

ESTIMATES COMMITTEE

THIRTY-NINTH REPORT 1956-57

**MINISTRY OF DEFENCE
BHARAT ELECTRONICS (PRIVATE) LIMITED,
BANGALORE**



**LOK SABHA SECRETARIAT
NEW DELHI
*December, 1956***

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ESTIMATES COMMITTEE

1956-57

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Shri A. R. Shirali—*Deputy Secretary*

Shri C. S. Swaminathan—*Under Secretary*

*Resigned on the 20th November, 1956.

**Died on the 6th October, 1956.

INTRODUCTION

I, the Chairman, Estimates Committee, having been authorised by the Committee to submit the Report on their behalf present this Thirty-ninth Report on the Ministry of Defence.

2. The Report embodies the conclusions of the Committee on the Bharat Electronics (Private) Limited, Jalahalli, Bangalore.

3. The Committee wish to express their thanks to the Officers of the Ministry of Defence for placing before them the material and information that they wanted in connection with the examination of the estimates.

BALVANTRAY G. MEHTA,
Chairman, Estimates Committee.

NEW DELHI;
The 5th December, 1956.

I

INTRODUCTORY

(a) Origin and growth of electronics

Electronics, the branch of electrical engineering which deals with Radio valves originated in 1904 when the Triode was invented. The first world war saw the application of this invention to wireless and when in 1922 the British Broadcasting Corporation was formed, wireless came to be recognised as a medium of mass entertainment. Gradually, new inventions brought in the radio-gramophone, the photo-electric cell which facilitated the making of a talkie film and television. It was not, however, until the invention of radar, which played a very important role in the defence of U.K. in the last war, that it was realised that electronics had uses other than in entertainment. Thus, electronics came to maturity in the second war and by the time the war was over, it had been recognised as a very potent force with vast potentialities. Since then it has found further scope in several directions, particularly in nuclear research, electrotherapy, air-navigation, machine tool industry and defence industries and in advanced countries it has even begun to displace man-power by automation. The electronics industry has become so diversified and important that today in U.K. it employs about 2,00,000 workers, who are distributed among some 225 companies of varying descriptions and sizes which are responsible for production worth more than £200m. of which exports alone amount to about £35m. Of these, Aeronautical Engineering and Defence work account for a substantial part of the output of the Industry.

(b) Position in India in 1948

2. It was not until 1948, however, that the question of establishing an electronics industry in India was considered either by the Government of India or by private enterprise, even though it is a very basic industry in the modern communications system, and all the requirements of wireless and electronics equipment needed in the country were wholly met through imports.

3. The figures below give the value of wireless equipment imported into India in various years prior to 1948 and after:—

Year	Value in Rs.
1938-39	33,85,967
1947-48	3,61,47,820
1948-49	1,25,76,323
1949-50	1,49,66,324

Year	Value in Rs.
1950-51	1,37,93,432
1951-52	2,05,90,181
1952-53	1,49,90,589
1953-54	1,18,43,152
1954-55	1,22,45,551
1955-56	2,08,90,369

[The values shown above do not include customs and other import duties, which on an average amount to about Rs. 50 to 60 lakhs per year.]

The above figures and the fact that in the very important field of communications, the country had to depend exclusively on foreign countries for basic requirements, illustrate how important and urgent it was to establish expeditiously an electronics industry in India.

4. The Government of India, in their Resolution on Industrial Policy dated the 6th April, 1948, announced the industries reserved by the State to itself for exclusive development. The industries mentioned therein include the manufacture of Defence equipment and wireless apparatus (excluding radio receiving sets). The Government carries, therefore, a heavy responsibility to establish a sound wireless and electronics industry in India on which future expansion can be based so as to attain in the near future a measure of self-sufficiency in this vital equipment of strategic importance.

(c) Appointment of Exploratory Committee

5. The late Ministry of Industry and Supply set up an Exploratory Committee in May, 1948, composed of the representatives of the principal users of wireless equipment to advise Government on the steps to be taken to establish an electronics industry in this country. The Exploratory Committee consisted of the following:—

- (1) Dr. J. C. Ghosh, Director-General of Supply.
- (2) Secretary, Department of Scientific Research.
- (3) Chairman, Radio Research Institute of the Council of Scientific & Industrial Research.
- (4) A representative of the Ministry of Defence.
- (5) Chief Engineer, A.I.R.
- (6) Director of Communications, D.G.C.A.
- (7) The Director-General of Observatories.
- (8) A representative of the Department of Posts and Telegraphs.
- (9) Scientific Adviser to the Ministry of Defence.

- (10) A representative of the Ministry of Industry and Supply.
- (11) A representative of the Ministry of Finance.
- (12) Dr. H. J. Bhabha; and
- (13) Prof. M. N. Saha.

6. The Exploratory Committee addressed letters to 15 foreign firms of international repute in the electronics field, enquiring whether they would be prepared to collaborate with the Government in manufacturing wireless equipment in India. Only four firms showed interest to start with and ultimately only two of the firms addressed, namely, Messrs. Marconi Wireless Co., U.K. and Compagnie General-de-Telegraphic Sans Fil (C.S.F.), France, were considered suitable as only they had shown sufficient interest in the establishment of the project. These two firms were then invited to submit detailed Project Reports for establishing wireless industry in India. The Project Reports were received in March 1950 after which a Technical Sub-Committee was appointed by the Exploratory Committee to examine them and to recommend which of the two could be invited for obtaining necessary assistance. The Technical Sub-Committee consisted of the following:

- (1) Shri B. V. Baliga, Chief Engineer, All India Radio.
- (2) Dr. N. B. Bhatt, Senior Scientist (Engineering), Defence Science Organisation, Ministry of Defence.
- (3) Col. P. N. Luthra, Deputy Director of Signals, General Staff Branch, Army Headquarters.
- (4) Group Capt. E. C. Passmore, Director of Signals, Air Headquarters, New Delhi.
- (5) Dr. M. B. Sarwate, Director of Communications, D.G. C.A., New Delhi.
- (6) Dr. P. K. Kapre, Development Officer (G. & E.), D. G., I. & S., New Delhi—Convener.

7. The Technical Sub-Committee reported on the 27th September, 1950, recommending collaboration of the French firm in preference to that of Messrs. Marconi & Co., in view of certain considerations which the Committee will have occasion to refer to when discussing the Agreement entered into with the C.S.F. The recommendation was, however, subject to the condition that the representatives of the Army and Air Force Signals should visit the C.S.F. Organisation to find out whether the C.S.F. had the necessary experience for manufacturing field type and other equipment to meet the defence service requirements. The Committee understand that the representatives of the Army, Navy and Air Force Signals visited the C.S.F. in April, 1951, and submitted a report containing their observations but without any specific recommendations. The delegation was not impressed by the tempo of the design and development in the C.S.F., but was favourably impressed by the standard of manufacture which showed excellent workmanship and finish equal to any other firm.

(d) Assessment of requirements and negotiations

8. The project was transferred from the late Ministry of Industry & Supply to the Ministry of Defence in August, 1951, as a result of the recommendation of the Planning Commission. At that stage, as three years had elapsed since the initial Project Report was asked for, it was felt that the requirements, on the basis of which the project was to be worked up, should be re-scrutinised, as there might have been changes in the requirements of the principal user departments. As a result, all Ministries of the Government of India concerned in the matter were asked to state again their anticipated requirements for 6 or 7 years. These requirements were then studied by experts to ensure a certain amount of standardisation and finally a case was put up to the Defence Committee of the Cabinet in June, 1952, giving a comprehensive evaluation of the two reports and asking their approval in principle to the early establishment of the wireless industry in India, in collaboration with the C.S.F. The proposal was accepted by the Cabinet at their meeting held on the 5th July, 1952.

9. Further negotiations were then entered into by the Defence Ministry with the C.S.F. and after considerable preliminary negotiations which were stated to be necessary because the original Project Report did not go into details of what commission, licence fee, etc. they would charge, an agreement for obtaining collaboration and assistance of the C.S.F. for a period of 10 years from the 1st January, 1953 was finally signed with the firm in December, 1952 for the establishment of the project in India.

(e) Formation of the B.E.L.

10. In order to progress the work connected with the project, a cell was initially created in the Ministry of Defence to carry on preliminary work and to arrange for the procurement of machinery and equipment and for the construction of buildings, etc., for the factory. The next important step was taken by the Government on the 21st April, 1954 when the Bharat Electronics (Private) Ltd. was formed as a limited concern with an authorised capital of Rs. 10 crores which was to be subscribed only by the Government of India. The work connected with the project was transferred by Government in May, 1954 to the Bharat Electronics Ltd. The Committee hope that the formation of a limited company to execute the project would give considerable scope for decentralisation of authority and for adoption of business-like methods with a view to expeditious conduct of work and production and that it would not merely become an adjunct or a subordinate organisation of the Ministry of Defence.

11. The fundamental objectives of the B.E.L. might be summarised as follows:—

- (a) to design, develop and progressively manufacture electronics equipment such as transmitters, trans-receivers, oscillators, amplifiers and radar X-ray machines, surgical, medical and other appliances and instruments intended for electro and other therapy treatment; and

- (b) to undertake manufacture of specialised electronic components, including valves.

12. With the establishment of the Bharat Electronics Ltd., it might be said that the foundation of an electronics industry in the country has been laid. The Company has been established primarily to meet the requirements of Government Departments and undertakings but it is the intention of Government as well as of the B.E.L. to expand the production for meeting the requirements of non-governmental concerns also, particularly in the matter of valve manufacture.

13. There is yet another aspect of the establishment of Bharat Electronics which the Committee would like to refer to. It will require a variety of raw materials and components in its manufacture programme and it might not be practicable and economical for the B.E.L. to undertake the manufacture of every one of them. Consequently, the establishment and development of subsidiary industries, which would feed the B.E.L. particularly in its requirements of raw materials and components are of great importance if the country is to become self-sufficient in all respects. Thus an extensive scope exists for the development in the country of industries manufacturing the various raw materials and components required in the electronics industry.

II

AGREEMENT WITH THE C.S.F.

(a) Advantages and disadvantages of the C.S.F. Project Report

14. The Technical Sub-Committee which had examined the Project Reports submitted by Messrs. Marconi Wireless Co. and the C.S.F. had recommended the assistance and collaboration of the C.S.F. in view of the following advantages of the C.S.F. Project:

- (a) the programme of production was flexible;
- (b) self-sufficiency was reached earlier and to a greater degree because of the flexibility in the manufacture of equipment and inclusion of manufacture of larger number of components and receiving valves as well as glass required for the valves;
- (c) quicker expansion and higher production was aimed at;
- (d) Indianisation of the factory was obtained earlier;
- (e) export of equipment manufactured by the Indian factory to neighbouring countries would be favourably considered; and
- (f) a smaller number of personnel was required for equal production.

At the same time, the Sub-Committee had pointed out that the C.S.F. Project had the following defects:

- (a) an over-optimistic evaluation of the raw material and components potential of the Indian market was assumed;
- (b) an over-optimistic potential of skilled workers in India was assumed; and
- (c) the capability in regard to the manufacture of specialised equipment for the Defence Services was not fully brought out.

It would thus appear that the recommendations of the Technical Sub-Committee in favour of collaboration with the C.S.F. was based on a number of assumptions and also took cognisance of a few defects. While the Committee consider it too early to judge the extent to which the assumptions made while recommending the acceptance of the C.S.F. Project will prove correct, they cannot over-emphasise the necessity of watching that the assumptions made do not go wrong and are constantly kept in sight and also that the defects are made good as far as possible.

15. The Committee were surprised to find as mentioned in para 8 that the case for collaboration with the C.S.F. was put up to the Cabinet for approval, even before ascertaining the commission, license fee, etc. which the two firms in question would charge, and consequently without giving a comparative evaluation of this aspect. .

16. The Committee understand that the representatives of the Defence Services who visited the C.S.F. in 1951 reported that during the war years, the C.S.F. group of factories had suffered a set back and that as a result, it would take them some time to catch up with the progress in the U.S.A. and U.K. They had also reported that the French Armed Forces were being re-equipped with the American and British Radio equipment and, where new equipment was being produced, the U.S.A. designs were being copied under license. Further, the Committee understand that wireless equipment manufactured by the C.S.F. which is also to be manufactured in India under license under the Agreement, was not in use in the principal user departments in India. This would mean that the users would have to handle a new type of equipment of which they had no previous experience. The Committee were, however, assured by the Defence Secretary that the equipment manufactured by the C.S.F. was put through a very severe test by the users as well as by the Technical Development Establishment and was accepted by them and that consequently there might be no difficulty in changing over from the type of equipment now in use to that manufactured by the B.E.L. They trust that in view of the tests carried out earlier, the users will not actually experience any difficulty during and after the change over, a process which has just begun.

(b) The Agreement

17. As mentioned earlier, the Government of India entered into an agreement with the C.S.F. in December, 1952 for obtaining their collaboration and assistance for a period of 10 years from the 1st January, 1953 in the establishment of a wireless and electronics industry in India. The Agreement is reproduced in Appendix 1.

18. The Committee realise that negotiations with a foreign firm for the establishment of an industry of which neither the Government nor the country had any previous experience, would involve protracted discussions in the matter of settlement of production programme, terms for assistance and collaboration, etc. However, they consider that the 4½ year period which elapsed after the initiation of action for the establishment of the industry until the final signing of the Agreement and during which imports of electronics equipment continued to be made at the rate of Rs. 2 crores a year, was more than was strictly justified. They are of the opinion that in such matters more business-like methods should be adopted and no efforts should be spared to expedite the progress of the negotiations and discussions with the firm whose collaboration and assistance is to be obtained.

(c) Services to be rendered by the C.S.F.

19. The assistance and services to be rendered by the C.S.F. under the Agreement may be summarised as follows:—

- (i) Service and assistance in the construction of buildings of the factory in the form of preparation of site plans, over-all layouts and plans for buildings, etc.
- (ii) Service and assistance of the following description for the purchase and installation of the equipment:—
 - (a) drafting of the exact specifications of the machine tools and other equipment,
 - (b) finding suppliers and submitting the enquiry to them;
 - (c) submitting to the Government for approval the choice of suppliers;
 - (d) assisting the Government in regard to inspection of the equipment; and
 - (e) assistance in the supervision of the installation of the machinery;
- (iii) Technical and industrial assistance:
 - (a) making available the necessary technique, "know-how", etc. including details of raw materials necessary to run the factory;
 - (b) training of technical personnel in India;
 - (c) setting up of a training school for the above purpose; and
 - (d) setting up of the research, design and prototype development section for the factory;
- (iv) Training selected Indian personnel in its own factories in France.

(d) Payments to the C.S.F.

20. The following sums are to be paid to the C.S.F. for the various services and assistance mentioned above:—

- (a) Rs. 1 lakh for submitting the Project Report;
- (b) £ 15,000 for the service referred to in para. 19(i) in instalments;
- (c) £ 67,500 for the service referred to in para. 19(ii) in instalments;
- (d) Rs. 2 lakhs for services relating to the items (b) and (c) mentioned above, rendered in India;
- (e) £ 2,49,375 spread over a period of 9 years for providing services and assistance in respect of the technical know-how of the production programme; and
- (f) Rs. 6,75,000 spread over the period mentioned in (e) above.

Thus, the total payments to be made to the C.S.F. will amount to about Rs. 53 lakhs, spread over a period of 10 years.

21. In addition, the C.S.F. has to be paid royalties at a graded rate depending on the actual production, for manufacturing under licence, equipment patented by the C.S.F. in France. Assuming that the full production targets mentioned in Schedule II of the Agreement are observed, the extent of royalties would roughly amount to nearly Rs. 42 lakhs during the period of the Agreement upto 1962.

22. The actual payments made to the C.S.F. so far amount to Rs. 18.45 lakhs, the details of which are shown in the statement at Appendix II.

(e) Assistance in the construction of buildings

23. The assistance of the C.S.F. in the construction of the buildings of the factory, includes preparation of site plans, over-all layouts of the buildings, etc., for which a sum of £15,000 is to be paid to the C.S.F. The Committee understand that apart from the actual execution of the construction work which was to be and is being done by the Government construction agency, the entire planning had to be got done exclusively by the French concern as only they knew how many workshops the factory would have, what the size of each would be and what the location of the various plant and machinery would be and that consequently the preparation of site plans, etc. by any other agency would not have been realistic and might have even caused difficulties. The Committee agree that there were special reasons on account of which the assistance of the French concern had to be obtained even in the preparation of plans and design of the factory but they would recommend that, in future, in similar cases, Indians might be associated even from the start in the designing etc. of the factory buildings so as to enable them to get the necessary experience which would undoubtedly prove valuable.

(f) Assistance in the purchase of machinery

24. The services and assistance of the C.S.F. in the purchase of machinery and equipment, *inter alia*, include (i) finding suppliers and submitting the inquiry to them, (ii) examining and discussing tender with suppliers and Government and (iii) submitting to the Government for approval, the choice of suppliers and other related matters. For these and certain other items mentioned in para 19 (ii), a sum of £67,500 is to be paid to the C.S.F. Accordingly, the Company did find potential suppliers, make inquiries and recommendation to Government regarding the purchases but it was decided to obtain the machinery and equipment after calling for tenders through the India Stores Department, London, instead of placing the orders on the firms recommended by the French company. While the Committee are glad to observe that the agency of the India Stores Department, London was and is being utilised by the B.E.L. for the purchase of their plant and machinery abroad, they feel that the Agreement when drafted

should have taken note of the existence of this agency for effecting purchases and that some of the clauses mentioned above need not have found place in the Agreement.

(g) Assistance by the C.S.F. Personnel

25. For the purpose of facilitating the successful performance of its obligations under the Agreement, the C.S.F. has maintained two full-time officers with the B.E.L. in India, one of whom has since left. In addition, a Civil Engineer and an Electrical Engineer were specially deputed by the C.S.F. (their passage, fees, and allowances during the period being borne by the B.E.L.) to help in the supervision of the construction of the factory buildings and in the planning of electrical installations respectively, while another Engineer of the C.S.F. now employed by the B.E.L., is being utilised by them to supervise the installation of machinery and equipment in consequence of which the Officer's emoluments are shared by the C.S.F. and the B.E.L.

Further, the Director and General Manager and five other senior officers of the C.S.F. have so far visited the B.E.L. to inspect the progress of the project. It is understood that they held discussions with the officers of the Ministry of Defence and senior officers of the B.E.L. The Committee suggest that in future the officers visiting the B.E.L. in this manner may be invited to submit reports on the progress of the work for the information of the Government of India as also of the Board of Directors of the B.E.L.

The C.S.F. has also deputed 13 Engineers and technical personnel from their own establishment for being engaged on the staff of the B.E.L. to initiate its production and to assist in the transmission of technical know-how. A list of these persons along with their terms will be found at Appendix III.

(h) Training and Research

26. In addition to the assistance provided by the C.S.F. in the manufacture and production according to the programme already settled and also for giving the technical "know-how" the Agreement enjoins on the Company to settle in consultation with Government and the B.E.L. a scheme for the training of technical personnel for the factory, for setting up a training school as part of the factory to train Indian personnel in the technical trades as required for the running of the factory and also to settle a scheme for the setting up of research, design and proto-type development section of the factory. The Committee are glad to observe that recognition has been given in the Agreement to the very important questions of training of technical personnel both in India and abroad in the factory of the C.S.F., France "to the extent as may be necessary", and of research, though they would have liked to see, subjoined to the Agreement a comprehensive scheme for training and research. The Committee hope that the opportunities provided under this Agreement will be fully utilised to train Artisans and higher technicians to meet the requirements of the B.E.L.

(i) Other features of the Agreement

27. In return for the various payments to be made under the Agreement, the C.S.F. has undertaken that its assistance will enable the production in the factory to the extent of 70 to 80 per cent of the value of the production of the factory as envisaged in Schedules I and II to the Agreement while for the remaining 20 to 30 per cent of the value of such production of the factory, the company has undertaken to use its good offices to obtain licenses, blue prints etc. from other companies and to give necessary assistance in the use of the data.

It has also been provided that if the production for the first year mentioned in Schedule II did not reach 50% of the value of production mentioned in the Schedule for that year or if production for any other years mentioned in that Schedule did not reach 75% of the value of the production mentioned for that year, then certain deductions for the lack of progress in production would be made. Since the first year of production has not yet ended, it is too early to say whether recourse will have to be had to these provisions but it is not unlikely that for the first year of production some deductions will have to be made from the fee payable to the C.S.F., due to what appears to be frequent changes made by the users in their requirements.

28. The C.S.F. has undertaken in clause 11 and 12(iii) of the Agreement to use its good offices to obtain from the French Government authorisation for supplying to the Government of India the manufacturing data relating to equipment on the secret list of the French Government and also to obtain licenses, blue prints, etc. from other companies producing equipment mentioned in Schedule I of the Agreement for the purpose of production in the Bharat Electronics Ltd. The Committee have already referred to in paragraph 16 to the fact that the Defence Services Delegation which had visited the C.S.F. had reported that the French Armed Forces were being re-equipped with the American and British radio equipment and that U.S.A. designs were being copied under licence in the production of new equipment. Consequently, they have some doubts as to what extent manufacturing data relating to the equipment on the secret list of the French Government can be acquired for production in India. All the same, they hope that the offer contained in these clauses will be fully availed of.

29. As mentioned earlier in this Chapter, the recommendation of the Technical Sub-Committee in favour of the C.S.F. was based on certain assumptions, the chief ones being the flexibility of the programme of production and the hope of reaching self-sufficiency earlier and to a greater degree because of flexibility. The Committee note that provision exists in the Agreement for altering the Schedules which lay down the programme of production and that in fact the programme has already undergone two or three changes in the last two years. They would have, however, liked to see in the Agreement and in the Schedules thereto greater evidence of the promise of reaching self-sufficiency at some given date. The Committee have recommended in para 113 that the B.E.L. should cater to the entire needs of the country

in respect of electronics equipment. They consider that the Agreement with the C.S.F. provides very good opportunities for developing a sound indigenous electronics industry which could make the country self-sufficient and that it is entirely upto those in charge of the B.E.L. to ensure the maximum utilisation and exploitation of the opportunities so provided and to make a complete success of the Agreement.

(j) Working of the Agreement

30. The Committee are glad to learn that the Agreement with the C.S.F. is working satisfactorily and that there have been very few minor differences so far between the C.S.F. and the B.E.L. They consider, however, that a true opinion on the working of the Agreement can be expressed only in terms of the fulfilment of its principal aims, *namely*:

- (1) observance of and even improvements in the programmes of production laid down in Schedules I and II;
- (2) self-sufficiency in the matter of production as well as of raw-materials, and components; and
- (3) self-sufficiency in the matter of requirements of technical personnel.

III

PROGRESS OF WORK AND EXPENDITURE

(a) Site for Factory

31. Even before the formation of the B.E.L. on the 21st April 1954, the Government of India, on the recommendation made by M/s. Marconi Wireless Co., as well as by the C.S.F. which was endorsed by the Technical Sub-Committee and the Exploratory Committee set up to examine the project reports, selected Bangalore for siting the proposed factory for the manufacture of wireless equipment. The Committee have no remarks to offer on the location of the site of the factory as they are aware that Bangalore offers several advantages both from strategic and climatic points of view for the situation of an important industry. They would, however, like to invite the attention of the Government to the recommendation contained in para 17 of the Estimates Committee's Sixteenth Report on the "Organisation and Administration of Nationalised Undertakings" that Government undertakings should be dispersed throughout the country and that they should not be concentrated in any particular area or areas, particularly as there are now at Bangalore four major industries of the Government of India, viz., the Hindustan Aircraft Ltd., the Hindustan Machine Tools Ltd., the Indian Telephone Industries and the B.E.L., besides those of the State Government.

(b) Land Buildings etc.

32. At the time of the formation of the B.E.L. land had already been acquired by the Ministry of Defence at an approximate cost of Rs. 5 lakhs and the portion required for the factory buildings had been partly levelled for an additional cost of Rs. 5 lakhs. The work of constructing the factory buildings was entrusted by the Government to the Military Engineering Services and actually began only in October, 1954. The factory is proposed to be laid out in an estate covering 620 acres in Jalahalli, about 8 miles from Bangalore and will cover a total floor space area of 6½ lakh sq. ft. It is also understood that the lay-out of the factory conforms to the accepted modern concept of the swift flow of material.

33: Out of 11 buildings planned for housing the factory, five buildings have been completed, while the construction of four other buildings under execution has progressed to the extent of about 60 to 70%. The remaining two buildings are yet to be taken up for construction. It is anticipated that the entire factory building work (except the two buildings referred to above) will be completed by the end of the financial year 1956-57.

34. The factory went in part production in December, 1955 and started manufacturing tools for the Receivers and Transmitters which are programmed for manufacture in 1956-57 and 1957-58.

(c) Estimate of Expenditure

35. The details of the original estimate for the factory and auxiliary buildings are as follows:—

(1) Factory building and roads	Rs. 255·31 lakhs.
(2) Plant and Machinery	Rs. 249·90 „
(3) Residential buildings	Rs. 141·79 „
(4) Payment to French firm for technical know-how, setting up the factory installation, etc.	Rs. 53·00 „
TOTAL	Rs. 700·00 „

36. The purchase of certain machines and equipment not required immediately is proposed to be postponed and certain auxiliary buildings which are not absolutely necessary are proposed to be given up. The reasons for this are stated to be that the full target of production is scheduled to be reached only during the 4th year, *i.e.* 1959-60 and since some of the projects envisaged in the production programme are to be taken up only after some time, purchase of plant and machinery has been restricted to the immediate requirements. The anticipated savings in the original estimated cost in consequence is likely to be about 17·5%, *i.e.* about Rs. 122·5 lakhs. Further, it is anticipated that there would even be some reduction in the number of machines to be ultimately purchased. The Committee understand that the changes in purchase programme mentioned above will not adversely affect production, since the purchases are being regulated in order to conform to actual production requirements.

37. The capital expenditure incurred upto the 31st August, 1956 is approximately Rs. 202·51 lakhs, the particulars of which are as follows:—

Buildings	Rs. 121·81 lakhs	including Rs. 4 lakhs on residential buildings.
Machinery and equipment.	Rs. 62·25 lakhs	
Payments to the French Company ..	Rs. 18·45 lakhs	
TOTAL	Rs. 202·51 lakhs	

38. The total Government investment estimated on the B.E.L. is Rs. 9·5 crores comprising of Rs. 7 crores to be incurred on capital assets including payments to the French firm (excluding Royalties) and working capital of Rs. 2·5 crores. So far the Government of

India have subscribed Rs. 2.5 crores and the balance will be subscribed as and when the investments increase during the period of the Second Five-Year Plan. Allowance has, however, to be made for the saving of Rs. 1.225 crores mentioned in para. 36.

The working expenses during 1954-55 and 1955-56 were Rs. 6.97 lakhs and Rs. 5.49 lakhs respectively.

39. The Budget estimates for 1956-57 are as follows:—

A. CAPITAL

(1) Factory Buildings	Rs. 65.35 lakhs.
(2) Residential quarters	Rs. 13.70 „
(3) Plant & Machinery	Rs. 41.37 „
(4) Payments to French firm (excluding Royalties)	Rs. 11.36 „

TOTAL Rs. 131.78 lakhs

B. REVENUE EXPENSES

Working expenses Rs. 69.58 lakhs

C **LOANS AND** Rs. 00.50 „
 ADVANCES

Rs. 70.08 lakhs

TOTAL : Rs. 201.86 lakhs

RECEIPTS

From sale of equipment produced in B.E.L.	Rs. 28.35 lakhs
Miscellaneous	Rs. 00.80 lakhs

TOTAL : Rs. 29.15 lakhs

(d) Annual Accounts and Audit

40. The Balance Sheet of the B.E.L. as on the 31st March, 1955, the Profit and Loss Accounts for the period ended 31st March, 1955 and the Annual Report for 1954-55 were presented to the shareholders viz. the President and five officials of the Ministry of Defence on the 17th October, 1956, just 4 days prior to the time limit of 18 months after the 21st April, 1954, the date of formation of the B.E.L., laid down in Article 105 of the Articles of Association. The Balance Sheet as on the 31st March, 1956 and the Annual Report for 1955-56, it is understood, will be presented sometime towards the middle of December, 1956, i.e. 8½ months after the close of the year. The Committee were informed that this delay was mainly due to the non-receipt of bills etc. from the I.S.D., London through whom overseas purchases are made, on account of which the finalisation of accounts had been delayed. They would nevertheless emphasise the necessity of bringing out the annual accounts more expeditiously and suggest that for this purpose the I.S.D. be approached to ensure expeditious rendering of bills etc. At the same time they suggest that the feasibility of closing the annual accounts without awaiting outstanding bills

beyond a certain date, by showing them suitably in the Balance Sheet as is done in most commercial concerns should also be examined.

41. The accounts are audited by a firm of commercial auditors M/s. Dandekar & Co. They are also subject to the audit of the Comptroller and Auditor General of India, who forwards his audit report direct to the Government of India.

(e) Annual Reports

42. The Estimates Committee had recommended in paragraph 30 of their Sixteenth Report that each State Undertaking should publish an Annual Report giving a record of its activity during the past year, the progress made during the year, comparative statistics of previous years relating to expenditure, production, etc., balance sheet and profit and loss accounts and similar other matters and that it should be presented to Parliament. The Committee find that this recommendation has still not been implemented and that the only information regarding the affairs of the B.E.L. which the Parliament receives, at present, is from the annual Administrative Report of the Ministry of Defence wherein a brief mention and some scanty information is to be found. They consider it necessary that the B.E.L. along with similar other State Undertakings should implement the recommendation referred to above and publish an Annual Report showing all its activities along with the annual accounts and the Balance Sheet for the information of the Parliament as well as of the general public and that a beginning in this respect should be made in 1957.

IV ORGANISATION

43. A chart showing the organisational set up of the B.E.L. is placed at Appendix IV.

(a) Board of Directors

44. The business of the Company is managed by a Board of Directors, in whom is vested the day-to-day management of the Company except for certain special and policy matters which are reserved by the Government of India. The number and appointments of Directors, which is not to exceed nine, are determined by the President.

45. The composition of the Board of Directors is as follows:—

Chairman : Secretary to the Government of India, Ministry of Defence. Shri M. K. Vellodi, I.C.S.

Directors : Financial Adviser, Defence Services. Shri S. Ratnam, I.A. & A.S.

Director, National Physical Laboratory. Dr. K. S. Krishnan, F.R.S.

Master General of the Ordnance, Army Headquarters. Maj. Gen. S. D. Verma.

Director of Research, Railway Board. Shri S. L. Kumar, I.R.S.E.

Adviser, Communications Ministry. Dr. M. B. Sarwater.

Representatives of Industry. Sir Vithal N. Chandavarkar, Bombay.

Do. Shri S. M. Rama Krishna Rao, Bangalore.

Mng. Director: Shri A. K. Ghosh, I. C. S.

46. The Committee find that there are as many as six officials on the Board of Directors of the B.E.L., which has been set up to carry out the project on business principles and that the Defence Secretary and the Financial Adviser (Defence), Ministry of Finance, who have also the duty of advising the Government in the control of the B.E.L. are the Chairman and Member of the Board respectively. They understand that the main reason for this arrangement is that the entire capital is provided by Government and that it is considered to be a satisfactory arrangement for a factory of this type to be run in its initial stages by a Board consisting mostly of officials

of Government. Another reason was stated to be that this factory had been set up primarily to provide electronics goods for Government Departments and not for sale to the public, on account of which the user departments were also represented on the Board of Directors.

47. The Committee are of the view that the Secretariat functions of laying down policies and the executive functions of implementing them should be clearly demarcated and that as far as possible Secretariat Officials should not be associated with the actual execution of policies laid down by them so as to enable them to retain an objective outlook. They do not, therefore, consider the arrangement under which the Secretary to the Government of India is the Chairman of the Board of Directors of a company set up by the Government to carry out a project on business principles, to be very satisfactory.

48. The Committee learn that the Defence Secretary is also the Chairman of the Board of Directors of the Hindustan Aircraft Ltd. In this connection, they would like to refer to certain remarks made by Dr. Paul H. Appleby in his report entitled "Re-examination of India's Administrative System":

"The role of the Secretary of the parent Ministry is a difficult one in the whole area of companies and corporations. ***If he is Chairman of a particular Board, he may make both the Board and the Managing Director useless instruments. ***One aspect of the role of the Secretary involves the question whether he should be chairman of the boards of enterprises under the aegis of his Ministry. This depends in part on the number of such enterprises sponsored by his Ministry. He cannot be an effective chairman of a large number of boards. It depends, too, on his ability to wear two or more hats, his ability to think and act one way for a corporation and another way for the Ministry proper."

The Committee entirely agree with the above remarks. Further, they doubt very much whether the Secretary of a very important Ministry like Defence has sufficient time at his disposal to attend to the affairs of two important Companies in the Public Sector.

49. Of the officials on the Board of Directors, one is a representative of the Army, one of the Railways, and the third of the Ministry of Communications. The Committee note that two of the principal user departments, namely, the Army and the Ministry of Communications are represented on the Board of Directors. They find, however, that while the Railways are represented on the Board, when in fact, the B.E.L. has no programme to manufacture any equipment, signalling or otherwise for the Railways, some of the other principal user departments, namely, the Indian Air Force, the Navy, the All India Radio, the Overseas Communications Service, etc., are not represented on the Board. The Committee would suggest that the composition of the Board of Directors should be rationalised and

made broad-based at an early date in the light of the remarks made above.

50. There are three non-officials on the Board of Directors one of whom is the Director of the National Physical Laboratory while the other two are representatives of the industry. The Director of the National Physical Laboratory is an eminent scientist and the two representatives of industry, it is understood, are industrialists who have been specially selected to serve as general advisers in view of their industrial background. The Committee suggest that a representative of the Radio Manufactures in India may also be associated with the Board of Directors, if possible, in view of the fact that, as the Committee will have occasion to observe later on, the question of the country's becoming self-sufficient in all respects in the equipment to be manufactured by the B.E.L. is inter-linked with the growth and development of the radio industry in the country, particularly in the manufacture of components.

51. The Committee have recommended later in the Report that the B.E.L. should take cognisance of the entire needs of the country in respect of electronics equipment and plan the production accordingly. Consequently, the question of having a large number of officials on the Board of Directors merely because the factory in its initial stages is intended to cater to the needs of Government Departments only should not arise. The Committee would, therefore, suggest the gradual replacement to the extent possible, of officials on the Board of Directors by non-officials such as industrialists, scientists, a Chartered Accountant, the Director of the Indian Institute of Science and/or of the Pilani Institute etc. so as to enable a fresh, businesslike and scientific outlook to be brought to bear on the affairs of the B.E.L.

52. The Committee feel that even if the production in the B.E.L. were to be confined to the requirements of Government Departments only, the Board of Directors should not have an overwhelming majority of officials as the presence of a large number of officials invariably tends to bring to the organisation and its functioning, an official approach of a type which is generally found in most Government Departments and to that extent defeats the very object of setting up a private limited company to work on business principles. They consider that even in the matter of safeguarding the special interests of the user departments while formulating the production programme and of facilitating co-ordination between them and the B.E.L. in matters of common interest, the purpose now intended to be served by having their representatives on the Board of Directors can be achieved by laying specific duties and responsibilities on the Radio and Cable Board—a body composed of representatives of the various User Departments.

53. The Committee are aware that two difficulties might be put forth against the proposal that the Board of Directors should have more non-officials than at present: (1) Non-officials might not have either the necessary time or the necessary enthusiasm to attend to the

affairs of the concern in view of the absence of any financial stake in it and (2) the secret nature of the production.

As regards the first difficulty, the Committee feel that it should be possible to find for this purpose non-officials who have had industrial, administrative, financial etc., background and who would take the requisite interest in the working of the concern out of patriotic motives. Further, they would like to reiterate the recommendation made by the Estimates Committee in paragraph 6 of their Sixteenth Report that at least 25 per cent. of the share capital of such State Undertakings should be available for subscription by the public as it would secure public interest and co-operation in the management of such concerns. They feel that this step would also incidentally help in finding suitable non-officials for the Board of Directors.

As regards the second difficulty regarding secrecy, the Committee would like to point out that there are already three non-officials on the Board of Directors. Besides, they doubt very much whether there is any substantial scope for maintaining excessive secrecy in regard to the production programme in the B.E.L.

54 The Committee observe a tendency on the part of Government to select a few non-officials to function on the Board of Directors of several nationalised and other industries in the public sector with the result that very often the non-officials concerned do not find sufficient time to attend to the affairs of all the concerns. The Committee do not consider this either fair to the non-officials concerned or conducive to efficiency and would suggest that the appointment of the same non-official on the Boards of Directors of a number of such concerns be avoided, as far as possible.

(b) Need for Technical Director or Advisory Board

55. The Committee understand that apart from the foreign personnel, the Managing Director, who is no technical man himself, has no senior technical adviser on the spot to advise him on the technical matters connected with the Agreement, and the production programme. The importance and the urgency of operating the Agreement entered into with the C. S. F. fully and effectively and the necessity of imbibing the technical know-how offered by the French firm and personnel assiduously cannot be overemphasised. The Committee feel that in the absence of a senior technical adviser on the spot to assist the Managing Director, the objectives aimed at are not likely to be achieved expeditiously. They were informed that the B.E.L. did have an adviser of this type till about February, 1956 and that as it was felt that the post did not carry sufficient work and responsibility, it was abolished. The Committee consider that the abolition of the post was not a step in the right direction and recommend that at the earliest opportunity a senior technical adviser should be appointed and also given a place on the Board of Directors.

56. The Committee realise that there might be some difficulty in finding a senior officer to hold the post of Technical Director of the B.E.L. in view of the dearth of such men in the country as well

as of the fact that those who are so qualified are probably engaged fully in their present responsibilities from which it might be difficult to spare them. Should this be the case, the Committee would recommend the formation of an Advisory Board consisting of technical experts, who might visit the B.E.L. once in six months or even a year and assess the working of and the progress made by the B.E.L. towards the achievement of the programme of production laid down and the ultimate goal of self-sufficiency. An Advisory Board of this type when appointed may be required to submit reports direct to the Government of India on the assessment made by them, so as to enable the Government of India to obtain independent advice on the working of the B.E.L. from a body different from the Board of Directors.

(c) Relations with Government

57. Even though the Board of Directors have been given full powers in the day-to-day management as well as in respect of certain general policy matters, the Ministry of Defence has retained to itself certain powers in respect of the Company, for example:

- (1) Appointment in respect of posts, the maximum pay of which is Rs. 2,000 per month;
- (2) Incurring of capital expenditure exceeding Rs. 10 lakh;
- (3) Increasing the share capital of the Company;
- (4) Issue of new shares;
- (5) Reduction in the capital of the Company;
- (6) Borrowing or securing the payment of any sum or sums in money for the purposes of the Company;
- (7) Investment in securities;
- (8) Issue of debentures;
- (9) Sub-division and consolidation of shares;
- (10) Appointment of Directors, their salaries and/or allowances;
- (11) Making changes in the constitution of the Board of Management; and
- (12) Payment of commission as profits or share in the general profits of the Company to any person.

In addition to the above, the specific approval of the Ministries of Finance and External Affairs is necessary for the deputation abroad of any employee. The Government may also issue directives as may be considered necessary in regard to the conduct of business of the company.

58. The Committee would like to refer to the power of making appointments to posts carrying a maximum pay of Rs. 2,000 or more per month which has to be exercised after obtaining the approval of the President. They observe in this connection that different limits in regard to the pay have been fixed by Government in the matter of

obtaining the prior approval of the President while making appointments to certain posts in the various nationalised undertakings in the public sector. For instance, they find that in the Hindustan Aircraft Ltd. no such limit has been fixed, that in the Indian Airlines Corporation and Air India International Corporation, a minimum salary limit of Rs. 1,000 has been fixed while in the Bharat Electronics Ltd. the criterion is that Rs. 2,000 should be the maximum pay of the post. The Committee recommend that some uniformity in this matter should be observed by the Government.

59. Position similar to that commented upon in paragraph 58 exists in the matter of obtaining prior approval of the Central Government for incurring capital expenditure in various undertakings. Thus, while in the Hindustan Aircraft Ltd. no limit has been fixed for the purpose, in the Indian Airlines Corporation and the Air India International Corporation, the limit is Rs. 15 lakhs and in the Bharat Electronics Ltd. it is Rs. 10 lakhs. The Committee recommend that the monetary limit for incurring capital expenditure without reference to the Government of India should be fixed in all such public undertakings on some uniform principle or principles.

(d) Board of Management

60. The Articles of Association of the B.E.L. contemplate the appointment of a Board of Management by the President for the conduct and management of the business of the company subject to the control and the supervision of the Board of Directors. Accordingly, a Board of Management has been appointed and consists of the following:—

- (a) Managing Director,
- (b) Controller of Finance, and
- (c) Deputy General Manager (who is also the Production Manager).

The Committee commend the principle of having a Board of Management which, if worked in proper spirit, facilitates the discussion among the chief executive and his two senior heads of department of problems, administrative and technical, facing the management and also ensures collective responsibility. They, however find that no specific powers have been delegated to the Board of Management and that powers delegated to the Managing Director are to be exercised by him in consultation with the Board of Management. They do not consider this to be very satisfactory and recommend that the Board of Management should have intermediate powers between the Managing Director and the Board of Directors. The Committee would also recommend the enlargement of the Board of Management of the B. E. L. by the addition of the technical director when appointed and until then by one or two of the senior foreign personnel working with the B.E.L. on the model of the composition of the Board of

Management of the Hindustan Aircraft Ltd. which consists of the following:—

- (1) General Manager
- (2) Finance Manager
- (3) Chief Designer
- (4) Deputy General Manager
- (5) Factory Manager
- (6) Production Adviser.

(e) Foreign Personnel

61. Under the Agreement, the C. S. F. was required to depute on terms to be mutually agreed upon, from its own establishment or from allied companies elsewhere in Europe such number of technical personnel, engineers and technicians as may be agreed upon to be engaged on the staff of the factory. A list of the foreign personnel employed in the B. E. L. along with their terms is shown at Appendix III. The Committee understand that the C. S. F. had originally recommended that the B. E. L. should have approximately 74 foreign technicians to initiate production. They are, therefore, glad to note that this number has been reduced to 18 men to begin with and that, at present, there are only 13 foreign personnel in the B. E. L. It would be observed from the statement at Appendix III, that these foreign technicians cost the B. E. L. approximately Rs. 40,000 per month *plus* approximately Rs. 3,500 house rent allowance, both free of income-tax. In addition, they are entitled to free passage for themselves and their families both for coming to India and going back, contribution by the B.E.L. to their social security fund in France, one month's salary as gratuity for each year of service and free medical advice for the Officer and family.

The Committee are glad to note that understudies have been provided for all these foreign technical personnel except one. They would, however, like to emphasise the necessity of drawing up a precise long-term plan phased suitably so as to gradually secure the replacement of the foreign personnel by some given date in the not too distant future.

62. The period of contract with the foreign personnel in most cases is 2 years and in one/or two cases has been extended by a year further. The Committee suggest that foreign technicians may be brought, keeping in view the long-term plan, the drawing up of which has been suggested above, and for predetermined periods to the minimum extent necessary so as to avoid as far as possible, the grant of piecemeal extensions and thus to facilitate their coming on more favourable terms to the country in view of the assurance of a longer stay with the B. E. L. The Committee further suggest that, if necessary, in the long-term phased programme for replacement suggested above, provision may be made for the foreign technicians to continue in an advisory or consultant capacity even after their replacement in executive posts by Indians so as to ensure some continuity in the

technical management as well as to give experience and confidence to those who will replace them.

63. It is understood that the B. E. L. have not so far succeeded in finding a suitable understudy for the French technician who is holding the post of Works Manager. The Committee are surprised that there should be no one available in this country for understudying the Works Manager. They suggest that concerted efforts should be made to find a suitable Indian Officer for this purpose either in this country or abroad.

64. The B. E. L. propose to obtain another 6 to 8 foreign technicians when the valves and components divisions go into production. It is understood that these two divisions are not likely to go into production till 1958. The Committee consider that the Government and the B. E. L. should have made arrangements to train Indians in the meanwhile so that after training they could assist in the setting up of the factory and also hold responsible positions, when it started production. They regret to observe that this was not done and that it is proposed to obtain foreign technicians only when the valve manufacture is taken up so that the training of Indians and their taking up executive positions will also correspondingly be delayed to that extent. They suggest that even at this stage, the B. E. L. might examine whether it would be possible to recruit officers and get them trained in the factory organisation, manufacture and production of valves and components.

(f) Liaison Officers

65. The B. E. L. have posted two Army Officers on their own grades of pay, one in London to maintain liaison with the D. G., I. S. D. in London and with the C. S. F. in the purchase of machinery abroad, and the other in New Delhi to keep in touch with the Ministry of Defence and the various user departments, mainly with a view to chase references made by the B. E. L. to them. The Committee understand that a non-technical Army Officer of the Army Ordnance Corps was put through limited technical courses and then posted in London to liaise with the D. G., I. S. D. and the C. S. F. in the purchase of machinery and equipment. They suggest that the necessity of this post may be re-examined in the light of the future purchase programme of the B. E. L. and the feasibility of merging its functions with the I. S. D. London or the Military Adviser to the High Commissioner in U. K. also considered. As regards the post of Liaison Officer in Delhi, the Committee deplore the necessity of having to post such an Officer to chase references made to the Ministries and User Departments and regard it as a sad reflection on the state of affairs in Government Departments. They would, however, like to suggest that in case appointments of liaison officers in this manner by various nationalised undertakings are inevitable in the present circumstances, the feasibility of two or three or more nationalised undertakings, having joint liaison officers, not merely in New Delhi but in other places also, may be examined by them.

(g) Consultants

66. The advice and services of the C. S. F., France are available to the B. E. L. till the expiry of the Agreement in 1962. The Committee suggest that the question of finding successor consultants to the B. E. L. may be examined sufficiently in advance and action taken to associate them with the B. E. L. even before the expiry of the contract with the C. S. F. Besides the appointment of the Director of the Indian Institute of Science and/or of the Pilani Institute on the Board of Directors of the B. E. L. suggested in para. 51, the Committee would suggest for the consideration of Government, the appointment of some University staff and Professors as consultants or advisers for this purpose. They also understand that informal contacts of this type already exist with the Indian Institute of Science, Bangalore, in which case the feasibility of putting the relationship on a *de jure* basis might be examined.

V

PERSONNEL MATTERS

67. A statement showing the number and designations of Officers and staff by various pay-ranges is placed at Appendix V while a statement showing their department-wise break-up is at Appendix VI. These statements exclude the number of the French personnel working in the B.E.L., a list of which along with their terms will be found at Appendix III. Thus, the total number of officers and staff in the B.E.L. in 1956 which is the first year of production is: 89 Officers: 353 non-industrial staff and 199 daily rated industrial staff. Ultimately when full production is reached in 1959-60, the following strength is anticipated:

	Man- ger	Deptt. Heads	Engin- eers	Tec. Assts.	Clerks	Skil- led	Un- skil- led	Total
(i) General Management	6	8	16	33	122	80	175	440
(ii) Wireless Equipment	2	30	214	530	364	1490	140	2770
(iii) Valves	2	22	64	145	127	415	55	830
(iv) Components	2	20	44	62	57	145	30	360
Total :	12	80	338	770	670	2130	400	4400

In view of the anticipated vast increase in strength of the B.E.L., the Sub-Committee examined the personnel matters in some detail.

(a) Classification

68. The personnel working in the B.E.L. have been classified as follows:

Class I: All posts on scales of pay the maximum of which is higher than Rs. 660 per mensem.

Class II: All posts on scales of pay the minimum of which is higher than Rs. 250/- and the maximum of which does not exceed Rs. 660/- per mensem.

Class III: All posts on scales of pay the minimum of which is Rs. 45/- and the maximum of which does not exceed Rs. 300/- per mensem and all skilled and semi-skilled workers on daily rates of pay irrespective of the rates of their pay.

Class IV: All posts such as Watchmen, attendants, sweepers, etc., the maximum of the time-scale of which does not exceed Rs. 45/- per mensem.

Note: In the case of daily rated workmen, the daily basic wage multiplied by 26 will determine the class to which the workmen would belong for recruitment purposes.

(b) Recruitment

69. (i) *Advertisements.* For purposes of recruitment, advertisements calling for applications are published in the following newspapers allowing on an average 15 days time for receipt of applications:—

For posts in Classes I and II—on an all-India basis

- (1) The Hindustan Times, Delhi.
- (2) The Hindu, Madras.
- (3) The Indian Express, Bombay Edition.
- (4) The Statesman, Calcutta and Delhi Editions.
- (5) The Deccan Herald, Bangalore.

For posts in Class III—Local and Madras Dailies

- (1) The Hindu, Madras.
- (2) The Deccan Herald, Bangalore.

70. The Committee are surprised that ordinarily an interval of only 15 days is allowed between the advertisement and the receipt of applications. It was explained that the interval was considered sufficient as it was just enough for the applicant to read the newspaper, apply for the form and then send the form in. The Committee consider that the interval allowed is too short and suggest that the time-limit should be increased to at least 30 days.

71. Further, the Committee do not appreciate the basis on which the advertisements are confined to five newspapers, in the case of posts in Classes I and II, recruitment to which is made on an all-India basis. They consider that the selection of newspapers should be more broad based than at present. For this purpose they suggest that the B.E.L. may keep in touch with the Ministry of Home Affairs of the Government of India and the Union Public Service Commission.

72. In the case of Class III posts, the Committee suggest that recruitment may be made on a regional basis rather than on a local basis as at present and that for this purpose advertisements may be made in newspapers in the entire Southern region, *i.e.*, Andhra, Bombay and Kerala besides Madras and Mysore.

73. The Committee further suggest that in all cases the advertisements may also be inserted in some Indian language newspapers which have a wide circulation.

74. (ii) *Selection Board.* Recruitment of personnel to Classes I and II posts is made by a Selection Board consisting of the members of the Board of Management, the head of the Department concerned and a Technical Officer, preferably not an employee of the B.E.L. The Committee are glad to note that an independent Technical Officer is being associated in such Selection Committees. They consider, however, that besides an independent Technical Officer, the Selection Committees should also consist of a member of the Union Public

Service Commission or at least of the local State Public Service Commission, especially at the interview stage, so as to minimise to some extent the effect of the exclusion of posts in nationalised and other undertakings in the public sector from the purview of the Union Public Service Commission.

75. In view of the large number of industries reserved by the State for exclusive development, as well as those which the State might start and develop, along with the private sector, in terms of the Industrial Policy Resolution, the number of nationalised and other undertakings in the public sector has grown enormously in recent years and will grow further as schemes included in the Second Five-Year Plan are taken up for execution. These industries employ a larger number of officers whose number will rise further as industrialisation progresses. The Committee do not consider it proper that the recruitment of all these officers should be made by a system different from that adopted for recruitment to services directly under the Government. The advantages of an independent body like the Public Service Commission being associated with recruitment cannot be minimised. The Committee realise that it would not be desirable to overburden the U.P.S.C. with the task of recruitment to posts in the undertakings in the public sector also and, therefore, recommend that a separate Public Service Commission should be set up for this purpose as early as possible. They further suggest that, if necessary, this Public Service Commission might have slightly different and more flexible rules and procedure to suit the peculiar circumstances and requirements of industrial undertakings in the public sector.

76. It is understood that the general policy in the B.E.L. is to advertise and recruit as and when the necessity and occasion arises. The Committee do not consider this procedure as satisfactory. They feel that if technical and qualified men in the country are to await the pleasure of each such undertaking to announce a vacancy only when it arises and without any co-ordination among the various undertakings, it would only result in their chasing one another, without any advantage to either. In view of the shortage of such qualified men in the country, they would like to commend in this connection a recommendation made by the Engineering Personnel Committee of the Planning Commission which is as follows:—

“Another suggestion which we would like to make for speeding up recruitment is that there should be one or two bulk selections every year for technical men of a particular category”.

The Committee would like to endorse the above recommendation and to further recommend that it should be implemented without any further delay in collaboration with similar other undertakings and Government Departments requiring technical men.

(c) Pay Scales.

77. The Committee learnt with regret that there has been some difficulty in the matter of recruitment to posts in Classes I and II as

also those in Class III in the B.E.L. and also that there have been 30 resignations so far in various grades mostly "for better prospects" elsewhere. A list of the resignations together with their reasons is placed at Appendix VII. On inquiry, the Committee learnt that the pay scales in B.E.L. are not very lucrative and do not, therefore, always attract suitable, competent and talented persons. The pay scales for various grades of posts are shown in Appendix V. In this connection, it was explained to them that considerable difficulties stood in the way of improving the pay-scales in the B.E.L. Firstly, there are four Central Government factories in Bangalore, namely, the Hindustan Aircraft Limited, the Indian Telephone Industries, the Hindustan Machine Tools Limited and the B.E.L. and they have jointly worked out common scales for the various grades of posts with the result that one of the factories could not change the pay scales without the concurrence of the others. Secondly, while the pay scales of the B.E.L. are definitely lower than those of corresponding scales in Departments of the Government of India like the All India Radio, Overseas Communications Service, etc., they are considerably higher than the corresponding pay scales of the Mysore Government. In fact it was mentioned to them that the Mysore Government had made a complaint to the Central Government that the Central Government industries were inflating the wage-rate in Bangalore. While the Committee agree that the reasons adduced in favour of maintaining the existing pay scales are weighty, they would like to refer here to a recommendation, with which they agree, made by the Engineering Personnel Committee of the Planning Commission as follows:—

"It may not be possible to regulate the salary scales in the Private Sector, except to the extent the type of society we propose to fashion permits. We do not, however, consider the competition of the Private Sector as of much consequence except perhaps in some isolated fields. It would thus be enough if the scales of pay between the Centre and the States are broadly the same. With the large scale development in the Public Sector, it may be necessary to bring the salary scales in the Public Corporations also in conformity with those of the Central and the State Governments. Unless such a balance is brought about by conscious effort, certain projects whose authorities are willing to offer higher scales will drain the best engineering talent to the disadvantage of other equally important needs. Though we recognise that the finances of certain States do not permit them to employ engineers on the scales of pay obtaining in more prosperous States, it would, still be desirable for them to agree to a common line of action which would have to include within its scope the evolution of uniform conditions of service for persons engaged on development schemes".

The Committee suggest that the question of the pay scales in the B.E.L. may be examined *de novo* by the Board of Directors of the B.E.L. as well as by the Ministry of Defence in consultation with those concerned with the management of H.A.L., I.T.I., and H.M.T. and also, if necessary, with the Mysore Government.

(d) Special steps for recruitment of Officers

78. In view of the difficulty experienced by the B.E.L. in recruiting officers for posts in Classes I and II, the Committee would recommend that the B.E.L., in consultation with similar other public undertakings, should evolve an effective machinery for bringing to the notice of Indians receiving technical training abroad, as well as of those studying in final years in colleges particularly those of Electrical Engineering, vacancies which they propose to advertise in the newspapers.

79. The Committee have no illusions that the measures suggested by the above will solve the difficulties of B.E.L. in the matter of recruitment to Classes I and II posts. They are aware that the Engineering Personnel Committee of the Planning Commission has estimated that the shortages in the supply of tele-communication engineers at the end of the First Five-Year Plan were 296 graduates and 46 diploma holders, while the shortages during the period of the Second Five-Year Plan would be 961 graduates and 183 diploma holders. That Committee have suggested this shortage to be made good by drawing on electrical engineering graduates whose number is itself short of the demand and by giving them departmental training. The Committee commend the above suggestion to the management of the B.E.L. At the same time, they feel that unless bold and effective measures are taken by the Government to overcome the shortage by opening more technical and engineering colleges, by upgrading some of the existing institutions as well as by increasing their capacity, the above suggestion will at best be only a temporary palliative which will not meet the shortage effectively.

(e) Quota for Promotees

80. In order to give encouragement to the staff already employed, a certain percentage of posts in higher grades is permissible to be filled by promotion of deserving staff. For this purpose, the following conditions have been laid down:—

- (1) The employees should possess the minimum qualifications that may be prescribed;
- (2) The employee should have at least three years' service in the grade just below the grade for which he is considered;
and
- (3) Promotion quota shall not exceed 33 1/3% of the vacancies.

81. The Committee appreciate that, in view of the fact that the B.E.L. is expanding very rapidly, absence of limits like those prescribed above might result in every man getting a higher post soon, even before he had gained sufficient experience and consequently that some such conditions had to be prescribed. They agree, therefore, that the prescribed minimum qualifications as well as the prescribed 3 years minimum service in the next lower grade should ordinarily be fulfilled by the staff to be considered for promotion though there might be occasional and exceptional cases where even these conditions could be waived.

(f) Procedure for recruitment of trainees

82. A Training School for training artisans of the mechanic and radio mechanic classes required for the factory in the B.E.L. has been established as an adjunct to the factory. A slightly different procedure for the recruitment of trainees to the School has been prescribed from that laid down for other Class III posts. Applications are invited twice a year for this purpose by advertising on an all-India basis. A copy of the latest advertisement is placed at Appendix VIII.

83. The selection is based on entrance tests both in theory and practice conducted at the factory and in the Training Centre. A Bond has been prescribed which has to be executed by the trainees. The period of training is normally six months. At the end of the training, trade tests are conducted by the Works Manager and the Principal of the School and depending on the results, the trainees are graded and posted to the factory on one of the following daily-rated scales of pay:—

'A' Skilled	..	Rs.	3|1|-	-|3|-	3|12|-	-|4|-	4|8|-	SG-|4|-	5|-|-
'B' Skilled	..	Rs.	2|8|-	-|2|-	3|-|-	SG-|4|-	3|8|-		
'C' Skilled	..	Rs.	1|8|-	-|2|-	2 8|-				

(g) Daily-rated pay system

84. The recruitment of trainees is confined to those who have passed the S.S.L.C. or an equivalent examination and possess a diploma in craftsmanship or a recognised certificate or diploma in the trade and also to those who have completed the Minimum IV Form (old) with minimum three years practical experience in the trade. The Committee do not, therefore, appreciate the appointment of skilled workers with such qualifications, to posts on a daily-rated pay system in the factory. It was explained to them that it was the usual practice to have technical staff of artisan class on daily-rated wages and that this was so in all the factories of the Central Government and of the Mysore Government and in private factories. It was also explained to them that as far as the security of service, provident fund benefits, etc., were concerned, it was immaterial whether the skilled worker was daily-rated or monthly-rated and that on the other hand the daily-rated men get overtime while the monthly-rated did not. The number of such daily rated staff in the B.E.L. at present is 199, including 131 skilled staff and 19 semi-skilled staff. This number will increase further as production increases. The Committee suggest that the present system of appointing skilled workers, especially those who are well qualified, having obtained diploma in craftsmanship and received special training like that in the B.E.L. on a daily rate of pay should be re-examined.

85. Further, it would be seen from the sample advertisement reproduced in Appendix VIII that it has been made clear therein that the trainees on successful completion of training might be offered employment in the Company on one of three grades carrying daily-rated scales of pay. The Committee consider that a mention of this

type in the advertisement, without at the same time indicating any advantages which the daily-rated system enjoyed, would undoubtedly deter intending applicants from sending in their applications since, whatever the actual position might be, one would not ordinarily associate any security of appointment and other advantages with a post which carried only daily rates of pay. The Committee suggest that, until the re-examination of the system is made, as suggested in para. 84 the advertisements which are issued for the purposes of inviting applications for the course of training in the B.E.L. should clearly indicate to the extent possible, the advantages which go with the pay-scales as well as the absence of disadvantages which a lay man ordinarily associates with a daily-rated system.

(h) Special steps for recruitment of trainees

86. The Committee understand that the B.E.L. have drawn up a 4 year programme for recruiting 300 trainees a year for the factory in view of the rising tempo of production in future years. They were also told that, at present, nearly 90 per cent. of the trainees belong to areas not far from Bangalore. Consequently, in view of the large number of factories in the same area requiring skilled workers, who are mostly drawn from the same surrounding areas, the possibility of a disappointing response in number and consequently in quality to advertisements for recruitment to the training school cannot be overlooked. The Committee cannot, therefore, over-emphasise the necessity of initiating special steps to facilitate recruitment on the proposed scale for the next four years. They hope that the suggestions made by them in para 85 as also in paras 70, 71 and 73 (the recruitment being on an all-India basis) will go a long way in increasing the response. At the same time, they suggest that the feasibility of maintaining contacts with schools giving training in craftsmanship, etc. by recruiting teams may also be examined.

(i) Grades of artisans

87. The Committee observe that the trainees after their trade tests, are fitted into one of the three grades, *namely* A, B or C depending upon the results of the training and the trade tests. An 'A' grade artisan starts on a minimum salary of Rs. 3 per day, *i.e.*, about Rs. 78 p.m. on the basis of a 26-day month plus dearness allowance admissible, a 'B' grade artisan starts on a salary of Rs. 2/8/- per day, *i.e.* Rs. 65 per month plus dearness allowance admissible, while a 'C' grade artisan starts on Rs. 1/8/- per day, *i.e.* Rs. 39 p.m. plus dearness allowance admissible. The Committee do not appreciate the basis on which the artisans are fitted into these three grades merely on the basis of the results of the examination, involving such wide disparities in the scales of pay. They recommend that this system should be re-examined and a more scientific system which would avoid such disparities at initial appointment should be evolved.

(j) Norms of work

88. The staff of the B.E.L., at present, consists of 89 officers, 353 non-industrial staff and 199 industrial staff besides about 80 trainees.

The number will further increase especially of industrial and non-industrial staff as production increases. The Committee were, however, surprised to learn that workloads and norms of work had not been prescribed for the various types of work both industrial and non-industrial. It was explained that the reasons for this were: (1) the workers had no experience and if norms were fixed now it might be found difficult to change them later, (2) the consultants (C.S.F.) had furnished norms which were worked out on a rough and ready basis and that consequently it was not possible for the B.E.L. to work out prescribed norms. In this connection, the Committee would like to refer to a statement contained in the report of the Technical Sub-Committee appointed to examine the Project Reports of M/s. Marconi and the C.S.F.:—

“The efficiency of Indian labour after they had undergone full training was assumed by both Marconi and C.S.F. to be 80 per cent. of that of British or French labour respectively. Marconi considered that this figure of efficiency could only be reached in the 5th year of production whereas C.S.F. felt confident that it would be obtainable within a year or so”.

89. The Committee understand that, in spite of the confidence felt by the C.S.F. in regard to the efficiency of Indian labour after training, the actual efficiency is only half and in certain operations even one-third of that of a French worker, but that it is likely to improve as production progresses. The Committee consider that it is important to fix, without any delay, the workloads and norms of work in the B.E.L. on the basis of those fixed by the C.S.F. for their own labour and to spare no effort to improve the efficiency of labour, with reference to the norms so fixed.

(k) Incentive System

90. The B.E.L. have not so far introduced the piece work and bonus system for payment of wages, as such a system is considered premature in the development stage in which the B.E.L. is, at present. The Committee understand that the introduction of a piece work system will be considered only after the factory goes into full production and after proper time and motion studies are made. They also understand that the management do not apprehend any difficulty in changing over from the daily rated system to the piece work system at that stage. The Committee consider, however, that when new industries are being established, a start should be made with this modern practice of piece work and bonus system rather than carry on with an old fashioned system. They hope, therefore, that this system will be introduced at an early date.

(l) Quota for Scheduled Castes

91. $12\frac{1}{2}$ per cent. of posts in each grade are reserved for Scheduled Castes and Scheduled Tribes recognised by the Central Government from time to time. The Committee understand that in the B.E.L. the percentage of staff of Scheduled Castes and Scheduled Tribes is

nearly 6½ per cent. They suggest that the management of the B.E.L. should keep in touch with the various Harijan Hostels and Ashrams in the country as well as the Commissioner for Scheduled Castes and Scheduled Tribes so as to reach the prescribed percentage of 12½ per cent. in the near future.

(m) Works Committees

92. The Industrial Disputes Act, 1947 contemplates the appointment of Works Committees consisting of representatives of employers and workmen in industrial establishments with the main purpose of promoting measures for securing and preserving amity and good relations between employers and workmen. The need for such Committees in all industrial establishments in the country in the present circumstances is great. The Committee regret to observe, however, that the B.E.L. have not so far set up any Works Committees. They, therefore, recommend that such Committees should be set up immediately.

93. The B.E.L. employs skilled workers who are mostly educationally well qualified, possess diplomas and have also received special training at the factory. The Committee consider that they could be depended upon to take active interest in the day-to-day working of the factory and that it would be advantageous to associate them in some measure in the management. They, therefore, recommend the setting up of Joint Production Committees of management and workers for the purpose of facilitating discussions and consultations on all production matters between the two. They also recommend that the system of inviting suggestions freely from workers should be introduced and that deserving suggestions should be suitably rewarded.

(n) Welfare Activities

94 (i) *Housing*.—The Committee are glad to observe that the construction of residential quarters for the low income group has not been lost sight of. Construction of a total number of 420 quarters is on hand. Pending completion of this work, certain temporary buildings previously occupied by the Army authorities were taken over and renovated and residential accommodation has so far been provided to a total number of 75 employees. The men under training in the Technical School are accommodated on the Estate in Hostels.

(ii) *Education*.—The need for providing separate educational facilities in the factory area, it is understood, has not arisen so far. However, as the construction of residential buildings progresses, this need will arise. It is understood that the question of providing educational facilities is already under discussion with the Mysore Government and that the Education Minister of Mysore has promised that if the buildings are constructed by the B.E.L., the Mysore Government will be prepared to run the schools for the children of the staff of the B.E.L. The Committee suggest that the B.E.L. may explore the possibilities of constructing building for this purpose in collaboration with the H.M.T. and other neighbouring concerns.

(iii) *Others.*—In addition, the following welfare measures have been taken by the management:—

- (1) subsidy on transport;
- (2) grant to the recreation club;
- (3) provision of play-grounds;
- (4) canteen; and
- (5) medical facilities.

The total expenditure on the above welfare activities is stated to be so far about Rs. 30,000.

VI

TRAINING AND RESEARCH

(a) Training Programme

95. The training of technical personnel and skilled labour for a factory of the type of the B.E.L. is of paramount importance and is in fact one of the major factors on which the success of the project would ultimately depend. The necessity of providing institutional facilities and arrangements in the factory itself was great as facilities for such training are not available, at present, in the country to the requisite degree. Provision for providing such training has been made in the Agreement entered into with the C.S.F., France. However, the Technical Sub-Committee which had examined the Project Reports of the C.S.F. and M/s. Marconi had pointed out that while the proposals contained in the Marconi Report were in considerable detail and were based on the appreciation of the importance of training, the C.S.F. Project Report apparently assumed the availability of skilled workers of sufficient standard and did not lay on training the stress that was necessary. Consequently, the Technical Sub-Committee had recommended that it would be necessary to have a more comprehensive training scheme than the one proposed in the C.S.F. Report. The Committee have already pointed out in para 26 that they would have themselves liked to see subjoined to the Agreement a comprehensive training scheme along with its details. In any case it is now the responsibility of the B.E.L. to draw up comprehensive training schemes together with details of recruitment and of the actual training programme, in such a way as would meet all its requirements in the foreseeable future at supervisory as well as at lower levels. For this purpose, the Committee consider that it is not enough if a year-to-year programme for training is drawn up but that the B.E.L. should have before them a concrete plan for a longer period—for at least 4 or 5 years.

(b) Training Schemes

96. The schemes for training of technical personnel for the factory comprise of—

- (1) setting up a training school with the assistance of the French Company as part of the factory for the training of skilled mechanics;
- (2) the training in France of Indian engineers and technicians under the French Company; and
- (3) training of engineers, technicians and mechanics during the actual execution of work for the factory.

(c) Training School

97. A Training School was established in October, 1954 as an adjunct to the factory under a whole-time French Principal. The main purpose of the Training School is to re-orientate the radio mechanic trainees recruited in the manner explained in para 82 to the actual needs of the factory. The duration of the training is about 6 to 9 months. During this period, they are provided with free boarding and lodging and are, in addition, paid Rs. 15 p.m. for the purpose of pocket expenses. The cost of training is about Rs. 250 per mensem per head including the salaries of the Instructors, materials, depreciation of the machines, etc. So far, 155 men in two batches of radio mechanics and mechanics have completed their training in the Training Centre and have taken up positions in the factory.

98. Besides the whole-time French Principal of the Training Centre, there are two Indian Instructors permanently attached to the School. In addition, two Indian technicians and one French technician work as part-time Instructors. Two more Indian Instructors are proposed to be employed shortly.

The Committee have already referred in paragraph 89 to the low efficiency and output of the Indian worker in the B.E.L. as compared to the French worker. They, therefore, suggest that the training imparted in the Training School may be re-examined with a view to seeing whether it could be improved upon so as to facilitate better efficiency and output on the part of the workers.

(d) Future of the School

99. In view of the programme for expansion in the next few years, a four-year programme for training men in the factory has been drawn up and, for this purpose, the B.E.L. has decided to train approximately 300 persons a year. The Committee understand that recruitment at the rate mentioned above is likely to meet the requirements of the B.E.L. in respect of skilled workers for the next four years and the question whether the Training School should continue thereafter in its present form or in a modified form will be examined after another year or 18 months. The Committee cannot over-emphasise the utility and the need of such Training Schools in the country in view of their shortage and, consequently the necessity not to discontinue the School in the B.E.L.

(e) Training of Outsiders

100. At present, the Training School is intended only for meeting the needs of the factory of the B.E.L. The need for skilled workers in this country is great and it would undoubtedly be a great advantage if this School could also train skilled workers at least for electronics, radio and similar other industries in the country. The Committee were, however, told that at present the entire capacity of the School is taken up in training men for the factory and it would be difficult to train outsiders. They, therefore, suggest that the Training School in the B.E.L. may be worked in shifts, if possible, and may also be

expanded further to the extent necessary after taking into account the available facilities for training such skilled workers in the country as they stand in relation to the demand.

101. The Committee were also told that there might be some difficulty in the B.E.L. catering to the needs of skilled workers in other industries in the country, as the expenditure on the School will be reflected in the cost of the B.E.L., which the latter, being a Company, might not be able to afford. It was also mentioned to them that in case the Government could subsidise the training scheme, there might be no difficulty in the B.E.L. providing such training courses for outsiders. The Committee consider that in the national interest the training facilities in the B.E.L. should be available not merely for its own requirements but also for the need of skilled workers in other industries in the country and that the question of finance necessary for the purpose should be taken up with the appropriate Ministries of the Government of India, viz. Education and Labour.

(f) Draftsmen Training Scheme

102. The B.E.L. have had considerable difficulty in recruiting Draftsmen for their Production Control Department as a result of which a large number of posts of Draftsmen are vacant. In view of the difficulty in getting trained Draftsmen, the B.E.L. have obtained an Electronics Industry Draftsman from France and have opened a School for 12 Draftsmen to be trained at a time.

103. It has been the experience of the Committee that there is a general shortage of Draftsmen required for the various industries in the country. At present, the Ordnance Factories have their own Draftsmen Schemes, the chief one being at the Machine Tool Prototype Factory, Ambarnath and other smaller ones in the various Ordnance Factories themselves. The Committee feel that there should be some co-ordination between the requirements of Draftsmen in the various industries, on a regional basis, if not on a central basis, and that Draftsmen Training Schemes, at least, for the purpose of imparting initial training, should be formulated on a collective basis, to meet this demand, leaving, if necessary the advanced training and specialisation to the respective industries. The Committee suggest that as a beginning the various Government undertakings in Bangalore may initiate a joint Draftsmen Training Scheme, and thereafter gradually such schemes may be extended to other regions also.

(g) Award of Diplomas or Certificates

104. The two training schemes in the B.E.L., namely, for training skilled workers for mechanic and radio mechanic trades and for training Draftsmen, at present, train a small number who are intended only for its own requirements. Consequently, the question of award of any diploma or certificate to those trained under these schemes has not arisen so far. The Committee have already recommended that the scope of these schemes should be enlarged. They, therefore, recommend that all those trained under the training schemes conducted by the B.E.L. should be awarded suitable diplomas or certificates which would be recognised by other institutions also.

(h) Training of Technicians in France

105. As part of the training in France of Indian engineers and technicians under the French Company, 13 technicians of the Foremen class were sent for a year's training to France in September, 1953 and four young engineers and one Chief Draftsman were sent early in 1955 for training for six months and four months respectively. During 1957, another 14 men are expected to go for training in France—12 for six months and 2 for 12 months. The Committee understand that no long-term phased programme has been drawn up for the deputation of engineers and technicians abroad for training as it was considered that with the data the B.E.L. had, it was not possible to frame a long-term programme. The Committee would like to repeat here the desirability of utilising to the maximum the French assistance offered under the Agreement for the purpose of getting as many Indians trained as possible, and they hope that it would be possible to draw up a longer programme than has now been done so as to facilitate recruitment even at this stage.

(i) Apprentice Schemes

106. A scheme for training apprentice engineers has been initiated and it is proposed to train every year two engineers for the B. E. L. and two others selected by the Ministry of Education. In view of the shortage of engineers pointed out in para 79, the Committee suggest that this method of recruitment and training may be exploited fully, and that expenditure should not be grudged on this account.

(j) Research

107. The necessity for having an effective research, design and prototype development section in the B.E.L. is great in view of the continuous development of new techniques of methods of manufacture and production, as also of the need for design and development of new types of equipment. While a provision for this purpose has been made in the Agreement entered into with the C.S.F., the Committee understand that, at present, only a small development cell has been set up. It is also anticipated that in the near future this branch will have only a minor part to play as the factory will be manufacturing equipment under licence with the French company. While the Committee agree that research, design and prototype development branch will have a greater role to play as the factory expands, they consider that even now these branches should receive greater impetus than at present and that, for this purpose, recruitment and training of selected personnel, procurement of equipment, etc., should be initiated even at this stage.

108. The Committee consider that the success and progress of research would depend to a great extent on the close co-ordination with other institutions offering facilities for research and development in electronics such as the National Physical Laboratory, the Indian Institute of Science, the Electronic Research Institute, Pilani, etc. To facilitate close co-ordination in research of this type, the B.E.L. should

take concrete steps to encourage the conduct of research in various institutes and Laboratories particularly in the matter of developing indigenous sources of raw materials required in the electronics industry, including those required in valves manufacture, while it could itself concentrate on the industrial aspect of research. The Committee suggest that for the purpose of facilitating research on selected lines, pilot plants be got opened in the Electronics Institutes and Laboratories either directly by the B. E. L. or preferably through the agency of the Council of Scientific and Industrial Research.

VII PRODUCTION MATTERS

(a) Programme of Production

109. According to the Agreement entered into with the C.S.F., the factory of the B.E.L. has been designed to produce the electronics equipment of the quality and description mentioned in Schedule I to the Agreement though the actual production till 1962 will be the quantities and values indicated in Schedule II to the Agreement. The guarantee of the C.S.F. is, however, confined in the first year to a production of 50% of the value of production mentioned for that year in Schedule II and in each subsequent year to 75% of the value of production mentioned in that Schedule for that year. As regards items mentioned in Schedule I but not included in Schedule II, the responsibility of the C.S.F. is confined only to the transmission of the technical know-how of production.

110. It would be observed from Schedule II to the Agreement entered into with the C.S.F. that the targets of production have been fixed as under:—

1956	..	Rs. 50 lakhs.
1957	..	Rs. 200 lakhs.
1958	..	Rs. 300 lakhs.
1959—62	..	Rs. 425 lakhs which is the estimated full production capa- city of the factory.

111. The Committee understand that the calendar years 1956, 1957, etc., mentioned above have been converted into financial years 1956-57, 1957-58, 1958-59, etc., without any change in the value of production. It was explained that the reason for doing so was to suit the maintenance of accounts which are kept according to the financial year. In view of the rising tempo of production in subsequent years, the Committee would have liked to see the target fixed for 1956-57 to be higher than that for 1956. They have, however, been assured that while the production for the first two years would be affected, it would be made up by the third year.

112. The factory went into production in December, 1955 and started manufacturing tools for the receivers and transmitters which are programmed to be manufactured in 1956-57 and 1957-58. So far tools and piece-parts worth Rs. 2 lakhs have been produced. 10 Receivers of the value of Rs. 40,000 have been assembled while 50 Receivers are in assembly with parts for another 50 under manufacture. The production has lagged behind the originally envisaged programme of Rs. 50 lakhs in 1956, since changed to 1956-57. The set back is stated to be due to modifications which had to be incorporated in the sets for meeting the requirements of the user departments.

(b) Survey of Requirements

113. The Committee believe that it is absolutely necessary to make a survey of the country's requirements of electronics equipment both in the public and in the private sectors for a fairly long period so as to plan the production in the B.E.L. accordingly. They understand that the Ministry of Defence had made in 1951-52 a fairly complete estimate of the requirements of the country, as far as the public sector was concerned, in respect of wireless equipment for the next five years and that the production programme contained in the Agreement entered into with the C.S.F. was based on that estimate. It was also explained to them that the B.E.L., which is the only manufacturer of these goods in India, had been contacting the various user departments and was receiving their estimates for the next five years, with the result that a survey was being made more or less as a continuous process and the production was being planned accordingly. The Committee do not, however, consider this enough. The country needs varied types of electronics equipment such as is used in electrotherapy and in scientific and nuclear research, refrigerating and air-conditioning apparatus, equipment used in broadcasting and other communications services, both civilian and defence, test and measuring instruments etc., both in the public and in the private sectors and the requirements will continue to increase with successive Five Year Plans. The Committee consider that the B.E.L. should cater not merely to the needs of Government Departments in the limited sphere of wireless transmission equipment and to the requirements of valves in the country but should also take cognisance of all the electronics equipment needed in this country as well as in the neighbouring countries subject, of course, to the assurance given to the private sector in regard to the manufacture of commercial radio receiver sets. They, therefore, suggest the appointment of a Committee of Experts to assess the demand of the country now and in the immediate future in respect of various types of electronics equipment so as to enable the B.E.L. to keep these items and targets of production in view in framing its plans for future expansion and at the same time to plan for the entire production during the currency of the Agreement with the C.S.F. so as to ensure its maximum exploitation. The Committee feel that only then would the establishment and existence of a private limited concern in the public sector, solely for this purpose, be considered as fully justified.

(c) Future Programme

114. The Committee understand that the production programme of the B.E.L. envisaged in the Schedules to the Agreement has already undergone two changes in the last year and a half. It has been explained to them in this connection that the two Schedules accompanying the Agreement were drawn up sometime in 1952 based on the then anticipated requirements of user departments of the Government and that these represented the likely requirements of the user departments for a period of five years *i.e.*, 1956-61. Consequently as the likely requirements of the user departments underwent changes with the

development of new techniques, the production programme envisaged in the Schedules to the Agreement had to be reviewed from time to time. A review was made in February, 1955 taking into account the requirements of the user departments for 1956-57. This revised programme had also to be subsequently modified because certain wireless sets had to be developed in accordance with the specifications of the Ministry of Defence. The Committee have been assured, however, that although the description, variety and quantity of the goods as laid down in the Schedules accompanying the Agreement were altered by mutual agreement in the light of the changed circumstances, there was no material change in the total value of production for the two years 1956 and 1957.

115. The revised production programme for 1956-57 and 1957-58 is as below:—

<i>Description of equipment</i>	<i>Nos.</i>	<i>Estimated cost of production</i>
		Rs.
Receiver Universal RU 536	676	27,00,000
400 Watts Transmitter ET 402	304	121,16,000
VHF—20 & 10 Watts Trans- receivers	300	15,00,000
HF 30 Watt Transreceiver	300	18,00,000
50 KW, SW Broadcast Transmitter	3	16,00,000
Rawin Transmitter	20,000	5,00,000
WS 'P'	120	2,40,000
50 Watt HF Transmitter	62	4,00,000
Miscellaneous (Consoles, Pre-amplifiers for ATR)	—	2,00,000
		Rs. <u>210,96,000</u>

There is a possibility of 3 to 4 Radar Sets also being assembled during this period in which case there will be a further addition of Rs. 20 lakhs to the estimated production during this two-year period.

The above estimate represents the requirements of user departments such as Civil Aviation, Defence, Police, All India Radio, etc.

116. The Committee were informed that even the above programme is subject to modification based on customer requirements. Even in the first year of production the programme underwent two changes as indicated in para 114. The Committee will not, therefore, be surprised if on the ostensible grounds of flexibility, frequent changes in customer requirements and consequently in production programme, become a regular feature, unless some prudent restraint is exercised by all concerned. While they realise that in view of the possibilities of development of new techniques it might not be possible to avoid changes altogether, they consider that frequent changes are likely to have a very upsetting and unbusiness-like influence on the production in the B.E.L. They,

therefore, suggest that some arrangement should be arrived at with the Radio and Cable Board, which is charged with the responsibility of co-ordinating the requirements of the user departments of wireless equipment, to lay down a firm production programme for three or four years at a time, without making changes in it every now and then.

(d) Manufacture of advanced types of equipment

117. The Committee find from the report submitted by the Technical Sub-Committee which had examined the Project Reports in 1950 that they had recommended that the manufacture of wireless test equipment particularly of the type required to meet Defence Services needs should form part of the production in the B.E.L. at a later stage, and that the C.S.F. should be called upon to submit separately a report for this purpose. They, observe, however, that while Schedule I of the Agreement mentions a few such items of test equipment, Schedule II which lays down the production programme till 1962 does not envisage the production during these years of some of them. They suggest that the question of implementing the recommendations of the Technical Sub-Committee be examined in consultation with the Defence Services without any further delay.

118. It has been suggested to the Committee that as the production in the B.E.L. progresses and as and when the manufacture of more advanced types of equipment is undertaken, the manufacture of simpler items and components may be gradually transferred to other subsidiary industries to the extent permissible under the Agreement with the C.S.F. so that the B.E.L. could obtain as much technical know-how and manufacturing technique as possible from the C.S.F. and at the same time concentrate on the production of advanced types of equipment. The Committee do not consider it their province to offer remarks on this suggestion but suggest that it may be given due consideration at the proper time by the B.E.L.

(e) Costing and Cost of Production

119. It is understood that a detailed system of costing has been introduced in the factory as from the 1st April, 1956. A note describing the system as furnished by the B.E.L. is reproduced at Appendix IX. The costing at present is stated to be only approximate and it is anticipated that the B.E.L. will be in a position to state the exact cost of production of each item during 1957-58.

120. The prices of equipment manufactured in the B.E.L. are fixed on the basis of actual cost of materials and labour and adjusted overheads plus 10% for profit. To arrive at the overhead rates, the expenditure on the factory is estimated as to what it would be when the factory reaches full production. The selling price worked out on the above basis of certain equipment manufactured by the B.E.L., the Committee were informed, was about 30% less than the price for similar sets manufactured by C.S.F.

121. Costing is an important means of controlling the costs of production in an industrial undertaking. It is, therefore, of great importance to lay down an efficient system of costing suited to the peculiar circumstances of each such undertaking and of ensuring that it is followed faithfully and efficiently in actual practice. At present, the responsibility in this respect rests on the management of that particular industrial unit though it also falls within the jurisdiction of the statutory auditors and of the Comptroller and Auditor General of India to review the system during the course of their audits. The Committee would, however, suggest that, in addition, it would be desirable to have another centralised authority charged with the responsibility of laying down the system of costing for each industrial unit and of ensuring by periodical inspections that the system is being faithfully followed by each Unit and also that action is being taken to control costs etc., on the basis of the data brought out.

The Committee understand that there is in the Ministry of Finance a Cost Accounts Branch which undertakes the following types of work:

- (1) Investigations into the costs of production of several industries, as and when the necessity arises;
- (2) Valuations of industrial undertakings at the time of nationalisation, etc.;
- (3) Investigations into the system of accounting in vogue in Government industrial organisations with a view to seeing whether they are operated on proper lines and whether Government interests are sufficiently safeguarded as and when the Ministries concerned desire this to be done;
- (4) Laying down or advising on the system of accounts to be adopted in Government commercial and industrial undertakings, when the Branch is asked to undertake such work.

The Branch has no statutory or other authority either to lay down system of accounts or conduct reviews, either concurrent or periodic, in regard to the adequacy or otherwise of existing accounting systems. The investigations conducted by the Branch are those specifically required by the various Ministries and once such work is completed and reported upon it is not, on its own initiative, required to follow up reports submitted by it and their further implementation.

The Committee would suggest that the Cost Accounts Branch be entrusted with the specific duties of laying down the system of costing to be followed in each undertaking in the public sector, of conducting systematic concurrent or periodic reviews in regard to the adequacy or otherwise of the cost accounts system and of submitting reports thereon, direct to the Ministry of Finance as well as the administrative Ministry concerned of the Government of India.

122. The Committee understand that the wireless equipment of the type manufactured by the B.E.L. is available in this country at perhaps one-third or half the selling price charged by the B.E.L. They

regret to observe that the prices charged by the B.E.L. should be so exorbitant as compared to the prices of similar imported equipment in spite of the fact that the customs duty for wireless apparatus, components, etc., imported by the B.E.L. for the purpose of production is charged at a concessional rate of $2\frac{5}{8}\%$ *ad valorem* on a certificate issued by the Ministry of Communications, whereas the normal duty for these items is about $31\frac{1}{2}\%$. The defence offered by the Defence Secretary for this unhappy state of affairs is as follows:—

“In the first place, it is not fair to compare production in the B.E.L., which has hardly started, with production in an organisation like, say, Phillips which is a world-wide organisation. They have been manufacturing Electronics goods for at least 25 years, they have manufacturing establishments all over the world; they have got access to raw materials, which we do not have. And we get the technical know-how at a very high price. There are hardly a dozen persons in this country who are really competent in the electronics field, and, therefore, when we manufacture electronics goods in B.E.L., the price of the end-product would be very much more than anything that you can import, even if you gave this concession in regard to customs duty on imported raw material. Also it is not only the raw material that actually counts in production, labour costs also count for a lot. We undoubtedly have cheap labour, but then the productivity of that labour is not so very great as in other countries. This is a specialised production. We have another difficulty. The consuming departments of the Government of India have represented that they can get transmitters, receivers etc., at perhaps one-third or half the price of what we manufacture. This is of course true; but if for this reason these departments insist on importing electronics goods they are not going to make it easy for us to establish production. Government must be prepared, and the country also must be prepared in such cases to pay a higher price. In fact, when we make the valves for example, for the commercial receiver and we ask for protection of that industry, we may then not be able to sell the valves at the same price as Phillips are selling today. For some time we shall have to put up with this.”

123. The Committee are aware, as already pointed out in paragraph 89, that the efficiency and output of the skilled workers in the B.E.L. is only half and in some cases even one-third of the output of a French worker. They have, therefore, suggested in paragraph 98 that the programme of training in the Training School attached to the B.E.L. should be re-examined to see what extent it could be improved upon to ensure better output. This question is also linked up

with the fixation of norms of work so as to ensure a comparison and also improvement between the actual output and fixed norms. The Committee do not, however, appreciate that this difference in productivity alone accounts for the enormous disparity between the prices of the equipment manufactured by the B.E.L. mostly with imported raw materials and components and of the imported equipment, since ordinarily labour charges account for only 40 per cent of the expenditure. The disparity between the prices has also to be examined with reference to the other constituents of the cost of manufacture, namely, materials and overheads. The overheads themselves have also to be examined under shop overheads, factory overheads, material overheads and administrative overheads. As regards raw materials, the purchase procedure and the present position in regard to the import of almost all the raw materials and components need to be reviewed, while the question of overheads is also linked up with the need to observe economy in all matters, particularly in the employment of non-industrial and supervisory establishment as well as in the purchase of machinery. The Committee recommend that a careful scrutiny into the reasons for the disparity between the prices of equipment manufactured by B.E.L. and that imported should be made by the administration, with the help, wherever necessary, of an experienced Chartered or Cost Accountant and a representative of the Comptroller & Auditor-General, with reference to each one of the contributory causes mentioned above and that steps be initiated without any further delay to bring costs down to a reasonable level.

124. It was brought to the notice of the Committee that in view of the disparity between the prices of imported equipment and that manufactured by the B.E.L., most of the user departments of the Government whose allotment for the Second Five-Year Plan had already been cut below their requirements by the Planning Commission were inclined to prefer to buy imported equipment. In this connection, they would like to refer to a recommendation made by the Stores Purchase Committee:—

“Government’s purchase policy should in our view admit generally a price preference upto 15% to indigenous products over the imported goods including customs duty. The preference margin should be increased to 25% for certain specified classes of stores where admittedly the indigenous industry is not in a position to compete with foreign manufacturers within the general limit of 15% because of low import duties or small turn-over or higher cost of raw materials and components, etc. Price preference even in excess of 25% should not be ruled out for lines of manufacture when unfair competition is feared or where special development is required if the Govt. is convinced of this justification. However, in respect of lines of manufacture which are the monopoly of a single firm or a group of firms, the degree of price preference to be given may be subject to examination by Govern-

ment of cost of manufacture, where considered necessary."

The Committee agree with the recommendation made above and consider that it should be equally applicable to firms in the public sector like the B.E.L. They, therefore, reiterate the suggestion made earlier that careful scrutiny of the costs of manufacture should be made with a view to finding out reasons for the wide disparity. At the same time, to prevent indiscriminate imports by user departments, the Committee suggest careful screening of indents for such equipment placed by user departments and restriction of imports to the extent of the production in the B.E.L. from time to time.

(f) Raw materials and components

125. (i) *Type of raw materials and components.*—The various raw materials and components required by the B.E.L. are ferrous materials such as steel rounds and alloy steel for tools, non-ferrous materials such as brass rounds and sheets, copper flats and sheets, copper wires and aluminium alloys, insulating materials such as bakelite sheets and paper etc. and components such as resistors, condensers, valves etc.

126. (ii) *Purchase Procedure.*—The purchases are made partly abroad and partly in India. The purchases abroad are made through I.S.D., London and I.S.M., Washington, from the C.S.F. and directly from foreign suppliers and amounted, during the first year of production to Rs. 28 lakhs, being 90% of the total quantity of raw materials needed for production. The purchases in India are made partly directly and partly through D.G.S. & D. by placing indents on him or operating the rate contracts. The amount of purchases made through the I.S.D. and D.G.S. & D. amount to 61% of the total purchases. Most of purchases made directly whether abroad or in India are made through the system of limited tenders. In India, the limited tenders are normally sent to about 6 suppliers. In certain cases, for example, proprietary materials, purchases are made on the basis of single tender. The selection of suppliers is stated to be done based on experience, and a list of approved suppliers is obtained from other factories and Government organisations. It is also understood that a separate list of approved suppliers is being compiled.

127. (iii) *Purchases for initial manufacture.*—Orders to the extent of Rs. 9 lakhs were placed on the C.S.F. for supply of prototype, sub-assemblies, components and raw materials for the initial production of transmitters and receivers which were to be assembled in the B.E.L. They understand that these orders were placed on the French Company without calling for competitive tenders in order to expedite commencement of initial production. It was also stated that these were not available indigenously with the French suppliers. The Committee further understand that a comparison of the prices of materials purchased in India and those purchased from the C.S.F. show that the Indian prices are on an average 35% cheaper, while items purchased indigenously from the French suppliers are on average 40% cheaper. It would thus appear that for the initial purchases of

Rs. 9 lakhs which were made from the C.S.F., a saving of Rs. 2½—3 lakhs could have been made had it been possible to procure indigenously the various raw materials and components which were obtained from the French firm. The Committee feel that with a little long-term planning, it should have been possible for the B.E.L. to obtain all these items indigenously (except prototype and sub-assemblies which are more or less intended as patented models for starting production) and save Rs. 2½—3 lakhs on this purchase.

128. (iv) *Import of components for assembly.*—The Committee understand that the value of components, etc., imported directly from abroad with a view to mere assembly in the factory was of the order of about Rs. 9 lakhs in the first year while the value of similar purchases during the second year will be about Rs. 42 lakhs as against the total production of Rs. 2·2 crores planned during these two years. Assuming that 40% of the expenditure represent labour charges, it would mean that in the first two years the purchases of components, mostly imported, merely for the purpose of assembly of sets in India, would amount to about 40% of the material used, though the percentage would be much higher for the first year. It is understood that the percentage will gradually decrease as production progresses.

129. (v) *Manufacture of components.*—The extent of purchases of raw materials and components for the 2nd year of production is expected to amount to Rs. 120 lakhs of which imports will amount to Rs. 106 lakhs *i.e.*, about 90% of the purchases. The Committee were informed that these purchases will be made in India and abroad on a competitive basis mostly by inviting limited tenders and that a majority of the non-ferrous and insulating materials are likely to be procured from indigenous sources but that most of the requirements in respect of ferrous items, being of special specifications, and of components are not at present manufactured in India and will have to be imported. They understand, however, that for the first five years imported items will form 80-85% of the total amount of production material required in the factory.

131. The value of wireless components imported in the manufacture of all the components, required by the factory, either at the B.E.L. or elsewhere has yet been drawn up. It might be mentioned in this connection that the Technical Sub-Committee which had examined the Projects Reports had recommended that a Components Section for the manufacture of wireless components including resistors and condensers should be included in the Project.

131. The value of wireless components imported in the last five years is given below:—

1951-52	..	Rs. 1,31,62,218	} excluding custom and other import duties.
1952-53	..	Rs. 97,50,054	
1953-54	..	Rs. 83,94,166	
1954-55	..	Rs. 96,51,198	
1955-56	..	Rs. 1,61,07,338	

The question of the country becoming self-sufficient in respect of wireless and electronics industry is thus closely linked with the manufacture of components in India. The importance of manufacturing in this country as many of the components as possible at an early date cannot therefore be over-emphasised. The Committee have already pointed out in paragraph 13 that the establishment and development of subsidiary industries to feed the requirements of the B.E.L. in the matter of raw materials and components are of great importance if the country is to become self-sufficient. The B.E.L. has itself a very responsible role to play in the development of various subsidiary industries which would feed its requirements. First, the types of subsidiary industries necessary for this purpose have to be determined. Secondly, a survey of the existing industries and their present as well as potential capacity will have to be made. This will have to be followed by an allocation of responsibilities for the manufacture of certain specified items to each such industry including the B.E.L. itself. Finally, it is necessary that the B.E.L. should plan its programme in such a way as would secure the orderly development of all these industries. The Committee feel that all these would be satisfactorily accomplished only by the appointment of a Committee of Experts of the B.E.L. and representatives of the Development Wing of the Ministry of Heavy Industries to undertake an immediate survey of the indigenous capacity for the manufacture of components, etc., and for drawing up, in consultation with the various industries concerned, a precise long-term plan allocating amongst various producers the responsibility for manufacturing specified items.

132. The Committee suggest that the feasibility of manufacturing ferrous items of special specifications required by the B.E.L. might be explored in consultation with the various Ordnance Factories in the country where large capacity to undertake such work exists.

(g) Valves.

133. The B.E.L. do not, at present, manufacture valves which is almost the core of electronics. They have, however, a proposal to undertake their manufacture in 1958. The extent of imports of Radio valves in the last five years is given below:

1951-52	....	Rs. 22,63,946	
1952-53	....	Rs. 16,31,236	
1953-54	....	Rs. 11,03,514	excluding customs and
1954-55	....	Rs. 14,66,199	other import duties.
1955-56	....	Rs. 30,15,954	

The Technical Sub-Committee which had examined the Project Reports had recommended that the factory should manufacture various types of valves and had even suggested an annual production of Rs. 50 lakhs in the initial stages. The Committee understand that the manufacture of valves when undertaken by the B.E.L. will make

the country completely self-sufficient in respect of the requirements of valves both in the public and private sectors. They, therefore, recommend that the negotiations for the manufacture of valves in India be expedited and production undertaken at an early date.

(h) Machinery and Equipment.

134. The placing of orders for machinery commenced in February, 1954. The types of machinery ordered are machine tools, special equipment for electronics industry, test equipment and electrical appliances. The total contractual value of orders placed so far is Rs. 62.25 lakhs and further orders are being placed according to requirements. The value of machinery received so far is Rs. 46.51 lakhs excluding freight, handling and customs duty. The machinery and equipment were mostly purchased through the D.G., I.S.D., London from various firms all over Europe on a competitive basis. The approximate value of the machinery excluding freight, customs and other incidental charges for which orders are yet to be placed is Rs. 1.28 crores. The Committee understand that the B.E.L. have bought all the machinery that they need for the next two years in view of the fact that it took anything from 18 months to 2 years to get machinery and that consequently all of it was not being used fully now. The overall utilisation of machinery at present is stated to be only 11.17 per cent out of a total of 77 machines installed so far. The low utilisation of installed machinery was stated to be due to the fact that in the initial phases, the work consisted mostly of assembly, which, as pointed out in para.128, accounts for 40% of the materials used in the first two years. It is expected to improve as the production progresses. However, the Committee cannot appreciate machinery being bought in advance merely because it took two years to get it and then being kept idle to such a large extent. They would like careful advance planning of purchases to be made so as to avoid machinery lying idle for long period due to production lagging far behind the installed capacity. In this connection, they would like to reiterate the necessity of having a Technical Director on the spot, as recommended in paragraph 55, to ensure co-ordination between the production programme and the various purchases.

135. The Committee understand that most of the tenders for the initial purchases of machinery were issued from London and opened there because of the advice of the Technical Consultants that very little machinery required for the electronics factory would be available in India and that it would be advisable in order to save time, to obtain it direct from Europe. They also understand that detailed lists of the types of machinery required for the factory were prepared between September and November, 1953 and were shown to the representatives of Indian Machine Tool Manufacturers in March—April, 1954, and that subsequently, after a survey of the indigenous capacity was conducted by an expert belonging to the Consultants, namely, the C.S.F., a few trial orders were placed on Indian manufacturers but that, as the placing of orders could not await the result of those tests and trials, orders for the bulk of immediate requirements

were placed on European manufacturers. Another reason for making initial purchases abroad was stated to be that the factory was to work on metric standards whereas the Indian manufacturers were producing machinery according to the British standards. One lathe was, however, purchased from Hindustan Machine Tool (P) Ltd., and, it is understood, has proved very satisfactory. The Committee have already referred in paragraph 134 to the low utilisation of the machinery bought so far, though orders for immediate requirements only were stated to have been placed abroad. They feel that with a phased programme it should have been possible to obtain indigenously at least a part of the machinery which was purchased abroad. In this connection, they would also like to refer to a recommendation made by the Engineering Capacity Survey Committee as follows:—

“The Committee in its preliminary report had pointed out that there were reasons to believe that Government Departments who, together constitute the largest single purchaser are inclined to operate in water-tight compartments, with the result that Government as a whole are unable to pre-plan and co-ordinate their purchase of engineering products, sufficiently in advance. A common complaint from manufacturers has been that Government plans are not formulated and published in advance for manufacturers to gear up to participate to the extent of the capacity available, with the result that shelter is at times taken to import substantial quantities of engineering products under the expediency of quick implementation of the plans. A very recent example brought to our notice was that of steel transmission towers in Hirakud and the Damodar Valley Projects. Though transmission towers have been made in the country and capacity exists for their manufacture orders valued over Rs. 70 lakhs were placed abroad on the grounds of urgency of requirements. It is felt that this could have been avoided if adequate planning had been carried out in advance by the authorities concerned. It has been brought to the Committee’s notice that in such matters the Central and State Governments do not always work in close co-operation; there have been cases where Central directives for the purchase of indigenous products have been avoided by State Governments”.

The Committee hope that at least in the future it would be possible for the B.E.L. to work out a long-term and phased plan for the purchase of their machinery in the light of the above remarks, in consultation with the Indian manufacturers and the Development Wing of the Ministry of Heavy Industries, so as to secure indigenous manufacture and procurement of the required machinery.

(i) Planning for self-sufficiency.

136. The B.E.L. is the sole manufacturer of electronics equipment (except radio receiver sets) in the country. It should, therefore, constantly keep before itself the essential goal of making the country

self-sufficient in all respects in the matter of this industry at some given date in the near future. The question of self-sufficiency has several aspects, namely, raw materials and components, machinery and equipment, technical know-how, including the question of training and research, personnel and finally the production programme with reference to the likely needs of the country in the foreseeable future. Each of these aspects needs careful long-term planning. The Committee have in this Report made several suggestions on each of these aspects as well as for the necessary planning. They are of the view that the B.E.L. should take the lead in each one of these matters and draw up, in consultation with the various interests concerned, well-integrated plans for attaining the goal of self-sufficiency in the minimum period possible.

NEW DELHI ;

BALVANTRAY G. MEHTA,

The 5th December, 1956.

Chairman,

Estimates Committee.

APPENDIX I

(Vide para 17)

Agreement with Compagnie Generale De Telegraphie Sans Fil

AN AGREEMENT made the **ELEVENTH** day of **DECEMBER**, 1952, between **THE PRESIDENT OF INDIA** (hereinafter called the "Government" which expression shall unless repugnant to the subject or context include his successors and assigns) of the one part and **COMPAGNIE GENERALE DE TELEGRAPHIE SANS FIL**, of 79 Boulevard Haussmann, Paris, France, a Company duly incorporated under the laws of France (hereinafter called the "Company" which expression shall unless repugnant to the subject or context include its successors) of the other part.

WHEREAS the Company has agreed to assist the Government in the manufacture of certain goods as hereinafter stated and in the establishment of a factory with the necessary sections and institutions attached thereto for the purpose of such manufacture on the terms and conditions hereinafter mentioned.

NOW THEREFORE IT IS AGREED by and between the parties hereto as follows:—

PART I

1. Object.—The object of the agreement is to establish and undertake the manufacture in India of:

- (a) Apparatus and equipment using electro-magnetic waves intended for
 - (i) Radio-telegraphic or radio-telephonic communications between fixed points or between fixed and mobile points or between mobile points. The term "communications" means the transmission and the reception of signals, sounds, pictures or other messages in whatsoever form in code or in plain language, but does not include broadcasting reception and television reception;
 - (ii) the detection and the determination at a distance of the direction, range and position of a mobile or fixed point in relation to another fixed or mobile point;
- (b) Electron tubes including miniature and sub-miniature tubes, magnetrons, klystrons and such other tubes as are intended for use in apparatus as defined in sub-paragraph (a) of this clause, and electron tubes for use in broadcasting reception and television reception;
- (c) All radio and other components required for the apparatus and equipment, and tubes mentioned in (a) and (b) above;

and for the above purposes, to set up a factory in India. A research, design and prototype development section in

the field of radio and electronics and a training school for the training of technical personnel required for the factory will be an integral part of the said factory.

2. Role of the Company.—The Company shall render service and assistance as adviser to the Government in every way to achieve this object and more particularly as laid down in the clauses hereafter.

PART II

3. Construction of the Factory.—(a) The Company shall render service and assistance to the Government in the construction of the buildings of the factory to be set up for the object mentioned in Clause 1 above. In particular, the Company shall ensure that the buildings comply with the industrial requirements of the factory. The detailed blue prints for buildings and civil engineering works as well as the actual work itself will be carried out by the Government construction agency who will be responsible for their execution;

(b) (i) The Company shall assist in deciding upon the final choice of the site on which the factory may be set up and take all steps preliminary to the preparation of a definitive layout of the factory;

(ii) The Company shall prepare site plans and overall layouts of the buildings;

(iii) The Company shall prepare line plans for each individual building showing the position of machinery, plant or equipment to be installed in the building. The Company shall prepare full and complete working drawings for the installation of machinery, plant or equipment together with the connected services such as lighting, heating, air conditioning, etc. The Company shall further give full details, drawings and specifications for any technical requirements peculiar to the factory in connection with the building construction;

(iv) The Company shall, at its own expense, maintain a local representative/representatives in India to keep in close contact with Government and its construction agency, so as to ensure constant liaison in the advancement and execution of the work being carried out and shall, in particular, make sure that in the execution of the works due attention is paid to the technical requirements.

The Company shall suggest such adjustment in the plan of the factory as may become necessary during the construction of the factory. Such adjustments will, however, be kept to the minimum.

(v) The Company shall assist the Government in preparing the phased programme for the execution of the works so as to ensure that the installation of machinery, plant or equipment fits in with the building programme, taking into consideration the period required for the construction of the buildings by the agency of the Government.

- (vi) The plans, etc., to be furnished by the Company under this clause will give the measurements in inches and feet.

4. Equipment.—The Company shall render service and assistance to the Government in the purchase and installation of the equipment for the factory required for the manufacture of goods mentioned in Schedule I to this agreement. Such service and assistance will include—

- (i) drafting of the exact specifications of the machine-tools, handling equipment and instruments constituting this equipment together with the characteristics and technical data required for calling of tenders;
- (ii) finding suppliers and submitting the enquiry to them and explaining to them the requirements of the factory;
- (iii) examining and discussing the tenders with the representatives of the Government as well as the suppliers;
- (iv) submitting to the Government for approval the choice of suppliers with the various elements in their favour or against them;
- (v) assisting the Government in regard to inspection and other related matters, at the time of acceptance of the equipment in the works of the suppliers;
- (vi) taking such steps as may be necessary to supervise the installation of the machinery by the personnel of the Government and to ensure that the machinery is put in operation.

5. The Government will maintain a representative or representatives at their expense in Europe for the purchase for the factory of the equipment referred to in the next preceding clause.

6. Payment.—For the services which the Company will render to the Government to their satisfaction under clause 3 in France, except as at Clause 3(b) (i) and (iv), the Government will pay the following to the Company in France. These payments will be made in Sterling in France, except the sum specified in sub-clause (c) of this clause which has been paid to the Company in Indian currency, and the receipt of which the Company hereby acknowledges.

- (a) (i) A sum of £ 3,750/- on the completion of the plans for the general layout of the factory as mentioned at Clause 3(b) (ii) and its acceptance by the Government;
- (ii) A sum of £ 7,500/- in four half-yearly instalments, the first instalment commencing six months after the acceptance by the Government of the plans of the general layout;
- (iii) A sum of £ 3,750/- on the completion of the factory buildings.
- (b) For the services which the Company will render to the Government to their satisfaction under clause 4 in France, except under Clause 4(vi), the Government shall pay to the Company a sum of £15,000/- on the date of commencement of this agreement; and a sum of £45,000/- in

eight quarterly instalments of £ 5,625/- the first of which shall be paid on the 1st January, 1954, and so on provided that as from the said date the total payment at any time shall not exceed 1/10th of the value of the equipment certified to have been inspected in the works of the suppliers and found acceptable as per the orders placed; and a final instalment of £ 7,500/- on the date on which the first complete unit of any of the items mentioned in Schedule II, to this agreement and produced in the factory on mass production scale is accepted by Government.

- (c) The sum of Rs. 1 lakh paid already to the Company by the Government for submitting the Project Report will not be required to be refunded.

7. A sum of Rs. 2 lakhs shall be paid by the Government to the Company in Indian currency for services rendered under Clauses 3(b) (i) and (iv) and 4(vi) in India to the satisfaction of the Government. This payment will be made on the date on which the first complete unit of any of the items mentioned in Schedule II to this agreement and produced in the factory on mass production scale is accepted by Government.

PART III

8. **Technical and Industrial Assistance.**—The Company undertakes to make available to the Government in France or by mail or other means or by exercising necessary supervision in India all technical, industrial and other service and assistance which may be necessary to run the factory as defined in Clause 1, and to enable the factory to carry out the manufacture of the articles mentioned in Schedule I to this agreement and according to the production programme indicate in Schedule II to this agreement, and otherwise to implement the object as defined in Clause 1, of the agreement. For this purpose, the Company undertakes to make available the necessary technique, "know-how", etc. together with blue prints, manufacturing data, including details of raw materials required, and all other information. The blue prints and manufacturing data shall be furnished in the English language and in the British or metric system as may be required by the Government. As part of this service and assistance, the Company shall in consultation with Government settle a scheme for training of technical personnel for the factory and setting up a training school as part of the factory to train Indian personnel in the technical trades as required for the running of the factory; and also in consultation with Government settle a scheme for the setting up of the research, design and prototype development section of the factory.

9. **Supply of Raw materials.**—The Company shall, as far as possible and if required to do so, sell to the Government raw materials, components, models or apparatus and electron tubes and any other articles that may be required for the programme of manufacture of the factory at the selling price charged by the Company from its associated companies. The Company shall use its good offices in getting the above raw materials, etc. from other sources, when required to do so by the Government.

10. Secrecy of information.—The assistance such as is mentioned in clause 8 is granted to the Government on a strictly confidential basis. The Government shall not, except with the previous permission of the Company, divulge, communicate, publish or bring to the knowledge of persons other than those to whom it may be necessary for Government to do so for the purpose of this agreement and confidential information given at any time by the Company to the Government. The Government shall also not use any such information for the profit of any person or body of persons other than Government. Similarly, the Company shall not divulge to others without the previous permission of the Government any confidential information acquired by the Company in the performance of its duties or otherwise in connection with this agreement.

11. Authorisation from the French Government.—The Company shall use its best endeavours to obtain from the French Government the authorisation for supplying to the Government of India the manufacturing data relating to equipment on the Secret list of the French Government.

12. Licences and patent rights.—(1) The Company hereby grants to the Government a licence under all patents which the Company may own or control, to manufacture, use or sell in India, or export to or sell in Burma, Ceylon, China, Indonesia, Nepal, Pakistan and Thailand the goods referred to in Schedule I to the agreement and all other goods and equipment within the scope of this agreement as defined in Clause 1 of the agreement.

(ii) The company undertakes that the licence given by Sub-clause (i) of this clause together with blue prints, technical or manufacturing data and all other assistance that the Company will give will enable Government to produce in the factory 70 to 80 per cent. of the value of the production of the factory as envisaged in Schedules I and II to this agreement.

(iii) For the remaining 20 to 30 per cent. of the value of such production of the factory, the Company shall use its good offices to obtain licences, blue prints, manufacturing data and such other rights or information as may be required from other companies producing material mentioned in Schedule I to this agreement or similar material. The Company shall endeavour to obtain the best terms of contract for Government but such contracts with the other companies shall be made by Government who shall be liable to pay the royalties and other payments direct to the said companies. The Company shall give to Government its assistance in the use of the data etc. obtained from the other companies in the manufacture of material in the factory.

(iv) In consideration of the payments to be made by Government to the other companies under sub-clause (iii) of this clause, the Company agrees to forgo in respect of any year mentioned in Schedule II to this agreement such portion of the sum payable to it under Clause 15(i) (b) as bears same proportion to the whole of such sum as the cost of production of the goods manufactured in that year by virtue of the rights acquired from such other companies bears to the total cost of production for that year:

Provided that the percentage of the amount so to be foregone shall be calculated on an average basis and provided further that if

the total payments, made in the particular year to the other companies are less than the amount to be forgone by the Company under this sub-clause, the Company shall be liable to forgo only the lesser amount but if such total payments exceed the amount to be forgone by the Company under this sub-clause then the Company shall be liable to forgo only the amount mentioned in this sub-clause and not the higher amount paid to the other companies.

13. **Staff.**—(a) The Company shall send to India at its expense and maintain such staff and officers as it deems necessary for the successful performance of its obligations under this Part. The staff shall include the senior officers and Directors of the Company who may visit India from time to time.

(b) The Company shall depute, on terms to be mutually agreed upon, from its own establishment or from allied companies or elsewhere in Europe such number of technical personnel as may be agreed upon to be engaged on the staff of the factory. The travelling expenses and salaries, etc. of such staff shall be paid by the Government.

(c) The Company undertakes to send to India, from time to time, if so desired by the Government and if the personnel are available, such number of engineers, technicians and workers and on such terms as may be agreed upon for giving any special assistance which the Government may desire.

Training of Indian Personnel

14. The Company shall also train selected Indian personnel in its own factories in France to the extent that may be necessary. The Company shall admit the latter personnel to its plants and laboratories in France and give them the fullest data on the subjects of interest to them, and more generally on the manufacturing and managing methods used by the Company. The Government shall pay the salary and cost of passage of the deputationists.

15. **Payments.**—(i) For providing services and assistance under Part III of this agreement to the satisfaction of Government, the Government shall pay to the Company, subject to the conditions hereinafter mentioned, the following amounts, that is to say—

- (a) For the 2nd year following date of commencement of this agreement, a sum of £9,375
- For the 3rd year following date of commencement of this agreement, a sum of £39,375
- For the 4th year following date of commencement of this agreement, a sum of £39,375
- For the 5th year following date of commencement of this agreement, a sum of £39,375
- For the 6th year following date of commencement of this agreement, a sum of £39,375
- For the 7th year following date of commencement of this agreement, a sum of £31,875

For the 8th year following date of commencement of this agreement, a sum of £24,375
 For the 9th year following date of commencement of this agreement, a sum of £16,875
 For the 10th year following date of commencement of this agreement, a sum of £9,375

TOTAL £2,49,375

- (b) A sum for each of the years mentioned in Schedule II to this agreement to be calculated on the basis that if the cost of production as certified by an Auditor appointed for this purpose by Government of the finished goods of the kind mentioned in Clause 1 manufactured in the factory in any of the said years (such cost of production being referred to herein as the production cost) does not exceed Rs. 1 crore then at the rate of 3 per cent. of the production cost, if the production cost exceeds Rs. 1 crore but does not exceed Rs. 2 crores then at the rate of 3 per cent. on the first Rs. 1 crore and 2 per cent. on the balance and if the production cost exceeds Rs. 2 crores then at the rate of 3 per cent. on the first Rs. 1 crore, at the rate of 2 per cent. on the second Rs. 1 crore and at the rate of 1 per cent. on the balance:

Provided that in calculating the production cost the following shall be excluded, namely:—

- (1) the production cost of goods manufactured in the factory for which the Patent rights, technical data, etc. are not furnished either by the Company or through its good offices.
- (2) the cost of materials supplied by the Company and entering into the finished goods manufactured by the factory, and
- (3) the amounts paid or payable to the Company under any provision of this agreement:

Provided also that if production cost of any goods or any component thereof manufactured in the factory is included in the calculation of production cost of any year then production cost of such goods shall not be included in the production cost of any other year.

- (c) A sum of Rs. 75,000 a year for each of the years mentioned in paragraph (a) of this sub-clause.

(ii) The whole of the payment mentioned in paragraph (c) of sub-clause (i) of this clause and one-fourth of the payment mentioned in paragraph (b) of sub-clause (i) of this clause is for services rendered by the Government to Government in India and shall be paid to the Company in India in Indian currency. The rest of the payments mentioned in sub-clause (i) of this clause are for services rendered by the Company to Government in France and shall be paid to the Company in Sterling in France. For this

purpose wherever necessary sums expressed in rupees shall be converted into Sterling at the then ruling rate of exchange.

(iii) The sum mentioned in paragraph (a) of sub-clause (i) of this clause shall be paid in four equal quarterly instalments the first of which shall be paid at the end of the first quarter after the commencement of the particular year concerned and so on.

(iv) The sums mentioned in paragraph (b) of sub-clause (i) of this clause shall be paid in the manner following, that is to say, a provisional payment of 90 per cent. of the sum to be paid for any particular year shall be paid within 3 months after the close of that year and the balance shall be paid within 6 months after the close of that year.

(v) Payment of the sum mentioned in paragraph (c) of sub-clause (i) of this clause shall be made at the end of the year for which it is to be made.

(vi) The payment of the sums mentioned in sub-clause (i) of this clause for the year 1956 and subsequent years is dependent on the goods of the quality and description mentioned in Schedule I to this agreement being produced in substantially the quantities in Schedule II to this agreement which are specified for the year for which the payments are to be made. If production for the first of the years mentioned in that Schedule does not reach 50 per cent of the value of production mentioned in that Schedule for that year or if production for any of the other years mentioned in the said Schedule does not reach 75 per cent. of the value of production mentioned for that year in the said Schedule then for the purpose of the payments to be made under this clause—

- (a) The period of the year in question whether mentioned in Schedule II to this agreement or in paragraph (a) of sub-clause (i) of this clause shall be extended upto and shall be deemed to terminate on the date on which the appropriate percentage as hereinbefore mentioned of the said value of production is reached, and
- (b) all subsequent periods of 1 year mentioned in the said Schedule or in paragraph (a) of sub-clause (i) of this clause shall be shifted accordingly and for the purposes of this clause the year as so shifted shall be deemed to be substituted for the original year as therein mentioned.

PART IV

16. Guarantee of Indemnity.—The Company shall at all times indemnify the Government against all claims which may be made in respect of the manufacture, use or sale within India of the goods referred to in Schedule I to this agreement and all other goods and equipment within the scope of this agreement, for infringement of any rights protected by patent or registration of design:

Provided that this indemnity shall extend only to the goods manufactured in the factory by means of or under patent rights manufacturing data, etc. given or supplied by the Company and shall not extend to goods manufactured by means of or under patent

rights, manufacturing data, etc. given or supplied by any other person, authority or company.

17. Undertaking Regarding the output of the Factory.—The Company undertakes that the factory established with its assistance as provided in this agreement shall be capable of producing and shall produce the goods of the quality and description mentioned in Schedule I to this agreement in at least the quantities hereinafter mentioned, that is to say, in the first year mentioned in Schedule II to this agreement at least 50 per cent. of the value of production mentioned in that Schedule for that year and in each of the subsequent years mentioned in that Schedule at least 75 per cent. of the value of production mentioned in that Schedule for that year:

Provided that any of the said periods of one year shall be extended by such further period as the Government consider reasonable if the production in the factory does not come up to the requirements of Schedule I to this agreement or to be appropriate percentage of the value of production mentioned in Schedule II to this agreement for any reason beyond the control of the Company.

18. Alteration of Schedules.—The two Schedules to this agreement may be altered at any time by mutual agreement and thereupon the altered Schedules shall, from such date as may be agreed upon, be deemed to be substituted for the original Schedules and all the provisions of this agreement shall, as from the said date, apply as if the altered Schedules were annexed to, and were part of, this agreement instead of the original Schedules.

19. Commencement, Extension and Termination of the Agreement.—(i) The agreement shall come into operation from the FIRST day of JANUARY 1953 which date is in this agreement referred to as the date of commencement of this agreement. It shall remain in force for a period of 10 years from that date and will, after the expiry of that period, be extendable for such further period and with such modifications as may be agreed between the parties provided that the agreement shall in any case continue beyond the said period of 10 years up to such further period as may be required for giving effect to sub-clause (vi) of clause 15 of this agreement.

(ii) Notwithstanding anything in this clause—

- (a) if the factory mentioned in clause (i) of this agreement is not sufficiently completed before the commencement of the first year mentioned in Schedule II to this agreement so as to ensure the production within that year of at least 50 per cent. of the value of production mentioned in that Schedule for that year, or
- (b) if the production of the factory does not, within the first year mentioned in Schedule II to this agreement, reach up to at least 50 per cent. of the value of production given in the said Schedule for that year, or does not, in any subsequent year mentioned in the said Schedule reach up to 75 per cent. of the value of production given in that Schedule for that year, or

- (c) if the goods manufactured in the factory and mentioned in Schedule I. to this agreement do not conform to the quality and description thereof mentioned in the said Schedule and are not entirely to the satisfaction of Government,

then and in any such event the Government shall, without prejudice to any other rights which they may have against the Company, have a right to terminate the agreement by three months previous notice in writing given by them to the Company. The Company shall not be entitled to any payment under this agreement in respect of any period after the termination of this agreement.

Provided that any of the periods mentioned in this sub-clause shall be extended by such further period as Government may consider reasonable if the default is due to any reason beyond the control of the Company.

20. Rights of Government after period of Agreement.—For avoidance of doubt it is hereby expressly declared and agreed between the parties that the various payments mentioned in sub-clause (i) of Clause 15 of this agreement for all the years therein mentioned are in full payment of all the rights of the Company transferred to Government or information in possession of the Company which is made available to Government in respect of its patents, blue prints, technical or manufacturing data, etc. by Clauses 8, 12 or any other clause of this agreement and Government shall be entitled to full benefit of all such rights and information even after the expiry of this agreement without liability to make any payment to the Company over and above those mentioned in sub-clause (i) of Clause 15 of this agreement for the years therein mentioned:

Provided that if the agreement is terminated by Government under sub-clause (ii) of Clause 19 of this agreement then Government shall not be entitled to the aforesaid rights and information from the date of such termination except such of them as may be necessary for the use or disposal of the goods manufactured in the factory before the date of such termination.

21. Right of Assignment.—The rights and liabilities of either party to this agreement shall not be assigned to any other person except that Government shall have the right to assign all their rights and liabilities under this agreement to a company which may be promoted by them and in which they hold the whole or a major portion of the capital.

22. Agreement shall be governed by the laws of India.—The provisions of this agreement and the rights and liabilities of either party thereunder shall be governed by the laws of India.

23. Address of the Company for purposes of notice.—Any notice or other intimation in writing requiring to be given to or served on the Company under this agreement shall be sufficiently given to or served on it if forwarded to it by post by prepaid letter addressed to its registered office at 79, Boulevard Haussmann, Paris, in France and the notice or such other writing so sent shall be deemed to be

given or served at the time when in due course of post it would be delivered at the address to which it is sent.

24. Arbitration.—If any dispute shall arise between the parties hereto touching these presents or the construction or operation thereof or the rights, duties or liabilities of either party thereunder, such dispute shall be referred to two arbitrators, one to be appointed by each party or to the umpire nominated by them before entering on the reference and the decision of the arbitrator or the umpire as the case may be shall be final and binding on the both the parties and such arbitration shall be governed in all respects by the provisions of the arbitration Act, 1940 or any subsisting modification or re-enactment thereof. The arbitration proceedings shall be held in Delhi or such other place in India as may be decided by the arbitrators or the umpire as the case may be.

25. Stamp duty.—The stamp duty on this agreement shall be payable by Government.

IN WITNESS WHEREOF the parties hereto have caused these presents to be duly executed the day and the year mentioned above.

Signed by Shri HIRALAL MULJIBHAI PATEL, Secretary to the Government of India, Ministry of Defence, for and on behalf of the President of India in the presence of

1. sd/.....

2. sd/-.....

Signed by MONSIEUR ETIKNNE MOINEVILLE, Sub-Manager for and on behalf of Compagnie Generale de Telegraphie Sans Fil as per power of attorney attached in the presence of 2 witnesses.

SCHEDULE I

TRANSMITTERS

Serial No.	Frequency Range	Power Supply	Output	Quantity	Remarks
(a)	(b)	(c)	(d)	(e)	(f)
V.H.F					
1	72.5 108 Mc/s	Mains .	5 KW	24	
2	.	Mains .	100 Watt .	400	
3	.	Mains .	100 Watt .	20	24 Channel.
4	See col. (f) .	Mains .	50 Watt .	255	200 on 116-132 Mc/s. 52 twin channel 118-145 Mc/s. 3 four channel 70-100 Mc/s.
5	—	Battery .	3-15 Watt	100	F. M. Mobile.
H.F.					
6	3.9 27 Mc/s.	Mains .	50-100 KW	3	
7	—	Mains .	30 KW	1	SSB Twin channel CW & RT.

(a)	(b)	(c)	(d)	(e)	(f)
8	—	Mains	10 KW	6	FSK CW & MCW.
9	—	Mains	8 KW	3	SSB Twin channel CW & R/T.
10	See col. (f)	Mains	4 KW	137	{ 58 on CW (2-27 Mc/s) 15 on R/T (3.5 KW crystal remote control) 60 (1.5-30 Mc/s) 3-5 KW 4 on CW 3-4 KW.
11	See col. (t)	Mains	2.5 KW	60	{ 10 (2-27.5 Mc/s) 10 (2-3 KW) CW, RT, MCW Marine. 40 FSK 3 KW.
12	See col. (f)	Mains	1-2 KW	141	{ 46 FSK CW (1 KW) Crystal. 75 (1.5-30 Mc/s) 1-2 KW 20 (1 KW) CW, MCW, R/T.
13	2-20 Mc/s	Mains	400-600 Watts	100	CW, R/T, RTT, Crystal.
14	1.5 30 Mc/s	Mains	500 Watt	444	{ 144 (1.5-25 Mc/s) MO & Crystal, four channel. CW, MCW & R/T. 300 (1.5-30 Mc/s.)
15	2-27.5 Mc/s	Mains	400 Watt	25	CW, MCW & R/T.
16	1.2-17.5 Mc/s	Mains	300 Watt	87	R/T, CW, MCW.
17	1.5-23 Mc/s	Mains	200 Watt	12	CW & MCW.
18	—	Mains	100 Watt	150	—
19	—	Battery 24 V	100 Watt	100	Crystal, 15 Channel air-borne.
20	1.5-16 Mc/s	Battery 12 V	100 Watt (in 3 stages).	261	RT, CW, MCW.
21	2-20 Mc/s	—	50-100 Watts	50	CW, RT, RTT, Crystal.
22		Battery	20-100 Watts	100	CW & RT Mobile.
23	1.5-13 Mc/s		40 Watt	75	RT., CW, MCW.
24	1-12 Mc/s	Battery	20 Watt	214	CW, Crystal.
25	235-1605 Kc/s	Mains	10-20 KW	8	Broadcast.
26	—	Mains	2-3 KW	10	CW, MCW, Marine.
27	190-410	Mains	1-3 KW	30	
28	535-1605 Kc/s	Mains	1-2 KW	15	Broadcast.
29	190-410 Kc/s	Mains	300-500 Watt	100	
30	190-410 Kc/s	Mains	Less than 100 Watt	100	

RECEIVERS

Serial No.	Equipment	Frequenc Range	Power Supply	Character- istics	Qty.	Remarks
1	General Purposes receivers CW, MCW R/T.	.	220 V AC	.	184	
2	MF/H.F. Receivers CW MCW R/T.	100-1500 Kc/s	220 V AC	.	140	
3	HF Receiver CW, MCW R/T.	1.5-30 Mc/s.	Dry Batteries	.	1499	978 sets AM & FM part of set R 209.
4	HF Receiver CW, MCW R/T.	1.5-10 Mc/s.	12V Wet Batteries	.	261	Part oc C52 set.
5	HF Receiver CW, MCW R/T.	1.5-24 Mc/s.	220 V/AC	.	190	
6	HF Receiver CW, MCW R/T	1.5-30 Mc/s.	220 VAC	Crysrtal controlled.	1093	3 S.S.B. 50 Receivers to have FSK attachment.
7	HF Receiver CW, MCW R/T.	1.5-25 Mc/s.	24 V	Crystal controlled airborne.	200	Receivers to work on any one of 15 preselected channels from 3 positions, complete with control units.
8	VHF Receivers	116-145 Mc/s.	220 V AC	AM Crystal Controlled-ground.	350	100 of these sets should be capable of being modified to 200 Mc/s later.
9	VHF Receivers	One or more band in 30 to 300 Mc/s.	Battery	F.M.	200	
10	VHF Receivers	One or more band in 30 to 300 Mc/s.	220 V AC	F.M.	200	
11	VHF Receivers	225-400 Mc/s.	..	..	95	Naval CUG set.
12	VHF Receivers	277-283 Mc/s.	..	..	95	Naval CUH set
<i>Diversity Receivers Full Equipment</i>						
13	Double Diversity	..	Mains	A.M.	21	V No. specifica- tions. 6 for mobile use CW MCW, R/T & FSK of attachment.

Serial No.	Equipment	Frequency Range	Power Supply	Characteristics	Qty.	Remarks
13-A	Double Diversity	.	Mains	A.M.	52	48 for FSK working also. 14 for CW MCW and broadcast.
14	Triple Diversity	.	Mains	A.M.	2	CW MCW and R/T.
15	HF D/F Equipment	.	220 V AC	..	10	Complete with AE & display unit.
16	HF D/F Equipment	..	Battery	..	20	Do.
17	VHF D/F Equipment	..	Battery	..	60	Do.
18	VHF D/F Equipment	..	220V AC	Crystal	50	Do.
19	VHF/ D/F Equipment	..	220V AC	Do.	80	Visual, 114 to 150 Mc/s.
20	VHF D/F Equipment	..	Battery	Do.	10	Mobile, visual, 114 to 150 Mc/s

TRANSRECEIVERS

SCHEDULE I

Serial No.	Power Output	Power Supply	Characteristics	Quantity	Remarks
H. F.					
1	7 W	Battery	..	4256	Wireless set 62.
2	10 W	Do.	..	175	Wireless set 19.
VHF R]T					
3	1/4 Watt	Do.	F.M.	5805	Wireless set 88.
4	1/2 Watt	Do.	F.M.	5041	Wireless set 31.
5	4 W	Do.	A.M.	192	Wireless set BE 201
6	5 W	6 & 12 V	A.M.	100	80 to 110 Mc/s car Mobile.
7	5 W	24 V	A.M.	100	116 to 132 Mc/s.
8	10 W	24 V	A.M.	200	4 Channel in frequency band 116 to 145 later modified to 200 Mc/s band.
9	10 W	24 V	A.M.	200	10 Channel frequency range 116 to 132 Mc/s.
10	15 W	..	..	2000	

SCHEDULE I

MISCELLANEOUS EQUIPMENT

Serial No.	Description	Quantity	Remarks
1	8 Channel Microwave Telephone Circuits with ringing facilities	14	
2	Instrument Landing System (consisting of Localizer, Glide Path and three Marker Beacons)	6	
3	F.S.K. Racks (Frequency Shift Keyer and Terminal Equipment for Radio Teletype)	20	
4	V.H.S. Omni Range	34	
5	Distance Measuring Equipment 1000 Mc/s.	6	
6	Long Range Navigational Aids	3	
7	Radiosonde receivers and recorders	25	
8	Radio Theodolites	6	
9	M.F. Adcock Direction Finders for Coast Stations	5	
10	F.S.K. Radio Teleprinter working terminal equipment	62	
11	12 Voice channel VHF radio link	6	
12	50 W Voice amplifier	40	
13	High-intensity outdoor L.S.	300	
14	Monitoring Loud Speaker	60	
15	Secrecy Equipment (Indian Design)	60	
16	Dinghy Radio	100	
17	Multi channel long duration recorders	14	
18	Automatic triangulation table	10	
19	Airfield Controllers caravan	10	
20	Air Traffic Controllers Control Unit	20	
21	Contact car	20	
22	Voice recorder, Single channel	29	

SCHEDULE I
RADAR EQUIPMENT

Serial No.	Description	Quantity required
1	Coastal and Harbour Radar Equipment .	5
2	3 Cm and 10 Cm Radars	12
3	Radar Sets for meteor work and radio astronomy	8
4	Microwave test equipment	1
5	Ground Control Approach	2
6	Airfield Control Radar	6
7	Microwave tactical control radar, Radar AA No. 4 Mk. 6/7	102
8	Fire Control Radar Microwave Autofollow Radar AA No. 3 Mk. 7	100
9	Predictor for use with Fire Control Radar Equipment. Fire Control AA No. 1 .	102
10	Radar for Survey Units Counter Bombard- ment and counter mortars similar to radar AA No. 3 Mk 2F	6
11	Early warning and putting on radar, Radar AA No. 4 Mk. 3(V)	6
12	Coastal Defence Early Warning, Radar C.A. No. 2 Mk. 1	8
13	Coastal Fire Control Radar, Radar AA No. 3 Mk. 2/2	8
14	Medium powered 10 Cm. Early warning air transportable radar. Range on med bomber at 10,000'—100 miles . . .	20
15	Mobile 10 Cm. High powered G.C.I. Set Range 100 miles at 5,000.	2
16	Mobile high powered high looking G.C.I. metric Radar. Range 200 miles at 50,000'	3
17	Static early warning high powered Radar medium and high-cover, metric /Cm with height determination, Range 150 miles at 10,000'	5
18	Static 10 Cm. high powered Radar Range 100 miles at 5,000' (Radar 21) . . .	5
19	Static high looking high powered radar, range 200 miles at 50,000'	5

Serial No.	Description	Quantity required
20	Ground I.F.F. Interrogator (Indian Design)	50
21	G.C.A. using VHF/D/F for homing (mobile)	16
22	High powered Eureka Beacon (DME)	30
23	Storm warning and CR, 3Cm. Radar	16
24	Radar for determining Upper Air Wing velocity with autofollow device	6
25	Low powered battery operated Eureka Beacon equipment for air drop in DZ emergency landing	100
26	Airborne IFF transponder	650
27	Rebecca	40
28	Air Interception AI Equipment	98
29	Radar Gunsight	483
30	Precision Bombing Navigation Radar with Bombsight	60
31	Radar for A.S.V.	20
32	Radar Set Type 242	4
33	„ „ „ 242M	15
34	„ „ „ 243	3
35	„ „ „ 253P	16
36	„ „ „ 268	5
37	„ „ „ 274	2
38	„ „ „ 277P	4
39	„ „ „ 281B	3
40	„ „ „ 285P(4)	9
41	„ „ „ 291M	11
42	„ „ „ 291U	1
43	„ „ „ 291W	1
44	„ „ „ 293P	8
45	„ „ „ 293M	1

NOTE.—The description of each of the articles given in this Schedule is intended to indicate the kind of article that is required. The factory shall produce similar articles of the latest type and of best quality and workmanship containing all the improvements, such articles being designed and manufactured with due regard to suitability of the article for the purpose for which it is intended and to efficient and satisfactory performance thereof.

SCHEDULE II

APPROXIMATE PRODUCTION COST

(in lakhs of rupees)

&

APPROXIMATE PRODUCTION QUANTITIES

(Figures in brackets)

Years of production	1	2	3	4	5	6	7
Years	1956	1957	1958	1959	1960	1961	1962
I. Trans-receivers Items							
I to 10 . . .	40 (1100)	100 (2700)	140 (4000)	140 (4000)	140 (4000)	70 (2000)	..
II. Receivers Items I to 13, 15 to 18, 20 . . .							
	10 (600)	20 (1200)	20 (1200)	20 (1200)	10 (400)	..	..
III. Radar Equipment . . .							
Item 7	30 (22)	50 (38)	50 (38)	6 (4)	--	--
Items 8/9	60 (20)	50 (17)	50 (18)	100 (35)	36 (12)
Items 10-13	8 (4)	20 (12)	..	20 (12)
Items 1, 2, 3, 4, 6 and part of 32 to 45	40 (33)	46 (36)
IV. Transmitters							
Items 13 to 17	50 (250)	..	54 (268)	30 (150)	--	--
Items 18 to 23	28 (400)	22 (336)	..	..
Item 24	13 (214)	..	..
Item 1	15 (12)	15 (12)	..
Items 2, 3, 5	30 (500)	..	..
Item 4	14 (255)
Item 10	111 (137)	..
Items 11-12	80 (201)

Years of production	1	2	3	4	5	6	7
Years	1956	1957	1958	1959	1960	1961	1962
Item 25	24 (28)
Items 26 to 28	20 (45)
Items 29-30	20 (200)
Items 6,7, 8, 9	60 (14)
V. Receivers							
Items 13A, 14, 19	30 (134)
VI. Miscellaneous							
Equipment Item 1	14 (7)	14 (7)	..
VII. Tubes	30	75	75	75	75
TOTAL	50	200	300	425	425	425	425

NOTE NO. 1.—Each of the articles mentioned in this Schedule shall be of the quality and description mentioned in Schedule I including the description given in the note to that Schedule.

NOTE NO. 2.—Each of the years mentioned in this Schedule shall be the calendar year, that is to say, shall begin from the 1st January and end on the 31st December of that year.

NOTE NO. 3.—(a) The Item numbers in this Schedule refer to the Serial Numbers of the respective items in Schedule I.

(b) The figures for the various years mentioned in this Schedule, other than the figures in brackets, give the approximate production cost in lakh of rupees.

(c) The figures for the various years mentioned in this Schedule, given in brackets, give the approximate production quantities.

APPENDIX II

(Vide para. 22)

Statement showing the details of payment due to French firm on 30-9-1956 and corresponding payments made up to date

Sl. No.	Reference to clause of the agreement under which the payment is due	Brief particulars of the services rendered	Amount due £/Rs. S/As. d/Ps.	When due	Amount paid £/Rs. S/As. d/Ps.	Date of payment
1	2	3	4	5	6	7
1	6(a)(i) read with clause 3	For assistance and services in the construction of the Factory.	£1,750 0 0	On completion of the plans for the general layout and acceptance by Government.	£3,750 0 0	Paid by Government of India <i>vide</i> Ministry of Defence letter No. 0491/D/Fy/D/GS dated 9-7-1953.
2	6(a)(ii)	Do.	£7,500 0 0	Six months after acceptance by the Government of India of the plans of the general layout in four half yearly instalments.	£1,875 0 0	Paid by Government of India <i>vide</i> Ministry of Defence letter No. 0491/D/(Prod), dated 10-2-1954.

1	2	3	4	5	6	7
					1,875 0 0	Paid by Government of India <i>vide</i> Ministry of Defence letter No. 0491/D (Prod), dated 1-9-1954.
					1,875 0 0	Paid by Government of India <i>vide</i> Ministry of Defence letter No. 0491/D (Prod), dated 17-1-1955.
					1,875 0 0	Paid by Government of India <i>vide</i> Ministry of Defence letter No. 2/5/32/55/5789/D (Prod), dated 30-9-1955.
3	6(b) read with clause 4.	For assistance and £15,000 0 0	chase, installation of equipment	Date of commencement of the agreement <i>viz.</i> 1-1-1953	£15,000 0 0	Paid by Government of India <i>vide</i> Ministry of Defence letter No. 0491/D/FY/D/GS dated 17-3-1953.
				Quarterly payments upto 31-12-1955.	£2,480 0 0	Paid by Government of India <i>vide</i> Ministry of Defence letter No. 0491/D/ Prod., dated 30-10-1954.

£5,625 0 0 Paid by Government of India *vide* Ministry of Defence No. 0491/D/Prod, dated 5-3-1955.

£5,635 0 0 Paid by Government of India *vide* Ministry of Defence No. 0491/D/ (Prod), dated 22-4-1955

£9,931 0 0 Paid by Government of India *vide* Ministry of Defence No. 2/5/ 32/55/5250/D/Prod. dated 24-8-1955.

3

£3,650 0 0 Paid by B.E.L. on 4-5-1956.

£3,620 0 0 Quarter ending 31-3-1956.
£1,557 0 0 Quarter ending 30-6-1956.
£648 0 0 Quarter ending 30-9-1956.

} Payment is being arranged.

4 15(i)(a) For providing Technical and Industrial Assistance, license patent rights etc. under part III of the agreement.

£2,343 15 0 Paid by Government of India *vide* Ministry of Defence No. 0491/D/Prod. dated the 21-4-1954.

I	2	3	4	5	6	7
			£2,343 15 0	30-6-1954	£2,343 15 0	Paid by Government of India <i>vide</i> Ministry of Defence No. 0491/D/Prod, dated 4-8-1954.
			£2,343 15 0	30-9-1954	£2,343 15 0	Paid by Government of India <i>vide</i> Ministry of Defence No. 0491/D/Prod. dated 20-10-1954.
			£2,343 15 0	31-12-1954	£2,343 15 0	Paid by Government of India <i>vide</i> Ministry of Defence No. 0491/D/Prod. dated 16-12-1954.
			£9,843 15 0	31-3-1955	£9,843 15 0	Paid by Government of India <i>vide</i> Ministry of Defence No. 0491/D/Prod. dated 4-5-1955.
			£9,843 15 0	30-6-1955	£9,843 15 0	Paid by Government of India <i>vide</i> Ministry of Defence No. 2/5/32/55/5789/D/Prod. dated 30-9-1955.
			£9,843 15 0 £9,843 15 0	30-9-1955 31-12-1955	£9,843 15 0 £9,843 15 0	} Paid by B.E.L. on } 4-5-1956.

5	15(i)(c)	£9,843	15	0	31-3-1956	..	} The compliance of provisions of the agreement by the French Company is under verification.		
		£9,843	15	0	30-6-1956	..			
		£9,843	15	0	30-9-1956	..			
		Rs. 75,000	0	0	For the year 1954	Rs. 75,000	0	0	Paid by Government of India <i>vide</i> Ministry of Defence No. 0491/D/Prod. dated 5-3-1955.
		Rs. 75,000	0	0	Do.	Rs. 75,000	0	0	Paid by B.E.L. on 2-4-1956.

APPENDIX III

(Vide PARAS 25 & 61)

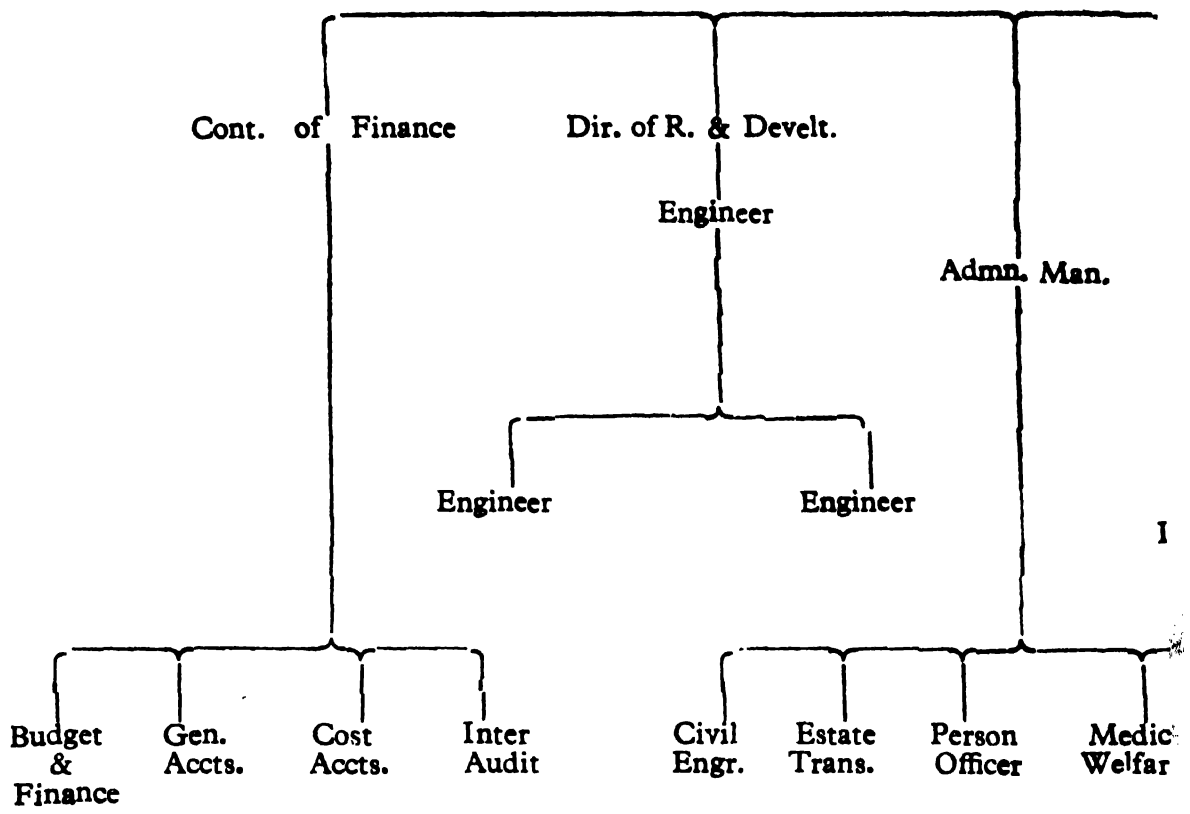
Statement showing the foreign personnel employed by B.E. (P) L. and their terms and conditions of service

Serial No.	Name	Designation	Date of joining BEL	Period of Contract	Basic Salary	Overseas allowance
Messrs						
1.	G. Mace	Principal, Training Centre	5-10-1954	3	Rs. 2000	Rs. 500
2.	A. Dolgopoloſſ	Chief Inspector	15-8-1955	2	3600	500
3.	R. Courtois	Testing Inspector	2-11-1955	2	2500	500
4.	Jussot	Foreman, Drawing and Tool Room	14-1-1956	2	1550	500
5.	M. Buret	Works Inspector	3-12-1955	2	1650	500
6.	Maurer	Production Control and Planning Engineer	7-1-1956	2	2300	500
7.	Lefebvre Albaret	Quality Control Engineer	30-12-1955	2	2500	500
8.	Malinowsky	Head Instructor (Radio Mechanics)	5-10-1954	2 years extended by one year	1250	500
9.	F. Hinderer	Redesignated Assembly Engineer	6-4-1956		1550	500
10.	R. Blondy	Head of Maintenance Department	30-4-1955	2	3000	500
11.	Bellotteau	Electrical & Mechanical Engineer	14-2-1955	2	2500	500
12.	Henillard	Chief Production Control & Industrial Engineer	22-9-1955	2	3000	500
13.	E. Malcailloz	Industrial Draughtsman	20-9-1956	1	1850	500
		Chief Production Manager	1-6-1955	3	3600	500

Board

Managing
&
General

Secy. to Board
of Directors



APPENDIX IV
(Vide PARA 43)

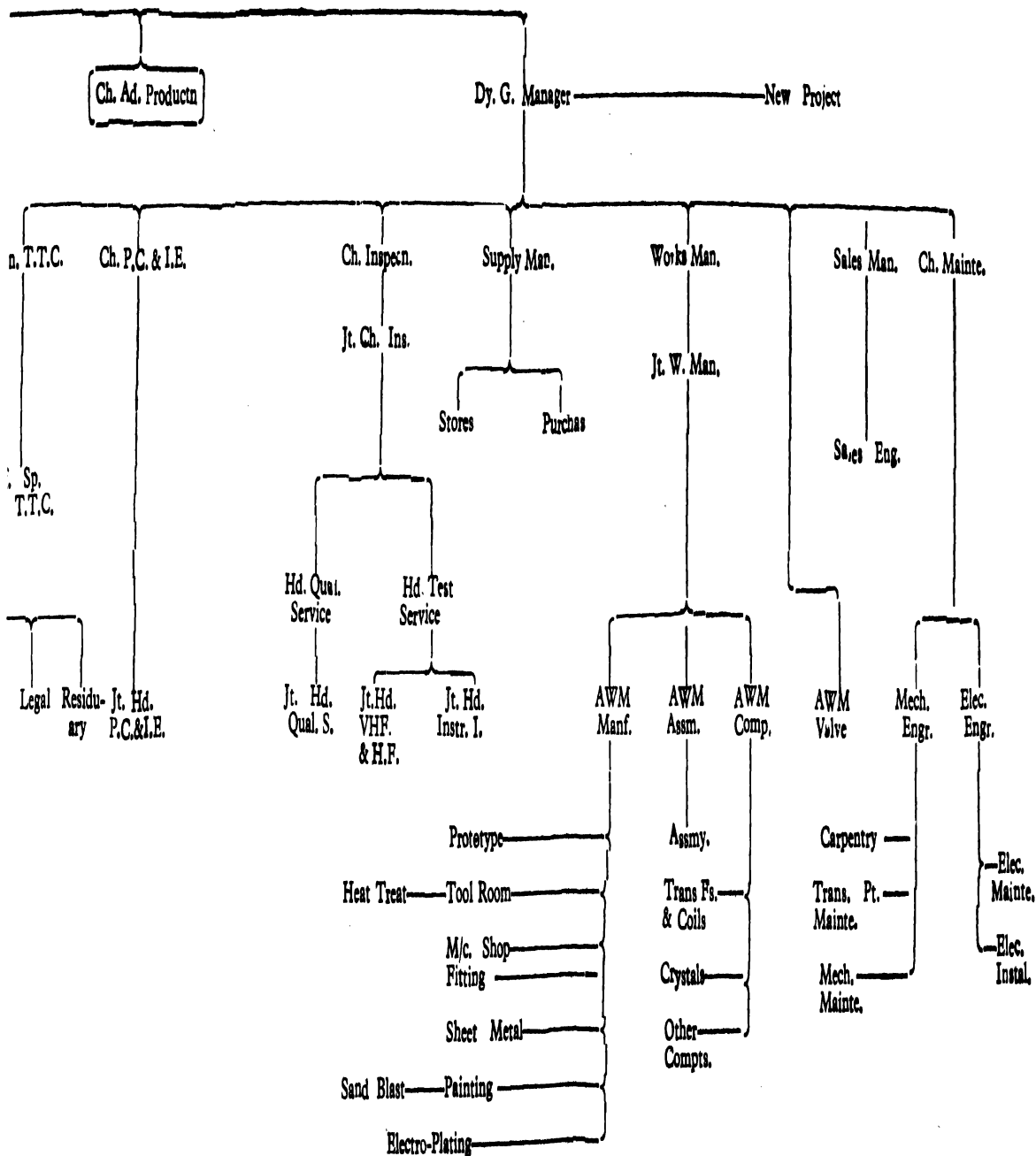
Director

Director
Manager

Liaison Officer,
Delhi

Board

Engineering
&
General



APPENDIX V

(Vide PARA 67)

Statement showing the number and designations of officers and staff by various pay-ranges

Serial No.	Name of post	Scales of pay	No.
1	2	3	4
OFFICERS			
		Rs.	
1.	General Manager	Officer on deputation from Government of India on his own pay	1
2.	Controller of Finance	Do.	1
3.	Production Manager	1,300—50—1,600	1
4.	Supplies Manager	900—50—1,200. . . .	1
5.	Civil Engineer	1,300—50—1,600. . . .	1
6.	Liaison Officer	Army Officers on Deputation on their own pay. . .	2
7.	Mechanical Engineer, Deputy Chief Production Control and Industrial Engineer, Technical Purchase Officer AND Electrical Engineer	600—40—1,000	4
8.	Project Officer (Valves Division)	600—40—1,000—50—1,150	1
9.	Secretary, Registrar T.T. C., Development Engineer, Material Control Engineer, Stores Officer, Planning Engineer, Methods Engineer, Chief		

1	2	3	4
	Draughtsman, Test Engineer, Standards Engineer, Cost Accounts Officer, Engineer Quality Service, Deputy Chief Inspector, Purchase Officer, Personnel Officer, Senior Development Engineer, Industrial Development Engineer, Accounts Officer & Internal Auditor.	400—20—500—25—600—30—660.	19
10.	Assistant Personnel Officer	400—20—500. . . .	1
11.	Foremen	350—600	2
12.	Assistant Planning Engineer, Engineer Assistant to Production Manager, Assistant Accounts Officer, Foremen Electrolytic treatment, Assistant Personnel Officers, Assistant Development Engineers, Assistant Engineers, Security Officer, Commercial Engineer, Assistant Supplies Officer, Assistant Stores Officer, Assistant Purchase Officer, Estate and Transport Officer, Budget & Finance Officer	260—20—460	25
13.	Assistant Foremen, Project Draughtsman Senior	260—20—400	17

MONTHLY RATED STAFF

14.	Draughtsman Civil, Assistant Supervisor	150—10—250	2
-----	---	--------------------	---

1	2	3	4
Rs.			
15.	Assistant Supervisors, Assistant Security Officer, Purchase Assistants, Junior Assistant Foreman, Technical Assistants, Resident Medical Officer, Tools and Jigs Draughtsman, Senior Store-keeper	150—10—250 . . .	47
16.	Store-keepers . . .	100—6—130—10—180 .	3
17.	Stenographers, Senior Clerks, Group Leaders, Office Assistant, Personnel Assistant	100—6—130—10—180 .	15
18.	Draughtsman . . .	75—5—100—6—130	1
19.	'A' Grade Clerks, Draughtsman, Steno-typists, Sub-overseer, Tracer	65—5—100—6—130 . .	50
20.	Nursing Orderly . . .	65—5—100 . . .	2
21.	Despatch Rider . . .	50—5—100 .	1
22.	'B' Grade Clerks, Drivers, Typists, Assistant Draughtsman	45—5—90 . . .	84
23.	Compounder . . .	40—5—75 . . .	1
24.	Wireman/Lineman . . .	40—2—60—3—75 . .	5
25.	Record Clerk . . .	35—2—45—3—54 . .	1
26.	Daftry, Head Watchmen .	30—1—35 . . .	8
27.	Sweeper Mate . . .	25—1—35 . .	1
28.	Peons, Watchmen, Gardeners, Sweepers, Mazdoors Etc.	20—1—30 . .	132
29.	Trainees . . .	Free boarding and lodging plus Rs. 86/15/- out of pocket expenses.	

1	2	3	4	
DAILY RATED STAFF.				
	Rs.			
30. Group leader .	3 8 0	0 3 0	4 1 0	
	0 4 0	5 13 0	0 3 0	
	6 0 0			I
31. Skilled 'A' .	3 0 0	0 3 0	3 12 0	
	0 4 0	4 8 0	SG 0 4 0	42
	5 0 0			
32. Skilled 'B' .	2 8 0	0 2 0	3 0 0	58
	SG 0 4 0	3 8 0		
33. Skilled 'C' .	1 8 0	0 2 0	2 8 0	30
34. Semi-skilled .	1 0 0	0 2 0	1 8 0	19
35. Un-skilled .	0 12 0			49
36. Foreign Employees				13
			TOTAL	727

APPENDIX VI
(Vide PARA 67).

Serial No.	Scale of Pay	Depart- ments under direct control of General Mana- ger	Finance and Accounts	Pro- duction Depart- ment	Techni- cal Depart- ment	Supplies Depart- ment	Civil Engg. Depart- ment	Library Depart- ment	Techni- cal Training Centre	Remarks
1	2	3	4	5	6	7	8	9	10	11
1	Officers on deputation from Government of India on their own pay	2	1	..	..	1	..	..	..
2	1300—50—1600 . . . . .	..	..	1	..	..	..	..	..
3	900—50—1200 . . . . .	..	..	..	..	1	..	..	..
4	800—40—1000 . . . . .	..	..	..	..	..	1	..	..
5	600—40—1000 . . . . .	..	..	4	..	..	..	..	..
6	600—40—1000—50—1150 . . . . .	..	..	..	1	..	..	..	..

I	2	3	4	5	6	7	8	9	10	11
7	400—20—500—25—600—30—660	2	3	8	3	2	..	..	..
8	400—20—500	1	..	..	..	..	..	..	..
9	350—600 . . . .	..	..	2	..	..	..	..	..
10	260—20—460	5	3	13	1	3	..	..	..
11	260—20—400 . . . .	..	..	17	..	..	..	..	..
12	150—10—250	6	3	22	1	10	6	..	1	
13	100—6—130—10—180 . . . .	..	..	..	..	3	..	..	..
14	100—6—130—10—180	1	2	8	1	2	1	..	..
15	75—5—100—6—130 . . . .	..	..	1	..	..	..	..	..
16	65—5—100—6—130	7	14	11	1	11	3	2	1	
17	65—5—100	2	..	..	..	..	..	..	..
18	50—5—100	1	..	..	..	..	..	..	..
19	45—5—90	25	17	16	1	17	3	1	4	
20	40—5—75	1	..	..	..	..	..	..	..
21	40—2—60—3—75 . . . .	..	..	5	..	..	..	..	..

22	35-2-45-3-54	.	.	.	I	..	..	..	..	..
23	30-I-35	.	.	.	I	..	..	2	..	..
24	25-I-35	.	.	.	I	..	..	..	..	..
25	20-I-30	.	.	.	77	9	3	7	26	I 4
26	Trainees	.	.	.	..	..	..	..	..	-86
27	3-8-0 0-3-0 4-I-0 0-4-0 5-13-0 0-3-0 6-0-0	.	.	.	..	I	..	..	..	..
28	3-0-0, 0-3-0, 3-12-0, -4-0, 4-8-0 SG 0-4-0 5-0-0	.	.	.	..	42	..	..	..	..
29	2-8-0 0-2-0 3-0-0 SG 0-4-0 3-8-0	.	.	.	..	58	..	..	..	..
30	1-8-0 0-2-0 2-8-0	.	.	.	..	30	..	..	..	..
31	1-0-0 0-2-0 1-8-0	.	.	.	..	19	..	..	..	..
32	0-12-0	.	.	.	..	49	..	..	..	..

APPENDIX VII

(Vide Para 77)

List of Resignations of Staff together with reasons therefor

Number of resig- nations	Scale of pay		Reasons
	Rs.		
1	600—40—1000	. .	To take up a job elsewhere.
1	260—20—460	. .	For better prospects
2	200—10—300	. .	Do.
1	150—10—300	. .	Private.
1	150—10—250	. .	On medical grounds.
2	Do.	. .	For better prospects.
1	100—6—130—10—180	. .	Do.
1	100 Consolidated	. .	For better prospects.
1	200 Consolidated	. .	Domestic
1	65—5—100—6—130	. .	Domestic.
4	Do.	. .	For better prospects.
2	Do.	. .	Further studies.
8	45—5—90	. .	For better prospects and studies.
1	20—1—30	. .	Domestic.
1	Do.	. .	For better prospects.
1	Skilled 'C'	1 8 0	On medical grounds
		0 2 0	
		2 8 0	
1	Unskilled	0 12 0	For better prospects.
<hr/> Total 30 <hr/>			

APPENDIX VIII

(Vide Para 82)

Sample advertisement for recruitment of trainees

BHARAT ELECTRONICS (PRIVATE) LIMITED

(A Central Government Factory under the Ministry of Defence)

Jalahalli P.O., Bangalore.

Advt. No. P/44/56.

WANTED:

I. RADIO MECHANICS: (No. of posts 60)

- Qualifications:** A. (1) Pass in the S.S.L.C. or equivalent examination.
(2) Diploma in Craftsmanship, or recognised Diploma or Certificate, in the trade.

OR

- B. Minimum IV Form (Old) completed, with minimum 3 years practical experience in the trade.

AGE:

18—25 years as on 1st July 1956, relaxable in case of exceptionally qualified and/or experienced candidates.

II. TURNERS, MILLERS, BENCH-FITTERS AND GRINDERS: (No. of posts 60)

- Qualifications:** A. (1) Pass in the S.S.L.C. or equipment examination.
(2) Diploma in Craftsmanship, or recognised Diploma or Certificate in the trade.

OR

- B. Minimum IV Form (Old) completed, with minimum 3 years practical experience in an industrial concern allied with the Metal Working Industry.

AGE:

18—25 years as on 1st July 1956, relaxable in case of exceptionally qualified and/or experienced candidates.

Selected candidates will be required to undergo training for approximately six months in the Training Centre of the Company. During the period of Training, the trainees will be provided free boarding and lodging in the hostel attached to the Training Centre, and a stipend of Rs. 15/- per month for out of pocket expenses.

On successful completion of training, trainees may be offered employment in the Company in one of the following grades, depending upon the results of the training.

'A' Grade: Rs. 3-0-0 — 0-3-0 — 3-12-0 — 0-4-0 — 4-8-0 S.G. 0-4-0 — 5-0-0 plus D.A. Admissible.

'B' Grade: Rs. 2-8-0 — 0-2-0 — 3-0-0 — S.G. 0-4-0 — 3-8-0 plus D.A. admissible.

'C' Grade: Rs. 1-8-0 — 0-2-0 — 2-8-0 plus D.A. admissible.

Selected candidates will be required to execute a Bond in the proper form binding themselves to serve the Company for a minimum period of 4 years, on completion of their training.

Candidates, if required, will have to appear for interview and test at Bangalore. Return third class railway fare by the shortest route will be paid.

Applications should be submitted in prescribed forms which could be had on payment of As. -/8/- by crossed Postal Orders marked payable to Bharat Electronics (Private) Limited. No other forms of payment will be acceptable.

Where the candidates are employed in Government or Quasi-Government concerns, the applications should be forwarded through proper channel.

No correspondence will be entered into with the applicants.

Canvassing in any form will entail disqualification.

Last date for receipt of applications is 19th July 1956.

PERSONNEL OFFICER.

APPENDIX IX

(Vide Para 119)

Note on the system of costing in B.E.L.

A Costing system has been introduced in B.E.L. as from 1st April, 1956.

2. The intention is to make use of the Costing system for the following purposes:

(a) To find out the cost of the different products by batches with a view to find out the cost per unit, of each product.

(b) To ascertain the cost of each batch by components, sub-assemblies and assemblies.

(c) To exercise control over the expenses.

3. To achieve item (a) and (b) above, all manufacturing programmes in the factory are undertaken under specific Projects Order, Work Orders and Sub-Work Orders.

4. *ELEMENTS OF COST*: Following the usual procedure, the cost of manufacture is split up into the following elements:

(a) Direct labour,

(b) Direct Materials,

(c) Direct expenses,

(d) Overheads.

5. *Direct Labour*: In order to facilitate correct booking of time to jobs, Daily Time Tickets are introduced for all skilled workers in the Production Shops. The time booked against jobs is reconciled monthly against time paid as recorded by Time Recording Clocks.

6. *Direct Materials*: The materials required are drawn against Stores Requisitions on which the relative Work Orders are pre-written. All stores requisitions are analysed according to Work Orders for all direct materials, and cost centres for all indirect materials monthly.

7. *Direct Expenses*: All direct expenses are analysed according to Work Orders every month.

8. *Overheads*: As in all big factories, Overhead expenses form a large percentage of the total cost of production. Special attention is, therefore, being given for the collection, distribution and allocation of overhead expenses.

The overheads are first collected under standard heads of accounts.

For equitable distribution and control of overhead expenses, the factory is divided into productive and non-productive departments, which are termed as Cost Centres.

The expenses collected are distributed every month to the different Cost Centres on an actual basis to the extent possible, and the rest on an estimated basis as per accepted costing principles. For example, salaries and wages, overtime, P.F. contribution, idle time, consumption of store, electric supply, etc., are distributed on an actual basis, while depreciation is distributed according to the value of various assets in each Cost Centre. A provisional list of Cost Centres drawn up for the purpose is enclosed at Annexure "A".

The entire overhead expenditure of the factory is thus collected under productive and non-productive cost centres. Out of the cost collected under non-productive cost centres, the expenditure on service departments such as mechanical maintenance, electrical maintenance, transport, etc., is re-distributed to the other cost centres (Productive & non-productive) on the basis of services rendered.

The overhead expenditure of the factory is classified under four main groups:—

- (A) Shop Overheads,
- (B) Factory Overheads,
- (C) Material Overheads and
- (D) Administrative Overheads.

The items of expenditure comprising these overheads are given in Annexure "B".

The total expenditure under each productive cost centre represents the shop overhead pertaining to that shop. Similarly, the expenditure on Factory, Administrative and stores overheads, is separately available under the relevant cost centres.

9. Allocation of Overheads: The Shop Overhead expenditure pertaining to each shop is distributed as a percentage of the direct labour charges and booked to the jobs undertaken in that shop. This means that there is a separately overhead rate for each shop. The factory and administrative overheads are worked out as percentages of the entire direct labour of the factory and then distributed to the jobs undertaken in the factory.

The material overheads, being representative of the services rendered by the stores, are levied as a percentage on the value of material issues.

It is the intention to gradually split the shop overheads into 2 divisions, viz., machine overheads and labour overheads, to facilitate the most equitable distribution of overheads.

The overheads will be applied on a pre-determined basis and will be subject to periodic revisions on the basis of actual cost and under or over-absorbed overheads.

ANNEXURE A

For the purposes of Costing, the Factory is divided into the following Departments (Cost Centres).

	Code No.	Description
<hr/>		
PRODUCTIVE:	01	Prototype Workshop
	03	Tool Room
	05	Machine Shop
	07	Sheet Metal Shop
	11	Heat Treatment
	12	Electroplating
	13	Painting
	16	Assembly
	17	Crystals Division
	18	Valves Division
NON-PRODUCTIVE :	40	Chief Inspector's Establishment
	41	Material Inspection
	43	Works Inspection
	45	Testing
	47	Purchase
	49	Stores
	50	Supplies Managers' Establishment
	51	Mechanical Department
	53	Electrical Department
	55	Transport
	57	Carpentary
	59	Civil Engineering Department
	60	Estate
	61	Drawing Office and Industrial Development
	63	Record and printing of drawing
	65	Methods and Materials Control
	66	Production Control and Production Planning
	67	Shop Planning

Code No.	Description
<hr/>	
NON-PRODUCTIVE	68 Tool crib
	70 Training Centre
	72 Technical Department
	73 Development Department
	74 Security (Watch & Ward)
	75 Hospital and Medical supply
	77 Welfare
	80 Managing Director and General Manager's office and General Factory Administration
	81 Office of the Controller of Finance & Accounts Department
	82 Production Managers' Establishment
	83 Personnel Office
	84 Works Managers' Establishment

ANNEXURE B
CLASSIFICATION OF OVERHEADS

I Shop Overheads: (For each shop)

- Indirect labour.
- Salary of Supervisors & Clerks.
- Idle time.
- Contribution to Provident Fund.
- Consumable Stores.
- Electricity, Water Gas.
- Depreciation of machinery, buildings and equipments.
- Insurance of machinery, buildings & equipments.
- Repairs & Maintenance of machinery, buildings & equipments.
- Allotted expenses of service departments.

II Factory Overheads: (Expenses of the following departments)

- Production Managers' Establishment.
- Works Managers' Establishment.
- Production Control & Production Planning.
- Industrial Engineering & Methods.
- Shop Planning.
- Tool Crib.
- Chief Inspector's Establishment.
- Works Inspection.
- Testing.
- Quality Service.

III Stores Overhead: (Expenses of the following departments)

- Supply Managers Establishment.
- Purchase.
- Stores.
- Material Inspection.
- Material Control.
- Stores Accounts.

IV. Administrative Overheads: (Expenses for the following Departments)

- Managing Director & General Managers' Secretariat.
- Finance & Accounts Department except Stores Accounts.
- Administrative Managers' Establishment.
- Personnel Officer.
- Technical Training Centre.

Technical Managers' Establishment.
Standards Engineers' Establishment.
Development Engineers' Establishment.
Library.

Commercial Engineers' Establishment.

Administrative Expenses such as:

Printing & Stationery.

Postage telegrams, telephones.

Advertisement & Publicity.

Entertainment.

Legal & Audit Fees.

Periodicals

Membership & Donations.

Directors' fees etc., etc.

APPENDIX—X

Statement showing the summary of conclusions/recommendations of the estimates committee relating to the Ministry of Defence—Bharat Electronics (private) Limited

S. No.	Reference to para no. in the Report	Summary of conclusions/recommendations
1	2	3
1	10	The Committee hope that the formation of a limited company to execute the project would give considerable scope for decentralisation of authority and for adoption of business-like methods with a view to expeditious conduct of work and production and that it would not merely become an adjunct or a subordinate Organisation of the Ministry of Defence.
2	14	The Committee find that the recommendation of the Technical Sub-Committee in favour of collaboration with the C.S.F. was based on a number of assumptions and also took cognisance of a few defects. While the Committee consider it too early to judge the extent to which the assumptions made while recommending the acceptance of the C.S.F. project will prove correct, they cannot over-emphasize the necessity of watching that the assumptions made do not go wrong and are constantly kept in sight and also that the defects are made good as far as possible.
3	15	The Committee are surprised to find that the case for collaboration with the C.S.F. was put up to the Cabinet for approval, even before ascertaining the commission, licence fee, etc., which the two firms in question would charge and consequently without giving a comparative evaluation of this aspect.
4	18	The Committee realise that negotiations with a foreign firm for the establishment of an industry of which neither the Government nor

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the country had any previous experience, would involve protracted discussions in the matter of settlement of production programme, terms for assistance and collaboration, etc. However they consider that the 4 1/2 year period which elapsed after the initiation of action for the establishment of the industry until the final signing of the Agreement and during which imports of electronics equipment continued to be made at the rate of Rs. 2 crores a year, was more than was strictly justified. The Committee are of the opinion that in such matters more business-like methods should be adopted and no efforts should be spared to expedite the progress of the negotiations and discussions with the firm whose collaboration and assistance is to be obtained.

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The Committee agree that there were special reasons on account of which the assistance of the French concern had to be obtained even in the preparation of plans and design of factory but they would recommend that, in future, in similar cases, Indians might be associated even from the start in the designing, etc., of the factory buildings so as to enable them to get the necessary experience which would undoubtedly prove valuable.

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While the Committee are glad to observe that the agency of the India Stores Department, London was and is being utilised by the B.E.L. for the purchase of their plant and machinery abroad, they feel that the Agreement when drafted should have taken note of the existence of this agency for effecting purchases and that some of the clauses relating to the assistance of the C.S.F. in the purchase of machinery need not have found place in the Agreement.

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The Committee suggest that in future, officers of the C.S.F. visiting the B.E.L. to supervise the progress of the project may be invited to submit reports on the progress of the work for the information of the Government of India as also of the Board of Directors of the B.E.L.

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The Committee are glad to observe that recognition has been given in the Agreement to the very important question of training of technical personnel both in India and abroad in the factory

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of the C.S.F., France "to the extent as may be necessary" and of research though they would have liked to see subjoined to the Agreement a comprehensive scheme for training and research. The Committee hope that the opportunities provided under this Agreement will be fully utilised to train artisans and higher technicians to meet the requirements of the B.E.L.

- 9 28 The C.S.F. has undertaken in clauses 11 and 12 (iii) of the Agreement to use its good offices to obtain from the French Government authorisation for supplying to the Government of India the manufacturing data relating to equipment on the secret list of the French Government and also to obtain licenses, blue prints, etc., from other companies producing equipment mentioned in Schedule I of the Agreement for the purpose of production in the B.E.L. The Committee have some doubts as to what extent manufacturing data relating to the equipment on the secret list of the French Government can be acquired for production in India. All the same, they hope that the offer contained in those clauses will be fully availed of.
- 10 29 The Committee note that provision exists in the Agreement for altering the schedules which lay down the programme of production and that in fact the programme has already undergone two or three changes in the last two years. They would have, however, liked to see in the Agreement and in the Schedules thereto greater evidence of the promise of reaching self-sufficiency at some given date.
- 11 29 The Committee consider that the Agreement with the C.S.F. provides very good opportunities for developing a sound indigenous electronics industry which could make the country self-sufficient and that it is entirely upto those in charge of the B.E.L. to ensure the maximum utilisation and exploitation of the opportunities so provided and to make a complete success of the Agreement.
- 12 30 The Committee are glad to learn that the Agreement with the C.S.F. is working satisfactorily and there have been very few minor differences so far between the C.S.F. and the B.E.L. They
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consider, however, that a true opinion on the working of the Agreement can be expressed only in terms of the fulfilment of its principal aims.

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The Committee have no remarks to offer on the location of the site of the factory as they are aware that Bangalore offers several advantages both from strategic and climatic points of view for the situation of an important industry. They would, however, like to invite the attention of the Government to the recommendation contained in para 17 of the Estimates Committee's sixteenth Report on the 'Organisation and Administration of Nationalised undertakings' that Government undertakings should be dispersed throughout the country and that they should not be concentrated in any particular area or areas, particularly as there are now at Bangalore four major industries of the Government of India, *viz*, the Hindustan Aircraft Ltd., the Hindustan Machine Tools Ltd., the Indian Telephone Industries and the B.E.L. besides those of the State Government.

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The Committee would emphasize the necessity of bringing out the annual accounts more expeditiously and suggest that for this purpose the I.S.D. London be approached to ensure expeditious rendering of bills etc. At the same time they suggest that the feasibility of closing the annual accounts without awaiting outstanding bills beyond a certain date, by showing them suitably in the Balance Sheet as is done in most commercial concerns should also be examined.

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The Committee consider it necessary that the B.E.L. along with similar other State Undertakings should implement the recommendations made in paragraph 30 of Estimates Committee's Sixteenth Report and publish an Annual Report showing all its activities, along with the annual accounts and Balance Sheet, for the information of the Parliament as well as of the general public and that a beginning in this respect should be made in 1957.

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The Committee are of the view that Secretariat functions of laying down policies and the executive functions of implementing them should be clearly demarcated and that as far as possible Secretariat officials should not be associated with the actual execution of policies laid down by them so as to enable them to retain an objective outlook. They do not, therefore, consider the arrangement under which the Secretary to the Government of India is the Chairman of the Board of Directors of a company set up by the Government to carry out a project on business principles, to be very satisfactory.

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The Committee would suggest that the composition of the Board of Directors should be rationalised and made broad-based at an early date.

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The Committee suggest that a representative of the Radio Manufacturers in India may also be associated with the Board of Directors, if possible, in view of the fact that the question of country's becoming self-sufficient in all respects in the equipment to be manufactured by the B.E.L. is interlinked with the growth and development of the radio industry in the country, particularly in the matter of manufacture of components.

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The Committee would suggest the gradual replacement, to the extent possible, of officials on the Board of Directors by non-officials such as industrialists, scientists, a Chartered Accountant, the Director of the Indian Institute of Science and/or of the Piloni Institute etc. so as to enable a fresh, business-like and scientific outlook to be brought to bear on the affairs of the B.E.L.

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The Committee feel that even if the production in the B.E.L. were to be confined to the requirements of Government Departments only, the Board of Directors should not have an overwhelming majority of officials as the presence of a large number of officials invariably tends to bring to the organisation and its functioning, an official approach of a type which is generally found in most Government Departments and to that extent defeats the very object of setting up a private limited company to work on busi-

ness principles. They consider that even in the matter of safeguarding the special interests of the User Departments while formulating the production programme and of facilitating co-ordination between them and the B.E.L. in matters of common interest, the purpose now intended to be served by having their representatives on the Board of Directors can be achieved by laying specific duties and responsibilities on the Radio and Cable Board—a body composed of representatives of the various User Departments.

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The Committee would like to reiterate the recommendation made by the Estimates Committee in paragraph 6 of their Sixteenth Report that at least 25% of the share capital of such State Undertakings should be available for subscription by the public as it would secure public interest and co-operation in the management of such concerns. They feel that this step would also incidentally help in finding suitable non-officials for the Board of Directors.

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The Committee observe a tendency on the part of Government to select a few non-officials to function on the Boards of Directors of several nationalised and other industries in the public sector with the result that very often the non-officials concerned do not find sufficient time to attend to the affairs of all the concerns. The Committee do not consider this either fair to the non-officials concerned or conducive to efficiency and would suggest that the appointment of the same non-official on the Boards of Directors of a number of such concerns be avoided, as far as possible.

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The Committee feel that in the absence of a senior technical adviser on the spot to assist the Managing Director, the objectives aimed at are not likely to be achieved expeditiously.

They were informed that the B.E.L. did have an adviser of this type till about February, 1956 and that as it was felt that the post did not carry sufficient work and responsibility, it was abolished. The Committee consider that the abolition of the post was not a step in the right direction and recommend that at the earliest

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opportunity a senior technical adviser should be appointed and also given a place on the Board of Directors.

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The Committee realise that there might be some difficulty in finding a senior officer to hold the post of Technical Director of the B.E.L., in view of the dearth of such men in the country as well as of the fact that those who are so qualified are probably engaged fully in their present responsibilities from which it might be difficult to spare them. Should this be the case, the Committee would recommend the formation of an Advisory Board consisting of technical experts, who might visit the B.E.L. once in six months or even a year and assess the working of and the progress made by the B.E.L. towards the achievement of the programme of production laid down and the ultimate goal of self-sufficiency. An Advisory Board of this type when appointed may be required to submit reports direct to the Government of India on the assessment made by them, so as to enable the Government of India to obtain independent advice on the working of the B.E.L. from a body different from the Board of Directors.

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The Committee observe that different limits in regard to the pay have been fixed by Government in the matter of obtaining the prior approval of the President while making appointments to certain posts in the various nationalised undertakings in the public sector. For instance, they find that in the Hindustan Aircraft Ltd., no such limit has been fixed, that in the I.A.C. and A.I.I. corporation, a minimum salary limit of Rs. 1000/- has been fixed while in the B.E.L., the criterion is that Rs. 2000/- should be the maximum pay of the post. The Committee recommend that certain uniformity in this matter should be observed by the Government.

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The Committee observe that at present different limits have been fixed in the various nationalised undertakings in the matter of obtaining prior approval of the Central Government for incurring capital expenditure. The Committee recommend that the monetary limit for incurring capital expenditure without reference to

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the Government of India should be fixed in all such public undertakings on some uniform principle or principles.

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The Committee commend the principle of having a Board of Management, which, if worked in proper spirit, facilitates the discussion among the chief executive and his senior heads of departments, of problems, administrative and technical, facing the management and also ensures collective responsibility. The Committee, however, find that no specific powers have been delegated to the Board of Management and that powers delegated to the Managing Director are to be exercised by him in consultation with the Board of Management. They do not consider this to be very satisfactory and recommend that the Board of Management should have intermediate powers between the Managing Director and the Board of Directors. The Committee would recommend the enlargement of the Board of Management of the B.E.L. by the addition of the technical director when appointed and until then by one or two of the senior foreign personnel working with the B.E.L. on the model of the composition of the Board of Management of the H.A.L.

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The Committee are glad to note that under-studies have been provided for all the foreign technical personnel except one. They would, however, like to emphasize the necessity of drawing up a precise long-term plan, phased suitably so as to gradually secure the replacement of the foreign personnel by some given date in the not too distant future.

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The Committee suggest that foreign technicians may be brought keeping in view the long term plan and for predetermined periods to the minimum extent necessary so as to avoid, as far as possible, the grant of piece-meal extensions and also to facilitate their coming on more favourable terms to the country in view of the assurance of a longer stay with the B.E.L.

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The Committee are surprised that there should be no one available in this country for under-studying the Works Manager. They suggest that concerted efforts should be made to find a suitable Indian Officer for this purpose either in this country or abroad.

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The Committee consider that the Government and the B.E.L. should have made arrangements to train Indians in the work relating to the production of valves and components so that after training they could assist in the setting up of the factory and also hold responsible positions when it started production. The Committee regret to observe that this was not done and that it is proposed to obtain foreign technicians only when the valve manufacture is taken up so that the training of Indians and their taking up executive positions will also correspondingly be delayed to that extent. They suggest that even at this stage, the B.E.L. might examine whether it would be possible to recruit officers and get them trained in the factory organisation, manufacture and production of valves and components.

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The Committee suggest that the necessity of posting a non-technical Army officer in London to maintain liaison with the D.G.I.S.D. in London and with the C.S.F. in the purchase of machinery abroad may be re-examined in the light of the future purchase programme and the feasibility of merging his functions with the I.S.D. London or the Military Adviser to the High Commissioner in U.K. also considered. The Committee deplore the necessity of having to post a liaison officer in New Delhi to chase references made to the Ministries and User Departments and regard it as a sad reflection on the state of affairs in Government Departments. The Committee would, however, like to suggest that in case appointments of liaison officers in this manner by various nationalised undertakings are inevitable in the present circumstances, the feasibility of two or three or more nationalised undertakings, having joint liaison officers, not merely in New Delhi but in other places also, may be examined by them.

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The Committee suggest that the question of finding successor consultants to the B.E.L. may be examined sufficiently in advance and action taken to associate them with the B.E.L. even before the expiry of the contract with the C.S.F. Besides the appointment of the Director of the Indian Institute of Science and/or of the Pilani Institute on the Board of Directors of the B.E.L. suggested at Serial No. 19,

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the Committee would suggest for the consideration of Government the appointment of some University staff and Professors as consultants or advisers for this purpose. They also understand that informal contacts of this type already exist with the Indian Institute of Science, Bangalore, in which case the feasibility of putting the relationship on a *de jure* basis might be examined.

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The Committee are surprised that ordinarily an interval of only 15 days is allowed between the advertisement and the receipt of applications. The Committee consider that the interval allowed is too short and suggest that the time-limit should be increased to at least 30 days.

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The Committee do not appreciate the basis on which the advertisements are confined to five newspapers in the case of posts in Classes I and II, recruitment to which is made on an all-India basis. They consider that the selection of newspapers should be more broad based than at present. For this purpose, they suggest that the B.E.L. may keep in touch with the Ministry of Home Affairs of the Government of India and the U.P.S.C.

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The Committee suggest that recruitment in the case of Class III posts may be made on a regional basis rather than on a local basis as at present and that for this purpose advertisements may be made in the entire Southern region, *i.e.* Andhra, Bombay and Kerala besides Madras and Mysore.

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The Committee suggest that in all cases the advertisements may also be inserted in some Indian language newspapers which have a wide circulation.

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The Committee are glad to note that an independent Technical Officer is being associated in Selection Committees for recruitment of personnel. They consider, however, that besides an independent Technical Officer, the Selection Committees should also consist of a member of the U.P.S.C. or at least of the local State Public Service Commission, especially at the interview stage, so as to minimise to some extent the effect of the exclusion of posts in nationalised and other undertakings in the public sector from the purview of the U.P.S.C.

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The Committee do not consider it proper that the recruitment of all the officers in industries in the public sector should be made by a system different from that adopted for recruitment to services directly under the Government. The advantages of an independent body like the Public Service Commission being associated with recruitment cannot be minimised. The Committee realise that it would not be desirable to over-burden the U.P.S.C. with the task of recruitment to posts in the undertakings in the public sector also and, therefore, recommend that a separate Public Service Commission should be set up for this purpose as early as possible. They further suggest that, if necessary, this Public Service Commission might have slightly different and more flexible rules and procedures to suit the peculiar circumstances and requirements of industrial undertakings in the public sector.

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The Committee do not consider the present system obtaining in the B.E.L. of advertising and recruiting as and when the necessity and occasion arises, as satisfactory. They would like to commend in this connection the recommendation made by the Engineering Personnel Committee of the Planning Commission that there should be one or two bulk selections every year for technical men of a particular category. They would further recommend that the recommendation of that Committee should be implemented without further delay in collaboration with similar other undertakings and Government Departments requiring technical men.

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The Committee suggest that the question of the pay scales in the B.E.L. may be examined *de novo* by the Board of Directors of the B.E.L. as well as by the Defence Ministry in consultation with those concerned with the management of H.A.L., I.T.I. and H.M.T. and also, if necessary with the Mysore Government.

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The Committee would recommend that in view of the difficulty experienced by the B.E.L. in recruiting Officers for posts in Classes I and II, the B.E.L. in consultation with similar other Public Undertakings should evolve an

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		effective machinery for bringing to the notice of Indians receiving technical training abroad, as well as of those studying in final year in colleges particularly those in Electrical Engineering vacancies which they propose to advertise in newspapers.
43	79	The Committee commend the suggestion made by the Engineering Personnel Committee of the Planning Commission that the shortages in the supply of tele-communication engineers in the country be made good by drawing on electrical engineering graduates and by giving them departmental training. At the same time, they feel that unless bold and effective measures are taken by the Government to overcome the shortage by opening more technical and engineering colleges, by upgrading some of the existing Institutions as well as by increasing their capacity, the above suggestion will at best be only a temporary palliative which will not meet the shortage effectively.
44	84	The Committee suggest that the present system of appointing skilled workers, especially those who are well qualified, having obtained diploma in craftsmanship and received special training like that in the B.E.L. on a daily rate of pay should be re-examined.
45	85	The Committee suggest that, until the re-examination of the system of appointing skilled workers is made, the purposes of inviting applications for the course of training in the B.E.L. should clearly indicate, to the extent possible, the advantages which go with the pay scales as well as the absence of disadvantages which a layman ordinarily associates with a daily rated system.
46	86	The Committee suggest that the feasibility of maintaining contacts with schools giving training in craftsmanship etc. by recruiting teams may be examined.
47	87	The Committee do not appreciate the basis on which the artisans are fitted into the three grades merely on the basis of the results of the examination, involving such wide disparities in the scales of pay. They recommend that this system should be re-examined and a more scientific system which would avoid such disparities at initial appointment should be envolved.

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48	88 & 89	The Committee are surprised to learn that work-loads and norms of work had not been prescribed for the various types of work both industrial and non-industrial. The Committee consider that it is important to fix, without any delay, the work-loads and norms of work in the B.E.L. on the basis of those fixed by the C.S.F. for their own labour and to spare no effort to improve the efficiency of labour, with reference to the norms so fixed.
49	90	The Committee consider that when new industries are being established, a start should be made with the modern practice of piece work and bonus system rather than carry on with an old fashioned system. They hope, therefore, that this system will be introduced at an early date.
50	91	The Committee suggest that the management of the B.E.L. should keep in touch with the various Harijan Hostels and Ashrams in the country as well as the Commissioner for Schedule Castes and Schedule Tribes so as to reach the prescribed percentage of 12½% in the near future.
51	92	The Committee regret to observe that the B.E.L. have not so far set up any Works Committees. They, therefore, recommend that such Committees should be set up immediately.
52	93	The Committee recommend the setting up of Joint Production Committees of management and workers for the purpose of facilitating discussions and consultations on all production matters between the two. They also recommend that the system of inviting suggestions freely from workers should be introduced and that deserving suggestions should be suitably rewarded.
53	94	The Committee suggest that the B.E.L. may explore the possibilities of constructing buildings for providing separate educational facilities in the factory area for the children of the staff in collaboration with H.M.T. and other neighbouring concerns.
54	95	The Committee consider that it is not enough if a year-to-year programme for training is drawn up but that the B.E.L. should have before them a concrete plan for a longer period for at least 4 or 5 years.

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55	98	The Committee suggest that the training imparted in the Training School may be re-examined with a view to seeing whether it could be improved upon so as to facilitate better efficiency and output on the part of the workers.
56	100	The Committee suggest that the Training School in the B.E.L. may be worked in shifts, if possible and also expanded further to the extent necessary after taking into account the available facilities for training such skilled workers in the country as they stand in relation to the demand.
57	101	The Committee consider that in the national interest the training facilities in the B.E.L. should be available, not merely for its own requirements but also for the need of skilled workers in other industries in the country and that the question of finance necessary for the purpose, should be taken up with the appropriate Ministries of the Government of India, viz., Education and Labour.
58	103	The Committee feel that there should be some co-ordination between the requirements of Draftsmen in the various industries, on a regional basis, if not on a central basis, and that Draftsmen Training Schemes, at least for the purpose of imparting initial training, should be formulated on a collective basis, to meet this demand, leaving, if necessary, the advanced training and specialisation to the respective industries. The Committee suggest that as a beginning, the various Government undertakings in Bangalore may initiate a joint Draftsmen Training Scheme, and thereafter gradually such schemes may be extended to other regions also.
59	104	The Committee recommend that all those trained under the Training Schemes conducted by the B.E.L. should be awarded suitable diplomas or certificates which would be recognised by other institutions also.
60	105	The Committee would like to emphasize the desirability of utilising to the maximum the French assistance offered under the Agreement for the purpose of getting as many Indians trained as possible and they hope that it would be possible to draw up a longer programme than has now been done so as to facilitate recruitment even at this stage.

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61	106	In view of the shortage of engineers, the Committee suggest that the method of recruitment and training of apprentice engineers which has been initiated may be exploited fully and that expenditure should not be grudged on this account.
62	107	While the Committee agree that research, design and prototype development branch will have a greater role to play as the factory expands, they consider that even now these branches should receive greater impetus than at present and that, for this purpose, recruitment and training of selected personnel, procurement of equipment, etc., should be initiated even at this stage.
63	108	The Committee consider that the success and progress of research would depend to a great extent on close co-ordination with other institutions offering facilities for research and development in electronics such as the National Physical Laboratory, the Indian Institute of Science, the Electronics Research Institute, Pilani, etc. To facilitate close co-ordination in research of this type, the B.E.L. should take concrete steps to encourage the conduct of research in various Institutes and Laboratories particularly in the matter of developing indigenous sources of raw materials required in the electronics industry, including these required in valves manufacture, while it could itself concentrate on the industrial aspect of research. The Committee suggest that for the purpose of facilitating research on selected lines, pilot plants be got opened in the Electronics Institutes and Laboratories either directly by the B.E.L. or preferably through the agency of the Council of Scientific & Industrial Research.
64	113	The Committee consider that the B.E.L. should cater not merely to the needs of Government Departments in the limited sphere of wireless transmission equipment and to the requirements of valves in the country but should also take cognisance of all the electronic equipment needed in this country as well as in the neighbouring countries subject, of course, to the assurance given to the private sector in regard to the manufacture of commercial radio receiver sets. They, therefore, suggest the appointment of a Committee of Experts to assess the demand of the country now and in the immediate future in respect of

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various types of electronic equipment so as to enable the B.E.L. to keep these items and targets of production in view in framing its plans for future expansion and at the same time to plan for the entire production during the currency of the Agreement with the C.S.F. so as to ensure its maximum exploitation. The Committee feel that only then would the establishment and existence of a private limited concern in the public Sector, solely for this purpose, be considered as fully justified.

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While the Committee realise that, in view of the possibilities of development of new techniques, it might not be possible to avoid changes altogether, they consider that frequent changes are likely to have a very upsetting and unbusiness-like influence on the production in the B.E.L. They, therefore, suggest that some arrangement should be arrived at with the Radio and Cable Board, which is charged with the responsibility of co-ordinating the requirements of the user departments of wireless equipment, to lay down a firm production programme for three or four years at a time, without making changes in it every now and then.

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The Committee find from the report submitted by the Technical Sub-Committee which had examined the Project Reports in 1950 that they had recommended that the manufacture of wireless test equipment particularly of the type required to meet Defence Services needs should form part of the production in the B.E.L. at a later stage, and that the C.S.F. should be called upon to submit separately a report for this purpose. They observe, however, that while Schedule I of the Agreement mentions a few items of test equipment Schedule II which lays down the production programme till 1962 does not envisage the production during these years of some of them. They suggest that the question of implementing the recommendations of the Technical Sub-Committee be examined in consultation with the Defence Services without any further delay.

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It has been suggested to the Committee that as the production in the B.E.L. progresses and as and when the manufacture of more advanced types of equipment is undertaken the manufacture of simpler items and components may be gradually transferred to other subsidiary industries to the

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extent permissible under the Agreement with the C.S.F. so that the B.E.L. could obtain as much technical know-how and manufacturing technique as possible from the C.S.F. and at the same time concentrate on the production of advanced types of equipment. The Committee do not consider it their province to offer remarks on this suggestion but suggest that it may be given due consideration at the proper time by the B.E.L.

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The Committee would suggest that, in addition to the existing audit arrangements, it would be desirable to have another centralised authority charged with the responsibility of laying down the system of costing for each industrial unit and of ensuring by periodical inspections that the system is being faithfully followed by each Unit and also that action is being taken to control costs etc. on the basis of the data brought out.

The Committee would also suggest that the Cost Accounts Branch of the Ministry of Finance be entrusted with the specific duties of laying down the system of costing to be followed in each undertaking in the public sector, of conducting systematic concurrent or periodic reviews in regard to the adequacy or otherwise of the cost accounts system and of submitting reports thereon, direct to the Finance Ministry as well as the administrative Ministry concerned of Government of India.

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The Committee regret to observe that the prices charged by the B.E.L. should be so exorbitant as compared to the prices of similar imported equipment in spite of the fact that the customs duty for wireless apparatus, components, etc. imported by the B.E.L. for the purpose of production is charged at a concessional rate of $2\frac{1}{2}\%$ *ad valorem* on a certificate issued by the Ministry of Communications whereas the normal duty for these items is about $31\frac{1}{2}\%$ per cent.

The Committee recommend that a careful scrutiny into the reasons for the disparity between the prices of equipment manufactured by the B.E.L. and that imported should be made by the administration, with the help, wherever necessary, of an experienced Chartered or Cost Accountant and a representative of the Comptroller & Auditor-General, with reference to each one of the contributory causes mentioned and that steps be initiated without any further delay to bring the costs down to a reasonable level.

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70	124	To prevent indiscriminate imports by user departments, the Committee suggest careful screening of indents for such equipment placed by users departments and restriction of imports to the extent of the production in the B.E.L. from time to time.
71	127	The Committee feel that with a little long-term planning, it should have been possible for the B.E.L. to obtain all components, and raw materials indigenously (except proto-type and sub-assemblies which are more or less intended as patented models for starting production) and save Rs. 2½- 3 lakhs from the orders placed in the first year of production aggregating to Rs. 9 lakhs.
72	131	The Committee feel that the establishment and development of subsidiary industries to feed the requirements of the B.E.L. in the matter of raw materials and components are of great importance. The B.E.L. has a very responsible role to play in the development of various subsidiary industries. First, the types of subsidiary industries necessary for this purpose have to be determined. Secondly, a survey of existing industries and their present as well as the potential capacity will have to be made. The Committee feel that all these could be accomplished only by the appointment of a Committee of Experts of the B.E.L. and the representatives of the Development Wing of the Ministry of Heavy Industries who should undertake an immediate survey of the indigenous capacity for the manufacture of components, etc. and for drawing up a long-term plan allocating amongst various producers the responsibility for manufacturing specified items.
73	132	The Committee suggestth at the feasibility of manufacturing ferrous items of special specifications required by the B.E.L. might be explored in consultation with the various Ordnance Factories in the country where large capacity to undertake such work exists.
74	133	The Committee recommend that the negotiations for the manufacture of valves in India be expedited and production undertaken at an early date.

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75	134	The Committee cannot appreciate machinery being bought in advance merely because it took two years to get it and then being kept idle to such a large extent. They would like careful advance planning of purchases to be made so as to avoid machinery lying idle for long periods due to production lagging far behind the installed capacity.
76	135	The Committee observe that most of the tenders in the initial purchase of machinery were issued from London and opened there because of the advice of the Technical Consultants that very little machinery required for the Electronics Factory would be available in India and that it would be advisable, in order to save time, to obtain it direct from Europe. The Committee feel that with a phased programme it should have been possible to obtain indigenously at least a part of the machinery which was purchased abroad. They hope that in future it would be possible for the B.E.L. to work out a long term plan for the purchase of their machinery in consultation with the Indian manufacturers and the Development Wing of the Ministry of Heavy Industries so as to secure indigenous manufacture and procurement of the required machinery.
77	136	The Committee are of the view that the B.E.L. should draw up in consultation with the various interests concerned, well-integrated plans for attaining the goal of self-sufficiency in all respects in the matter of the electronics industry in India in the minimum period possible.

1	2	3	4
	Draughtsman, Test Engineer, Standards Engineer, Cost Accounts Officer, Engineer Quality Service, Deputy Chief Inspector, Purchase Officer, Personnel Officer, Senior Development Engineer, Industrial Development Engineer, Accounts Officer & Internal Auditor.	400—20—500—25—600—30—660.	19
10.	Assistant Personnel Officer	400—20—500. . . .	1
11.	Foremen	350—600	2
12.	Assistant Planning Engineer, Engineer Assistant to Production Manager, Assistant Accounts Officer, Foremen Electrolytic treatment, Assistant Personnel Officers, Assistant Development Engineers, Assistant Engineers, Security Officer, Commercial Engineer, Assistant Supplies Officer, Assistant Stores Officer, Assistant Purchase Officer, Estate and Transport Officer, Budget & Finance Officer	260—20—460	25
13.	Assistant Foremen, Project Draughtsman Senior	260—20—400	17

MONTHLY RATED STAFF

14.	Draughtsman Civil, Assistant Supervisor .	150—10—250	2
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