 15.25 lakhs, having the following break-up:

(I) *Capital—Non-recurring*:

Rs. 1,66,000|-

(II) *Recurring*:

(i) Pay & Allowances: Rs. 13,15,000|-

(ii) Other charges: Rs. 44,000|-

4.12. Fresh recruitment is likely for 8 officers and 16 staff. The expenditure for these personnel in the current year may be Rs. 86,000 and the expenditure for stores and equipment and other charges Rs. 18,000.

4.13. In reply to a question if the scheme for providing technical consultancy to the mining industry has been finalised the Ministry have stated as follows:—

"In pursuance of the recommendation of the Reorganization Committee, the scheme prepared by the Bureau has been generally accepted. The details of the scheme and its final shape are yet to be finalised. The proposal to have a small drilling unit for appraisal of mineral deposits has not been accepted as this job can be accomplished through the Geological Survey of India which has facilities for drilling. The schedule of rates of charges for various types of job and mode of payment are under finalisation in consultation with the Ministry of Finance and the agreement to be drawn up between the Department and the Consultee is being finalised in consultation with the Ministry of Law. However, a beginning has been made to provide the services from the current year and a few jobs are already in hand.

Sanctioned strength

Class I

1.	Regional Controller of Mines	1
2.	Deputy Controller of Mines	1
3.	Senior Mining Geologist	1
4.	Deputy Ore Dressing Officer	1
		4

Class III and IV

1.	Senior Technical Assistant	1
2.	Junior Technical Assistant	2
3.	Laboratory Assistant	1
4.	Stenographer	2
5.	Accounts Clerk	1
6.	Lower Division Clerk	1
7.	Peon	1
8.	Field Orderlies	2
		11

4.14. The number and nature of cases received for Technical Consultation so far are as under:—

1.	Preparation of mine plans : (Surface and underground)	2
2.	Mining Geological Report including plans	8
3.	Estimation of Reserves and preparation of mining scheme/ enhancing rate.	4
4.	Mineral beneficiation on laboratory and Pilot Plant scale	4

4.15. Processing of cases each under items (1), (2) and (4) have been completed and 2 cases under (4) are in the process. Rest of the cases are in the preliminary stages of correspondence and estimation.

4.16. The State Government, Public Sector Undertakings, Mining Associations and Federations and important mine owners were intimated about the facilities by the end of 1968 and towards beginning of 1969. Based on this information the requests have been received much before the actual sanction was effected.

4.17. The representatives of non-official organizations who appeared before the Committee, however, stated that they were not aware that such a scheme had been started.

4.18. The Committee are surprised to note that no consultancy service worth the name has been set up so far. In spite of the fact that this matter was one of the terms of reference of the Committee on the Reorganization of the Indian Bureau of Mines and that that Committee felt that there was unquestionably wide and genuine need in the country of a strong and competent Consultancy Division, nothing tangible has been achieved so far. The facilities of consultancy service introduced by Government towards the beginning of 1969 appear to have made hardly any impact on the mining industry. The only inference that the Committee can draw from this is that the consultancy service introduced in 1969 is only a nominal service and not a real service which is the need of the industry. In view of the fact that the mining industries are unanimous in their demand for an effective consultancy service, the Committee see no reason why the Indian Bureau of Mines should not be able to meet the requirement. The Committee expect the Indian Bureau of Mines to treat this as an opportunity and challenge to establish its consultancy services and render meaningful service to the industry at an economic cost.

B. Mining Machinery Pool

4.19. It has been suggested to the Committee that the Indian Bureau of Mines should be entrusted with an additional function of providing the mineowners, particularly smaller ones, different types of mining machineries as and when required by them on nominal rents or on hire-purchase basis. For this purpose a separate 'mining machinery pool or bank' may be created in the Indian Bureau of Mines.

4.20. One of the representatives of a non-official organization pleaded the case of the small mine-owners in the following words:—

> "....There are two definite families of miners—large and small. The problem is for the small miners, one cannot write off small miners. Government of North Rhodesia considered and helped small miners because production becomes quite effective with small miners . . . The small miners cannot afford to have a sophisticated machinery and capital expenses of providing it."

4.21. Asked if there was any arrangement at present for helping the mine-owners particularly smaller mines in this matter the representative of the Ministry stated during evidence that Rajasthan Government had recently organized a scheme for providing different types of machinery on a rental basis. Madhya Pradesh Government had also provided small drilling rigs.

4.22. On a suggestion that it should be organized by the Central Government on an all India basis the representative of the Ministry stated:

> "We will consider it."

4.23. The Committee note that the small mines collectively represent the important sector for production. The Committee suggest that Government should encourage small mine owners to form cooperatives so that financial assistance may become available to them for purchase of different types of mining machinery as and when required by them on no loss no profit or on hire-purchase basis.

C. Standard Layouts for Mining Industry

4.24. A leading Public Undertaking has made the following suggestions:—

> "This Mine Design and Technical Consultancy Division should also undertake designs and planning of mines as and when

requested by the industry. It should at the same time undertake the task of preparing standard layouts and Designs for various mining operations and components. It may be noted here that our country does not possess standard layouts at all even for important plans and operations like pit-top, pit-bottom stoping, drifting, winning, etc. which are indeed very badly needed for country's development. It may not be out of place to mention here that in Russia such standardisation of designs has been carried out for every coal field, minefield and for almost all major sectors of mine operations. As a result of this, projection and planning of a new mine has become very easy, quick and inexpensive. To illustrate the case Ukraine coalfield has standard pit-top layouts for 1000, 2000, 3000 and 4000 tons daily production of coal. Thus when a new mine of 3000 tons per day is to be planned, all that the planner does is that he selects one of the standard layouts of pit-top for 3000 tons daily production and incorporates in the main plan. These layouts are made after great experiments and research and represent the most efficient and economical design. No such organization to put up standard layouts and designs of mines is existing in India which small mine owners can look for. The latter are left to find out their own layouts obviously after doing several mistakes which ultimately mean a national loss. It may be noted here that the Central Mining Research Station at Dhanbad is primarily intended for carrying out research on safety and not mine design and layouts. Such standard design and layouts, help in the production of standard equipments and simplification of demands on machinery manufacturers."

4.25. In reply to a question whether there were any standard layouts for various mining operations, the Committee have been informed by the Ministry in a written note that:

"It is not possible to have a standard layout which will be suitable for all mineral deposits."

4.26. The Committee would suggest that Government should review the whole matter and examine the feasibility of helping the small mine-owners through Indian Bureau of Mines in regard to standard layouts and designs for various mining operations and components.

D. Ore Dressing and Beneficiation

Magnitude and Importance

4.27. Naturally occurring ores/minerals seldom conform to the specifications required by industrial users, whether metal producer or industrial product manufacturer. It becomes necessary to subject these ores/minerals to treatment by which the objectionable constituents are reduced or removed. In the context of depletion of high grade ores/minerals and the large expansion proposed for mineral production and growth of mineral based industries, the need for processing and beneficiation of inferior grade ore/minerals has become more and more important and essential. Utilization of low grade minerals after suitable processing and beneficiation is an important aspect for conservation of minerals.

achievements

4.28. Detailed below are the research projects undertaken by the Indian Bureau of Mines and the results of the research from the utility point of view as furnished to the Committee:

4.29. Since inception of the laboratory a total number of 125 detailed investigations were carried out.

4.30. All the research work on beneficiation undertaken by this department is of applied nature from the point of view of direct utility.

4.31. (i) *Beneficiation work for projects*: Beneficiation work in laboratory and pilot plant has been carried out for evolving data required for specific projects. Such instances are beneficiation of copper ore samples from Khetri, Kolihan and Dariba in Rajasthan, Rakha in Bihar and Chitradurg in Mysore, pyrite samples from Amjor, copper-lead-zinc ore samples from Sikkim, iron ore samples from Bailadila, Bellary-Hospet and Kudremukh deposits and diamondiferous material from Panna. At present beneficiation work on rock phosphate samples is underway in connection with "Soft Rock Project" of the Government for exploitation of indigenous resources of rock phosphate for fertilizer industry. The results of beneficiation research indicated that in most of the cases concentrates of suitable grade with satisfactory recovery could be obtained. Some of the results are being made use of by the concerned exploitation agencies.

4.32. (ii) *Beneficiation work for exploration*: The Geological Survey of India, State Governments and public undertakings are

carrying out intensive explorations for minerals. In order to arrive at proper evaluation of deposits and industrial utilisation beneficiation research on a number of samples is undertaken by the department. A number of samples of limestone from Kanger Valley (Madhya Pradesh), Mysore, Goa, Jammu, Salem district of Madras, chromite from Nuasai-Kehonjar belt of Orissa, wolframite from Degana in Rajasthan and Manganese from Madhya Pradesh|Maharashtra belt were subjected to research investigation in the Bureau. The results of research in most of the cases have indicated their amenability to beneficiation.

4.33. (iii) *Beneficiation work for private parties*: Beneficiation research work on some samples is undertaken for the private parties. For example, samples of barytes from Hindustan Minerals, iron ore from M|s. Salgaonkar Bros., Goa, recovery of ferromanganese from casting sands from M|s. Khandelwal Ferro Alloys, briquetting of Manganese ore fines from Shri Ram Mining Pvt. Ltd., Garividi. The results of research have been very satisfactory and have been communicated to the parties concerned.

4.34. (iv) *Beneficiation work for mineral conservation*: The ore Dressing division in collaboration with the M.C.C.M. division undertakes beneficiation work which would ultimately result in conservation of mineral resources of the country. This is achieved either by evolving suitable methods for beneficiation of such low grade ores which have not been utilised so far or working out methods for treatment of rejects which have been accumulated at the mine site. Instances in this respect are research on number of samples of high phosphorus manganese ores of Madhya Pradesh|Maharashtra belt, recovery of scheelite from dump rejects of Kolar Gold Mining Undertaking etc. The results obtained are promising.

Existing facilities

4.35. It has been stated that facilities for research on mineral dressing and beneficiation are not much developed in India. Some facilities are available with the Indian Bureau of Mines and the National Mettallurgical Laboratory only. Certain beginning is reported to have been made in one or two laboratories at Hyderabad and Bhubaneshwar of the C.S.I.R. for a few specific minerals.

4.36. The Bureau has got only one laboratory and one pilot plant at Nagpur. The ore dressing laboratory includes units for conducting chemical analysis and mineralogical examination required in connection with beneficiation investigations.

4.37. It has been stated by the Ministry that "With the merger of the Exploration Wing with the Geological Survey of India on 1st January, 1966, the Mineral Technology Section, which was catering to the major chemical analysis need of the ore dressing laboratory and pilot plant, was also transferred to the Geological Survey of India, leaving the small unit, attached to the Ore Dressing Division with the Bureau (capable of 2500 determinations and 10-11 complete investigations per year). The increasing need of chemical analysis of ores and minerals and beneficiated fractions necessitated expansion of this section without which expeditious completion of tests would be difficult. Sanction for creation of a Chemical Section has been recently accorded. As a result of this chemical determinations would increase to 5000 and complete investigations to about 14 per year.

4.38. It was stated during evidence that 5 to 6 lakhs rupees were being spent on research in the ore dressing laboratory of Indian Bureau of Mines.

Need to Accelerate

4.39. It has been stated in the Fourth Plan Proposals of the Bureau that "The necessity for research and commercial tests in Pilot Plant scale for mineral beneficiation have been felt for long and, consequent upon the decision taken by the Mineral Advisory Board and the Government more than one committees were constituted to evaluate the need in this direction. These committees have recommended setting up of more pilot plants and expansion of the two laboratories with Indian Bureau of Mines and National Metallurgical Laboratory. In fact certain actions were initiated and purchases made for setting up two pilot plants after having pooled the money from a few State Governments and the Central Government, but due to difficulty in providing a small amount of foreign exchange, the idea has now been put off for the time being and the State Governments have raised the issue of obtaining refund of the sums deposited."

4.40. The Committee regret to note that although the necessity for research and commercial tests in pilot plant scale for mineral beneficiation has been felt for long and the Government have appointed several committees to evaluate the need in this direction, nothing concrete and tangible has been achieved so far. The Committee suggest that planned and expeditious action may be taken in the matters in consultation with the mining industry.

Mobile Pilot Plant

4.41. There is a proposal to set up during the Fourth Plan period a Mobile Pilot Plant for conducting on-the-spot pilot plant tests in

promising prospects for which laboratory results have been successful and when reserves are adequate to develop the project into an exploiting mine.

4.42. Such tests would give clear picture of the process because it will be operated in conditions wihch are likely to prevail when the project materialises. Other advantages of a mobile pilot plant are stated to be (i) that it will save expenditure on account of setting up pilot plants at every successful prospect; (ii) it will enable faster completion of preliminary work; (iii) being on-the-spot the personnel of the exploiting agency can be trained easily.

Regional Laboratories

4.43. In view of the increased geological explorations and exploratory mining in various parts of the country especially in Rajasthan, Mysore, Bihar and Andhra Pradesh it is expected that rapid tests in connection with the establishment of amenability to beneficiation for ores received from various deposits would also increase. It is, therefore, proposed to set up two regional laboratories one at Ajmer and the other at Bangalore. These steps, it is expected, will accelerate the production of scarce metals.

4.44. The Committee hope that Government will take decision in the matter of setting up of a mobile pilot plant for conducting on-the-spot tests and the two regional laboratories at Ajmer and Bangalore as expeditiously as possible in consultation will the industry.

Fourth Plan Proposals

4.45. Asked as to what were the total requirements of ore dressing laboratory of the Indian Bureau of Mines to cope with the increasing needs of the country and what will be the financial implications of providing them, it was stated by the Ministry in a written note that "The Ore Dressing Laboratory of the Indian Bureau of Mines works on samples sent to it by the various exploration agencies and private and public sector mines. It also undertakes laboratory studies on a limited scale of the samples collected by the officers of the Indian Bureau of Mines. It is not possible to anticipate the quantum of work which the Bureau will be assigned by the various agencies. But there is a great scope for undertaking beneficiation on a large scale as part of long-term mineral development programmes. For example, the need for

beneficiation of low grade bauxite has been recognised. Similarly, the need for beneficiation of iron ores with a view to reduce its alumina content; reduction of phosphorus and iron in the manganese; agglomeration of chromite ore fines, etc. have been recognised. The Indian Bureau of Mines has made a provision for undertaking 30 ore dressing investigations per year in their Fourth Five Year Plan proposals for which provisions for about Rs. 18 laks on account of pay and allowances and Rs. 11 lakhs for operational expenditure and Rs. 25 lakhs for equipment have been made in the Bureau's Fourth Plan proposals."

4.46. During evidence, however, the representative of the Ministry stated that:

> "The total overall allocation made by the Planning Commission falls short of what we wanted for all these things put together. We are trying to get the allocations increased further to be able to meet the targets better."

4.47. It was also explained during evidence that the proposal to step up beneficiation of 13 or 14 samples to 30 samples during the Fourth Plan was on the basis of the budget of Rs. 46 crores for Geological Survey of India and Indian Bureau of Mines but the Planning Commission is agreeable to only Rs. 31 crores which will cut down the programme.

4.48. The Committee note that the allocations for beneficiation research may have to be brought down from those proposed during the Fourth Plan in view of the overall reduction in allocations from Rs. 46 crores to Rs. 31 crores on Geological Survey of India and Indian Bureau of Mines. They suggest that the whole matter should be examined with a view to see that the beneficiation research is not adversely affected.

Need for Review

4.49. The Committee on Reorganisation of Indian Bureau of Mines have observed in their Report as follows:

> "A fact which has impressed the Committee is that whatever work is being done in the Ore Dressing Division became standardised something like ten years ago and has since then remained stagnant. At the moment activities of the Ore Dressing Division lack dynamism and there is no indication whatsoever of any progress or development."

4.50. Asked if any review is made periodically of the researches made in Bureau, the Ministry have stated that "Review of beneficiation work, though not carried out periodically, has been done from time to time through certain committees such as, Kapadia Committee (1958), Sub-committee under Mineral Ores Export Advisory Committee for manganese ore. The benefication work on Phosphates|Phosphorites from Uttar Pradesh and Rajasthan, included under Soft Rock Project, are being reviewed regularly."

4.51. Asked if any evaluation had been made in recent years of the results achieved in the Ore Dressing Division, it was stated:

> "The work carried out by the Ore Dressing division is reflected in the reports, schemes|project of the agencies which get their benefication tests conducted in Indian Bureau of Mines. Besides, the adoption of processes evolved by Indian Bureau of Mines by the exploiting agencies, like Hindustan Copper Ltd., Sikkim Mining Corporation, National Mineral Development Corporation etc., speaks of the utility of the work done."

4.52. The Committee regret to note that no regular review has been made so far of the researches made by the Indian Bureau of Mines inspite of the observations of the Committee on Reorganisation. The Committee are confident that if a review of the research had been made in proper manner there would have been no room for criticism and the Committee on Reorganisation of Indian Bureau of Mines would not have been compelled to observe that "at the moment activities of the Ore Dressing Division lack dynamism and there is no indication whatsoever of any progress or devleopment". The Committee, therefore, recommend that the Government should ensure that the research carried out in the Ore Dressing Division of Bureau is evaluated regularly and periodically by a team of experts who are not on the staff of the Geological Survey of India or Indian Bureau of Mines so that research services keep pace with the development of the industry and needs of the economy of the country

Need to Coordinate

4.53. The Committee on Reorganisation of Indian Bureau of Mines commenting on the overlapping of research activities of the Indian Bureau of Mines and other organisations said:

> "There will on the other hand, be considerable apparent overlapping between the Bureau's research activities (which

we have suggested should be intensified and expanded) and the work of various Research Institutes in the country such as the National Metallurgical Laboratory, the Central Mining Research Station, the Central Fuel Research Institute etc. The need for research is, however, so great that we consider that this should be no cause for concern to Government. We think in other words that in our present stage of development there cannot be too much of research in India and that there is room for both fundamental as well as applied research by all institutions we are capable of organising it. What is really distressing is that as matters stand at present there is no arrangement for exchange of information about the results of researches as between one institution and another. The present tendency of every research organisation to work in a water-tight compartment does require correction."

4.54. Asked if some of the research work done in the Indian Bureau of Mines Laboratory in Nagpur was also being done by the National Metallurgical Laboratory, Jamshedpur, the Ministry explained:

"The type of research and investigation on ore dressing and mineral beneficiation carried out in Indian Bureau of Mines and National Metallurgical Laboratory are similar in nature but not identical. The problems of ore dressing work in the country are varied and large as well. The work is therefore, distributed between these two laboratories. There is undoubtedly a need to carry out beneficiation research on a number of samples not only from different deposits but also from the same deposit. The National Metallurgical Laboratory and the Indian Bureau of Mines have carried out ore dressing work on a few low grade ore samples from the same deposit.

In case of important deposits ready for commercial exploitation, ore dressing research even on identical ore samples by two competent and independent organisations are useful for confirming the commercial feasibility, preparation of processes flow-sheet and evaluation of cost estimates of the milling project. If the results obtained by two organisations on identical samples are different, the causes for such difference may on scrutiny yield valuable information as to the different steps in beneficiation techniques, reagents etc. If the results obtained are similar,

the details of beneficiation techniques, reagents and other beneficiation conditions adopted may be different which information would be useful for making balanced assessment of the economics of milling."

4.55. Asked what is the machinery for achieving coordination between these organisations, the Ministry stated in a written note;

"In order to achieve coordination between the Indian Bureau of Mines and the National Metallurgical Laboratory, the Bureau has taken up the matter with the Director, National Metallurgical Laboratory for exchange of ore dressing reports for mutual benefit."

4.56. Asked why the necessity was not felt earlier, the representative explained during evidence:

"It is not true that there is lack of coordination. There is coordination. This is due to nature of the project. This does not mean that earlier there was no coordination and there has always been coordination."

4.57. Asked what was the existing mode of coordination it was stated that "the existing mode of coordination is limited to exchange of reports and notes and mutual discussion and exchange of views in meetings and conferences connected with mineral development problems and programmes. The question of making coordination between the two organisations more effective is under consideration."

4.58. The Committee feel that research on samples from the same deposite and even on identical ore samples without proper coordination may lead to waste of the public funds which the country cannot afford. They, therefore, suggest that there should be proper coordination between the Indian Bureau of Mines, National Metallurgical Laboratory and other laboratories.

CHAPTER V

A. Inspections

5.1. Administration of the Mineral Conservation and Development Rules, 1958 is an important function of the Indian Bureau of Mines. For the purposes of these Rules, officers of the Indian Bureau of Mines are empowered to enter and inspect any mine; survey and take measurements; examine any document, book, register or record in possession or power of any person having control of or connected with any mine for the purpose of ascertaining the position of the working, actual or prospective, of any mine or abandoned mine or for any other purpose connected with the Mines and Minerals (Regulation and Development) Act, 1957 or the Rules made thereunder. The officers of the Bureau are required to undertake periodic inspections of the mines to advise the mine-owners regarding systematic development of their proporties, and to ensure that the Rules are being observed.

5.2. The Committee on Reorganization of the Indian Bureau of Mines dwelling on the subject of inspections reported as follows:—

> "The Committee made an attempt to make an objective appraisal of the results of inspections now being made. Typical inspection reports prepared by officers of different ranks were scrutinised and some of the inspecting officers were also interviewed. The matter was also discussed with the representatives of a few mining associations. The Committee's overall conclusion is that by and large inspections by the Bureau's officers have tended to be a routine affair even though the IBM has undoubtedly made significant contributions in such matter as, for example, development of copper mines, lead-zinc mines and a few manganese and mica mines; utilisation of old dumps of manganese ore; location of mica shoots; solution of problems connected with their iron ore industry etc. etc. Except where they were undertaken with clearly specific objectives, routine inspections of mines have produced little or no significant results and have on the whole been a waste of effort and time. Most representatives of

mining industry whom the Committee had to opportunity to examine were nearly unanimous and also emphatic in their view that, as matter stands at present, the IBM does not fill the role of an instrument of public service and approaches made on it for help or guidance, formal or informal, hardly ever evoke satisfactory response; and that it is so much obsessed with its police functions that the natural reaction of the private industry is to run away from it and not turn to it for help and guidence. The Bureau's inspections are hardly ever welcome since there follow usually in their wake a spate of minatory notices and letters."

5.3. The Committee on Reorganization have commented further:

"There can be no question that inspections are essential but we consider that while inspections by the Inspectorate of Mines can be a part of its routine, the Bureau's inspections should be both selective and purposeful as well as thorough; and besides, the subject-matter of the selective inspections should be pursued to definite conclusions. By merely filling in set forms, as they do at present, and by attempting to reach a minimum target number of "inspections" every year, officers of this Division would not be rendering the service expected of them, nor would the Bureau acquire essential knowledge for the conservation of the country's mineral wealth. From the Bureau's point of view it is the qualitative and not the quantitative aspect of inspections which should be of prime importance. Further, the Bureau should cease to dissipate its efforts on investigations of minerals which are currently of minor significance and, instead, concentrate on those minerals, particularly non-ferrous metals, which are of real importance from the country's point of view, whether for promotion of its exports or for making up its industrial deficiencies. It is precisely because inspections have not been purposeful and planned for carrying out specific objectives that the Bureau, for instance, lacks today even after 15 years of workings, fully detailed and spelt-out mineral-wise maps of India—a sad lacuna which will require a lot of time and effort to make good."

5.4. It has been stated by the Ministry that " the inspections rmed as 'routine' inspections which were carried out regularly

for almost all mines in the country, have resulted in obtaining the existing knowledge of the mining industry in the country and have helped in identifying the facts and problems which are being considered at various levels so that scientific and systematic mineral development programmes may be drawn up. The data collected through such inspections has formed the basis of future programmes and, therefore, these cannot be considered wasteful."

5.5. Asked to give an evaluation of the improvements effected by means of these inspections under Rules in the mining techniques during the last 20 years, the Ministry have detailed as follows:

"The suggestions offered to the small mine-owners have resulted in adopting systematic prospecting for mineral deposits, extension rod drilling for locating blind ore shoots, adopting pneumatic drill for drilling blastholes, using higher explosives in place of conventional, gunpowder, opening out quarries in benches and such other simple adaptations within their limitations of finance and technical know-how. In a number of mines labour saving devices like use or wheel-barrows for internal haulage in place of headload, using iron channels for lowering minerals from hilly areas, using mechanical means for hoisting in place of head load, using jigging for mineral preparation, using concrete mat in replacement of solid mineral bearing pillar for larger extraction from underground mines, etc., have been adopted to the benefit of the mines. It is difficult to give examples from all categories of mines for various minerals."

5.6. It has been stated by the Ministry that as a result of inspection the following concrete results have been achieved:

"*Exploration*:—As a result of the inspection of the mines several small mine owners are adopting exploitation operations like pitting trenching prior to the actual exploration of the deposit. This was helped in a better assessment of the potentiality of the properties. Mention can be made of iron ore, manganese, china clay soapstone, calcite, apatite etc., in this respect use of extension drilling in the underground mica mines of Andhra Pradesh and Bihar has been introduced for exploring the continuity of mica shoots and discovering hidden parallel shoots.

Exploitation:—Use of pneumatic drills in small mines has been introduced which has improved the production efficiency. Similarly use of high explosive in small mines has helped in improving the breaking efficiency. Improved drilling techniques like inclined drilling has also been adopted in many mines with resultant benefits.

Introduction of mechanical haulages has helped in improving the haulage capacity of the mines and increasing the production. In several cases, installation of pumping units on the suggestion of the Bureau has reduced the idle time of the mines. The mine owners have been able to exploit the deposits to greater depths as a result of the introduction of suitable pumping arrangements.

On the suggestion of the Bureau several open cast small mines which had become inoperative due to the uneconomic depths, have been put back to the productive stage by converting the same as underground mines; suitable development and stopping methods have been adopted in underground mines bringing about a better exploitation of the deposits (like asbestos mines of Andhra Pradesh); use of concrete mats in replacement to solid crownpillars in case of underground manganese mines of Madhya Pradesh and Maharashtra and mica mines of Bihar has resulted in a higher recovery of ore from the stope blocks.

Mineral Beneficiation/Processing:—Use of Joplin jigs has been extensively adopted in the manganese mines of Madhya Pradesh and Maharashtra on the suggestion of the Bureau. This has resulted in a considerably higher recovery of Ore, which otherwise would have been thrown as waste."

B. **Reorientation**

5.7. It has been stated by the Ministry that consequent to the recommendations of the Committee on Reorganisation the whole programme of inspections has been reoriented as under:—

(i) *Detailed inspection of large open-cast—and underground mechanised mines*:—This study envisages a comprehensive detailed examination of important mines covering all aspects such as ore availability, methods and efficiencies of drilling, blasting, loading, and transport, performance and efficiencies of various types of equipment used in mining

operation; quality control; critical study of mine layout, and its impact on above problems; the cost of production; the man-power deployed, output per man shift and their analysis; comparative performance of different machines and various other factors. The information collected from these studies will enable drawing up expansion schemes for these mines to meet the enhanced targets of production stipulated by the Planning Groups for minerals other than Coal and Oil, and available data will also be utilised in preparation and scrutiny of mining schemes under public and private sector mines.

(ii) *Inspection studies of group of mines in compact mineralised areas regional mineral development studies:*—In this type of study all relevant information on mineral potentiality; methods of mining; availability of labour, power, water and transport facilities, existing production, despatch and utilisation pattern etc., will be collected from individual mines. The data so collected from compact mineralised areas will be studied and processed so as to formulate the regional development schemes for indigenous industries as well as for export.

(iii) *Special investigation.*—Inspection of mines is connected with special references made by the Central and State Governments. This type of inspection will fall in the category of special investigations which are carried out by the Bureau in connection with the construction of road and rail facilities, port development, setting up of specific mineral based industries in particular areas, modifications of mineral and mining laws, Parliament questions, preparation and scrutiny of mining schemes and propect reports and such other matters.

(iv) Regular inspections under Mineral Conservation and Development Rules.

Achievements after Reorientation of Inspections

5.8. The work done by the Bureau under regional studies programme and under detailed studies programme since after the reorientation of the inspections have been stated by the Ministry to be as follows:

"*Under Regional Studies Programmes:*—This department has already carried out regional studies of the private leaseholds of iron ores in Bihar and Orissa, iron ore in Bellary

Hospet, to a certain extent of the iron ores in the Goa region and also a number of manganese bearing areas in the States of Maharashtra and Madhya Pradesh. As a result of these studies, it has been possible to assess the production potential from the different regions, the extent of exploration facilities that are necessary to be undertaken by the various mine owners in the different regions and the extent to which the transport facilities already available in the region are required to be strengthened. It has also helped the Government to examine the possibility of installation of central crushers in an important iron ore bearing area in Orissa State. It has also indicated that the main problem for the development of manganese ore resources in the Maharashtra-Madhya Pradesh region is to intensify research work on the reduction of phosphorus content in the manganese ores and reduction of alumina in blue dust fractions of Goa iron ore deposits. All these problems, which have been brought out in concrete quantitative terms as a result of mineral development studies carried out over a period of two years, are being pursued for an effective solution and a scheme has been drawn up in this connection. A few more specific instances of regional studies carried out and their utility is given below:—

(1) Regional mining geological study of the Pulivendla Asbestos Belt was carried out and the mineralogical controls hitherto unknown, were deciphered on the basis of which future exploration programme in this belt and mode of development could be clearly defined. Geological Survey of India and Andhra Pradesh Mining Corporation have taken into consideration the findings and are suitably modifying their exploration and development programmes in this belt on the lines indicated.

(2) Regional studies on the manganese ores in Madhya Pradesh and Maharashtra belt have enabled in making a realistic assessment of the reserves of diqerent grades of manganese ore available in the private lease holds and quantity and quality of subgrade ore available in the dumps, to examine the possibility of locating a custom mill and also estimating the production potential of the region in relation to the demand of ore of different specifications. The tackling of the problem of reduction

of phosphorus in the ores of this region could also be taken for the first time on a systematic footing by proper collection of samples from some of the zones of high phosphorus. Some progress has already been made and if the work on the above lines is pursued further there is possibility of making certain zones of this area an important supplier of high grade manganese ore despite the high phosphorus content in the ores.

(3) Regional appraisal of limestone deposits in Satna indicated the possibility of locating cement plant in the area. The report was forwarded by the Ministry to Hindustan Steel Limited, Geological Survey of India and Cement Corporation of India.

(4) Regional study of Bauxite mines of Katni brought out the estimates of the reserve potential of refractory grade bauxite, to meet the increasing demand of refractory industry.

(5) Regional study of the principal iron ore mines of Bellary Hospet Region under private sector has helped in assessing the reserves which formed the basis for planing of future targetted production.

Under Detailed Studies Programme:—This department, during the last two years, has carried out detailed inspections of some of the important mines of limestone, diamond, gold, asbestos, etc. Apart from their great utility in bringing out monographs and bulletins on different aspects of production of various important minerals, the detailed inspections have also been very useful in understanding and bring out problems requiring attention for the improvement of the mining techniques. Some of the specific instances in this direction are given below:—

(a) Detailed scheme of development of different asbestos mines in Pullivendla asbestos belt was prepared and furnished to the mineowners for quickly raising the production from their properties. A suitable method of stoping was also evolved for the Pullivendla Asbestos Belt, as a result of which larger production with maximum recovery of ore would be possible. A start already made by the industry on the suggested lines has shown improvement in the production.

(b) Detailed study of six captive limestone mines of cement plants of Andhra Pradesh would enable suggesting to the mineowners suitable remedial measures to improve upon their present method of work wherever warranted and help prospective mineowners for planning of their new mines.

Similarly another detailed study of the two mechanised limestone mines worked under private and public sectors and situated in the same locality has brought out the comparison in the efficiency of different operations and their cost. This study also helped in scrutinising and suggesting modifications from the practical angle, while drawing up the project report of a new mechanized limestone mine under public sector *viz.* Bhavanathpur Limestone Project of Bokaro Steel Plant.

(c) A detailed study of diamond mines of National Mineral Development Corporation around Panna, Madhya Pradesh brought out the problems faced in the development of Panna diamond field. The need for the introduction of methods of regional prospecting and exploratory development, introdutcion of improved methods of beneficiation and reduction in the losses of diamonds etc., were thrown up by the detailed study.

(d) A detailed study of the Hutti Gold Mines has brought out an accurate assessment of the potentiality of the mine after the implementation of the expansion scheme. The need for undertaking greater development in the bordering areas, proper method of exploration, reduction in the dilution of ore and improvement in the tramming efficiency by modifying stoping method and undertaking research on rock bolting, greater conservation by using concrete mats instead of leaving underground institution pillars in the stopes, reduction in the size of concrete mat by undertaking necessary research, experimentation on use of cheaper and more suitable explosives, improvement in the recovery of gold etc., have been brought out after the detailed inspection.

Periodicity of Inspections

5.9. Number of inspection visits to mines, including re-visits since 1961-62 are stated to be as under:

1961	*1962*	*1963*	*1964*	*1965*	*1966*	*1967*	*1968*
960	1351	1254	2327	2221	2298	1145	558

5.10. The reduction in number of inspections in the years 1966-67 onwards is said to be due to reorientation in the programme of work.

5.11. The inspections are carried out on continuing basis and the coverage of mines had been 50 per cent to 70 per cent in past years.

5.12. The periodicity of visits was once in two years or less.

5.13. Asked how the Indian Bureau of Mines could ensure that there is no waste of minerals either due to reckless mining or for other reasons when their on-the-spot inspections were few and far between the representative of the Ministry stated:

> "There are very large number of small mines who are doing good work. But there is no wastage in the mining. There are fairly large areas where small mines are doing their best with the resources available."

5.14. Asked if any directives had been issued by the Indian Bureau of Mines from time to time by way of instructions to the lessees on the subject of conservation, the Ministry stated in a written reply that directives had been issued to all the mica mines in Bihar, Rajasthan and Andhra Pradesh covering about 700 of them and five other mines.

5.15. Asked why it was not felt necessary to issue directives to the mine-owners except five mine owners other than mica mines inspite of paying a large number of visits during the last 20 years the representative of the Ministry stated during the evidence:

> "Frankly, Sir, we cannot say that because directives were not issued everything is all right but by and large we can say in respect of certain groups of mines it has not been found necessary to issue directives. Directives have been issued ot five or six specific mines and one of the contributory factors is that inspection staff is below normal strength."

5.16. The Committee agree with the observations of the Committee on Reorganization of Indian Bureau of Mines that by merely

filling in set forms, and by attempting to reach a minimum target number of inspections every year officers of I.B.M. would not be rendering the service expected of them, nor would the Bureau acquire essential knowledge for the conservation of the country's mineral wealth. The Committee suggest that the I.B.M. should cease to dissipate its efforts on investigations of minerals which are currently of minor significance and should instead, concentrate on those minerals, particularly non-ferrous metals, which are of real importance from the country's point of view.

C. Mineral Intelligence

Importance of Statistics

5.17. An important function of the Indian Bureau of Mines is the collection and publication of statistics relating to mineral production in India, mineral stocks, exports, imports, local consumption etc., and collection and maintenance of information relating to world production, world mineral trade, foreign mineral rules and other related matters and assisting the mineral trade in the marketing of minerals, conducting market surveys and mineral commondities in collaboration with Minerals and Metals Trading Corporation and other agencies. It is useful for formulating a number of policies of the Government in respect of levy of royalties, the import of the fixation of minimum wages in the mines of different minerals, the impact of extending the Provident Fund Rules to the various mines, the extent to which the imposition of various levies such as export duties will affect the mineral trade, the need for any change in the mineral legislation in the country for promotion of mineral development, the Government decisions regarding the creation of facilities for ports and transport and various other fiscal and legislative policies of the Government of India.

Delays in Publication of Statistical Information

5.18. It has been represented to the Committee that "under the rules the Indian Bureau of Mines gets a large number of returns from each mining lease holder and it also gets a lot of information from the various State Governments. Unfortunately, it would appear that there is not much of an attempt to critically study this information, evaluate fields in which more scope for development exists and indicate trends in the development and utilisation of the different minerals. Whatever statistical information the Indian Bureau of Mines ultimately publishes, comes out so late that it ceases to be of any interest by the time it comes out."

5.19. The Ministry have in a note submitted to the Committee stated:

"Information collected by the Indian Bureau of Mines is mainly from two sources, *viz.*, statutory and non-statutory. So far as the former is concerned, the timeliness of receipt of information is more or less satisfactory though the Bureau has to pursue to obtain full coverage vigorously. The timeliness of information from non-statutory sources is poor in as much as it takes more than a year to obtain a fair coverage. The delay in receiving information from non-statutory sources coupled with inordinate time taken by the Government Printing Press and the fixation of price by the Collector of Printing and Stationery have resulted in the delay in the release of the annual publication, the Indian Minerals Year Book. Being conscious of the fact that there is considerable delay in the annual publication and in order to make available the important statistics regarding production, exports imports and Minerals and Metals and Mineral based products to the Government and the Public early, the Indian Bureau of Mines started publishing the "Monthly Bulletin of Mineral Statistics and Information" statistical summary of Mineral production with effect from January, 1961. The present bulletin in the series covers data on development in mineral policy and legislation, Minerals based products, grant and execution of mineral concessions, etc. besides the production (Mineral-wise and State-wise), external trade in Minerals and Metals and is published with a gap of 4-4½ months. Since there was still this gap in publishing the above data, recently the Bureau started releasing, in cyclostyled form, statistical information every quarter on the index of Mineral production, quantity, and value of Mineral Production (State-wise), Metal and alloy production, external trade, etc. Further, the Mineral production and value during each of the Months (State-wise) is also released in cyclostyled form to enable the Government Organisations to have uptodate data. In this series, data for each month is released with a period of two months.

At present, with the existing personnel the data on grade-wise production, despatches and stocks, pit's mouth value etc. only are processed compiled and released from the

monthly and annual statutory returns numbering over 35,000 which are submitted by more than 2,800 Mine-owners (other than coal and minor minerals). This leaves processing and compiling information on cost of production, output per manshift, development of labour, capital investment etc. available in the return. Though such information is not being compiled on a regular basis, special compilations are taken up on some of these aspects whenever occasion demands *e.g.* while advising the Government on extension and fixation of minimum wages, Employees' Provident Fund and other social security measures etc. No doubt, there is a vast scope for compiling such information on a regular basis and having this aspect in view, the Bureau has made provisions for the above work in the Fourth Five Year Plan proposals with necessary personnel. With the availability of these personnel, possessing and release of the above information on a regular basis can be initiated."

5.20. Asked why the Minerals Year Book for the year 1965 was delayed so much that it was published in 1969, the Ministry have stated in a written note that the requisition for printing this publication together with the manuscript was sent to the Government of India Press, Nasik, on the 26th May, 1967. The Printed copies of the publication were duly received from the Press in August, 1969. It may thus be seen that the printing alone of this publication has taken about 2 years and 3 months, over which the Bureau has no direct control.

5.21. Asked if there was any prescribed date of publication of Minerals Year Book, the Ministry stated:

"There is no prescribed date as such of this publication, but the Department endeavours to bring it out as early as possible.

Taking into consideration the past experiences of the Department, the staff situation and the diversification of the publication itself, the date for finalising the manuscript and its despatch to the printing press may be set at one and a half years from the close of the period to which the publication relates. The bulk of the information on

non-statutory basis from the industrial units, the State Governments, State Undertakings, foreign sources, etc. is received at the fag end of the following year to which the publication relates and even at this stage the coverage is not so complete. The preparation of the manuscript and press copy of over 2,500 typed pages and its editing requires the remaining period. The Bureau would like to reduce this period of 1½ years still further to about a year with the availability of more cooperation from the different State Governments industries, etc. As the Bureau has no control over the printing presses any date fixed for its publication would only be hypothetical."

Collection of Data on Local Consumption and on World Trade of Minerals

5.22. The Committee on Reorganisation has pointed in their report as follows:—

"There are, however, at least two matters where the highly important work of collection of mineral statistics falls far short of minimum standards. One is collection of statistics relating to local consumption of minerals and the other is collection of statistics relating to world mineral trade. The deficiency in both these regards is mainly organisational. As far as we have been able to judge, there are no satisfactory arrangements for collection of relevant statistics on either subject.".

5.23. The difficulty had also been expressed in a preliminary note received from the Ministry regarding collection of certain types of data in respect of internal production and consumption and in respect of international market of minerals and port charges etc. and also about differences in physical characteristics of indigenous ores from the imported ores and minerals. This, it has been stated, makes it difficult to understand the competitive position of Indian ores and minerals in world market and formulation of policies regarding installation of smelters based on imported concentrates.

5.24. Asked what ways and means had been adopted or were proposed to be adopted to overcome this difficulty the Ministry stated as follows:—

(a) To obtain exhaustive data on the physical and chemical characteristics of minerals and ores produced and des-

patched for internal consumption export, the returns under the Mineral Conservation and Development Rules have been suitably modified and are awaiting finalisation. Coming into force of these revised returns will help in processing and compilation of the requisite data to some extent. Besides, liaison with the principal exporters and Port authorities needs to be established to obtain data regularly on important minerals to begin with. Provision for this has been made in the Fourth Plan proposals.

(b) There is considerable delay in receipt of information on consumption, physical and chemical specifications (development of mineral based industries etc., which is presently received on a non-statutory basis. Besides, the coverage too is unsatisfactory in spite of the fact that repeated efforts are being made to obtain the complete information. Due to the incomplete coverage, very often estimates have to be made by the Bureau for consumption of minerals keeping in view the past trend in consumption, production of mineral based products, etc. Though the figures provided by the industrial units are scrutinised and cross checked still complete accuracy and authenticity of information supplied on non-statutory basis cannot be fully vouchsafed. In order to overcome the above difficulties, Controller, Indian Bureau of Mines is of the view that statutory provisions enabling the Indian Bureau of Mines to receive regular annual returns from the Mineral-based industrial units may be necessary to ensure both timeliness and accuracy. This can be achieved either by asking the industrial units consuming minerals to submit copies of returns already being sent to Directorate General of Technical Development or by prescribing fresh returns exclusively for Indian Bureau of Mines under the rules framed under Industries (Regulation and Development) Act.

(c) For a thorough knowledge of international production and trade in minerals and their competitive position *vis-a-vis* the position of Indian minerals, it is necessary to have intimate knowledge of mineral deposits in the important countries of the world and to obtain and process data on gradewise and areawise world mineral production, the form in which international trade takes place, quality-wise distribution of commodities traded and extent of tied

up trade in internal market, proportion of sea-borne and inland trade statistics, the prices of different grades of ores in the different world markets, port handling capacities and charges in the different ports of the important trading countries of the world and ocean freight from the exporting country etc. This can only be achieved by posting personnel having intimate knowledge of geology, mining and marketing of minerals in the important mineral producing and consuming regions of the world. In this connection, it is pointed out that our efforts to obtain even meagre informaion on production and trade in menerals from Indian Trade Councillors abroad have not met with success. As such, proposal for posting Mineral Attaches in the different Indian Embassies is under consideration. As and when services of such Mineral Attaches are available to the Bureau, this aspect of the world mineral information can be tackled effectively.

Part of the information required by the Indian Bureau of Mines may be supplied by the Minerals, Metals and Trading Corporation if they furnish the details on gradewise despatches to foreign countries and prices obtained. Besides published journals of foreign origin the Minerals, Metals and Trading Corporation should be in a position to inform the trend in international pricing of Minerals and mineral products.

5.25. During evidence when asked at what stage the proposal of posting mineral attaches in different embassies abroad for the purposes of collecting information in respect of international market of minerals and port charges stood, the representative of the Ministry stated:

"Commercial secretaries in the embassies are supposed to do this job as part of their work."

5.26. Asked if the question of obtaining a copy of the return submitted to D.G.T.D. on utilisation of mineral raw materials was being pursed, the representative stated:

"The normal return submitted by the units to D.G.T.D. does include this one column regarding use of minerals, and it is regular in coming. It is well organised. What happens is that the D.G.T.D. is supposed to compile separately the

information regarding those items and send it and there is a lot of consequent delay. One suggestion is that one more copy of the whole information may be compiled and sent directly to IBM."

5.27. The Committee are surprised to note that it has not been possible for the Ministry to overcome this difficulty of collecting information on internal consumption and production and on international trade in a period of 3 years since the recommendation of the Reorganisation Committee in this regard. The Committee suggest that early steps be taken to make necessary arrangements with our commercial secretaries abroad and with D.G.T.D. at home. Necessary changes should be effected in the relevant Rules if found necessary.

5.28. The Committee regret to note the delays in the publication of the statistical data collected by the Indian Bureau of Mines from various sources. The Commitee also note that the most important factor in these delays is the excessive time taken in the printing of the Minerals Year Book in the Government of India Press, Nasik.

5.29. The Committee, however, understand that arrangements are being made to procure a copy of the returns submitted to the D.G.T.D. with a view to avoid delays being caused in the receipt of information from non-statutory sources, and that a common press is proposed to be installed for the Geological Survey of India and the Indian Bureau of Mines. As the importance of satistical information in the formulation of national mineral policies is self-evident, the Committee suggest that for this purpose, statistical information should be both reliable and comprehensive and all publications relating to the mineral statistics should be brought out in time and with expedition.

5.30. The Committee are of the view that it is necessary to fix a firm date for the publication of the Minerals Year Book. They feel that the utility of the Year Book for the industry will definitely increase if it is printed and produced in a business-like manner. The Committee, therefore, suggest that as soon as the arrangements for obtaining information are finalised the Bureau should endeavour to publish the Year Book within six months following the year to which it relates.

D. Inventory

5.31. It has been generally felt that a reliable knowledge regarding the distribution of the mineral resources in the country is an essential pre-renuisite in the formulation of a well directed national

mineral development policy. A function now added to the activities of the Indian Bureau of Mines is the preparation of mineral maps leading to a complete inventory of mineral resources of India.

Progress so far

5.32. To start with the preparation of Mineral maps and the inventory for iron ore, manganese ore, chromite, copper, lead-zinc, antimony and tin were undertaken. The inventory is in two parts viz. the virgin areas and lease hold areas. Available information on the extent, distribution of deposits, quality of ore, etc. has been collected, from the published and unpublished literature in respect of manganese ore, chromite, antimony and tin. Besides, data on reserves as far as available from the above sources has been collected. The Directorates of Geology and Mining in various States, the Geological Survey of India and other Government organisations and Undertakings engaged in minerals exploration and development have been requested to supply the information on the basis of estimation of resources done by them in the past and the information on the latest reserve figures for the individual deposits. The leading organisations such as Geological Survey of India have indicated that the information sought for is under compilation at their end. In the meantime the information so far collected by the Bureau from the published and unpublished sources and those received from the different organisations in respect of manganese ore, chromite, antimony and tin are being processed. The collection of information on iron ore, copper, and lead-zinc from different published and unpublished sources has been initiated.

5.33. With respect to the information relating to the lease holds, sufficient data have been collected by way of conducting regional studies particularly in respect of iron ore in the Bihar—Orissa region. The data is being processed.

5.34. After completing the work relating to iron ore in other important regions of the country, other minerals like manganese ore will be taken up when sufficient data by way of regional studies are available for which purpose the annual programme of the department is being suitably drawn.

5.35. The Committee have been informed that at present no separate personnel were in position for this work. As the preparation of mineral inventory and the basic mineral maps is a new function assigned to the Bureau by the Government in 1968, the present work indicated above is being carried out by the existing personnel in addition to their normal earlier assignments. The Deputy Mineral Economist and Senior Mining Geologist in the Mineral Economics

and Mines Control and Conservation of Minerals Divisions respectively were sanctioned during 1969-70.

5.36. Asked how much time it is likely to take to achieve this work, it was stated that the work involved is of a continuing nature since the inventory for a number of minerals have to be completed. Even when the inventories of the minerals are completed the work does not end since it will be necessary to bring it uptodate, particularly with the availability of the additional data by way of field programme of the Indian Bureau of Mines and the different agencies conducting explorations such as Geological Survey of India, State Directorates of Geology and Mining, Public Sector Organisations, etc. With the availability of the personnel provided in the Fourth Plan proposals, vigorous efforts will be made to complete the work in this regard in stages.

5.37. The Committee note that the work regarding compilation of a complete inventory of mineral resources in the country is already in progress. In view of the stupendous nature of the job and in view of the great importance thereof in the proper development of mineral resources, the Committee feel that the job should be taken up in right earnest by the Indian Bureau of Mines.

E. Common Forms

5.38. It has been represented to the Committee that

> "there appears to be lack of coordination among different departments of the Government. Often there are duplications and overlappings. Under various provisions of the Acts and Rules that are applicable to mines, mine-owners are required to send a number of notices and returns to several departments. The Federation feels that it would be better if common returns are worked out and prescribed under different enactments. Many unnecessary inspections can be avoided if there is proper coordination between the workings of Indian Bureau of Mines and the Chief Inspector of Mines".

5.39. Attention of the Ministry was invited to this. It has been stated in a written note that "There is a certain amount of overlapping in the Mines and Directorate of Mines Safety. Efforts are being made to remove the same by evolving common forms of notices and returns to be submitted to these organisations."

5.40. The Committee hope that early steps will be taken to evolve common forms for submission of returns by mine-owners to different authorities with a view to ease the avoidable burden on the mine-owners and thus earn their goodwill and co-operation.

NEW DELHI;
April 27, 1970.
Vaisakha 7, 1892 (*Saka*).

M. THIRUMALA RAO,
Chairman,
Estimates Committee.

APPENDIX II

(*Vide* para 2·11)

STATEMENT SHOWING THE NAMES AND NUMBER OF THE VACANT GAZETTED POSTS, WHICH ARE REQUIRED TO BE FILLED ON THE RECOMMENDATION OF THE U.P.S.C./ D.P.C. (As in February, 1970)

A. *Gazetted vacant posts to be filled through UNION PUBLIC SERVICE COMMISSION*

1.	Controller of Mines. . .	2
2.	Suptdg. Mineral Economist.	1
3.	Assistant Controller of Mines.	10
4.	Asstt. Mineral Economist .	3
5.	Asstt. Ore Dressing Officer. . .	2
6.	Chemist.	2
7.	Publication Officer. .	2
8.	Jr. Mining Geologist.	7
		29

B. *Gazetted Posts to be filled through DEPARTMENTAL PROMOTION COMMITTEE*

1.	Deputy Controller of Mines. .	7
2.	Senior Administration Officer.	1
3.	Dy. Ore Dressing Officer. .	2
4.	Senior Mining Geologist. . . .	2
5.	Asstt. Mining Engineer. . .	2
6.	Mineral Officer (Stat). . . .	5
7.	Mineral Officer (Int.) .	3
		22

APPENDIX III

(*Vide* para 2·11)

Statement showing references to UPSC and Central surplus cell of the Ministry of Home Affairs for filling up the vacant posts of Indian Bureau of Mines

S. No.	Name of the post	Nos.	Reference to	Date of reference	Remarks
1	2	3	4	5	6
	Reference to U.P.S.C. for recruitment to Gazetted posts				
1	Controller of Mines (Rs. 1600-1800)	2	UPSC	9-10-69	
2	Suptdg. Mineral Economist (Rs. 1300-1600)	1	UPSC	1-1-69	The UPSC recommended a candidate on 28-6-69. He could not be appointed so far due to certain procedural difficulties in respect of promotion of the departmental officer, who is eligible for promotion to this grade and is on deputation to an ex-cadre post.
3	Asstt. Controller of Mines (Rs. 400-950)	1 1	UPSC UPSC	19-11-68 20-12-68	The UPSC recommended 2 candidates on 10-6-69. Offer of appointment since made to them.
	(including 7 anticipated vacancies)	15	UPSC	27-11-68	The UPSC recommended 3 candidates on 5-1-70. Offers of appointment will be made to them after verification of their character and antecedents.
4	Jr. Mining Geologist (Rs. 400-950)	5 1	UPSC UPSC	*6-1-69 *7-3-69	*The UPSC recommended 6 candidates on 21-7-69. Offers of appointment since made to 5 of them. The verification of character and antecedents of the 6th candidate is not yet complete.
	(Including 2 anticipated vacancies)	3	UPSC	29-1-70	

6	Chemist . . . . . (Rs. 400-950)	2	UPSC	6-1-69	The UPSC recommended 2 candidates on 28-7-69. After verification of character and antecedents of one of the candidates offer of appointment has been made to him. This formality is not yet complete in respect of the second candidate.
7	Publication Officer . . . . (Rs. 350-800)	1	UPSC	25-11-69	

Sl. No.	Name of Post	No. of posts	Reference to	Date of reference	Remarks
	Reference to the Central Surplus Cell				
1	Class III (Technical) . . .	45	Ministry of Home Affairs (Surplus Cell)	14-2-68	
2	Class III (Ministerial) . . .	13	Do.	Do.	
3	Class III (Technical) . . .	30	Do.	1-7-68	
4	Class III (Ministerial) . .	2	Do.	Do.	
5	Class III (Technical) . . .	29	Do.	2-12-68	
6	Class III (Ministerial)	10	Do.	Do.	
7	Class IV	8	Directorate of Employment Exchange, New Delhi.	11-12-68	
8	Class III (Ministerial) . . .	7	Surplus Cell	13-3-69	
9	Class III (Technical) . . .	68	Do.	29-7-69	
10	Class III (Ministerial) .	9	Do.	Do.	
11	Class IV	8	Directorate of Employment Exchange, New Delhi.	22-9-69	
12	Class III (Technical) . .	4	Surplus Cell	22-9-69	
13	Class III (Ministerial) . . .	4	Do.	22-9-69	

APPENDIX IV

(*Vide* para 2.26)

A Scheme for training of Mining Engineers in India with particular reference to the requirements of Metalliferous Mines

01. Standard and utility of graduate mining engineers depends upon the quality and type of training and teaching facilities available in the existing educational institutions in the country which can be subsequently supplemented by available opportunities for post-graduate training and professional work. It is, therefore, necessary to assess the above facilities in order to determine the particular spheres of activity in which training facilities are lacking and require to be augmented. The extent or magnitude of such augmentation will be governed by the needs of the metalliferous mines in the foreseeable future, the number of qualified mining engineers required by the metalliferous mines, their number currently in position, the pattern of envisaged development of the metalliferous mines in the country and the types of problems which may arise and which need to be solved.

02. There are at present 7 institutions in the country imparting teaching and training facilities at the graduate level. The aggregate annual intake capacity of these institutions is of the order of 265. The employment opportunities of graduate mining engineers are reviewed from time to time by the Joint Board of Mining Engineers Education and Training. In view of the recent recession in the employment potential in the mines, the Joint Board recommended a reduction in the intake to the institutions and as a consequence to this, actual admissions were 115 in 1967 and 77 in 1968. Teaching facility at the post-graduate level is available now and only at the Indian Institute of Technology at Kharagpur where a M. Tech. course in Mine Planning and Mechanisation has recently been started. Besides the above graduate and post-graduate teaching facilities, a number of institutions provide teaching-*cum*-training opportunities at the diploma level. The total intake capacity of these Diploma Institutions in the country for diploma course is of the order of 400. The Joint Board, however, in view of the recession, recommended a reduction in the intake as a consequence to which admissions were limited to 158 in 1967 and 96 in 1968. The number of graduates and diploma holders expected to pass out of the institutions for the pur-

poses of post-graduate or post diploma training between 1972 and 1973 will be approximately as follows:—

Year	No. of Degree Holders passing out (approx.)	No. of Diploma Holders passing out (approx.)
1969 .	200	270
1970	200	160
1971	190	95
1972 .	115	90
1973 . . .	75	90
Total . .	780	705

03. A major problem relating to employment of mining engineers in India is that none of the above categories of successful students, namely, post-graduates, graduates and diploma holders can be appointed to even the lowest responsible position in a mine unless they pass a statutory examination conducted by the Directorate of Mines Safety, under the Mines Act. The only employment opportunities available for them, without possessing one or the other of the various certificates awarded under the Mines Act are in a few departments of the Central and State Governments and the sales organizations dealing with mining machinery and equipment. A further difficulty arises out of the fact that a prescribed period of practical training in mines is an essential qualification for eligibility to appear in the examinations conducted by the Department of Mines Safety. For example, a graduate in mining engineering has to have 2 and 3 years practical experience in mines before he can appear in the second class or first class Mine Manager's Certificate Examinations. Since it is not possible to acquire more than a maximum of 6 months training during the 5-year course in the college, most of the students have to undergo 1½ to 2 years post-graduate training in mines merely to qualify themselves to appear in the Second Class Mine Manager's Certificate Examination. The minimum period for eligibility to appear in the lower of the two Manager's Certificate Examinations for a graduate mining engineer is thus in the region of 6½ to 7 years after his passing out of the Higher Secondary Examination or its equivalent.

40. Yet another aspect of the Institutions in India is the emphasis laid on the teaching of coal mining methods and practices. This development has been the result of the dominant role played by coal in the mining industry in India and a relatively large employment opportunity it offers to the Indian Mining Engineers. This can easily be assessed from the fact that although the number of graduate mining engineers already turned out must have been substantial (about 1,840 during 1960 to 1968), only about 200 mining engineers are actually employed in all the matalliferous mines put together.

05. In view of the importance of possessing one or the other certificates awarded by the Department of Mines Safety and also because a prescribed period of practical experience is essential for the students to be eligible to appear in the examinations, the Government of India started a scheme of post-graduate or post-diploma directed practical training. Training is arranged by the Directorate of practical Training under the Ministry of Education. The period of training is 2 years for graduate engineers and 1 year for diploma holders. The graduate mining engineers and diploma holders receive monthly stipend of Rs. 250|- and 150|- respectively during the period. The Directorate fixes up the training in the various coal and metalliferous mines and as far as possible the trainees are fixed in the important mines of the country. The training scheme operates a syllabus which cater to the major operations in the mine, *i.e.* sinking and drifting face operations, prevention of accidents, general management, planning etc. The trainees are visited at their mines by the technical officers of the Directorate who impart on-the-spot instructions and guidance to the trainees. The technical staff attached to the Directorate are only six in nummber. In order to facilitate the imparting of Training to the large number of students by the small strength of technical staff, hostel accommodation has been provided at three places, Zawar, Mosaboni mines and Amjor Pyrites mines. The total capacity of these hostels is of the order of 36 only. The primary objective of the training is to guide the students and prepare them for the various statutory examinations conducted by the Department of Mines. The graduate mining engineers are trained for the Manager's Certificate Examinations and the Diploma holders for the Overman|Foreman|Sirdar Certificate Examinations. The Directorate of Practical Training have so far arranged for the training of 1,671 graduate engineers and 1,354 diploma holders. The yearwise breakup of the number of students trained is given in

annexure No. 1. The following is a summarised account of this annexure:

	Coal Mines	Metal Mines	Total
Graduate Engineers	1,439	232	1,671
Diploma Holders	865	489	1,354
Total . .	2,304	721	3,025

It is seen from the above and also from the annexure that the number of graduate mining engineers trained in the metalliferous mines is too small. It will also be seen that the number of trainees in the metalliferous mines was almost negligible before 1964-65 from which year interest of the trainees in metalliferous mines seem to have increased. Maximum number of trainees in the metalliferous mines in any year is 50.

06. Besides the above scheme of directed practical training, certain facilities for (advanced and specialised) training have also been taken advantages of under various general and bilateral schemes. Under the Colombo Plan, mining engineers have been sent to the Colombo Plan countries from time to time. Training arrangements are also made under TCM and USAID plans in the USA and Canada. Bilateral arrangements for training is reported to exist between India and Poland and Hungary. Government of France also imparts training for Indian Mining Engineers. Some mining Engineers are also reported to have been sent abroad for training under the plans of the National Productivity Council. Details regarding the number of persons so far trained under these schemes, the qualifications of the persons sent abroad and their utility after their return are not available. Informal discussions with the Directorate of Practical Training indicate that the total number under all the above schemes may be of the order of 200—300.

07. In addition to the training facilities discussed in paragraphs 05 and 06 above, some of the public sector corporations have made arrangements for the training of their employees. For example, some probation mining engineers from the NCDC were trained in the European and British coal mines under NCDC's own scheme. A few mining engineers were sent by the HSL for training in the USSR and USA. Here again the exact number is not known.

08. It would, appear, therefore, that the intake capacity of the mining institutions in India are adequate and that some 3,025 graduate mining engineers and diploma holders have received training in the various coal and metalliferous mines of the country since 1961-62 and that the number of mining engineers (mostly at the graduate level) trained abroad may be of the order of 300 or more. While the number so far trained appears to be adequate, there does appear to be a need to increase and improve training facilities in the metalliferous mines. It is, therefore, necessary to examine the lacuna in the present system of training and education.

09. A major defect both in teaching and training of graduate and diploma holders is that the objective in either case is limited to the passing of one or the other of the statutory examinations conducted by the Directorate of Mines Safety. This is a positive inhibition to the acquisition of real, basic, fundamental knowledge and basic research in the subject of mining engineering.

10. There is practically no or little contact between the educational institutions and the industry. There is no exchange of personnel between the teaching institutions and the industry. Nor do the professors in the teaching institutions get any opportunity to visit various mines and study the problems of the industry. The students also, particularly at the post-graduate level, get little opportunity to work on real, practical problems facing the industry. The result of the rather water-tight division between the educational institutions and the industry is that the teachers as well as the students confine much of their time to problems of academic interest only.

11. Even the scheme of directed practical training executed by the Ministry of Education suffers from lack of appreciation on the part of the management in the existing mines, the need for utilising the training in assignment of responsibility commensurate with their abilities and deputation of some of them for management development courses. A few are alive to this problem and they pay incentive bonus of Rs. 100 per month in addition to the stipend paid by the Government of India. There is a need to develop healthy conventions in this regard whereby mine owners may take up trainees, assign them responsibilities, pay them extra remuneration during training and if possible absorb them later on. This will require certain changes in the Mines Act.

12. A major difficulty in the imparting of requisite training in metalliferous mining is the small number of metalliferous mines

in the country where any worthwhile training on the modern techniques can be arranged. Even in these mines, it is not possible to acquire training in many aspects where adequate practical training is essential. Project evaluation, design of mines, high speed shaft sinking and pre-mining development work, and large concentrated outputs from underground work, training in mineral beneficiation, design and installation of mineral beneficiation plants, are all spheres of activity in which scope for acquisition of practical training in the mines in India are rather non-existent. There is also no opportunity of acquiring practical training in many mining methods such as the various caving systems, resuing and the mining of wide orebodies and very thin orebodies. This deficiency can be removed only by deputing Indian mining engineers abroad to acquire practical training in the various specific items where facilities in India are not available.

13. The corrective measures necessary to improve the standard of teaching and training facilities in metalliferous mines in India would thus be the following:—

(a) During the period of post graduate or post diploma training the management of mines may be persuaded to give them additional stipends say of Rs. 100 per month and after 6 months of directed practical training, the trainees may be assigned specific responsibilities in mines related to various technical aspects on a rotation basis with a view to groom them up for undertaking full-fledged responsibility of management and control of operations. The diploma holders similarly may be entrusted with responsibilities equivalent to mining mates after initial six months of practical training. For this purpose, the Mines Act may be suitably modified.

(b) After completion of the full terms of training as enunciated above, the graduate mining engineers and diploma holders may be awarded Assistant Mine Managers and Mine Mates Competency Certificates respectively. The Mines Act will have to be suitably amended for this purpose also.

(c) To the extent possible, the mine management may notify to the Directorate of Practical Trainning their requirements of mining engineers and the Directorate of Practical Training will endeavour to allocate suitable trainees according to requirements. The management should,

to the extent possible, recruit their employees from amongst those trained in their mines.

(d) A suitable number of trainees during their post graduate training period may be attached to the consulting firms, either Indian or foreign, working on specific projects. Such trainees should receive extra remuneration from the mining concerns who have engaged the services of the consultants. To the extent possible, trainees may be allocated to specific job assignments as under:—

(i) Mine Plan Design and Layout.

(ii) High Speed Shaft-sinking.

(iii) High Speed Underground and Opencast Pre-mining Development.

(iv) Design and Erection of beneficiation Plants.

(v) Problems of Strata Control.

(vi) Study of Environment Conditions.

Besides allocating trainees to consultants, trainees may be allocated to various mines where one or the other of the above problems are being studied or taken up in great detail. To enforce this, all problems and projects at least public sector mines may be referred to the Directorate of Practical Training who may take these into account while allocating the post graduate trainees to the various Mines. The Department of Mines may be persuaded to recognise such training for their various examinations.

(e) The metal mining professors in the important educational institutions may be encouraged to spend at least one or two months every year in important mines and study the problems in these mines. At the same time, problems of mines relating to strata control, ventilation studies and project evaluation, mineral beneficiation etc. may be referred to one or more selected institutions where the students may work on the practical problems, rather than on academic problems. A suitable grant may be made by the Government to these selected institutions for the purpose.

(f) A suitable number of qualified graduate engineers may be given stipend and sent abroad for training in specific

problems. For the purpose, it is necessary to select only such candidates who are intelligent, have a good academic record and who have put in at least 5 years of experience in the mines where the problems have been identified and which need to be solved. The training also should be acquired in these mines abroad where similar problems have been solved. Irrespective of the problems, trainees may be sent abroad for high speed shaft-sinking, high speed pre-mining development and mineral beneficiation. It will be desirable that the organisations which require such services will recommend the names of graduate engineers and the venue of their training in foreign countries for specific aspects. A screening cell which may be sent up for the purpose will examine and finalise the priority list of trainees to be sent abroad for specialised training in different aspects of mining and mineral beneficiation for the development of mineral industries of immediate importance.

14. The quantum of training in the various aspects may now be discussed. This has to be related to the actual requirements of mining engineers for metalliferous mines and the nature of the problems envisaged.

The Joint Board of Mining Engineering Education and Training in its several deliberations have attempted to assess the probable requirements of the mining engineers during IV Plan. This assessment was based on the tentative targets of mineral production originally fixed for IV Plan. Since these targets had been revised by the various sub-groups while drawing up the revised IV Plan, the requirement of mining engineers correspondingly needs revision. The fresh requirement of mining engineers in the light of this and the present pattern of employment is shown in the table at annexure-2. According to this assessment about 300 mining engineers will be required during the IV Plan. The requirement of diploma holders has not been studied separately but can be considered commensurate with the restricted admissions effected in the institutions as a sequal to the recommendations by the Joint Board of Mining Engineering and Training.

The graduates likely to be available for metalliferous mining industry are also estimated to be around 300 during the next five years as indicated in the table at annexure-3. The out turn and availability of diploma holders for metalliferous mining industry

for the period 1969 to 1973 is also indicated in the same table at annexure—3.

15. It may be noted that mines of iron-ore, limestone and bauxite are going to be open cast mines and a number of these mines are expected to be fully mechanised mines. Mines of copper, lead and zinc are going to be underground mines. Here again lead and zinc and the copper mines of Rajasthan are likely to involve concentrated mines of wide and steeply dipping ore bodies. While Copper mines in the Singhbhum copper belt will entail mining of relatively gently dipping thin ore bodies. The pyrite bed at Amjore is flat and horizontal while the pyrite ore body at Saladipura is fairly wide and very steep. As regards fluorite and phosphate deposits conditions vary. Again, the facilities for acquisition of training in large mechanised open-cast mines exist in India while those for underground mines is rather limited. The following summarises the position:—

Nature of work	No. of trainees required		whether facilities exist in India
	Graduate	Diploma	
Mechanised open-cast mining . .	174	174	Yes
Underground Mining :			
wide deposits . . .	50	50	Not adequate.
Thin deposits . . .	76	76	Facilities not adequate for thin flat, dipping deposits.
Total .	300	300	

A phased mineral-wise training programme of graduate engineers and diploma holders in the metalliferous mines of the country; keeping in view the anticipated demand of mining engineers during the IV Plan is given in the Table at annexure-4.

The above programme takes care of the number of the graduate mining engineers and diploma holders that is likely to pass out of the institutions in India from 1969 onwards. Their training is proposed to be given all in selected mines in India and will take care of training in methods of mining ore beneficiation and preparation and planning carried out by both foreign and Indian Consultants employed for specific projects in the country. Advantage

should also be taken of placing an appropriate number of suitable trainees in shaft-sinking, pre-mining development erection and installation of beneficiation plants and such other specialised jobs which may be taken up any time during the next five years in the country. Training should also be restricted at least for graduate mining engineers to a few important mines within the country where facilities are available for a proper appreciation and appraisal and analysis of the mining problems existing in such mines. The following mines are suggested for training of graduate mining engineers:

Name of Training	Places where training is to be acquired
(a) *Training in Open-cast Mines*	
(i) Iron-ore mining methods	Mines of TISCO, IISCO, NMDC, HSL Chowgle & Co., Dempo & Souza, Salgaonkar, Sesagoa.
Iron-ore preparation	Mines of TISCO, NMDC, NML, Chowgle & Co., Dempo & Souza etc.
(ii) Limestone mining methods	Mines of ACC, Jeypore Udyog, Churk India Cements, HSL and other mechanised limestone quarries of cement plant.
Limestone preparation	Do.
(iii) Manganese mining methods	Dongri Buzurn, Bharweli, Tirodi, Ukwa, Kandri and Mansar.
(iv) Bauxite mining methods	Captive bauxite mines of Aluminium plants,

(b) *Underground mining methods for wide ore bodies of Copper, Lead and Zinc, Manganese and Gold:*

Khetri, Kolihan, Mosaboni, Hutti, Zawar and Bharweli.

(c) *Underground mining of thin ore boides of pyrites, gold, asbestos, manganese, lead and zinc, mica etc.*

Amjor pyrite, K.G.F., Hutti, Pulivendla Asbestos, Ukwa, Dharweli, Mosaboni, Zawar, mica mines etc.

As regards Diploma holders, they should be distributed both amongst the important mines as stated above and also in the other semi-mechanised mines.

The above programme may not, however, solve some of the immediate problems which the metal mining industry is likely to face. A few important copper, lead, zinc and pyrites mines in

volving concentrated production from wide steeply dipping ore bodies and relatively flat and thin ore bodies are likely to come to production before the end of the IV Plan. A few thin flat dipping ore deposits like the pyrites deposits at Amjor and asbestos mines at Pulivendla may also be brought to production. Facilities for training in the specific problems associated with the mining of such deposits do not at present exist in India. It has been stated already that this deficiency can be met with only by sending suitable panels for training in appropriate mines abroad. In the event of people with requisite experience not being available due to the non-existence of mines on such deposits, suitable candidates may be chosen from other mines.

An approximate number of engineers who will have to be sent abroad for specialised training in different aspects of mining and mineral beneficiation is given below:—

Nature of Training	Number of Mining Engineers to be sent per annum
1. Iron Ore Preparation	1
2. Phosphate mining & beneficiation	2
3. Mining Methods of wide and Steeply dipping ore bodies of copper, lead, zinc, pyrites, etc.	4
4. Mining Methods of thin and flat dipping deposits of pyrites, asbestos etc.	1
5. High speed shaft sinking	1
6. High speed pre-mining development	1
7. Strata control and study of environmental conditions	1
8. Mineral Beneficiation for non-ferous metals, manganese, fluorite etc.	2

The duration of the special training abroad may be of two years. As stated earlier, the mining engineers selected for such training will be drawn from the mining industry, IBM and GSI, possessing a minimum experience of five years and well acquainted with the problems of a particular mining industry or field for which training abroad may be necessary. In order to ensure that the services of such trainees after their return are properly utilised, an undertaking to serve the industry from where they have been sponsored for at least five years may be necessary.

ANNEXURE I

	1961-62		1962-63		1963-64		1964-65		1965-66		1966-67		1967-68		1968-69		Total	
	Coal	Metal	Coal	Metal	Coal	Metal	Coal	Metal	Coal	Metal	Coal	Metal	Coal	Metal	Coal	Metal	Coal	Metal
DEGREE . . .	220	7	201	15	216	7	179	22	187	43	191	46	152	42	82	50	1429	232
DIPLOMA . .	83	32	120	41	151	30	152	60	101	73	121	125	104	80	33	48	865	489

ANNEXURE II

Estimated additional requirement of graduate mining engineers in the Metalliferous Mines by 1973-74

Mineral Agency	Unit	Annual Production target considered by Joint Board	Total requirement estimated by Joint Board	Annual Production target revised by the Planning Group	Revised Requirement based on the revision of target	Mining Engineers in position	Additional requirement of Mining Engineers
1	2	3	4	5	6	7	8
Copper	Tonnes	72,000	60	58,000	50	26	24
Lead & Zinc . . .	"	50,000	16	59,000	16	3	13
Iron Ore	Million Tons	55	122	55	122	53	69
Bauxite	"	1.8	36	2·0	40	4	16**
Manganese	"	3·2	128	2·5	00	20	40**

	2	3	4	5	6	7	8
Chromite	Tonnes	3,60,000	14	2,50,000	10	1	9
Magnesite	,,	5,50,000	11	3,09,000	6	4	2
Mica	,,	34,000	70*	25,000	37**	17	20
Limestone	Million Tonnes	48	120	30	75	48	27
Dolomite	,,	3·6	9	1·3	3	1	2
Fireclay	,,	1·0	10	1·2	2	1	1
Chinaclay	,,	2·0	20	0·5	12	8***	4
Gypsum	,,	2·2	55	1·7	7	3	4
Pyrites, Fluorite & Phosphates	=				16***	4***	12***
Rest of the Minerals	=		80				20**
I. B. M.	=		30		..		16@
Prospecting	=		20		..	..	20
Minor Minerals	=		62*	..	Nil	..	Nil**
	TOTAL.		913		496		299

*This figure was revised by Joint Board as against the figure of 170.

**These figures are based on the possibilities indicated by the present pattern of employment of mining engineers in mines.

***An approximate.

@Fourth Plan proposals of the Indian Bureau of Mines.

ANNEXURE—3

Estimates of the number of graduate mining Engineers & Diploma Holders likely to be available for metalliferous mining training during 1969-1973.

Year	Graduate Engineers	Percentage of the total during five years	Diploma Holders	Percentage of the total during five years
1969	77	26	115	38
1970	77	26	67	22
1971	72	24	41	14
1972	44	15	38	13
1973	29	9	39	13
TOTAL.	299	100	300	100

Note: —(a) The percentage of graduate engineers opting for metalliferous mining out of the total passing out is considered to be 45% and that in case of diploma holders as 50%.

(b) Wastage against the admissions is considered to be 15%.

ANNEXURE—4

Desirable Application of training for different minerals during the period 1969—1973.

OPEN CAST MINING

	1969	1970	1971	1972	1973	Total
1. Iron Ore						
Graduate Engineers	18	18	16	10	7	69
Diploma Holders	26	15	10	9	9	69
2. Bauxite						
Graduate Engineers	4	4	4	2	2	16
Diploma Holders	6	4	2	2	2	16
3. Manganese						
Graduate Engineers	5	5	5	3	2	20
Diploma Holders	8	4	3	3	2	20
4. Chromite						
Graduate Engineers	1	1	1	1	1	5
Diploma Holders	2	2	1	1	..	5

	1969	1970	1971	1972	1973	Total
5. Limestone						
Graduate Engineers . .	7	7	6	4	3	27
Diploma Holders . .	10	6	4	4	3	27
6. Magnesite Dolomite Fire-clay Gypsum Phosphate I.B.M.						
Graduate Engineers . .	10	10	9	5	3	37
Diploma Holders . .	14	8	5	5	5	37
TOTAL						
Graduate Engineers .	45	45	41	25	18	174
Diploma Holders .	66	38	25	24	21	174

UNDERGROUND MINING

(a) *Wide Ore Bodies* . . .	1969	1970	1971	1972	1973	Total
1. Copper						
Graduate Engineers . .	3	3	3	2	1	12
Diploma Holders . .	5	3	2	1	1	12
2. Lead & Zinc						
Graduate Engineers . .	3	3	4	2	1	13
Diploma Holders . .	5	3	2	2	1	13
3. Chromite						
Graduate Engineers . .	1	1	..	..	..	2
Diploma Holders . .	1	1	..	..	..	2
4. Mica						
Graduate Engineers . .	1	2	1	1		5
Diploma Holders . .	2	1	1	1		5
5. Pyrites						
Graduate Engineers .	1	1	1	..	..	3
Diploma Holders .	1	1	1	..	..	3
6. I.B.M.						
Graduate Engineers . .	1	1	1	1	..	4
Diploma Holders . .	1	1	1	1	..	4
7. Prospecting						
Graduate Engineers . .	2	3	2	2	1	10
Diploma Holders . .	4	2	2	1	1	10
TOTAL						
Graduate Engineers . .	12	14	12	8	3	49
Diploma Holders . .	19	12	9	6	3	49

	1969	1970	1971	1972	1973	Total
(b) *Thin Ore Bodies*						
1. Copper						
Graduate Engineers . .	3	3	3	2	1	12
Diploma Holders . .	5	3	2	1	1	12
2. Manganese						
Graduate Engineers .	5	5	5	3	2	20
Diploma Holders .	8	4	4	2	2	20
3. Chromite						
Graduate Engineers . .	1	1		..	..	2
Diploma Holders . .	1	1		..	..	2
4. Mica						
Graduate Engineers . .	4	4	3	2	2	15
Diploma Holders .	6	3	2	2	2	15
5. Pyrites						
Graduate Engineers .	1	1	1	..	..	3
Diploma Holders .	1	1	1	..	..	3
6. Other minerals						
Graduate Engineers .	3	3	2	1	1	10
Diploma Holders .	4	2	2	1	1	10
7. I.B.M.						
Graduate Engineers .	1	2	1	..	..	4
Diploma Holders .	2	1	1	..	..	4
8. Prospecting						
Graduate Engineers .	2	3	2	2	1	10
Diploma Holders .	4	2	2	1	1	10
TOTAL :						
Graduate Engineers . .	20	22	17	10	7	76
Diploma Holders . .	31	17	14	7	7	76
GRAND TOTAL :						
Graduate Engineers . .	77	81	70	43	28	299
Diploma Holders . .	116	67	48	37	31	299

APPENDIX V

(*vide* para 2·47)

Distribution of functions among the various reorganised Divisions of the Indian Bureau of Mines

M.C.C.M. DIVN.

(DIRECTOR)

TECH. CONSULTANCY RESEARCH AND PUBLICATION DIVISION

(DIRECTOR)

MINING GEOLOGY (RESOURCE APPRAISAL)

Regional offices (*Jt. Director*)	*Tech. Consultancy* (*Jt. Director*)	*Research and Publication* (*Jt. Directors*)
(1) Planned inspection of Mines.	(1) Providing tech. consultancy on payment.	(1) Research on special mining problems in collaboration with other research organisations.
(2) Reg. Mineral Development studies.	(2) Appraisal of deposits.	(2) Publication of bulletins monographs etc. on mineral (facts and problems).
(3) Inventory of mineral resources & preparation of basic map field studies thereof.	(3) Scrutiny and preparation of mining schemes & feasibility reports.	(3) Research on application of new technology in mining to augment resources development activities.
(4) Administration of Mineral Conservation Development Rules, '58.	(4) Studies on development of roads, railways, port etc. for mineral development.	(4) Preparation of documents minerals.
(5) Collection of samples for beneficiation studies, wherever, necessary.		
(6) General advice and guidance to mineowners.		

MINERAL ECONOMICS DIVISION

(DIRECTOR)

Mineral Intelligence & Information (Joint Director)	*Mineral Industrial Study, Statistics, and Press* (Joint Director)
(1) Collection and compilation of information on Mineral Concessions—Statewise, District-wise and Mineral-wise.	(1) Collection, processing and compilation of mineral statistics received through statutory returns etc.
(2) Inventory of mineral resources in collaboration with MCCM Division and outside organisations.	(2) Collection and compilation of mineral statistics on industrial consumption.
(3) Collection and compilation of mineral Development information in the country and in important countries in the world (through Mineral Cells in Embassies)	(3) Collection of statistics on world mineral Production.

(4) Internal and International market study.

(5) Organising Library facilities and work.

(6) Publication of bulletins, monographs on mineral development studies and mineral marketing; publication of Indian Minerals Year Book, periodic reports of the Deptt. and the quarterly journal 'Mines & Minerals'.

(7) Administration of certain sections of the M. C. D. Rules, 1958.

(8) Advising Govt. on mineral development matters and supplying data to other organisations.

(4) Perspective planning for requirement of minerals based on industrial studies as well as export and import studies.

(5) Publication of monthly bulletin on mineral statistics and information.

(6) Investment and earning studies on mineral mining industry.

(7) Running and maintenance of the 'Press'.

ORE DRESSING DIVISION

(DIRECTOR)

Laboratory and Mineralogical Analysis (Joint Director) — Chemical Analysis

(1) Research on ore dressing and mineral beneficiation problems brought up by the M.C.C.M. Divn.

(2) Beneficiation tests on laboratory scale for samples sent by parties, (private or public sector mines), on payment.

(3) Beneficiation tests on samples sent by the Geological Survey of India and State Govts. with or without payment.

(4) Mineralogical tests on ore dressing and other samples.

(5) Publication of results and exchange of ideas and views with other Govt. organisations.

(6) Research on mineral utilisation *vis-a-vis* import substitution.

Pilot Plant (including Mobile pilot pan (Joint Director)

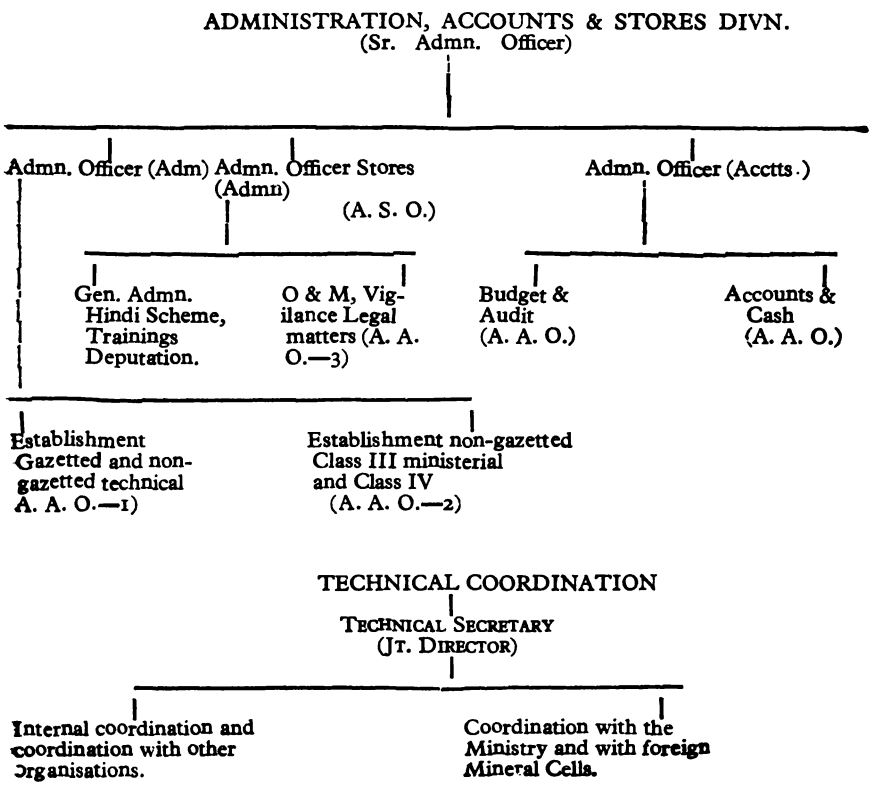
(1) Beneficiation tests on pilot plant scale after laboratory test for establishing commercial feasibility—samples from Geological Survey of India, other Divns. of IBM and State Govts. with or without charges.

(2) Full Pilot plant test on payment for samples sent by parties.

(3) Crushing, grinding etc. and partial tests on bulk samples as might be stipulated by parties, on payment.

(4) Preparation of process flowsheets estimates of machinery and equipment required cost involved etc. for consultancy service.

(5) Bulk tests on possibility of setting up custom mill for various minerals/ores.


ADMINISTRATION, ACCOUNTS & STORES DIVN.
(Sr. Admn. Officer)
Admn. Officer (Adm)
Admn. Officer Stores (Admn)
(A. S. O.)
Admn. Officer (Acctts.)
Gen. Admn. Hindi Scheme, Trainings Deputation.
O & M, Vigilance Legal matters (A. A. O.—3)
Budget & Audit (A. A. O.)
Accounts & Cash (A. A. O.)
Establishment Gazetted and non-gazetted technical A. A. O.—1)
Establishment non-gazetted Class III ministerial and Class IV (A. A. O.—2)

TECHNICAL COORDINATION
TECHNICAL SECRETARY
(JT. DIRECTOR)
Internal coordination and coordination with other Organisations.
Coordination with the Ministry and with foreign Mineral Cells.

APPENDIX VII

Summary of Recommendations|Conclusions contained in the Report

Sl. No.	Reference to para No. of the Report	Summary of Recommendations/ Conclusions
1	2	3
1	1.17	The Committee note that the functions of the Indian Bureau of Mines, as they now stand, have been evolved through periodic reviews. The Committee note in particular the recommendations made by the Committee on Reorganisation of the Indian Bureau of Mines 1966-67 and feel that with the implementation of the major recommendations of that Committee the activities of the Bureau have been reoriented in the right direction.
2	1.18	The Committee also note that with a view to eliminate over-lapping in the functions of the Geological Survey of India and the Indian Bureau of Mines, the divisions which had been appended to the latter in 1953 were transferred back to the former in 1966.
	1.19	The Committee regret to note that it required Government 13 years to realise the existence of over-lapping of functions between the two organisations.
3	1.24	The Committee note that the subject of creation of a new organisation responsible for carrying out drilling and exploratory mining for minerals other than atomic minerals, oil and gas is under consideration of Government.
	1.25	The note prepared in Planning Commission

1	2	3
		lays stress on increasing the tempo of exploration. The representative of the Ministry, has, however, stated that the two main difficulties being felt with the existing arrangement are the cost of drilling and the point at which the exploring agency should stop drilling and pass on the job to the exploiting agency. The Committee do not think that these difficulties could be solved simply by creating a new agency. The erstwhile Exploratory wing of the Indian Bureau of Mines was transferred back to Geological Survey of India in 1966 only to avoid duplication. In case, however, it is desired to divest the Geological Survey of India of its drilling functions, the Committee fear that such a step would reduce Geological Survey of India to a mere academic institution. It need hardly be pointed out that a Government-owned drilling company recommended by the Committee on Reorganisation was only as interim measure pending development of private-owned drilling agencies.
	1.26	The Committee, therefore, are of the opinion that the best course for the Government would be to constitute an efficient, cost conscious and economically viable unit within the Geological Survey of Indian who could take up drilling work in a businesslike manner.
4	2.12	The Committee note that while in many cases the reasons for filling up these posts are stated to be beyond the purview of the Department of Mines & Metals, in some cases there has been considerable delay in the Department itself. For instance, the two posts of the Controller of Mines fell vacant on 25. 9. 68 and 2. 1. 69 and reference to the Union Public Service Commission was made only on 9. 10. 69. Similarly the time taken to fill up the two posts of Assistant controller of Mines which fell vacant on 1. 1. 66 and 23. 8. 67 cannot be attributed wholly to an outside agency

1	2	3
		as the references in these cases were made to Union Public Service Commission on 19. 11. 68 and 20. 12. 68 only.
	2.13	The Committee also note that no steps appear to have been taken to fill up a number of posts of the Deputy Controller of Mines. The Committee consider such delays as objectionable. Apart from generating frustration among the aspiring juniors the delay must have impeded the work of the Bureau to a great extent.
	2.14	The Committee, therefore, urge that immediate steps should be taken to fill up the large number of posts lying vacant at the moment. The Committee would suggest that time limit should be fixed for making references to fill up a vacancy where a reference has to be made to the Union Public Service Commission or the Central Surplus Cell. In any case a post should not be allowed to remain vacant beyond three months where the Departmental Promotion Committee has to take a decision.
5	2.15	The Committee also note that a number of posts were lying vacant in the Bureau as clearance from the Central Surplus Cell could not be received even where a reference had been made some two years ago. As the Indian Bureau of Mines is a technical Organisation, actual implementation of various projects can be expected only when the sanction to the staff is timely and the staff sanctioned is in position. The Committee, therefore, urge that the matter of clearance from the Central Surplus Cell should be taken up at a high level and a workable solution arrived at.
6	2.21	The Committee are of the view that the non-technical staff in a technical organisation should be kept to the barest minimum in the interest of efficiency. They, therefore, suggest that while sanctioning posts in future for Indian Bureau of Mines, the Government should ensure that non-

1	2	3
		technical staff is recruited only when it is absolutely necessary.
7	2.23	The Committee note that a new entrant is put as under-study with an experienced officer before being assigned an independent charge. The Committee are, however, surprised to note that at present no arrangement exists in the Bureau for imparting practical training to the staff through an organised training section.
	2.24	The Committee, therefore, suggest that the Government should make necessary arrangements for imparting training to the staff through an organised training section.
8	2.37	The Committee note that emphasis has heretofore been laid on the coal mining methods and practices in India on account of the larger employment opportunities it offers to the Indian Mining Engineers. Although 1840 graduate mining engineers were turned out during 1960 to 1968, only about 200 were actually employed in all the metalliferous mines put together. The Committee also note that the intake capacity of the training institutions in India is adequate as about 3025 graduate mining engineers and diploma holders have received training in various coal and metalliferous mines of the country since 1961-62.
	2.38	The Committee are, however, surprised that the Department of Mines and Metals have no details regarding the number of persons trained under Colombo Plan etc. The Department of Mines and Metals could not even furnish information to the Committee regarding arrangements made by the Public Sector Corporations like National Coal Development Corporation or Hindustan Steel Ltd. under their own schemes.
	2.39	The Committee feel that in execution of training programme of mining engineers, particularly

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		where people are sent abroad for advanced and specialised training, there should be proper planning by the Central Government.
	2.40	The Committee feel that it is high time to increase and improve training facilities in metalliferous mines in view of the increasing activities in this field.
9	2.41	The Committee note that adequate facilities do not exist in the country in some spheres of mining activity, *e.g.* project evaluation, design of mines, high speed shaft sinking and pre-mining development work, large concentrated outputs from underground work, training in design and installation of mineral beneficiation plant. There are also no arrangements for acquiring practical training in many mining methods such as various caving systems, resuing and the mining of wide ore-bodies and very thin-ore bodies. The Committee, therefore, urge that early arrangements should be made in a phased and planned manner for training of technical personnel in foreign countries. In this matter full advantage should be taken of the facilities available under various bilateral training programmes and schemes like Colombo Plan, Technical Cooperation Mission and USAID Plans etc.
	2.42	The Committee are of the view that full advantage should also be taken of collaboration arrangements to train our engineers etc. They, therefore, suggest that this should be done by invariably attaching a suitable number of trainees to consulting firms—Indian or foreign who are asked to execute any specific project in India so that technical know-how is built up in India systematically and progressively.
10	2.43	In this connection the Committee would like to draw attention to the suggestion made by

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		the Committee on Reorganization that a mechanism should be evolved whereby the services of such personnel as have acquired specialised and advanced training in any specific fields can be made available to all the wings of the metal mining industry irrespective of the corporation or organization they may happen to belong.
11	2.44	The Committee suggest that in case there are no opportunities of training in any of the specific fields referred to above within the country Government should make necessary arrangements for sending the technically qualified personnel to foreign countries for training, so that mining engineers in India are not deprived of the latest technological developments in metalliferous mining in the world.
12	2.50	The Committee note the proposals put forth for the reorganization of the Indian Bureau of Mines which are based on the recommendations of the Committee on Reorganization of the Indian Bureau of Mines. The Committee hope that the Government will give due consideration to the proposals made for the reorganization of the Indian Bureau of Mines and will ensure that the reported exodus of experienced personnel from the Bureau is stopped as early as possible. The Committee also hope that all efforts will be made to find suitable incumbents for technical posts.
13	2.57	The Committee are of the view that none of the procedural bottle-necks in the recruitment of personnel mentioned by the Ministry is of a character which could not have been overcome by now. Such advance action was all the more necessary in the case of the Indian Bureau of Mines where sophisticated equipment will have to be procured and highly technical and experienced personnel recruited.

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14	2.59	The Committee are glad to note that the Ministry propose to authorise the Controller, Indian Bureau of Mines to initiate action for recruitment of personnel and place orders for equipment during the Fourth Plan period.
15	2.60	The Committee hope that the Ministry have already prepared a perspective Plan for recruitment of personnel and purchase of equipment etc. They, however, suggest that Government should ensure that there is no over capitalisation and arrangements are made for proper maintenance and servicing of machinery and equipment and proper utilisation thereof.
16	3.13	The Committee would like to invite attention to their observations on this aspect *viz.* gaps between the discoveries of mineral resources and their exploitation made in para 3.35 of their Hundred and Twenty-sixth Report. The Committee feel that more concerted efforts will have to be made to fill the gaps between the time of exploration and that of exploitation, in the case of scarce metals if the country is to be relieved of the drain on foreign exchange. This can be achieved through advanced planning and more realistic feasibility reports before the decisions to launch production are taken and by introduction of modern mining techniques wherever possible and economically justified.
17	3.18	The Committee note that there is no particular cell in the Ministry of Petroleum and Chemicals and Mines and Metals where perspective planning could be done from exploration to

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		exploitation keeping the country's future requirements in view. Nor is there any agency which could see that the time-lag between the location and exploitation stages could be abridged. The Committee feel that the present arrangements of constituting planning groups under the auspices of the Planning Commission on the eve of formulation of a Five Year Plan though useful for short term needs are not at all adequate from the point of view of long term needs.
	3.19	The Committee, would, therefore, suggest that a permanent agency or Cell should be created in the Ministry which would not only watch the long term needs of the country for a systematic and progressive development of its resources but could also provide a link between the exploration and exploitation stages. This agency can also be utilised by Government for solutions of specific problems as and when they arise.
18	3.34	The Committee note that a large number of mineral bearing areas have been reserved in pursuance of the Industrial Policy Resolution. The Committee also note that Expert Committees were appointed in 1957/58 in States to facilitate selection of suitable deposits of iron and manganese ores for State exploitation.
	3.35	In this connection, the Committee note that this matter was discussed in the meeting of the Mineral Advisory Board held at Bangalore in May, 1963 and the Board recommended that the Government might review the position in consultation with the State Governments and public sector undertakings.
	3.36	The Committee note the policy followed by Government in the matter of reservation of mineral bearing areas as indicated in para 3.33.

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	3.37	The Committee feel that this matter needs to be more thoroughly examined keeping uppermost the national interest and preservation of mineral wealth and recommend that Government should after careful consideration draw up a firm policy so far as its attitude on reserved and non-reserved areas is concerned and ensure that the production of minerals increases appreciably and the country becomes self-sufficient in those minerals which are in short supply and which are being imported at present.
19	4.18	The Committee are surprised to note that no consultancy service worth the name has been set up so far. In spite of the fact that this matter was one of the terms of reference of the Committee on the Reorganization of the Indian Bureau of Mines and that that Committee felt that there was unquestionably wide and genuine need in the country of a strong and competent Consultancy Division, nothing tangible has been achieved so far. The facilities of consultancy service introduced by Government towards the beginning of 1969 appear to have made hardly any impact on the mining industry. The only inference that the Committee can draw from this is that the consultancy service introduced in 1969 is only a nominal service and not a real service which is the need of the industry. In view of the fact that the mining industries are unanimous in their demand for an effective consultancy service, the Committee see no reason why the Indian Bureau of Mines should not be able to meet the requirement. The Committee expect the Indian Bureau of Mines to treat this as an opportunity and challenge to establish its consultancy services and render meaningful service to the industry at an economic cost.
20	4.23	The Committee note that the small mines collectively represent the important sector for

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		production. The Committee suggest that Government should encourage small mine owners to form cooperatives so that financial assistance may become available to them for purchase of different types of mining machinery as and when required by them on no loss no profit or on hire-purchase basis.
21	4.26	The Committee would suggest that Government should review the whole matter and examine the feasibility of helping the small mine-owners through Indian Bureau of Mines in regard to standard layouts and designs for various mining operations and components.
22	4.40	The Committee regret to note that although the necessity for research and commercial tests in pilot plant scale for mineral beneficiation has been felt for long and the Government have appointed several committees to evaluate the need in this direction, nothing concrete and tangible has been achieved so far. The Committee suggest that planned and expeditious action may be taken in the matter in consultation with the mining industry.
23	4.44	The committee hope that Government will take decision in the matter of setting up of a mobile pilot plant for conducting on-the-spot tests and the two regional laboratories at Ajmer and Bangalore as expeditiously as possible in consultation with the industry.
24	4.48	The Committee note that the allocations for beneficiation research may have to be brought down from those proposed during the Fourth Plan in view of the overall reduction in allocations from Rs. 46 crores to Rs. 31 crores on Geological Survey of India and Indian Bureau of Mines. They suggest that the whole matter should be examined with a view to see that the beneficiation research is not adversely affected.

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25	4.52	The committee regret to note that no regular review has been made so far of the researches made by the Indian Bureau of Mines inspite of the observations of the Committee on Reorganisation. The Committee are confident that if a review of the research had been made in proper manner there would have been no room for criticism and the Committee on Reorganisation of Indian Bureau of Mines would not have been compelled to observe that "at the moment activities of the Ore Dressing Division lack dynamism and there is no indication whatsoever of any progress or development". The Committee, therefore, recommend that the Government should ensure that the research carried out in the Ore Dressing Division of Bureau is evaluated regularly and periodically by a team of experts who are not on the staff of the Geological Survey of India or Indian Bureau of Mines so that research services keep pace with the development of the industry and needs of the economy of the country.
26	4.58	The Committee feel that research on samples from the same deposit and even on identical ore samples without proper coordination may lead to waste of the public funds which the country cannot afford. They, therefore, suggest that there should be proper coordination between the Indian Bureau of Mines, National Metallurgical Laboratory and other laboratories.
27	5.16	The Committee agree with the observations of the Committee on Reorganization of Indian Bureau of Mines that by merely filling in set forms, and by attempting to reach a minimum target number of inspections every year officers of I. B. M. would not be rendering the service expected of them, nor would the Bureau acquire essential knowledge for the conservation of the country's mineral wealth. The Committee suggest that the I. B. M. should cease to dissipate its efforts on investigations of minerals which are

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		currently of minor significance and should instead, concentrate on those minerals, particularly non-ferrous metals, which are of real importance from the country's point of view.
28	5.27	The Committee are surprised to note that it has not been possible for the Ministry to overcome this difficulty of collecting information on internal consumption and production and on international trade in a period of 3 years since the recommendation of the Reorganisation Committee in this regard. The Committee suggest that early steps be taken to make necessary arrangements with our commercial secretaries abroad and the D.G.T.D. at home. Necessary changes should be effected in the relevant Rules if found necessary.
29	5.28	The Committee regret to note the delays in the publication of the statistical data collected by the Indian Bureau of Mines from various sources. The Committee also note that the most important factor in these delays is the excessive time taken in the printing of the Minerals Year Book in the Government of India Press, Nasik.
	5.29	The Committee, however, understand that arrangements are being made to procure a copy of the returns submitted to the D. G. T. D. with a view to avoid delays being carried in the receipt of information from non-statutory sources, and that a common press is proposed to be installed for the Geological Survey of India and the Indian Bureau of Mines. As the importance of statistical information in the formulation of national mineral policies is self-evident, the Committee suggest that for this purpose, statistical information should be both reliable and comprehensive and all publications relating to the mineral statistics should be brought out in time and with expedition.
30	5.30	The Committee are of the view that it is necessary to fix a firm date for the publication of

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		the Minerals Year Book. They feel that the utility of the Year Book for the industry will definitely increase if it is printed and produced in a business-like manner. The Committee, therefore, suggest that as soon as the arrangements for obtaining information are finalised the Bureau should endeavour to publish the Year Book within six months following the year to which it relates.
31	5.37	The Committee note that the work regarding compilation of a complete inventory of mineral resources in the country is already in progress. In view of the stupendous nature of the job and in view of the great importance thereof in the proper development of mineral resources, the Committee feel that the job should be taken up in right earnest by the Indian Bureau of Mines.
32	5.40	The Committee hope that early steps will be taken to evolve common forms for submission of returns by mine-owners to different authorities with a view to ease the avoidable burden on the mine-owners and thus earn their goodwill and co-operation.

APPENDIX VII

(*Vide* Introduction)

Analysis of recommendations/conclusions contained in the Report

I. CLASSIFICATION OF RECOMMENDATIONS :

Recommendations for improving the Organisation and working :

1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32.

Recommendations for effecting economy :
15.

II. ANALYSIS OF THE RECOMMENDATIONS DIRECTED TOWARDS ECONOMY :

Sl. No.	Sl. No. as per summary of Recommendations (Appendix VI)	Particulars
1	15	Government should ensure that there is no overcapitalisation and arrangements are made for proper maintenance and servicing of machinery.

Sl No.	Name of Agent	Agency No.
	DELHI	
24	Jain Book Agency, Connaught Place, New Delhi.	11
25	Sat Narain & Sons, 3141, Mohd. Ali Bazar, Mori Gate, Delhi.	3
26.	Atma Ram & Sons, Kashmere Gate, Delhi-6.	9
27	J. M. Jaina & Brothers, Mori Gate, Delhi.	11
28.	The Central News Agency, 23/90, Connaught Place, New Delhi.	15
29.	The English Book Store, 7-L, Connaught Circus, New Delhi.	20
30.	Lakshmi Book Store, 42, Municipal Market, Janpath, New Delhi.	23
31	Bahree Brothers, 188 Lajpatrai Market, Delhi-6.	27
32.	Jayana Book Depot, Chapparwala Kuan, Karol Bagh, New Delhi.	66
33.	Oxford Book & Stationery Company, Scindia House, Connaught Place, New Delhi—1.	68
34.	People's Publishing House, Rani Jhansi Road, New Delhi.	76
35.	The United Book Agency, 48, Amrit Kaur Market, Pahar Ganj, New Delhi.	88
36.	Hind Book House, 82, Janpath, New Delhi.	95
37.	Bookwell, 4, Sant Narankari Colony, Kingsway Camp, Delhi-9.	96
	MANIPUR	
38.	Shri N. Chaoba Singh, News Agent, Ramlal Paul High School Annexe, Imphal.	77
	AGENTS IN FOREIGN COUNTRIES	
39.	The Secretary, Establishment Department, The High Commission of India, India House, Aldwych, LONDON W.C.—2.	59

'UBLISHED UNDER RULE 382 OF THE RULES OF PROCEDURE AND CONDUCT OF BUSINESS IN LOK SABHA (FIFTH EDITION) AND PRINTED BY THE GENERAL MANAGER GOVERNMENT OF INDIA PRESS, MINTO ROAD, NEW DELHI