

# ESTIMATES COMMITTEE

**Twenty-second Report  
1955-56**

**MINISTRY OF PRODUCTION**

**(National Instruments Factory, Calcutta)**



09542

**LOK SABHA SECRETARIAT  
NEW DELHI  
January, 1956.**

C O R R I G E N D A

TWENTY-SECOND REPORT OF THE ESTIMATES COMMITTEE (1955-56).

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Appendix II, for pages "19-20" read "19-27"  
" V, for pages "31-32" read "31"  
" VI, for page "33" read "32-33"  
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Page 7, para 14, line 11, for "put" read "but"  
Page 14, para 31, line 16, for "world" read "would"  
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"instituting"  
Page 61, serial No.19, line 7, for "am-" read "ma-"  
Page 63, serial No.25, line 2, for "Stipendary" read  
"Stipendiary".

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## MEMBERS OF THE ESTIMATES COMMITTEE, 1955-56

1. Shri Balvantray Gopaljee Mehta—*Chairman*
2. Shri T. Madiah Gowda
3. Shri Amarnath Vidyalankar
4. Shri Lalit Narayan Mishra
5. Shri M. R. Krishna
6. Shri Radheshyam Ramkumar Morarka\*
7. Dr. Ram Subhag Singh
8. Shri Raghavendarao Srinivasrao Diwan
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24. Shri Vishnu Ghanashyam Deshpande
25. Shri P. Subba Rao

### SECRETARIAT

Shri S. L. Shakdher—*Joint Secretary.*

Shri M. Sundar Raj—*Deputy Secretary.*

Shri C. S. Swaminathan—*Under Secretary.*

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\*Elected Member with effect from the 7th December, 1955 *vice* Shri R. Venkataraman resigned.

## INTRODUCTION

I, the Chairman, Estimates Committee, having been authorised by the Committee to submit the Report on their behalf present this Twenty-second Report on the Ministry of Production.

2. The Report embodies the conclusions of the Committee on the National Instruments Factory, Calcutta.

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

BALVANTRAY GOPALJEE MEHTA,  
*Chairman, Estimates Committee.*

NEW DELHI;

*The 19th January, 1956*

# THE NATIONAL INSTRUMENTS FACTORY, CALCUTTA.

## I

### Introductory

The National Instruments Factory is a manufacturing concern run departmentally by the Ministry of Production. The factory is situated at Calcutta.

2. It had its origin in the Mathematical Instruments Office founded in 1830 for the maintenance and repair of precision instruments such as theodolites etc., required by the Survey of India. It specialised in repair work, not only of surveying instruments but also of various types of precision instruments. Its services are utilised for this purpose mostly by the Union and State Governments and semi-Government bodies in the country. During the course of the last war, it became a full-fledged factory for the production of survey, drawing, mathematical and optical instruments.

3. The principal functions of the factory at present are:—

- (i) Manufacture, repair and sale of surveying, mathematical and other scientific instruments.
- (ii) Purchase and testing of imported and indigenous instruments for supply to indentors on outright sale.
- (iii) Design and development of new instruments and research work, fundamental or applied, in connection therewith.
- (iv) Certification of standard lengths, raingauges and flash point apparatus.

4. The funds required for the running of the factory are provided under Grants Nos. 83-A-N. I. F. (Major Head 43) and 132-A-1 (Major Head 72, Capital Outlay)—Reorganisation of the N.I.F. The Budget Grants under these heads for the years 1951-52 to 1954-55 are given in Appendix I.

## II

### The Paranjpe Committee

5. To review the organisation of the factory and to determine the lines on which it might be adapted or expanded to meet the country's present day requirements of mathematical and scientific instruments, an Expert Committee was appointed in December, 1947 under the Chairmanship of Professor G. R. Paranjpe. In other report submitted to Government in June, 1948 the Committee recommended large scale reorganisation of the factory and formulated its plans under two heads—short term and long term.

6. A summary of the Committee's recommendations together with its composition, terms of reference etc., is given in Appendix II. The report has not been published so far.

7. It will be noticed from this summary that besides the reorganisation of the factory on a short term programme, various important suggestions have been made by the Committee for the development of the industry in the country and for establishing research on sound lines. The Committee have asked for a statement to be furnished to them showing the action taken by Government so far on the various recommendations of the Paranjpe Committee, and expect that the same will be submitted to them in due course. The Report was submitted to Government over seven years ago and it appears that action on some of the recommendations is still pending. The Committee would recommend that the Paranjpe Committee Report should be published early.

8. The Committee would observe in this connection that whenever a Committee or officer is appointed by Government to examine any particular matter and make recommendations thereon, the Report should be examined in detail as soon as it is received. Thereafter, action should be taken to arrive at a decision on the recommendations. Action should then be initiated without delay to implement such of the recommendations as have been accepted, and a continuous review of the progress of the action should be maintained. A statement showing the recommendations contained in the Report, the decisions taken thereon, if any recommendations are not accepted the reasons therefor and the action taken to implement the accepted items should be drawn up and maintained upto date from time to time. Except in case, when for sufficient reasons Government consider that it is inexpedient in the public interest to do so, the Report as well as the decision of Government thereon should be given the widest publicity and copies thereof placed before Parliament.

### III

#### **Reorganisation and Shifting of the Factory**

9. In the implementation of the short term programme of the Paranjpe Committee for the shifting of the factory to a new site etc., a scheme costing about Rs. 71 lakhs has been approved by Government. Land measuring 8.3 acres was acquired at a cost of Rs. 8.64 lakhs near the College of Engineering and Technology at Jadavpur in Calcutta. As regards the buildings, the present position is that administrative approval for a sum of Rs. 39 lakhs has been communicated to the Chief Engineer, C.P.W.D., New Delhi for the construction of the new workshop in the Administrative Block and it is stated that the plans for the building have been finalised and tenders to the extent of Rs. 19 lakhs have been issued. In 1954-55 Rs. 6,18,168 were spent on this account and an amount of Rs. 14,37,000 is expected to be spent this year. Plant and machinery worth Rs. 6,27,000 have been purchased upto November, 1955 and indents to the extent of Rs. 13.44 lakhs are pending supply with the D.G.S. & D. Organisation. The Ministry expect that the construction of buildings and the purchase and installation of machinery would be completed during 1956-57.

10. The Committee are surprised to note that even in regard to this item, there has been so much delay since the recommendations of the Paranjpe Committee which were made some time in 1948. The

Committee note that even in their Annual Report for the year 1952-53, the Ministry have stated that the land had been acquired and the estimate of cost of new building had been prepared by the C.P.W.D., and this statement continues to be repeated in the annual Reports of the Ministry for the subsequent years. In the budget for the year 1955-56, the provision originally made on account of buildings plant and machinery, additional staff etc. was Rs. 38.26 lakhs. The Ministry have, however, now stated that the whole of this expenditure may not be incurred and that the provision will have to be "scaled down to about Rs. 18.09 lakhs in the Revised Estimate due mainly to the expenditure on building construction by the C.P.W.D., procurement of machinery and the Optical Glass Factory not materialising as anticipated". As far as the Optical Glass Factory is concerned, the remarks of the Committee will be found subsequently. The Committee would, however, point out that the delay in taking up and completing the construction works indicates that the work has not been planned well and that proper attention is not being paid to the matter. The Committee would like to be informed on what basis the provision was made in the budget for the year 1955-56 and in what way difficulties that could not be anticipated earlier arose to hinder materialisation of the original anticipation. The Committee are distressed to find that after a plan has been drawn up and decisions have been taken thereon, a determined effort is not being made to carry them out within the target time.

11. The Paranjpe Committee had referred to the need for undertaking the manufacture of optical glass in the country and Government included in the First Five Year Plan proposals for the setting up of a project of this nature and made provision of funds therefor even in the grant for 1955-56. Government have also been conducting negotiations for some considerable time with foreign countries and even as long ago as 1952, a foreign expert had been called in. Based on his Report, Government, it appears, decided to set up a Production Unit. The Committee have, however, now been given to understand that the Project is proposed to be undertaken during the Second Five Year Plan period only. The Committee are sorry to note that a Project of so vital importance to the country has been postponed. The value of optical glass imported into the country is not known, but the value of optical and ophthalmic instruments imported is as follows:

*Value of imported Optical and Ophthalmic Instruments*

1950-51	—	Rs. 30,42,058
1951-52	—	Rs. 65,95,410
1952-53	—	Rs. 37,39,187
1953-54	—	Rs. 47,85,440

Since optical glass is an essential requirement for the manufacture of these instruments, the postponement of the Project necessitates the continued wastage to a substantial extent of our foreign resources and at the same time delays the development of an important industry. The Committee hope that there would be no further postponement of action in the matter.

12. The present plans of the Government are to close down completely operations in the existing factory when the new factory goes into production in Jadavpur where the equipment at present under acquisition as well as the existing machinery excepting those that are not unserviceable or obsolete will be installed. There is, however, a great demand for scientific instruments in the country as indicated by figures of imports which are as follows:

(a) *Advanced Instruments for Scientific and Industrial Research & Testing.*

1950-51	—	Rs. 53,94,201
1951-52	—	Rs. 59,74,128
1952-53	—	Rs. 49,19,930
1953-54	—	Rs. 48,83,964

(b) *Optical and Ophthalmic Instruments*

1950-51	—	Rs. 30,42,058
1951-52	—	Rs. 65,95,410
1952-53	—	Rs. 37,39,187
1953-54	—	Rs. 47,85,440

(c) *Electrical Instruments and Meters*

1950-51	—	Rs. 64,17,339
1951-52	—	Rs. 107,41,933
1952-53	—	Rs. 67,15,449
1953-54	—	Rs. 62,82,907

In view of this and in view of the fact that there appears to be no prospect of installation of other additional units of large scale production in the near future, the Committee desire that Government should examine the possibility of continuing to work the factory in the present site in addition to the new factory without dismantling the equipment at the former place replacing them, however, in due course as and when necessary. This may perhaps necessitate running the organisation in two separate sections, but that should not constitute an obstacle to this proposal which would have the effect of increasing the production, and would at the same time enable Government to undertake new items of manufacture with the additional capacity available in the new factory. It would also give additional employment to about 800 men or so.

#### IV

#### **Survey of Capacity and Requirements**

13. The scope of the National Instruments Factory has all along been confined to the limited objectives of meeting the requirements of Government Departments and Institutions only. In the public sector, besides this factory, the only other similar factory owned by the Government of India is the Ordnance Factory, Dehra Dun. The value of instruments manufactured by the former during 1954-55 was about Rs. 27 lakhs and by the latter about Rs. 5 lakhs.

The quantum of manufacture in the private sector is not available and no survey of capacity in the country including the private sector has so far been undertaken. It appears that the Ministry of Production have recently requested the Development Wing of the Ministry of Commerce and Industry to carry out a survey of the capacity and output of scientific instruments in the private sector. Moreover, the requirements of the country for the various kinds of scientific instruments even under broad categories are not known with any degree of exactitude. The value of imports each year averages about Rs. 1.05 crores of rupees under the three broad categories of (i) Advanced Instruments for Scientific and Industrial Research, (ii) Optical and Ophthalmic Instruments and (iii) Electrical Instruments and Meters, as already stated. The Committee consider that besides a survey of capacity, a survey of the requirements of the country at present of the various kinds of scientific instruments and the position that would develop with the increasing industrial activity in the country should be undertaken without any further delay, especially as the manufacture of scientific instruments forms an important part of the Second Five Year Plan of the country. It appears that besides the plans for the increase in the output of the factory, as well as of the Ordnance Factory, Dehra Dun, various schemes have been submitted by State Governments to the Planning Commission for the setting up of similar factories under the small scale industry schemes. It appears also that there are some proposals for establishing servicing workshops in the various parts of the country. The Committee consider that all these schemes should form part of a coordinated effort based on data available after careful survey of capacity and demand.

## V

### Development of new Lines of Manufacture in the Factory

14. A list of principal items of manufacture during the period January to August, 1955 in the factory is placed as Appendix III. It will be seen therefrom that this consists of a very large number of items such as drawing boards, Chains of sorts' levelling staves, plane table etc., which are not by any means high precision instruments, and whose manufacture could well be undertaken in other factories either in the public or private sector. If the National Instruments Factory is to function as a pioneer institution in the development of new lines of instruments as recommended by the Paranjpe Committee, more and more new items of manufacture should be undertaken and to the extent that this takes up the capacity of the factory, the established lines of production may be left to others including manufacturers in the private sector. The Paranjpe Committee had recommended various new items for development in the factory under short term and long term plans respectively. These are indicated in the lists at Appendices IV-A & IV-B respectively. The development of most of these have not yet been undertaken as will be seen from the list of items actually developed for manufacture since 1948 (App. V). The Committee understand that a Coordination Committee has been set up with a view to avoiding overlapping and duplication of efforts and to provide mutual assistance in the matter of utilisation of surplus capacity between the Ordnance Factory, Dehra-Dun and the National Instruments Factory, Calcutta, but there is

no satisfactory organisation for the coordination of output of the factories in the public and the private sectors. Rationalisation in this matter has yet to be undertaken. It appears that the private sector insists on the Government factories giving up production of established lines in their favour, on the ground that the Government factory ought to undertake development of new items and leave to the private manufacturers the production of established lines. The Committee were informed that it is difficult for Government factories to abandon entirely the manufacture of established items which form the bread and butter of the factory. The Committee realise the complexity of the problem put wish to emphasise the fact that for the development of new items in a field like this, where practically little has been done in this country and where much progress cannot otherwise be made, Government ought to take the initiative even if at the outset this should result in some loss. As regards the established lines, the Committee feel that the demands in the country are sufficient to provide work for the factories both in the public as well as the private sectors. The extent to which this is possible cannot, of course, be specified in the absence of the survey to which the Committee have referred to earlier, and which, in their opinion, ought to be undertaken without any further delay.

The Committee understand that the question of undertaking manufacture of Pressure and Vacuum Gauges and various other instruments required by the Railways is receiving the attention of the Ministry. The Committee desire that the matter should be vigorously pursued.

## VI

### **Outturn in the Factory**

15. A statement showing certain important statistics such as the value of output, total sales, wages and allowances paid, number of industrial and other employees, the extent of absenteeism etc., for the year 1951-52 onwards is given as Appendix VI. These figures reveal a steady increase in the output till 1954-55, but the position is not so satisfactory when a comparison is made with the outturn of the previous years since 1942-43 especially that of the war years. This comparison is made in the statement showing the quantum of production and the average number of workers from year to year since 1942-43 which is placed at Appendix VII. During the war years, the factory worked in two shifts of 11½ hours whereas at present it works only in a single shift of 8 hours. The number of workers employed also touched the figure of 2,000 during the war years whereas at present the number is 700. Even in regard to the total value of production, there has been a considerable fall, and it is clear, therefore, that the factory was put to a more intensive use during the war years than at present. The Committee have been informed that during the war years, it was possible to obtain a greater output due to manufacture being undertaken in larger batches and that instruments manufactured then were of a different nature from the present production. While that may be so, the Committee do not see why the quantum of production in the factory cannot be increased even in the matter of instruments at present under manufacture by increasing the number of staff and working the factory in two shifts. If the

narrow view that the factory ought to supply its products only to Government Department is abandoned, it is clear that much greater use could be made of the equipments in the factory.

16. The Paranjpe Committee have referred to one particular item of work done during the war which was abandoned subsequently, name.v, the repairs, testing and production of aircraft instruments. That Committee has stated as follows:—

**"2-65 Aircraft instrument repair and testing Section**

This Section, which played a very important part during the last war should be revived and during the transitional stage reorganised on a broader basis. It is understood that adequate equipment for the section already exists in the MIO but has been put aside in its godown. Civilian aviation will develop rapidly and it would be very necessary to maintain all control and directive equipment rigidly at an unimpaired high level. This supervision should not be, according to our idea, left to private enterprise but should be controlled by the Central Government."

It is now understood that about 60 per cent. of the equipment utilised on this work during the war years has since been brought into use either by adapting them for other processes or by utilising the spare parts elsewhere etc., and that 40 per cent. of the equipment is lying in the godowns. It appears that this machinery was received under an agreement the terms of which required that it should not be sold in the open market. The Committee were informed that after the war, the work of testing of aircraft instruments etc., as originally carried out in the factory was no longer required in the country and the Government had no other alternative but to close down this work. The Committee would suggest that attempts should now be made to see how far the Indian Air Force authorities and the Civil Aviation Department would like to have similar work done in the factory. This would revive the skill which had been developed previously and at the same time find a use for the equipment which is lying unutilised.

17. During the current year the production in the factory has been considerably affected by a strike which took place in the factory about the middle of July and lasted for about 3 months. It appears that various staff matters had been pending decision for some time and that most of the issues have now been settled. The Committee learn that Government have recently exempted the factory from the application of the Employees' State Insurance Act for a period of one year from 7th December, 1955 in the first instance, exemption in this respect being one of the issues raised by labour. During the period of strike, the factory suffered a loss of production to the tune of Rs. 4 lakhs. The Committee desire that such of the issues which are still pending should be settled early.

18. Another reason for the short-fall in production has been the delay in the procurement of materials. It appears that recently a procedure has been drawn up as a result of discussions by the Ministry with the Director General of Supplies and Disposals for timely procurement of materials and that this procedure is working well.

To overcome the difficulty caused by the failure of suppliers to effect deliveries as scheduled, a system of stock-piling is under consideration. As such a system would have the disadvantage of locking up a substantial amount of capital, the Committee desire that before introducing it, careful examination of the need therefor should be undertaken and it should be seen whether it would not be possible to effect any other change in the procedure that may result in obviating such a course. If, however, stock-piling is essential, the maximum amount of material that can be acquired and stocked should be fixed and the procedure should include a system of periodical review at the highest level of the movement of goods through the Depots, and the quantity and nature of the items stock-piled.

19. It appears that there has been a certain amount of delay in deciding the future pattern of this factory soon after the war was over, and this has also had a serious effect on the production in the factory. Due to frequent break-downs in plant and machinery which in turn were caused by the failure to replace the obsolete and worn out machines in time, the figures for idle time booked in the factory have been consistently high. The figures for 1953-54 and 1954-55 are as follows:—

1953-54	—	Rs. 3873/-
1954-55	—	Rs. 3178/-

This represents the actual man hours (in money value) lost as a result of machine break-down. It does not represent the period the machines were out of commission. Action for procurement, the Committee are given to understand, of high production machines as well as replacements in the worn out ones have now made considerable progress and the machines have started coming in, some have already been put into commission. The Committee consider that there should be no further delay in the acquisition of the necessary machinery and hope that the amount of idle time booked due to break-down of machinery will show a reduction in future.

## VII

### Budget

20. A statement showing the Budget and Revised Estimates and Actuals for the years 1951-52 to 1954-55 and the Budget Estimates for 1955-56 under Grant No. 83-A-N.I.F. Major Head-43 and Grant No. 132-A-1(3)-Reorganisation of the N.I.F.—Major Head 72-Capital Outlay is placed as Appendix VIII. It will be seen therefrom that under the Capital Head, the actuals for these years are considerably less than the corresponding Budget and Revised Estimates. For a ready comparison the figures are reproduced below:

*Major Head 72—Capital Outlay etc.  
A-1(3) "Reorganisation of N.I.F."*

Year		Budget Estimate	Revised Estimate	Actuals
1951-52	.	..	14,50,000	7,69,023
1952-53	.	..	10,00,000	3,44,592
1953-54	.	..	6,50,000	1,39,097
1954-55	.	..	14,50,000	6,29,000
1955-56	.	..	..	..
		38,26,000		

These reflect the failure to undertake the capital works anticipated in each year and the poor planning in this regard. Such large surrenders under capital grants not merely retard the progress of the particular work, but seriously affect the planning in other branches, grants for which have to be curtailed on account of the provisions made for the concerned work which ultimately is not undertaken. The Committee hope that there will be no such recurrence of over-estimating and failure to carry out planned works in the current and the future years.

21. It is also noticed by the Committee that the expenditure other than capital incurred on Operation is consistently in excess of the amount recovered from the sale or disposal of the products (vide Appendix I) during the four years 1951-52 to 1954-55, this excess is about Rs. 16,40,000. The factory does not prepare a profit and loss account like other commercial concerns. But the Committee have been furnished with a statement of profit or loss made by the factory during the last three years (vide Appendix VIIA). The statement takes into account all invisible charges that are not actually booked in the account, which are maintained only on cash basis. The losses incurred by the factory in the years 1952-53 and 1953-54, after excluding the invisible charges, appear to be assessed at a much lower figure than would be expected by the large excess of cash expenditure over recoveries during the years 1951-52 to 1954-55. As this may indicate that either the stock has been allowed to accumulate to a large extent or there are large amounts unrecovered from the customers, the Committee desire that the matter should be investigated and the correct position ascertained. The losses sustained by the factory invalidate the claim referred to elsewhere that the items manufactured at present in the factory are bread and butter items which bring in a substantial amount of profit, the abandonment of which in favour of new lines of a developmental nature would decrease the profit. The reasons for the losses and the items on which they are incurred can only be known by a proper system of costing to which a reference is made in the next chapter.

## VIII

### Costing and Accounts

22. The factory is treated as a Department of the Government and its accounts are accordingly maintained on the same basis, that is, only cash accounts of receipts and disbursements are maintained against the grants. There is no trading, manufacturing or profit and loss account or balance sheet and the capital investments are not also shown in any capital statement. There is no depreciation of the capital value of the assets etc. Accordingly it is not possible to determine whether the factory is working on a profit or loss. The affairs of a manufacturing concern of this nature cannot be properly examined unless the accounts are maintained on a commercial basis—at least proforma. The fact that being a part of the Government Department, accounts are maintained on a cash basis, need not necessarily prevent the maintenance of proforma commercial accounts. There are many other organisations within the Government Department which carry on the business of trading or manufacture and for which proforma commercial accounts are maintained besides the cash accounts. The Committee see no reason, why

such accounts should not be maintained in this case also and recommend, therefore, that steps should be immediately taken to draw up commercial accounts for the factory.

23. At their request the Committee have been furnished with an analysis of costs for the year 1954-55. The Committee observe from this analysis (Appendix VIIIB) that "on cost" amounts to about 255 per cent. of the prime cost and that the fixed charges are about 350 per cent. of direct labour. It is also noticed that the overheads form nearly 72 per cent. of the total cost of production, in spite of the fact that interest on Capital and depreciation on plant and machinery are not included in the overheads. Such high overheads indicate that there is a large scope for improvement in organisation and efficiency. It would appear that the unusually large number of ministerial staff employed in the factory about which a reference is made elsewhere is also a contributory factor to this. As against the expenses of Rs. 362,965 incurred on direct labour, the factory incurred an expenditure of Rs. 7,38,140 on non-industrial employees. The analysis also indicates that the expenses on Office contingencies, stationery and forms and rent of hired building are on the high side. The Committee consider that there is an urgent and imperative need for instituting cost control in the factory as a first step to efficiency.

24. The Committee learn that an examination has been carried out recently in regard to the Cost Accounting procedure adopted in the factory so as to rationalise the procedure and ensure better cost control. The Committee hope that a satisfactory and modern procedure of standard costing etc., will be introduced and that the procedure will lead to strict cost control and effective review. The Committee consider, however, that Government should not be satisfied with merely laying down a procedure for satisfactory Cost Accounting, but should undertake an examination to see how far the actual manufacturing processes in the factory are conducive to efficient working and how far slack working due to inefficient procedure could be avoided. An examination on the lines of Time and Motion Study should be undertaken with the help of experts in the field, if necessary.

25. Government should consider the advisability of introducing a system of payment of wages according to outturn in all manufacturing institutions of this kind. Such a system would act as an incentive to the workers to increase their out-put.

26. The Committee observe that the sale price of certain instruments manufactured in the factory are lower than their cost price. A few instances are given in (Appendix VIIIC). The Committee recommend that all such cases may be investigated and steps taken to correlate the selling price to the cost price.

## IX Staff

27. The number of staff in the factory under the various categories is listed in Appendix IX and a chart showing the distribution of staff in the various branches and the organisation of the factory is shown in Appendix X. A statement showing the total number of

letters received in and issued from the factory during 1951-52 onwards is placed at Appendix XI. The ratio of the number of ministerial staff employed in the factory to the total number of workers is unusually high being about 25 per cent. or so. It has been explained by the Government that one of the reasons for this is the limited extent of delegation of powers to local authorities. It has been stated that, for example, for even the smallest purchase, written tender notices have to be issued to several suppliers, tenders received have to be tabulated and after the best tenders have been selected, orders have to be issued in writing and followed up similarly. Moreover if the delivery date is exceeded by even a day, the factory has to obtain the concurrence of the Finance Ministry on a written note before accepting the stores. Other reasons have also been stated such as the correspondence with the Audit and Accounts Authorities, the need for compiling large statistical information under the Five Year Plan, the clerical work with the various committees, etc., the application of industrial labour legislation and so on. It appears that a Special Reorganisation Unit of the Ministry of Home Affairs and the Ministry of Finance have recently examined the staff requirements of the factory with reference to the work load etc. The Committee would like to be furnished in due course with a copy of the report. In regard to the cases where frequent references have to be made to higher authorities even in small matters which could well be disposed of by the factory itself by a proper delegation of powers, the Committee would observe that in a manufacturing organisation it is always necessary that the authorities in local charge should have sufficient powers to carry on the day to day work so that production may not be hampered for want of sufficient authority. In this connection the Committee would quote the remarks contained in the report of an Officer who examined the organisation in July, 1955. Amongst other things, the Report stated:

"The fact that in almost all matters the man in charge on the spot has to refer cases to the Ministry is, to my opinion, a very great weakness. The National Instruments Factory is a manufacturing organisation selling its products not only to Government Departments but in the outside market also and to get the best out of it, it is necessary that it should be run on a commercial basis and that it should not be required to refer to the Ministry for running its day-to-day affairs. This weakness is all the more evident so far as the re-organisation project is concerned and it is necessary, if we are to get quick action to cut out the 'red tape' as much as possible, consistent, of course with proper financial control."

The Committee consider that there should be no further delay in removing this defect and would, therefore, recommend that the question of delegation of powers to the local authorities should be examined in detail at a very early date. A reduction in the strength of the clerical staff should be possible, especially after the powers of the local authorities are enhanced.

28. The post of Superintendent of the Workshop has been vacant for over a year now and the duties of general supervision and administration of the factory are now being carried on temporarily

by the Works Manager. The Committee understand that difficulties have been experienced in getting a suitable candidate for this post on account of the low salary as a very experienced person in the manufacture of instruments etc., is required. The Committee consider that it is not in the interests of the factory to keep this important post vacant for so long and they would recommend that the post should be filled without any delay and that whatever difficulties stand in the way of getting a suitable recruit, should be examined and suitable action taken to increase the scale of pay, if necessary.

29. The Committee understand that the recruitment of non-Gazetted Staff is made by departmental selection Boards consisting only of officials. The Committee feel that non-officials of standing such as Members of the legislature and Parliament, should be associated in this work which would have amongst other things the effect of giving a wider publicity to the selection and so bring in candidates from a wider field.

## X

### Research and Development Department of the Factory

30. The need for paying a greater attention to the development of the scientific instruments industry in the country through the activities of this factory has, as already stated, been stressed by the Paranjepe Committee. In this matter the Research and Development Department of the factory has a vital part to play. The scientific instruments production in this country is at its infant stage at present. For the increasing demand of such products in an expanding industrial economy, the National Instruments Factory, and more especially its Research and Development Department, has to function as a nucleus of future growth. It is, however, distressing to note that this function of the Department has not been fully appreciated or exploited. The Committee have been informed in regard to the activities of this Department as follows:—

"The Research and Development Department is composed of a Technical Manager, one Foreman, one Supervisor and a few industrial workers. At present, it is not treated as a Service Department. Its cost is included in the production cost. Since the factory is expected to pave its way, it has not been possible to allocate a larger share to the Research Budget. Research has, therefore, been confined to the development of a few important instruments for which the demand has been found to be substantial. Inadequacy of floor space and machine tools also prevents the expansion of this Research Department in the existing factory.

The Research Department was brought into being as a distinct section some four years ago. The facilities being very limited, it is not naturally possible to devote attention to any technical problem of a fundamental nature. Efforts were concentrated in bringing out improved design of instruments already under manufacture in the factory and developing such other allied instruments for which the demand is large and known. A few of the recent developments are profile Projector, Tank Microscope, Integrating Photometer, a few types of thermometers etc. Due attention within the limited

capacity has always been accorded to such technical problems arising in different Government or semi-Government Departments, as have been referred to the factory and which are of mutual interest. Since the scope of the department was limited, it could not serve the needs of the private sector".

The following measures are, therefore, essential in this regard:

- (i) The Research Department should function not as a Service Department of the factory but as a separate unit.
- (ii) The Department should undertake investigations not concerned merely with the production difficulties in the factory but also technical problems of a fundamental nature. Besides this, investigations for the manufacture of new items in the country, the cost of manufacture etc., should also be undertaken. The possibilities of utilisation of raw materials from indigenous sources in the manufacture of such instruments should constitute one of the items of research.
- (iii) For this purpose the factory should be provided with sufficient funds and all accommodation and equipment necessary therefor should be made available.
- (iv) Where research is undertaken in this Department, in regard to manufacturing problems of the factory, suitable charges therefor should be levied as a part of cost of production of the factory.
- (v) The Department should also serve the need of the private sector, charging the cost of such work to the persons served.

## XI

### Foreign Experts

31. There are at present two foreign experts employed in the factory since 1948. The details of the work on which they are employed at present and the salary paid to them are indicated in the note at Appendix XII. It appears that their main duties are as follows:—

- (i) Overall planning and production.
- (ii) Reorganisation of the factory (in consultation with all officers).
- (iii) Improvement in the manufacturing techniques.
- (iv) Preparation of plans for the new factory (in consultation with all officers).
- (v) Preparation of designs for mechanical parts of instruments.

It is, however, clear that from the details furnished at Appendix XII that these experts have not been employed on work of a highly specialized technical nature. The items of work shown therein do not also appear to be of such a nature as would require the employment of foreign nationals. It is also clear that some of the works are undertaken without proper planning as evidenced by the instance of designing of alarm clocks referred to in the statement, which had to be abandoned after completion on the ground that it would

entail competition with the private sector. The Committee would, therefore, recommend that Government should investigate the possibilities of replacing these experts by Indian officers at the earliest possible moment. If their services are to be continued, they should be employed only on such matters requiring high technical skill for which Indian officers are not available and their services should be engaged for a limited period only on a contractual basis. Officers should be specially nominated as under-studies and attached to them on the distinct understanding that these under-studies are given full training by the experts.

## XII

### Cottage Industries

32. A scheme for the manufacture of scientific instruments on a cottage and small scale units form of organisation, working around a Central Assembly unit has been drawn up by the Ministry, though the scheme has not been put into practice. The scheme consists in a number of smaller instruments and parts being manufactured in cottage industries and in small scale units which act as feeders to a main Assembly unit. The latter would under the scheme provide technical advice to the subsidiary industries, distribute various components etc., to them and arrange for the supply of tools, gauges, fixtures etc., and also undertake inspection of the products of these industries. The cottage unit would feed the main factory either directly or through the small scale unit and the main factory would carry out only those operations and manufacture only those components which cannot be undertaken in small units and which would require specialised and costly machine tools. The main factory would also be fully engaged with the development projects with a view to increase the range of products as well as to make improvements in the existing methods of production. It appears that the proposals for starting the production of Clinical Thermometers in conjunction with the cottage industries on these lines is already under consideration with the Ministry. The other items suitable for production for cottage industries would be:—

- (i) Mechanical components of all instruments which would require general machine tools only.
- (ii) Measuring Chains.
- (iii) Wood Work.
- (iv) Stands, Plane Tables, Drawing Boards, Staves etc.
- (v) Thermometers.
- (vi) Set Squares.
- (vii) Parts and components requiring mutual finishing operations.

33. In view of this, the Committee desire that full detailed proposals for organising production on this basis should be worked out and early steps taken to implement the same in various parts of the country. The Committee also desire that in drawing up schemes for deputing our staff for training in foreign countries in the instrument manufactures, attention should also be paid to the organisation of cottage industries in foreign countries such as Japan, where such organisations exist.

## XIII

## Training Scheme

34. The Paranjpe Committee had drawn up a detailed training scheme to be operated in the factory and suggested that the factory should train workers not only for their own requirements but also those in the industry. It appears, however, that even at present, though candidates from the various Universities are trained under a Stipendiary Scheme sponsored by the Ministry of Education etc., there is neither a provision for a training centre in the Factory under the guidance of a regular instructor, nor have scheduled courses of training been laid down. The Committee desire that the proposals recommended by the Paranjpe Committee should as far as possible be implemented early and a regular training scheme drawn up for this. The award of diplomas at the end of the training to candidates who have successfully undergone the training, indicating therein the merits of the candidates etc., should be considered. A record should also be maintained of the candidates undergoing the training and of the manner in which they are employed afterwards to see to what extent the training has been of use to them. Wide publicity should be given to the training course so that candidates from all parts of the country may take advantage of it. In the selection committees constituted for selecting the candidates for the training course non-officials should also be associated.

## XIV

## Publicity

35. The Committee consider that the work of the various Government factories of this kind should be brought out in separate reports at the end of the year and full publicity given thereto. As it is, the activities of such factories are reported upon only as a part of the activities of the Ministry concerned in its annual report of the Ministries presented to Parliament. This, however, does not give sufficient publicity to the work turned out by the factory. Steps should also be taken to bring the activities of such institutions to the notice of the public through articles written in journals and periodicals.

36. In this connection the Committee would recommend the opening of a show-room in one or two important cities to display the articles manufactured in the Factory. The show-room may also be utilised to show the scientific instruments that are at present being imported and give such information as may enable enterprising business-men to take up the question of their manufacture. This may be done even in regard to the articles manufactured in the factory which, however, do not fully meet the demands in the country so that their manufacture in the private sector may be taken up.

## XV

## Miscellaneous

37. While the general pattern of the organisation of State undertakings appears to have been accepted as the Company form, in this case, however, the departmental form continues. The Paranjpe Committee have made various suggestions for the organisation which, amongst other things, included the formation of an

Advisory Committee for the running of the factory etc. Government, however, appear to have decided not to accept this recommendation and to continue to run the factory departmentally. As pointed out elsewhere, instances have arisen where the red-tape common to the Government Departments has affected the working of this factory. The Committee would suggest, therefore, that this question be reviewed, and the form of organisation brought into line with the accepted pattern, namely the Company Form.

38. The Committee had asked for a comparison to be made of the cost of production of the scientific instruments in this factory with the cost of the manufacture in other concerns. A list of the cost of production of some of the items, comparing them with the sale price of the imported articles of some of the foreign manufacturers, has been furnished and it has been explained to the Committee by the Ministry that the cost of production of the private manufacturers is not available, but the Committee feel that attempts should be made to work out approximately, at any rate, the cost of production from the sale price of the private manufacturers deducting therefrom for example, such known factors as the custom duty, transport cost etc., and making a small deduction on account of profit. Such a comparison is essential to see that the cost of production in the Factory is not unduly high. A comparison between the price paid by Government Departments for articles purchased from this factory with the selling price of similar articles produced by manufacturers in the open market is also necessary to see that the Government Departments do not incur heavier expenditure by purchasing the articles from Government-owned factories thereby subsidising the latter indirectly. The Committee desire that suitable rules in this regard be drawn up by Government.

39. The Committee understand that 441 items valued at Rs. 25,321 remain undisposed of for more than 10 years. In addition to these, 227 items valued at Rs. 64,384 remain undisposed of for more than 5 years. The storage of manufactured articles for such long periods not only locks up funds but is also likely to cause deterioration to the articles and consequent additional loss thereby. The Committee recommend that a periodical review should be undertaken of items undisposed of for a long time and that action should be taken to dispose of them in a suitable way.

40. The Paranjpe Committee had suggested that one of the functions of this factory should be to draw up standards of specifications, quality etc., of scientific instruments for use in the country. It appears that the question has been taken up by the factory with the Indian Standard Institution about two years ago and that various Committees have been appointed to lay down the standards of specifications, but the work has not yet been finalised. As this matter is long over due having been recommended by the Paranjpe Committee over six years ago, the Committee suggest that action should be taken to finalise this work as early as possible.

BALVANTRAY GOPALJEE MEHTA,  
Chairman, Estimates Committee.

NEW DELHI;

The 19th January, 1956.

## APPENDIX I

(wide para 4)

*The Budget grants under Grants No. 83-A-NIF (Major Head 43) and 132-A-1 (Major Head 72, Capital Outlay)—Reorganisation of the N.I.F. for the year 1955-56 and the actual for the years 1951-52 to 1954-55.*

(i) *Grant No. 83-A-NIF.*

**MAJOR HEAD 43.**

**A. NATIONAL INSTRUMENTS  
FACTORY**

	1951-52	1952-53 Actuals	1953-54	1954-55	1955-56 Budget Grant
(1) Pay of Officers	82,752	51,578	55,143	42,652	55,000
(2) Pay of Establishment	8,36,204	8,51,867	8,70,465	9,09,171	9,68,000
(3) Allowances and Honoraria	8,43,610	8,38,558	8,95,474	9,20,743	9,54,000
(4) Other Charges	55,181	80,470	90,816	1,13,224	1,00,000
(5) Purchase of Stores	3,93,045	5,03,007	2,24,100	3,23,865	5,50,000
	<u>21,90,792</u>	<u>23,25,480</u>	<u>21,35,998</u>	<u>23,09,655</u>	<u>26,27,000</u>
(6) <i>Deduct—Recoveries (—)</i>	15,68,107	17,81,834	18,49,904	21,20,606	24,00,000
Net Expenditure	6,22,685	5,43,646	2,86,094	1,89,049	2,27,000

(ii) *Grant No. 132-A-1(3)—Reorganisation of the NIF.*

**MAJOR HEAD 72**

**CAPITAL OUTLAY ETC.**

**A-(3) "REORGANISATION OF NIF".**

	7,69,022	3,44,592	1,39,097	6,29,267	38,26,000
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## APPENDIX II

(vide para 6)

*A summary of the Paranjpe Committee's recommendations together with its composition, terms of reference etc.*

### FORMATION OF THE COMMITTEE

#### Committee

Government of India Ministry of Industry and Supply, vide their letter No. I-3/47-III dated, New Delhi, the 23rd December, 1947 set up a Committee of Experts to review the organization of the Mathematical Instruments Office, Calcutta, and to determine the lines on which it might be adapted or expanded to meet the country's requirements of mathematical as well as scientific instruments in general.

This Committee consisted of:—

**Chairman:** Prof. G. R. Paranjpe, O.B.E., F.N.I., J.P.

**Members:** Prof. Satyendra Nath Bose D.S.C. F.N.I.

Mr. H. P. Bhaumik, O.B.E., B.A., M.I.E.

\*Sir Shanti Swarup Bhatnagar, O.B.E., F.R.S., D.Sc.

**Secretary:** Rai Saheb S. K. Banerjee, B.C.E.

[\*This appointment was communicated to the Chairman by the Joint Secretary, Ministry of Industry and Supply in his D.O. letter No. Fy-2(46) dated, New Delhi, 11th February 1948].

#### Terms of Reference

The terms of reference to the Committee were:—

- (i) To examine the need and adequacy of the existing facilities in the Mathematical Instruments Office for the manufacture and repair of scientific instruments, having regard to the trade capacity available in India.
- (ii) If existing facilities are found to be inadequate, to formulate concrete plans, both short-term and long-term, for the development of manufacture of scientific instruments and photographic, electronic and electro-acoustic equipment.
- (iii) To report whether the Mathematical Instruments Office can be used as a suitable training centre for instrument-makers, mechanics, etc., and if so, to draw up a training scheme.
- (iv) To examine whether the Mathematical Instruments Office should continue to be run as a Government Factory, and if so, to review the terms and conditions of service of the employees there.

### Meetings

The Committee held its *First Session* in Calcutta at the MIO from the 12th to 16th January 1948, inspected the works, interviewed the Superintendent (Officer-in-charge) discussed several points arising out of the terms of reference.

- (a) with Senior and Junior members of the staff (technical and administrative) from different sections of the MIO,
- (b) with the Senior Professors in the University College of Science, Calcutta,
- (c) with representatives of manufacturers and importers of scientific instruments in this country,
- (d) with the members of a deputation from the Scientific Workers' Association of the MIO.

The Committee held its *Second Session* in Calcutta at the MIO from the 16th to the 22nd March 1948 and drafted the Report and its Appendices.

The Committee held its *Final Session* in Delhi from the 29th to 31st May 1948, discussed the views expressed by the officers of the D.O.F., the Technical Development Establishment, Dehra Dun and had a conference with the Development Officers of the Ministry of Industry and Supply and finalized the Report.

## SUMMARY

### *Summary of the recommendations made by the MIO Committee in their Report*

The Committee is of the opinion that the present demand for the different types of scientific instruments will increase considerably in the near future, if progress is maintained in all branches of India's programme for prosperity and for her defence. It is also clear that the new demand will be mostly for instruments not hitherto manufactured in MIO. This necessarily means large amount of additional space which is not available at the MIO.

It can be stated in brief that the MIO should be so reorganised that in its new form it will be able to satisfactorily serve the following purposes:—

- (i) to develop and manufacture scientific instruments of all kinds,
- (ii) to serve as a model to other industrial concerns for efficient and precision workmanship,
- (iii) to assist Indian manufacturers of scientific instruments by placing at their disposal concrete and expert advice in matters of development, production and test, and
- (iv) to maintain a special section within itself solely devoted, if necessary, to examine and serve the needs of the Defence Department.

The recommendations recorded under the following main heads cover concrete plans, both short-term and long-term for the development and manufacture of scientific instruments of the more important kinds so as to render India gradually independent of outside sources for her needs in these respects.

- (a) Initiating a new policy.
- (b) Reorganization of the MIO.
- (c) Provision of a new modern-factory to accommodate and facilitate the carrying out of the proposed activities and to undertake future plans of expansion.
- (d) Procurement of new and necessary equipments.
- (e) Procurement and production of essential raw-materials.

### **New Orientation of policy and control**

It is proposed that the new scientific instruments manufacturing organization (SIMO) which will grow out of the present MIO should be placed under an Advisory Board, consisting of persons who will be able to ensure finance, lay down policies for procurement of tools, capital equipment and raw materials from abroad and decide about the needs of the country, determine priorities regarding the lines of

development in types of scientific instruments required in the various public utility services, coordinate all scientific efforts that are likely to assist the industry and direct the maintenance of a standard.

There should be a Board of Management to manage the scientific instruments manufacturing organization replacing the existing Superintendent and the Chairman of the Board of Management would represent the Organization on the Advisory Board.

### **The Advisory Board**

The Advisory Board should consist of:—

1. The Hon'ble Minister, Industry and Supply (Chairman).
2. Director-General, Ministry of Industry & Supply.
3. Director, Council of Scientific and Industrial Research.
4. Chairman of the Boards of Management. (Ex-Officio Regional Secretaries.)
5. One Member, Specialist (Co-opted as required).

### **Board of Management**

The Committee visualizes that the best method of ensuring the services of such diverse talents is to recruit men of ability and place them all at the head of their branch of the organization. If the principle of joint responsibility can be accepted, then it should be possible to ensure that the main Departments of the SIMO are manned and controlled by the best men.

The Committee feel strongly that these high objectives will be reached if the affairs of the MIO or the SIMO were placed in the hands of a *Board of Management* consisting of three members, who will be designated as:—

- (1) Development Manager,
- (2) Production Manager, and
- (3) Commercial Manager,

and in charge of each department, allocated according to his ability.

### **Division of work**

The following is a general statement of the duties allotted to the Chairman and the Members of the Board of Management.

**Chairman:** Will represent the organization on the Advisory Board and, through the Executive Officer, will look after the accounts, discipline, condition of service, medical requirements, labour welfare, power and water supply, maintenance of buildings etc.

**Development Manager:** Will be responsible for the research, laboratory, experimental workshop, library, designs and preparation of pilots, repairs to instruments and small scale manufacture and training of apprentices and artisans.

**Production Manager:** Will be responsible for the efficient running of all productive sections, manufacturing new articles (not repairs

and miscellaneous articles), manufacture of tools, jigs, fixtures and gauges, wood and metal finishing, and heat treatment.

**Commercial Manager:** Will be responsible for provisioning and procurement of materials, maintenance of commercial relations, statistics of production and consumption, looking after the quality control of products, organising a museum and conducting works inspection.

**The Executive Officer:** He will be under the Chairman and in charge of administration, establishment, accounts and other miscellaneous ministerial duties. He should have considerable experience in administration and knowledge of accounts. He will be assisted by other members of the staff in the different sections.

**The Store holder:** Will be under the Executive Officer. He will be responsible for the provision of materials for anticipated requirements and their proper storage. He should also be responsible for the maintenance of proper ledgers and preparation of indents when the balance of any stock goes down to a datum level.

It is recommended that all stores should be centralized as far as possible, and provision should be made for sub-stores maintained in different sections to facilitate speedy work. There should be adequate stock of all imported (from foreign countries) materials to cover at least five years' anticipated requirements. Materials which are available in India should be stocked for at least one year's consumption. The same observations can be made in regard to the stock of small tools, and other sundry items.

#### Accounts Officer

The maintenance of cash accounts will be the responsibility of the Executive Officer. He will be assisted by an *Accounts Officer* and an adequate staff under him.

The Accounts Section should be resorted to the MIO and the latest method of costing and fixing overhead charges should be followed.

The Committee recommends that a new factory could be located on a piece of land where sufficient space for workshops and residential accommodation could also be provided for the workers of the MIO.

#### Existing & New Equipment

**Existing and New Equipment:** Some of the existing machinery have already run their useful term of life and these should be replaced by new machinery.

Before taking in hand the installation of additional equipment for increasing the production three-times, it would be desirable to remove the several bottlenecks created in the machine shop, tool room, moulding shop, plating shop, photo-etching section and inspection section, by hiring additional buildings as was done during the war.

#### Short-term Planning

**Short-term Planning:** Under the short-term planning the manufacture of all types of scientific instruments that the MIO has so far

manufactured should be taken. As an immediate objective effort should be made to treble the production in three years.

A list of suitable instructions is given:—

- (i) Scientific instruments done in MIO,
  - (a) Mechanical.
  - (b) Optical.
- (ii) Development of new instruments,
  - (a) Mechanical.
  - (b) Electrical.
  - (c) Optical.
  - (d) Surgical instruments.

While this is being done early steps should be taken to ascertain exactly which of the items of (i) are already being manufactured by private factories in India, and to explore the possibilities of relieving the MIO from the necessity of doing them. This step will make room for the introduction of other new items in the MIO Workshop.

### Long-term Plan

*Long-term Planning:* Under this planning the procedure should be that important instruments, required for education, research and defence, having sufficient demand and which have not been manufactured at the MIO or anywhere in the country, should be given priority. All the details of long-term planning should be taken up in hand immediately so that full blue-prints would be available before the short-term planning is over. This will enable the long-term planning to step in immediately after the completion of the short-term planning. A list of instruments for long-term planning is given.

The making of lenses for photographic objectives is a field full of possibilities and we recommend that MIO should endeavour to develop this line. The making of microscopic lenses is obviously a tall order for the present but it would be necessary to keep this item on the long range project.

### Financial Implications

#### Financial Implications:—

##### (a) Non-recurring :—

Land and Building	.	.	.	.	.	Rs. 35 lakhs.
Machine tools	.	.	.	.	.	„ 100 „
Stores	.	.	.	.	.	„ 50 „
Library	.	.	.	.	.	„ 0.75 „
Museum	.	.	.	.	.	„ 0.25 „
						Rs. 186.0 lakhs

(b) Recurring expenses when the factory would be running at full pressure after 5 years, that is after the end of the short-term plan:—

Personnel . . . . .	Rs. 50 Lakhs
Consumption of materials & power . . . . .	„ 10 „
Library . . . . .	„ 0.2 „
Museum . . . . .	„ 0.1 „
Training . . . . .	„ 0.75 „
	<hr/>
	Rs. 61.05 lakhs

It is also expected that this recurring expense will mount gradually from 30 lakhs to 61.05 lakhs in five years, as expansion takes place.

It would be necessary to provide capital for the following items, in the very early stages:—

Machines . . . . .	Rs. 40 Lakhs
Land (about 30 acres) . . . . .	„ 5 „
Buildings (including Power, Water & Gas supply) . . . . .	„ 30 „
Library . . . . .	„ 0.75 „
Museum . . . . .	„ 0.25 „
Stores . . . . .	„ 10 „
	<hr/>
	Rs. 86.00 lakhs In the first year.

and Rs. 100 lakhs in instalments of about 25 lakhs per year for the next four years.

### Raw Materials

**Materials.**—Arrangements should be made by Government for the manufacture of different kinds of raw materials which are important to the growth of the Scientific Instrument Industry. Some of the typical raw materials are listed.

Government should take early steps in this direction by directing the several National Laboratories to concentrate their attention on these items on a priority basis.

### Capital and Machine Tools

Government should levy protective tariff on imported scientific instruments or components, if similar articles are manufactured at the MIO or by any firm in India.

Government should allow duty-free import of capital equipment and scientific instruments required for research work, if the same can be certified by competent authority as necessary for the manufacture of scientific instruments in India.

Government should endeavour to secure the necessary machinery, either from surplus stores or by import from foreign countries.

It is suggested that the purchase of machinery in foreign countries may be possible by using the barter system in exchange of India's mica, beryl, manganese and other valuables.

Government should make provision for some of the technical staff of the MIO to travel abroad for purposes of practical training in advanced methods of manufacture of scientific instruments. If this is not possible, then it would be desirable to import and employ competent and experienced technicians from Germany for short periods of contract not exceeding three years at a time.

It should be possible, under the circumstances to use the facilities available at the MIO to provide a suitable training ground for workmen who would eventually be called upon to perform similar skilled and precision jobs in corresponding scientific instrument workshops either here or in the country.

If it could undertake the training of skilled instrument mechanics under conditions of war and to meet its own needs, it could very usefully, with proper adjustments, provide similar facilities to increase the technical man-power necessary for the Scientific Instrument Industry in India.

The following scheme has been drawn up so as to benefit (i) the MIO in the matter of its future requirements of technical personnel, (ii) other bona fide manufacturers who would feel it necessary to employ such qualified personnel for the development of their products, and (iii) the very large section of the public who can usefully turn their attention to learn the fine art and technique of instrument making

### Financial implications

#### Financial implications of the Training Scheme:—

##### Expenditure on account of:—

	Rs.
Organizing and Supervisory staff	17,800
Materials	3,400
Stipends etc.	44,000
Honoraria to MIO Staff	..
Honoraria to instructors	5,000
Fees to examiners	5,000
Total Cost :—	

The annual recurring cost outlined here in connection with the Training Scheme is estimated at Rs. 75,000 approximately.

The Committee recommend that the Industry concerned with the production of these instruments should be rightly classed as *Key Industry*.

The Committee would like to point out that the country possesses an excellent organization in the present MIO. It has rendered very valuable service during the last war as the records of the quality and performance of its productions during that period will show. It has even tackled such new problems as repairs to Aircraft instruments—such jobs were entirely new to the Organization but the MIO succeeded in effectively handling them.

The State should build on it, by rational planning, a much bigger organization to supply the needs of the country.

Having come to the conclusion that the MIO should continue to run as a Government concern, the Committee gave careful consideration to the terms and conditions of service of the employees prevailing at MIO.

The Committee, therefore, particularly studied the scales etc., recommended by the Pay Commission for the employees of that factory, and it considers that the scales proposed for the employees of the Ordnance Factory would be adequate for the corresponding grades of the staff of the MIO.

The Committee considers that the system of paying daily or by the month, whichever is in vogue in similar Government workshops should prevail in the MIO and no exception or discrimination ought to be allowed in the case of the staff of this concern.

### APPENDIX III

(Vide para 14)

*List of principal items Manufactured during the period January, 1955 to August, 1955 in the Factory*

Sl. No.	Nomenclature	Numbers Produced	Value in Rs.
1	Binocular Prismatic	41	12,300 0 0
2	Chain of sorts	858	49,056 0 0
3	Clinometer N.I.F.	16	3,600 0 0
4	Compass Prismatic 4½"	249	93,375 0 0
5	Curve French, Set of 12 (Ebonite and Perspex)	163	12,312 0 0
6	Drafting Machine	4	2,200 0 0
7	Drawing Board of sizes	264	21,530 0 0
8	Ferro-Printing Frame of sizes	23	14,400 0 0
9	Glass Measuring 1" (for Raingauge)	226	4,181 0 0
10	Level Dumpy Internal Focussing	499	4,49,100 0 0
11	Level Engineers	13	16,600 0 0
12	Level Abneys	47	8,225 0 0
13	Level Spirit Mason's 12"	358	5,370 0 0
14	Levelling Staves	285	44,640 0 0
15	Optical Square	412	15,038 0 0
16	Pantograph	12	6,000 0 0
17	Plane Table	226	32,770 0 0
18	Raingauge of sizes	104	11,145 0 0
19	Ranging Rod of sizes	242	2,194 0 0
20	Rule Parallel of sorts	73	9,065 0 0
21	Set square of sorts	3598	20,030 12 0
22	Tee Square of sizes	231	7,700 0 0
23	Thermometer Maximum & Minimum	69	4,485 0 0
24	Thermometer of sorts	970	35,950 0 0
25	Theodolite Transit	5	13,000 0 0
26	Umbrella Survey 5"	20	3,000 0 0
Value of Misc. Manufacture			Total Rs. 8,96,266 12 0
Repair Value			Rs. 1,19,983 4 0
TOTAL OUTPUT			Rs. 78,408 1 0
			Rs. 10,94,658 1 0

## APPENDIX IVA

(Vide para 14)

*List of Items which the Paranjpe Committee had recommended for the development in the factory under short term planning*

### Development of new instruments

#### (a) Mechanical

Vacuum pumps  
Compressors  
Microtomes  
Micrometers

#### (b) Electrical

Induction furnaces      }  
Dielectric heaters      }  
Measuring Instruments.

#### (c) Optical

Students Microscope  
Refractometers  
Spectrometers  
Epidiascopes  
Elementary Cinema Projectors  
Comparators  
Photographic Lenses      }  
Microscope objectives.      } Early stage of development.

#### (d) Surgical instruments

Blunt instruments—various types of forceps, directors, probes etc. Edge-cutting instruments—scalpels, various types of scissors, chisels, osteotomes etc.

## APPENDIX IVB

(Vide para 14)

*List of Items which the Paranjpe Committee had recommended for development in the factory under long term planning.*

(i) *Mechanical*

Vacuum pumps, several high-grade types  
Calculating machines  
Clock works and movement trains  
Bearings, ball and jewel  
Mechanical printers (cinematographic film).

(ii) *Optical*

Photographic lenses  
Microscopes for all purposes  
Cameras  
Saccharimeter  
Microphotometer  
Interferometer  
Cine-projector  
Micro projector  
Range finder  
Periscope  
Piezo-electric crystals  
Quartz lenses and prisms

(iii) *Surgical*

Eye instruments  
Hypodermic syringes  
Gynecological instruments

(iv) *Electronics, Electro-acoustic & other allied Electrical Instruments and Equipments*

High and Low voltage cables and Transformers, for X Ray and Medical Equipment.  
Low and High Voltage Valves  
X-Ray tubes and Equipment  
Condensers  
Inductances  
Microphones and Telephones.  
Loudspeakers.  
Electric Measuring Instruments.  
Electric Energy Meters.  
High speed signalling apparatus and its adjuncts used in Tele-Communication equipment.  
Ultra Violet Lamps.  
Infra Red Lamps and Heaters.  
Switches, relays and other accessories.  
Electric Motors.  
Telephone Repeaters and Carrier Equipments.

## APPENDIX V

(Vide para 14)

*List of important Items which were taken up for manufacture after development since 1948 are given below:—*

Sl. No. 1	Items 2	Month and year of production 3
1	Barometer Fortins . . . . .	December '48.
2	Thermometer Maximum/Minimum . . . . .	July '49
3	Microscope Dissecting . . . . .	August '49.
4	Objectives for Microscopes . . . . .	November '49.
5	Microscopes Students' . . . . .	December '49
6	Beam Compass Telescopic . . . . .	December '49.
7	Equilateral Prisms . . . . .	Decembers '49
8	Pilot Balloon Equipments . . . . .	March '50.
9	Osmometer (improved) . . . . .	March '50.
10	Level Engineer's 11" . . . . .	July '50.
11	Bomb Calorimeter Thermo . . . . .	August '50.
12	Hydrometer Glass . . . . .	September '50.
13	Glass Magnifying Pocket 10 x & 20 x combined . . . . .	September '50.
14	Eye Pieces for Microscopes . . . . .	October '50.
15	Profile Projector . . . . .	November '50.
16	Absorption Cell . . . . .	December '50.
17	Drafting Machine . . . . .	March '51
18	Thermometer Dry Bulb . . . . .	March '51.
19	Thermometer Wet Bulb . . . . .	March '51.
20	Demonstration Eye Piece . . . . .	April '51.
21	Glass Tubes . . . . .	May '51.
22	Level Dy. 11' Internal Focussing . . . . .	May '51.
23	Quartz Cell . . . . .	October '51.
24	Plankton Counting Chamber . . . . .	December '51.
25	Linen Prover . . . . .	December '51.
26	Level Reversible . . . . .	December '51.
27	Thermometer Clinical . . . . .	February '52.
28	Mechanical Stage for Spectrometer . . . . .	March '52.
29	Tensile Tester for Jute Fibre . . . . .	March '52.
30	Thermometer Solar Radiation . . . . .	July '52.
31	Thermometer Rail Expansion . . . . .	October '52.
32	Evaporimeter . . . . .	October '52.
33	Theodolite . . . . .	November '52.
34	Dendrometer Christins . . . . .	March '53.
35	Thermometer High Temperature . . . . .	September '53
36	Thermometer Revolving Shutter . . . . .	November '53.
37	Psychrometer Whirling Meteor . . . . .	May '54.
38	Thermometer Minimum Terrestrial . . . . .	July '54.

## APPENDIX

(Vide

*Statement showing the total output of the factory as will ascertain allowances paid, number of industrial and other employees,*

S. No.	Item of information	1951-52		1952-53	
1	Total Output :—	Nos.	Value Rs.	Nos.	Value Rs.
	(a) Instruments manufactured	32,847	12,19,094	1,03,571	16,55,849
	(b) Instruments repaired	2,316	1,26,309	1,448	1,40,936
	(c) Instruments reconditioned	664	50,049	68	15,100
	(d) Repairing of surplus stores	333	6,837	240	3,438
	TOTAL . . .	<u>36,160</u>	<u>14,02,289</u>	<u>1,05,327</u>	<u>18,15,373</u>
2	Sales (including sales from Stock)	..	17,42,295		18,43,630
3	Total Wages and allowances paid	..	17,42,561		17,42,033
4	Number of Industrial employees	..	681		686
5	Number of staff employed	..	291		297
6	Number of Gazetted Officers employed	..	8		7
7	Total man-hours available (based on full work without any absence)	..	14,67,.84		14,96,543
8	Actual man-hours worked	..	12,71,752		13,10,324

\*Manufacturing programme for 1955-56

	No.	Value Rs.
Carry over from the year 1954-55	.. .	12,816
New programme for the year 1955-56	.. .	30,385
TOTAL . . .	<u>43,201</u>	<u>21,35,933</u>
		43,07,589

VI  
para 15)

important statistics such as the value of the output, total sales, wages and the extent of absenteeism etc. for the year 1951-52 and onwards.

1953-54		1954-55		*1955-56 (up to Sept. 55)
Nos.	Value Rs.	Nos.	Value Rs.	Value Rs.
58,060	15,80,022	53,338	19,99,966	
1,980	1,62,140	2,995	1,53,567	
116	10,702	73	2,672	
81	1,399	5	75	
60,237	17,54,263	56,411	21,56,280	6,35,926
	20,26,274		26,93,002	7,73,381
	18,21,082		18,72,565	9,34,553
	685		679	677
	298		294	291
	9		9	10
	15,23,187		15,17,842	7,63,216
	13,11,444		12,85,135	6,48,555

## APPENDIX VII

† (vide para 15)

*Statement showing the quantum of production and the average number of workers from year to year since 1942-43.*

Year	Production	Average No. of workers	Average earning per month of workers	Remarks.		
				Rs.	Rs.	
War Production	1942-43	24,52,000	..	47 15 6	Peak year, 2	
	1943-44	..	2038	53 1 0	Shifts 11½ hours	
	1944-45	27,84,000	2027	52 8 0	each.	
	1945-46	29,21,000	1545	60 13 6		
Period of Retrench- ment & reduction	1946-47	14,62,000	852	73 0 9		
	1947-48	8,16,000	758	..		
Re-organisation and Civil Pro- duction.	1948-49	10,62,000	736	..		
	1949-50	11,55,000	710	..		
	1950-51	12,31,000	701	113 0 0		
	1951-52	14,02,000	682	120 0 0		
	1952-53	18,15,000	686	130 0 0	Single Shift 8	
	1953-54	17,54,000	685	133 0 0	hours.	
	1954-55	21,56,000	680	139 0 0		
{ 1955-56 (April '55 to August '55)		5,40,581	677	138 0 0		

**NOTE :—**The instruments manufactured during the war period are not identical with the present production and in war years manufacture used to be undertaken in larger batches. Therefore the figures are not really comparable.

APPENDIX  
(vide para

*Statement showing the Budget and Revised Estimates and Actuals for the years  
No. 83-A—NIF Major Head 43 and Grant No. 132-A-A-I (3)*

National Instru

	1951-52			1952-53	
	Budget Estimate Rs.	Revised Estimate Rs.	Actuals Rs.	Budget Estimate Rs.	Revised Estimate Rs.
<b>MAJOR HEAD "43"</b>					
1. Pay of Officers . . .	49,200	85,200	82,752	90,400	56,000
2. Pay of Establishments . . .	8,70,700	8,70,700	8,36,204	8,86,000	8,79,000
3. Allowances and Honoraria . . .	7,95,000	8,04,000	8,23,610	8,43,600	8,50,000
4. Other Charges . . .	44,000	42,100	55,181	45,000	71,000
5. Purchase of Stores . . .	5,25,000	4,50,000	3,93,045	5,25,000	5,25,000
	22,83,900	22,52,000	21,90,792	23,90,000	23,81,000
6. Deduct Recoveries . . .	18,00,000	18,00,000	15,68,107	20,00,000	20,00,000
Net Expenditure . . .	4,83,900	4,52,000	6,22,685	3,90,000	3,81,000
<b>MAJOR HEAD "72" CAPITAL OUTLAY ETC.</b>					
(ii) <i>Grant No. 132-A-I(3)-Reorganisation of the NIF</i>					
<b>A-I(3) "Reorganisation of NIF"</b>	..	14,50,000	7,69,022	25,00,000	10,00,000

1951-52 to 1954-55 and the Budget Estimates for 1955-56 under Grant Reorganisation of NIF Major Head 72-Capital Outlay.

ments Factory

1953-54				1954-55				1955-56	
Actuals	Budget Estimate	Revised Estimate	Actuals	Budget Estimate	Revised Estimate	Actuals	Budget Estimate	Rs.	Rs.
51,578	53,000	55,000	55,143	53,100	48,000	42,652	55,000		
8,51,867	9,30,000	8,80,000	8,70,465	9,37,900	9,20,000	9,09,171	9,68,000		
8,38,558	8,85,000	9,00,000	8,95,474	9,39,000	9,15,000	9,20,743	9,54,000		
80,470	60,000	60,000	90,816	76,000	1,00,000	1,13,224	1,00,000		
5,03,007	6,00,000	4,90,000	2,24,100	4,00,000	4,00,000	3,23,865	5,50,000		
23,25,480	25,28,000	22,95,000	21,35,998	24,06,000	23,83,000	23,09,655	26,27,000		
17,81,834	20,00,000	19,00,000	18,49,904	20,00,000	21,00,000	21,20,606	24,00,000		
5,43,646	5,28,000	3,95,000	2,86,094	4,06,000	2,83,000	1,89,049	2,27,000		
3,44,592	39,00,000	6,50,000	1,39,097	32,00,000	14,50,000	6,29,267	38,26,000		

## APPENDIX VIII A

(vide para 21)

*The profit or loss made by this Factory during the last three years after taking into account all invisible charges are as follows:—*

Year	Profit (+)	Loss (—)	Invisible items of expenditure taken into account for arriving at profit or loss. These items are not actually appropriated by budget provision but debited proforma to our Account.	3	Rs.
					1
1952-53		(—)2,21,012/-	(i) Depreciation on active m/es. @ 6½% on diminishing book value . . . . . (ii) Depreciation on unused m/es. at 1/3rd of 6½% on diminishing value . . . . . (iii) Audit charges as communicated by the late Dy. Acctt. Genl. (I & S), Calcutta. . . . . (iv) Govt. contribution to Provident Funds as communicated by the late D.A.G. (I&S), Calcutta . . . . . (v) Superannuation charges @ 11.89% of the salary bills of pensionable establishment . . . . . (vi) Cost of Stationery and Forms consumed as intimated by Dy. Controller of Ptg. & Sty., Calcutta . . . . .	3	52,071 7,975 84,736 25,057 24,768 10,328 <hr/> 2,04,935
1953-54		(—)2,34,022/-	(i) Depreciation on active m/es. @ 6½% on diminishing book value . . . . . (ii) Depreciation on unused m/es. at 1/3rd of 6½% on diminishing value . . . . . (iii) Audit charges as communicated by late D.A.G. (I&S), Calcutta . . . . . (iv) Govt. contribution to Provident Funds as communicated by the late D.A.G. (I&S) Calcutta . . . . . (v) Superannuation charges @ 11.89% of the salary bills of the pensionable establishment . . . . . (vi) Cost of Sty. & Forms consumed as intimated by the Dy. Controller of Ptg. & Sty., Calcutta . . . . .	3	63,213 4,897 1,00,718 31,159 24,647 17,763 <hr/> 2,42,397

1	2	3	Rs.
1954-55	(+)	18,475/-	
		(i) Depreciation on active m/es. @ 6½% on diminishing book value . . . . .	67,487
		(ii) Depreciation on active m/es. @ 1/3rd of 6½% on diminishing value . . . . .	4,897
		(iii) Audit charges as communicated by the late D.A.G. (I&S), Calcutta . . . . .	84,480
		(iv) Govt. contribution to Provident Fund . . . . .	45,572
		(v) Superannuation charges @ 11.89% of salary bills of the pensionable establishment (approx) . . . . .	25,000
		(vi) Cost of Sty. & Forms consumed (approx) . . . . .	12,000
			<hr/> 2,39,436

*N.B.—In accordance with the Ordnance Factory procedure of accounting followed by this Factory no interest on Capital is charged to Production.*

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## APPENDIX VIII B

(vide para 23)

*For the year 1954-55 an analysis of the cost of production actually incurred and recovered from production at pre-determined rates is given below:—*

Prime cost	Incurred	Recovered	
	Rs.	Rs.	
Direct labour .	3,62,965	3,62,965	
Direct Materials .	3,02,037	3,02,037	
	<hr/>	<hr/>	
	6,65,002	6,65,002	

<i>On cost</i>			
Fixed charges .	12,59,562	9,93,583	
Variable charges .	4,37,477	6,17,088	
	<hr/>	<hr/>	
Cost of Production .	23,62,041	22,75,673	

The percentage of on cost recovered on direct labour is about 444% of which fixed charges represent 274% and variable charges 170%.

A statement showing separately the various items of fixed and variable overheads actually incurred during the year is also enclosed.

### *Variable charges*

1. Payments to industrial employees engaged for—	Rs.
(i) Clerical duties . . . . .	2,912
(ii) General shop labour . . . . .	1,01,080
(iii) Viewers and examiners . . . . .	72,905
(iv) Maintenance of machinery, belting, etc. . . . .	58,315
(v) Payments for idle time (within control) . . . . .	3,761
(vi) Payments for time spent in Factory dispensary due to injury or illness . . . . .	3,102
(vii) Care and custody of stock . . . . .	33,122
(viii) Testing jobs . . . . .	882
(ix) Preparation of shop fittings, Sundry shop stores, tools and gauges for shop use . . . . .	19,094
(x) Maintenance of lights and] fans, removal and re-erection of machinery . . . . .	37,540
2. Holiday pay and leave with pay to industrial employees. . . . .	1,45,616
3. Payments for Saturday bonus . . . . .	43,893
4. Suspension allowances to I.E's . . . . .	13,201
5. Cost of materials for—	
(i) General shop labour . . . . .	46,808
(ii) Repairs to Electrical installations . . . . .	1,404
(iii) Repairs to machinery & belting . . . . .	7,100
(iv) Care and custody of stores . . . . .	2,391
(v) Air Conditioning . . . . .	339

	Rs.
6. Cost of medicine . . . . .	3,275
7. Cost of fuel . . . . .	1,766
8. Cost of clothing . . . . .	209
9. Cost of lubricating Oil . . . . .	809
10. Cost of Petrol for factory truck . . . . .	1,488
11. Cost of Electric current . . . . .	17,639
12. Cost of Gas . . . . .	2,759
13. Auctioneer's Commission . . . . .	800
14. Loss on sale of stores . . . . .	..
15. Depreciation of Machinery . . . . .	63,966
16. Loss of stores in transit . . . . .	948
	<hr/>
17. Profit on sale of stores & Misc. Receipts . . . . .	6,87,118
	(—)1,746
18. Sale proceeds of Misc. scraps and components and adjustment of store . . . . .	(—)6,200
19. Insurance, postage and packing charges . . . . .	(—)2,41,695
	<hr/>
	4,37,477

*Fixed charges*

1. Pay and allowances of non-industrial employees . . . . .	7,38,140
2. Pay and allowances of Line Mistris (Industrial employees not engaged direct on production) . . . . .	1,83,135
3. Travelling allowances, medical allowances and rent free quarters . . . . .	14,431
4. Industrial employees engaged in Drawing Office (Blue Printers) . . . . .	947
5. Payments for idle time beyond control e.g. failure of power, unsuitable atmospheric condition . . . . .	159
6. Payments to industrial employees for the time spent in :—	
(i) Welfare and Canteen Committee Meetings . . . . .	92
(ii) Production Committee Meetings . . . . .	21
7. Payments to staff engaged in :—	
(i) Testing jobs . . . . .	11,679
(ii) Experimental jobs . . . . .	803
(iii) Preparation of samples for exhibition and to guide Factory trades . . . . .	33
(iv) Accident prevention . . . . .	24,753
(v) Maintenance of Factory buildings . . . . .	763
8. (i) Cost of materials for maintenance of buildings etc. . . . .	516
(ii) Materials for preparation of samples . . . . .	592
(iii) Materials used in departmental experiments . . . . .	1,018
(iv) Materials for fire protection and estate conservancy . . . . .	968
(v) Office furniture and contingencies . . . . .	240
9. Washing allowances . . . . .	88,576
10. Contingent charges . . . . .	5,460
11. Cost of armed and unarmed Police guards . . . . .	84,480
12. Audit charges . . . . .	45,572
13. Govt. contribution to I.O.F.W.P. Fund . . . . .	25,000
14. Superannuation charges . . . . .	12,000
15. Cost of Stationery, stock forms received from other Government Departments . . . . .	16,663
16. Rent of hired buildings . . . . .	3,521
17. Depreciation of capital assets other than machinery . . . . .	<hr/>
	12,59,562

## APPENDIX VIII C

(vide para 26)

*Comparative Prices of major items (in Rupees)*

Description of Instruments					N.I.F. cost price	N.I.F. sale price
Board Drawing 30" x 42" (Double Elephant)	.	.	.	.	85 6 0	80 0 0
Chain Measuring 100 ft.	.	.	.	.	78 0 0	60 0 0
Level Abney's in Slingh leather case	.	.	.	.	191 6 0	175 0 0
Level Engineers' 11" with Stand	.	.	.	.	1250 6 0	1200 0 0
Rule Parallel on Roller (Brass) 24"	.	.	.	.	158 14 0	135 0 0
Rule Parallel on Roller (Brass) 12"	.	.	.	.	98 0 0	85 0 0
Ferro Printing Frame with Stand 32" x 54"	.	.	.	.	731 10 0	650 0 0
Ferro Printing Frame with Stand 30" x 42"	.	.	.	.	654 6 0	600 0 0

## APPENDIX IX

(vide para 27)

*Statement showing the strength of Gazetted and non-Gazetted staff  
in the National Instruments Factory, Calcutta, as on 1-12-55.*

Designation	Sanctioned Strength	Scale	Remarks	
			Class I	Rs.
Superintendent . . .	1	1300—60—1600		The post is now vacant. It will be redesignated as Genl. Manager when its incumbent is in position.
Production Manager . . .	1	1500—100—1800		Held by a German Expert on contract.
Technical Manager (Production)	1	1500—100—1800		Do.
Works Manager . . .	1	600—40—1000— 1000—1050—1050— 1100—1100—1150		
Assistant Works Manager. . .	4	350—350—380—380— —30—590—EB— 30—770—40—850		
Administrative Officer. . .	1	Do.		
<i>Class II</i>				
Accounts Officer . . .	1	500—30—690—EB— —30—800		
Labour Officer . . .	1	275—25—500—EB— —30—650—EB—30— —80c		
Assistant Surgeon Class I . .	1	260—15—440—20— 500		

### *Non-Gazetted*

Designation of Employees	Scales of Pay	No. as on 1-12-55
	Rs.	
Foreman . . . .	(1) 300—20—500 (2) 360—20—500 (temporary)	7
Storeholder . . . .	300—20—460	2
Assistant Foreman . . . .	(1) 260—15—350 (2) 300—20—400 (Temporary)	2
Assistant Storeholder . . . .	260—15—335	1
Changeman Grade II . . . .	(1) 200—10—300 (Grade II)	9

Designation of Employees	Scales of pay	No. as on 1-12-55
Rs.		
Chargeman Grade I. . .	(2) 260-15-350 (Grade I) (temporary)	5
Assistant Surgeon Class II . .	160-10-230-EB-10-300	1
Supervisor 'A' Grade . .	150-7-185-8-225	9
Supervisor 'B' Grade . .	100-5-125-6-155-EB-6-185	39
Senior Estimator . .	150-7-185-8-225	1
Senior Draughtsman . .	150-7-185-8-225	2
Draughtsman . .	100-5-125-6-155(EB)-6-185	4
Senior Gate Keeper . .	150-7-185-8-225	1
Gate Keeper . .	100-5-125-6-155-EB-6-185	4
Tracer . .	60-4-120-EB-5-150	4
Telephone Operator . .	60-4-120-EB-5-170	2
Accountant . .	200-15-380-EB-20-500	2
Head Clerk . .	(160-10-250 + Special Pay 30) (200-10-300 pre 1931 entrant)	1
Cashier . .	(200-10-300 (for pre-1931 entrant) (80-5-120-EB-8-200-10/2-220 + 30/- special pay).	1
Assistant Cashier . .	80-5-120-EB-8-200-10/2-220.	1
Senior Clerk . .	(95-7-140-10-300 (personal for existing entrants.) (80-5-120-EB-8-200-10/2-220.)	2
Upper Division Clerk . .	80-5-120-EB-8-200-10/2-220	12
Lower Division Clerk . .	55-3-85-EB-4-125-5-130	116
Stenographer . .	80-5-120-EB-8-200-10/2-220.	1
Civilian Motor Driver . .	60-5/2-75	1
Godown Keeper . .	55-3-85-EB-4-125-5-130	6
Driver (Fire Brigade) . .	40-2-60-3/2-75	2
Compounder and Dispenser . .	55-3-85-EB-4-125-5-130	2
Record Supplier . .	40-1-50-2-60	2
Duplicating Machine operator . .	40-1-50-2-60	1
Subedar . .	40-1-50-2-60	1
Fireman Grade I. . .	40-1-50-2-60	3
Fireman Grade II . .	35-1-50	4
Book Binder. . .	35-1-50	1
Poddar . .	35-1-50	1
Jamadar (Durwan) . .	35-1-50	1
Orderly . .	30-1-35	25
Durwan . .	30-1-35	13
TOTAL . .		290

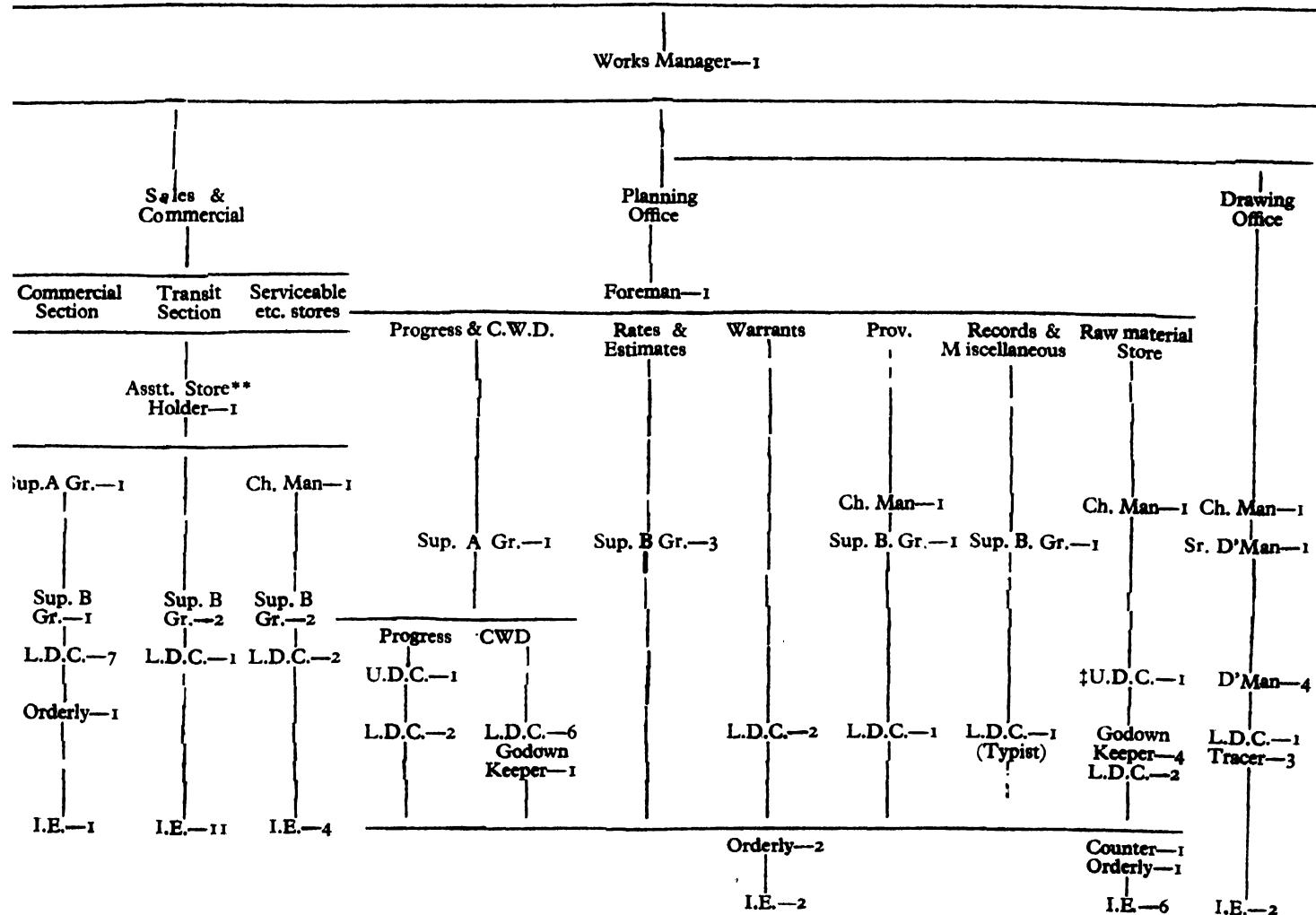
Designation of Employees	Scales of Pay	No. as on 1-12-55
	Rs,	
The Industrial workers in	I. 125—6—185	38
eight different scales of pay	II. 90—5—120	32
is shown. No specific categorisation such as un-skilled, semi-skilled etc. exists in the	III. 75—3—105	42
Factory at present.	IV. 60—5/2—75—3—90	84
	V. 45—2—75	162
This question is under examination by a Committee appointed by the Govt. But normally the scale of Rs. 125—185 is considered as highly skilled, Rs. 35—1—50 as semi-skilled, Rs. 30—1—35 as un-skilled and the remaining scales are considered as skilled.	VI. 40—2—60 VII. 35—1—50 VIII. 30—1—35	236 4 75
	TOTAL .	673

## APPENDIX X

(vide para 27)

### Organisational Chart of the National Instruments Factory as on 7-10-55.

†SUPERINTENDENT—1  
(Vacant)



I.E.—Industrial Employees.

Ch. Man—Chargeman.

Sup.—Supervisor.

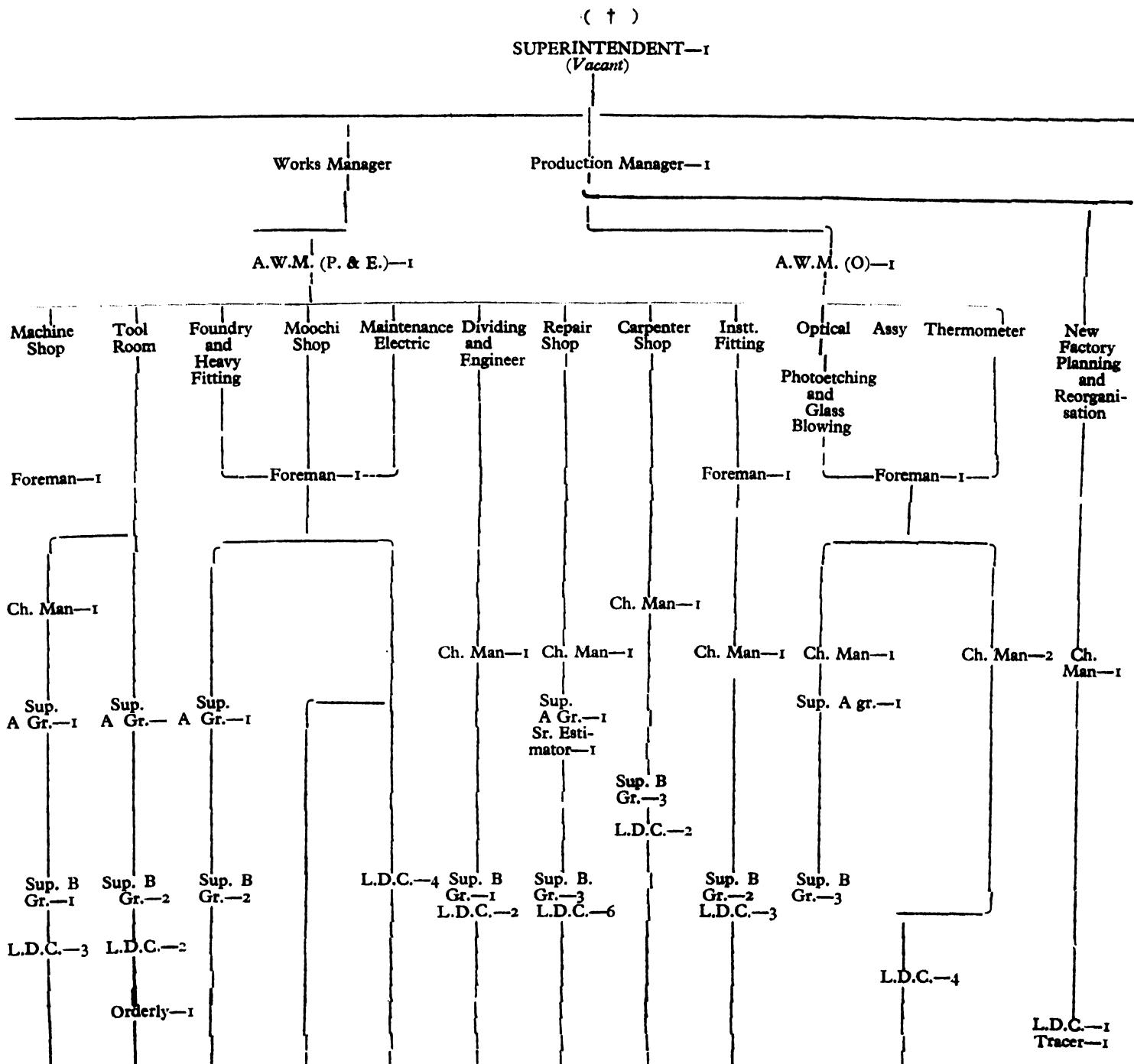
D'Man—Draughtsman.

† Duties temporarily carried out by W. M. designated as W. M. I/C.

\*\* Also responsible for execution of work relating to new factory.

‡ Under order of transfer to Accounts Section.

**Organisational Chart of the National Instruments Factory as on 7-10-55.**



I.E.—Industrial Employees.  
Ch. Man—Chargeman.  
Sup.—Supervisor.  
D'man—Draughtsman.

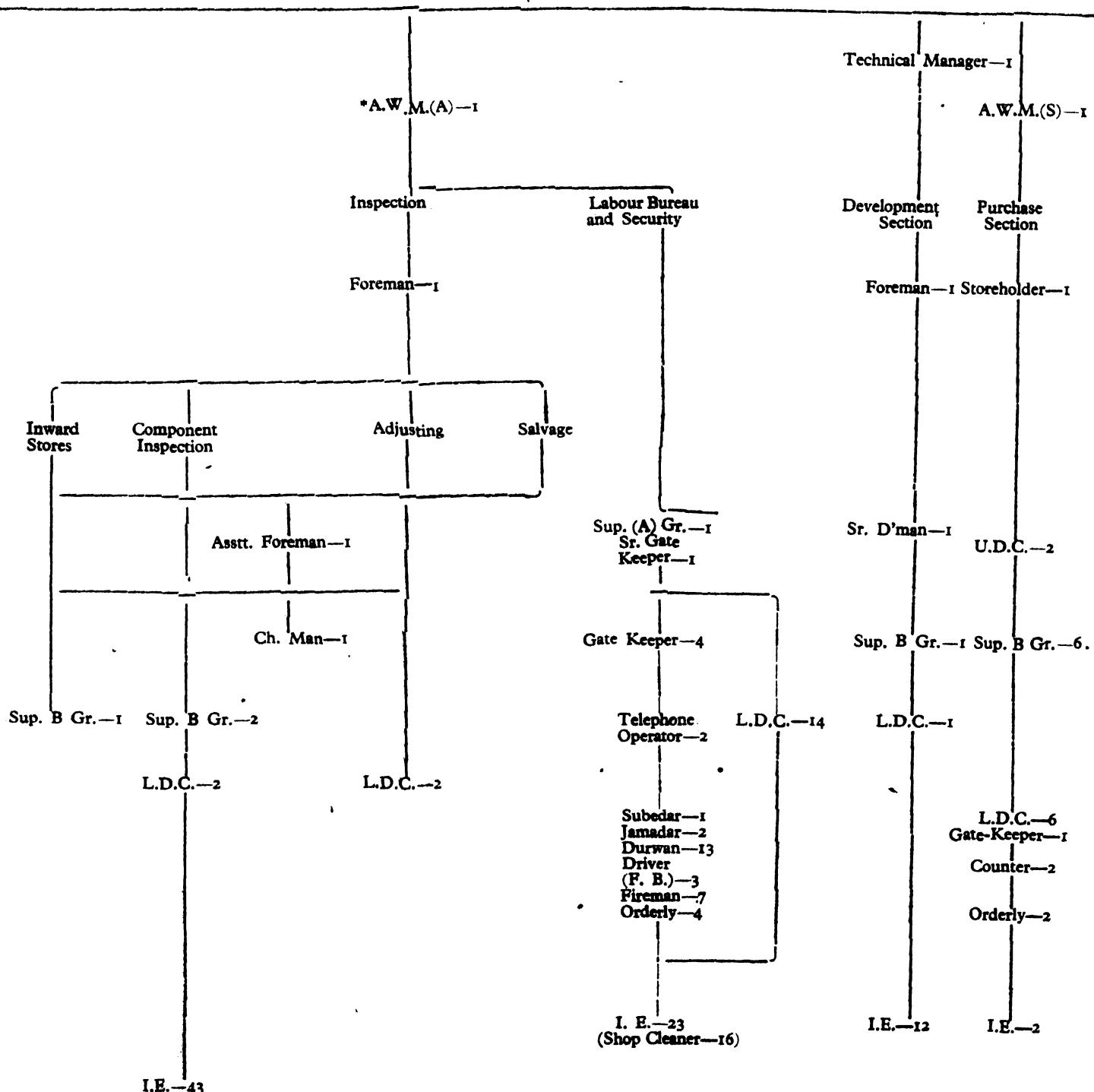
(†) Duties temporarily carried out by W.M. designated as W.M. I/C.

**Organisational Chart of the National Instruments Factory as on 7-10-1955.**

(†)

**SUPERINTENDENT—1**

( Vacant )



I.E.—Industrial Employees.

Ch. Man—Chargeman.

Sup.—Supervisor.

D'Man—Draughtsman.

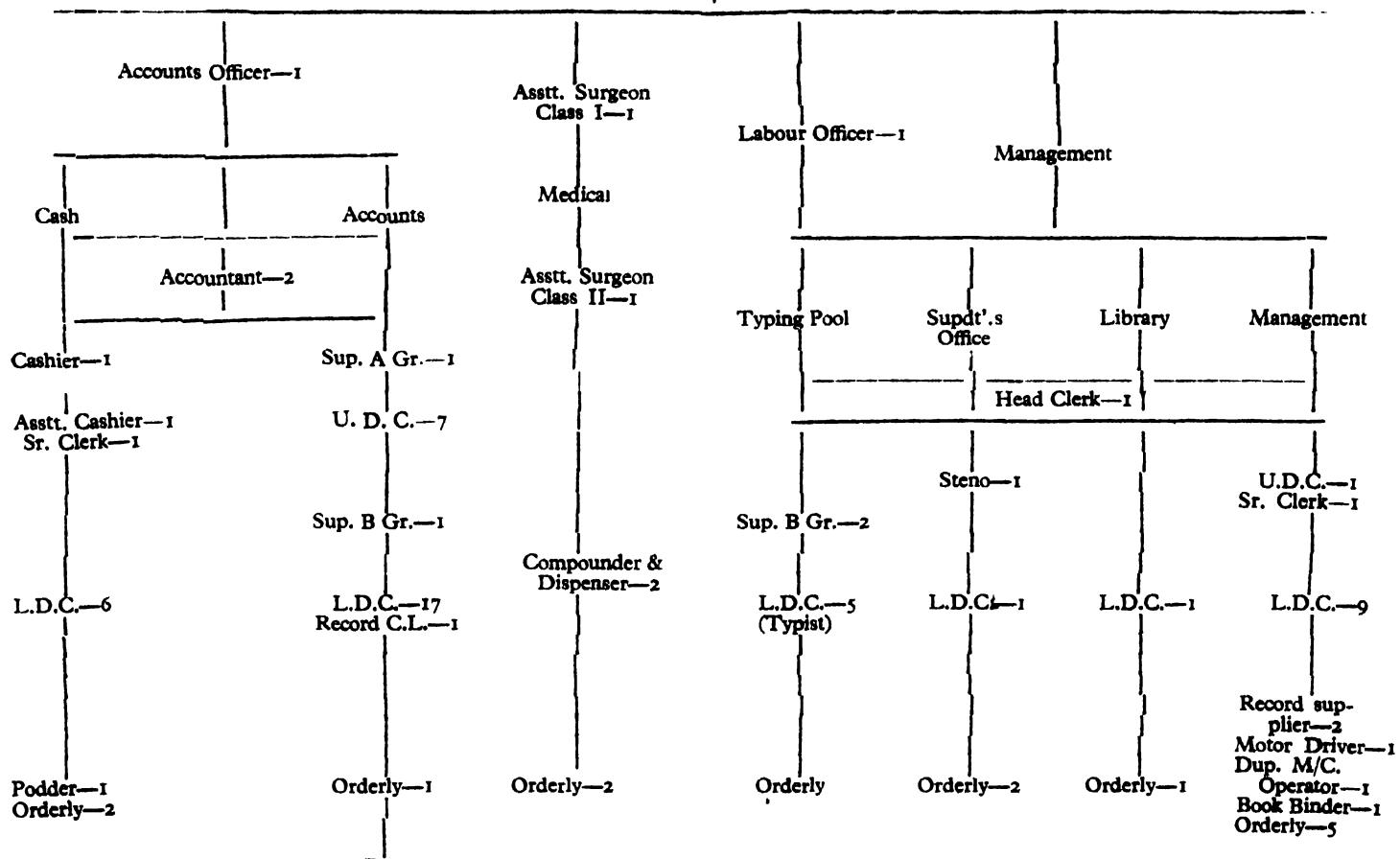
(†) Duties temporarily carried out by W. M. designated as W. M. I.C.  
\* Also responsible for execution of work relating to new factory.

**Organisational Chart of the National Instruments Factory as on 7-10-1955.**

(↑)

**SUPERINTENDENT—1**

(*Vacant*)



I. E.—Industrial Employees.  
 Ch. Man—Chargeman.  
 Sup.—Supervisor.  
 D'man—Draughtsman.

† Duties temporarily carried out by W. M. designated as W.M. I/C.

## APPENDIX XI

(*vide* para 27)

*Statement showing total number of letters, etc., received in and issued from the National Instruments Factory during*

<i>(vide para 27)</i>	<i>1951-52</i>	<i>1952-53</i>

	Annual Instruments Factory during							
	1951-52		1952-53		1953-54		1954-55	
	Receipt	Issue	Receipt	Issue	Receipt	Issue	Receipt	Issue
Letters including D. Os. and telegrams.	28,198	28,482	29,998	31,343	31,507	28,546	34,201	36,129
Confidential and secret letters.	422	377	354	367	185	186	249	433
								139
								321
								16,951
								1955-56
								Up to Sept. 55 Receipt

## APPENDIX XII

(vide para. 31)

\*A note indicating the details of the work on which two foreign experts are employed at present and the salary paid to them.

Two German Experts namely Mr. A. Hilbert and Mr. P. Dinkel are employed in the factory with effect from June 1949 and October 1949 respectively. The nature of assistance rendered to the Factory by the Foreign Experts are detailed as under:—

1. Paper design of a large number of new instruments already put under production.
2. Designing of mechanical parts of instruments.
3. Jig and tools designs.
4. Manufacture of pilot model of the instruments design.
5. Introduction of Model production planning.
6. Redesigning of some of the instruments under production.
7. Substantial modification in the original plan of the factory.
8. Working out the details of the new factory buildings.
9. Working out the details of the requirements of machine tools.
10. Working out the lay out of the workshops and machines.
11. Preparation of shifting schedule of the factory to the new premises.

Mr. Hilbert was concerned with the redesigning of some of the instruments and introduction of model production plan, the modification of original plan of the factory, working out the details of the new factory buildings, working out the details of the machine tools and to lay out the workshop machines and shifting of the factory to the new premises. As it will be noticed from the development in all respects, Mr. Hilbert rendered useful services to the factory during the period of his stay.

Mr. Dinkel was directly concerned with the research and development section of the factory which consisted of the designing of mechanical parts, model of new instruments, manufacture of pilot model of the instrument designed and special jig fixtures and tools and the paper designing of the instruments. His advice on the lines indicated has helped in the development of the factory to its present level.

The following additional particulars about the two German Experts are given below:—

**Mr. Hilbert:** Mr. Hilbert submitted a scheme including design of tools and equipments for the manufacture of Alarm Clocks in the country. The scheme was abandoned because that would mean competition with private sector.

He was also given to plan manufacture of Slide-Rules and design some of the instruments viz. Theodolite, Level, Drafting Machine etc. But these items were subsequently assigned to Mr. Dinkel for completion. Mr. Hilbert was given the assignment of assisting the Superintendent in the preparation of plans for the New Factory. He also gave innumerable suggestions—technical and organisational—those of which that were found practicable have been implemented.

**Mr. Dinkel:** The details of the work done by Mr. Dinkel are as follows:—

**I. Major Experimental jobs completed and passed on to Production:**

1. Profile Projector including Micrometer for machine stage.
2. Students' Microscope.
3. Sextant.
4. Printing Frame.
5. Important components of Drafting Machine.

**II. Important Pilot Models completed but not yet put to Production:**

1. Theodolite (Improved Model).
2. Camera Lucida.
3. Alidade Telescopic.
4. Travelling Microscope.
5. Plankton Sampler.
6. Cathetometer.
7. Tank Periscope.
8. Photometer.
9. Iris Diaphragm (some types).

**III. Major Experimental jobs in hand:**

1. Level Engineers' (Improved model.)
2. Level Internal Focussing. (Improved model).
3. Theodolite Transit. (Improved model).

**IV. Design work in progress:**

1. Station Pointer.
2. Flash Point Apparatus.

**V. Major Experimental jobs temporarily abandoned:**

1. Slide Rules.
2. Workshop Measuring Microscope.
3. Pilot Plant for Tape Production.
4. Syringe Pilot Plant and Record Syringe.
5. Pathological Microscope (transferred to O.F. Dehra Dun).
6. Belt type and mid-anchor type Drafting Machine.

Statement of salaries (in Rupees) paid to the German Experts during the period of employment in National Instruments factory:—

Year	Mr. Hilbert	Mr. Dinkel	Total
1949-50	16,746	6,460	23,206
1950-51	24,479	24,918	49,397
1951-52	22,310	20,277	42,587
1952-53	15,357	14,510	29,867
1953-54	9,509	20,872	30,381
1954-55	22,112	21,222	43,334
1955-56	17,250	16,350	33,600
(Upto Dec. 1955)			
	1,27,763	1,24,609	2,52,372

\*I. Mr. Hilbert was in service from 6/49 to 10/52; re-appointed in 12/53.

II. Mr. Dinkel was in service from 10/49 to 10/52; re-appointed in 1/53.

## APPENDIX XIII

### *Summary of conclusions/recommendations of the Estimates Committee relating to the Ministry of Production—National Instruments Factory.*

Serial No.	Ref. to para No. in the Report	Summary of conclusions/recommendations
1	2	3
1	7—8	A statement may be furnished to the Committee showing the action taken by Government so far on the recommendations of the Paranje Report.
2	7—8	The Paranje Report should be published early.  In all cases where a Committee or an officer is appointed by Government to examine a particular matter, prompt action should be taken to examine the report and implement the decisions taken thereon. A continuous review of the progress of action should be maintained. Except when it is inexpedient to do so, the report and the Government's decision thereon should be given wide publicity and copies placed before Parliament.
3	10	The delay in taking up and completing the construction works indicates that the work has not been planned well and that proper attention was not paid to the work throughout. The Committee would like to be informed on what basis the original provision was made in the budget for the year 1955-56 and what were the difficulties which arose later to hinder progress of the work.
4	11	The Committee are unhappy to note that the manufacture of optical glass, a project of so vital an importance to the country has been postponed. The Committee hope that there would be no further postponement of action in the matter.
5	12	In view of the great demand for scientific instruments in the country and in view of the fact that there appears to be no prospect of installation of other additional units of large scale production in the near future, Government should examine the possibility of continuing to work the factory in the present site in addition to the new factory.
6	13	Besides a survey of capacity, a survey of the present requirements of the country for the various kinds of scientific instruments and the position that would develop with the increasing industrial activity should be undertaken without any further delay, especially as the manufacture of scientific instruments forms an important item in the Second Five Year Plan.  The Committee consider that all the various schemes, namely (i) the plans for the increase in output of this factory as well as of the Ordnance Factory, Dehra Dun, (ii) the schemes submitted by State Governments to the Planning Commission for the setting up of similar factories, and (iii) the proposals for establishing servicing workshops in the various parts of the country should form part of a co-ordinated effort and that all necessary data should first be collected as a result of a careful survey of capacity and demand.

1 2

3

7 14 The National Instruments Factory should function as a pioneer institution in the development of new lines of instruments as recommended by the Paranjpe Committee, and more and more new items of manufacture should be undertaken. To the extent that this takes up the capacity of the factory, the established lines of production may be left to others, including manufacturers in the private sector.

The Committee realise the complexity of the problem but wish to emphasise the fact that for the development of new items in a field like this, where practically little has been done in this country and where much progress cannot otherwise be made, Government ought to take the initiative even if at the outset, this should result in some loss. As regards the established lines, the Committee feel that the demands in the country are sufficient to provide work for all the factories both in the public as well as the private sectors. The extent to which this is possible cannot of course, be specified in the absence of the survey to which the Committee have referred to earlier, and which in their opinion, ought to be undertaken without any further delay.

The Committee understand that the question of undertaking manufacture of Pressure and Vacuum Gauges and various other instruments required by the Railways is receiving the attention of the Ministry. The Committee desire that the matter should be vigorously pursued.

8 15 The output of the factory should be increased by increasing the number of staff and working the factory in two shifts. The narrow view that the factory ought to supply its products only to Government Departments should be abandoned. Much greater use could then be made of the equipment in the factory, than at present.

9 16 Formerly aircraft instruments etc. were tested in the factory, but the work has since been closed down. Attempts should now be made to see how far the Indian Air Force authorities and the Civil Aviation Department would like to have similar work done in the factory. This would revive the skill which had been developed previously, and at the same time find a use for the equipment which is lying unutilised.

10 17 The Committee desire that the various questions regarding staff matters which have been pending decision for sometime, should be settled early.

11 18 The authorities propose to stock-pile raw materials to overcome the difficulties caused by the failure of suppliers to effect deliveries as scheduled. As stock-piling would lock up a substantial amount of capital, the Committee desire that before doing so, careful examination of the need therefor should be undertaken and it should be seen whether it could be obviated by adopting any other change in the procedure. If, however, stock-piling is essential, the maximum amount of material that can be acquired and stocked should be fixed and the procedure should include a system of periodical review, at the highest level, of the movement of goods through the Depots, and the quantity and nature of the items stock-piled.

12 19 There have been frequent break-downs in plant and machinery caused by failure to replace obsolete and worn out machines in time. There should be no further delay in the acquisition of the necessary machinery and the amount of idle time booked due to break-down of machinery should show a reduction in future.

I	2	3
13	21	It is noticed by the Committee that the expenditure other than capital incurred on manufacture and operation is consistently in excess of the amount recovered from the sale or disposal of the products. During the four years 1951-52 to 1954-55 this excess is about Rs. 16,40,000. As the factory does not prepare a Profit and Loss Account as other commercial concerns, a correct picture of the total losses is not possible. Investigations should now be undertaken to assess the exact amount of loss incurred annually.
14	22	The Committee see no reason why commercial accounts should not be maintained in the factory, at least proforma, besides the accounts on cash basis as in the case of many other trading or manufacturing organisations within the Government Departments and recommend that steps should be immediately taken to draw up commercial accounts for the factory.
15	23	The "On cost" in the factory amounts to about 255 per cent of the prime cost, and the fixed charges are about 350 per cent of direct labour. The overheads form nearly 72% of the total cost of production. Such high overheads indicate a very unsatisfactory position. The expenditure on non-industrial employees, office, contingencies, and rent of buildings are also high. The Committee consider that there is an urgent and imperative need for instituting cost control in the factory as a first step to efficiency.
16	24	A satisfactory and modern procedure of standard costing etc. should be introduced and strict cost control and effective review should be undertaken in future. Govt. should not be satisfied with merely laying down a procedure for satisfactory Cost Accounting but should undertake an examination to see how far the actual manufacturing processes in the factory are conducive to efficient working and how far slack working due to inefficient procedure could be avoided. An examination on the lines of Time and Motion Study should be undertaken with the help of experts in the field, if necessary.
17	25	Government should consider the advisability of introducing a system of payment of wages according to out-turn in all manufacturing institutions of this kind. Such a system would act as an incentive to the workers to increase their out-put.
18	26	The Committee observe that the sale price of certain instruments manufactured in the factory are lower than their cost price. The Committee recommend that all such cases may be investigated and steps taken to correlate the selling price to the cost price.
19	27	It appears that a Special Reorganisation Unit of the Ministry of Home Affairs and the Ministry of Finance have recently examined the staff requirements of the factory with reference to the work load etc. The Committee would like to be furnished in due course with a copy of the report.
In regard to cases where frequent references have to be made to higher authorities even in small matters the Committee observe that in a manufacturing organisation it is always necessary that the authorities in local charge should have sufficient powers to carry on the day to day work so that production may not be hampered for want of sufficient authority. The Committee consider that there should be no further delay in removing the defect in the present procedure and would, therefore, recommend that the question of delegation of powers to Local Authorities should be examined in detail at a very early date. A reduction in the strength of the clerical staff should be possible after the powers of the local authorities are enhanced.		

I	2	3
20	28	The post of Superintendent which has been vacant for over a year should be filled without any delay. The difficulties that stand in the way of getting a suitable recruit, should be examined and suitable action taken, for example, to increase the scales of pay if that is necessary.
21	29	Non-officials of standing, such as Members of the Legislature and Parliament should be associated in the work of recruitment of staff which is at present made by a departmental selection Board consisting of officials. This would give a wider publicity to the selection and so bring in candidates from a wider field.
22	30	The following measures are essential in regard to the Research and Development Department of the Factory :— <ul style="list-style-type: none"> <li>(i) The Research Department should function not as a Service Department of the factory but as a separate unit.</li> <li>(ii) The Department should undertake investigations not concerned merely with the production difficulties in the factory but also technical problems of fundamental nature. Besides this, investigations for the manufacture of new items in the country, for evaluating the cost of manufacture etc. should also be undertaken. The possibilities of utilisation of raw materials from indigenous sources in the manufacture of such instruments should also constitute one of the items of research.</li> <li>(iii) For this purpose the factory should be provided with sufficient funds and all accommodation and equipment necessary therefor should be made available.</li> <li>(iv) Where research is undertaken in this department, in regard to manufacturing problems of the factory, suitable charges therefor should be levied as a part of the cost of production of the factory.</li> <li>(v) The Department should also serve the need of the private sectors, charging the cost of such work to the persons served.</li> </ul>
23	31	Government should investigate the possibilities of replacing the two foreign experts in the factory by Indian Officers at the earliest possible moment, since they are not employed on work of a highly specialised technical nature or in the development of manufacturing processes for new items of instruments. If their services are to be continued, they should be employed only on such matters requiring high technical skill for which Indian Officers are not available, and their services should be engaged for a limited period only on a contractual basis. Officers should be specially nominated as under studies and attached to them on the distinct understanding that these understudies are given full training by the experts.
24	33	Detailed proposals for organising production on a cottage and small scale units form of organisation, should be worked out and early steps taken to implement the same in various parts of the country. The Committee also desire that in drawing up schemes for deputing our staff for training in foreign countries in the problems of instruments manufactures, attention should also be paid to the organisation of cottage industries in foreign countries such as Japan, where such organisations exist.

1	2	3
25	34	<p>Though candidates from the various Universities are trained under a Stipendary Scheme sponsored by the Ministry of Education there is neither a provision for a training centre in the Factory under the guidance of a regular instructor nor have scheduled courses for training been laid down. The Committee desire in this connection that the proposals recommended by the the Paranjepe Committee should as far as possible be implemented early and a regular training scheme drawn up for this. In addition, action should be taken as follows :</p> <ul style="list-style-type: none"> <li>(i) The question of award of diplomas at the end of the training to candidates who have successfully undergone the training, indicating therein the merits of the candidates etc. should be considered.</li> <li>(ii) A record should also be maintained of the candidates undergoing the training and of the manner in which they are employed afterwards to see to what extent the training has been of use to them.</li> <li>(iii) Wide publicity should be given to the training course so that candidates from all parts of the country take advantage of it.</li> <li>(iv) In the selection committees constituted for selecting the candidates for the training course, non-officials should also be associated.</li> </ul>
26	35-36	<p>The work of the various Government factories of this kind should be brought out in separate reports at the end of the year and full publicity given thereto. Steps should also be taken to bring the activities of such institutions to the notice of the public through articles written in journals and periodicals.</p> <p>In this connection the Committee would recommend the opening of a show-room in one or two important cities to display the articles manufactured in the factory. The show-room may also be utilised to show the scientific instruments that are at present being imported.</p>
27	37	<p>The Committee would suggest that the question of organisation of the factory be reviewed and the form of organisation brought into line with the accepted pattern for state undertakings, namely, the Company form.</p>
28	38	<p>In order to enable a comparison to be made of the cost of production of the scientific instruments in the factory with the cost of the manufacture in other concerns, attempts should be made to work out the approximate cost of production from the sale price of the private manufacturers making necessary deductions, therefrom, for such known factors as customs duty, transport cost etc. and a small amount on account of profit. A comparison between the price paid by Govt. Departments for articles purchased from this factory with the selling price of similar articles produced by manufacturers, in the open market, is also necessary to see that the Government Departments do not incur heavier expenditure by purchasing the articles from Government-owned factories, thereby subsidising the latter indirectly. The Committee desire that suitable rules in this regard be drawn up by Government.</p>
29	39	<p>The Committee recommend that there should be a periodical review of items lying undisposed of for a long time and that action should be taken to dispose of them in a suitable way.</p>
30	40	<p>The Committee desire that action should be taken to finalise the work regarding drawing up standards of specifications, quality etc. of scientific instruments for use in the country.</p>