

GOVERNMENT OF INDIA  
DEPARTMENT OF LABOUR

**REPORT**  
OF THE  
**ADVISORY COMMITTEE**  
ON  
**TECHNICAL TRAINING**  
**1944-45**

**Training and Apprenticeship of Craftsmen for Industry**

**PART—I**



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## INTRODUCTION.

The Advisory Committee on Technical Training was constituted by the Government of India under Labour Department Notification No. TRA(1)-1403, dated the 1st March 1944, as follows :—

Mr. S. Lall, C.I.E., I.C.S., Additional Secretary to the Government of India, Department of Labour.—*Chairman.*

Brigadier A. W. H. Rea, O.B.E., A.M.I.Mech.E., Director of Training, Department of Labour.—*Vice-Chairman.*

Mr. A. W. Taylor\* of Messrs. Macneill & Company, Limited, Calcutta.  
Mr. P. F. S. Warren of Messrs. Jessop & Company, Calcutta. } representing the Indian Engineering Association.

†Mr. G. L. Mehta, representing the All India Organisation of Industrial Employers.

Mr. Herbert Jackson of the Cawnpore Cotton Mills, Limited, Cawnpore, representing the Employers' Federation of India.

Mr. M. Subba Rao of Messrs Poddar Sons, Limited, Bombay.

Major P. C. Basu, representing the Railway Board.

Mr. A. R. Winton, }  
Mr. H. I. Matthews, } representing the Supply Department.

Mr. V. Ramakrishna, I.C.S., Chairman of the Madras National Service Labour Tribunal.

Mr. N. Bhattacharya, B.Sc. (Engg.), A.M.I.E. (India), Assistant Director of Training, Department of Labour.—*Secretary.*

Later, one representative each of the Institution of Engineers (India), and the Engineering Association of India, namely, Mr. C. E. Preston, M.B.E. and Dr. Nand Singh‡, respectively, and Mr. A. Hughes§, O.B.E., I.C.S., Chairman of the Bengal National Service-Labour Tribunal, were added as members. At its first session, the Committee recommended that as the matters to be discussed were of considerable interest to labour, it would be desirable to have workers' representatives. The Government of India, therefore, appointed Messrs V. R. Kalappa, M.L.A., and G. Krishnamurthy, M.L.A., as representatives of the All India Trade Union Congress and the Indian Federation of Labour, respectively.

2. The Committee held three sessions as follows :—

|                      |                             |
|----------------------|-----------------------------|
| 1st session—Calcutta | 24th to 26th August 1944.   |
| 2nd session—Bombay   | 12th to 14th February 1945. |
| 3rd session—Delhi    | 7th and 8th August 1945.    |

3. During these sessions, arrangements were made for the members of the Committee to visit the principal training centres under the Technical Training Scheme of the Labour Department, where they could see for themselves the methods and standards of training. The members also visited a number of large engineering workshops and discussed the problems of training and recruitment of skilled workmen with persons having a first-hand knowledge of the existing difficulties.

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\*Mr. G. V. Apte attended the Delhi session.

†Dr. K. A. Hamied attended the Delhi session.

‡Mr. A. M. Kapadia attended the Bombay and Delhi sessions.

§Dr. N. Das, I.C.S., attended the Delhi session.

4. The operation of an industrial undertaking requires three distinct classes of personnel :—

- (1) managerial,
- (2) supervisory, and
- (3) skilled workmen.

It is with the last-named category that the Committee was primarily concerned, and the scheme prepared by it relates to the training of skilled craftsmen. Brief mention may, however, be made of the other two categories. At its Bombay session, the Committee was informed by the Chairman of the particulars of a scheme which the Government of India intended to bring into operation for sending out to the United Kingdom and the United States of America persons with sufficient academic qualifications and industrial experience for further practical training in industry. The Committee hopes that men trained under this scheme will be able to fill managerial posts with confidence and ability.

5. As regards the second category, namely supervisors and chagemen, the Committee feels that the type of artisans trained under the scheme recommended by it will be able, in view of their sound theoretical and practical training, to rise to supervisory posts and hold them competently.

6. When the Technical High Schools, as visualised in the report of the Central Advisory Board of Education on Postwar Educational Development in India (1944), are introduced, boys trained in them will, after a period of practical experience in the workshops, be able to take charge of supervisory posts.

7. There is one other possible source from which supervisory personnel might be drawn. At its Delhi session, the Committee was glad to be afforded an opportunity to express opinion on the scheme popularly known as the Bevin Training Scheme\*. The scheme has been running successfully during the last four years with the co-operation and generous help of His Majesty's Government and has played an important part in supplying the supervisory personnel required for war-time industry. The Committee considers that the time has now come when it should be switched over to meet the needs of post-war industry. It has the following recommendations to make in regard to this scheme :—

(1) At present its scope is confined to the engineering industry. There will be general industrial expansion in the post-war period and training should be provided for other industries.

(2) Industry should recommend for training its best and most promising craftsmen. Final selection should be made by the Regional Technical Committees which, according to the scheme recommended by this Committee, should be set up for the supervision and co-ordination of technical training in India. Direct applications from workmen should not be entertained.

(3) The period of training, which is eight months at present, should be extended to a minimum of one year. In some cases, longer training may be necessary.

(4) Training in the United Kingdom will be more beneficial if it is of a specialised type. On the recommendation of the employers, the Regional Technical Committee should specify the precise nature of the specialised training to be given to each trainee.

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\*Khan Bahadur M. D. Sheikh, Deputy Director, Railway Board and Mr. P. R. Nayak, I.C.S., Deputy Secretary, Supply Department were present when the Bevin Training Scheme was discussed.

(5) Every opportunity should be taken to encourage employers and Government officers in charge of industrial undertakings while on a visit to the United Kingdom to meet the trainees and to interest themselves in the working of the Bevin Training Scheme.

The Committee is of the view that if the above suggestions are brought into effect, the Bevin Training Scheme will be in a position to serve well the interests of Indian industry by supplying a nucleus of well-trained supervisory staff, whose widened general outlook and knowledge of up-to-date methods of production will be of immense advantage in the workshop.

8. When the Committee first met in August 1944, the European war had already taken a favourable turn. From the outset, therefore, it was obvious that the problem to be faced was not what adjustments were necessary in the Labour Department Technical Training Scheme to meet war-time needs, but to evolve a scheme to meet the post-war needs of industry. This was the task which the Committee set itself from the start.

9. The Committee is unanimously of the view that the provision of scientific, well-organised and progressive training for craftsmen has not up till now received in India the attention it deserves. The supply of skilled manpower is an essential requirement to maintain industrial production at a high standard and to develop the economic life of a country. While this is true of every country in the world, it is of particular importance to this country, the bulk of whose craftsmen are illiterate and where little effort has been made to train them on a scientific basis. Even the larger and better organised workshops; in many cases, have at present no arrangement for systematic training; the new recruit is left to learn what he can by working with the more experienced worker. This is very unsatisfactory. So far as Government effort is concerned, there are no doubt several institutions controlled by the Provincial Governments which are engaged on technical training. The Committee would, however, draw attention to the remark made by the Central Advisory Board of Education in its report on Post-war Educational Development in India (1944), that "the instruction itself (in these institutions) has not escaped the over-academic atmosphere which characterises education generally in India, nor has it been linked up closely enough with the actual conditions obtaining in works and factories". With this view the Committee is in entire agreement.

10. The existing training facilities are also insufficient to produce the number of skilled workmen that industry needs. At its first session, the Committee had no factual data of the number of skilled workmen now employed in Government and private industry and the existing facilities for their training. To overcome this handicap, it recommended that a rapid survey should be carried out to collect the necessary data. This was done by the Labour Department and the results were placed before the second session. The Committee would like to record its appreciation of the co-operative attitude of employers which made a quick survey possible. The results have shown that after allowing for the annual output of the existing apprenticeship schemes and the industrial and trade schools in the provinces, a large number of skilled workmen is still required annually by existing industries to maintain their present strength. In addition, skilled workmen will be required to meet the expansion needs of these industries and of new industries that may be started in the post-war period. The short supply of craftsmen may well prove to be the bottleneck in the future development of industry in India, and the Committee urges strongly that serious efforts should be made immediately to make good this deficiency.

11. Representatives of both employers and labour were agreed on the imperative need for introducing systematic craftsmanship training. From the employers' point of view, trained and efficient labour is not only indispensable,

if expansion programmes are to be carried through, but is also economical. To labour, training means better earning capacity.

12. The basic principle on which the training of craftsmen should be organised was the subject of considerable discussion at the first session. The Committee came to the conclusion that, as in other countries, the best way of ensuring a regular supply of skilled craftsmen to industry is through a comprehensive and systematic course of apprenticeship ; but in the special conditions obtaining in this country, apprenticeship should follow a course of training in a specially designed training centre.

13. The scheme described in the report has the unanimous approval of the Committee. It must be emphasized very strongly that there is a real danger of the growth of Indian industry being hampered by the lack of skilled labour, and the scheme recommended by the Committee is designed to suggest a beginning which will help Government and industry to avoid this risk. There should, therefore, be no delay in implementing it. The experience of training craftsmen during war-time can be of great help in organising and running the new scheme.

14. The Committee also strongly recommends to Government the scheme for the training of instructors which must be considered as an urgent and indispensable feature of the scheme for training craftsmen. Without properly trained instructors no scheme can produce craftsmen of the requisite standard.

15. The recommendations of the Committee are confined to the engineering trades. The Committee is, however, of the view that the need for training craftsmen for other industries, particularly textile and leather, is equally urgent and would recommend that early steps should be taken to investigate the matter further with a view to drawing up definite training schemes for other industries.

16. Lastly, the Committee desires to place on record its appreciation of the assistance rendered by Brigadier A. W. H. Rea, O.B.E., Director of Training, in working out the technical details. It would also place on record its appreciation of the valuable services of its Secretary, Mr. N. Bhattacharya, who worked throughout with zeal and enthusiasm. The thanks of the Committee are also due to the officers of the Labour Department of the Government of India without whose help satisfactory progress would not have been possible.

S. Lall (Chairman).

A. W. H. Rea.

P. F. S. Warren.

H. I. Matthews.

V. Ramakrishna.

G. V. Apte.

V. R. Kalappa.

V. Das.

G. Krishnamurthy.

C. E. Preston.

K. A. Hamied.

M. Subba Rao.

A. M. Kapadia.

P. C. Basu.

A. R. Winton.

Herbert Jackson.

N. Bhattacharya (Secretary).

Dated New Delhi, the 8th August 1945.

## **I.—TRAINING AND APPRENTICESHIP OF CRAFTSMEN.**

### **General Principles.**

1. The scheme recommended by the Committee recognises the fact that the best way of providing good craftsmen is through comprehensive and systematic apprenticeship. As stated by Messrs Abbott and Wood in paragraph 135 of their Report on Vocational Education in India (1937) "the workshop in India is not usually a very good school for obtaining a knowledge of first-rate workshop practice." The scheme now advocated therefore visualises that the first part of the training should be given in specially designed training centres and the second in workshops actually engaged on production, thus co-ordinating training and production to the greatest possible degree. The aim of training, which should be planned and organised on a national basis, should be to train boys for a National Certificate of Craftsmanship. The scheme recommended by the Committee is described fully below.

### **Trades in which Training is recommended.**

2. For the present, training should be given in the following trades :—
1. Blacksmiths.
  - \*2. Bricklayers and Masons.
  - \*3. Boiler-makers.
  4. Carpenters.
  5. Draughtsmen (Mechanical).
  6. Electricians (including Electrical Artificers, Wiremen, Linesmen and Armature Winders).
  7. Fitters [including Engine Artificers (I.C. and Steam), Millwrights, Electrical Fitters, Pipe Fitters].
  8. Grinders.
  9. Instrument Mechanics.
  10. Machinists (including Millers).
  11. Moulders.
  12. Painters.
  13. Plumbers.
  14. Wireless Mechanics (including Radio Mechanics and Wireless Operators).
  15. Shipwrights.
  16. Tin and Coppersmiths.
  17. Turners.
  18. Trimmers (Upholsterers).
  - \*19. Welders (Electric).
  20. Welders (Oxy-Acetylene).
  21. Automobile Mechanics.
  22. Electroplaters.

More trades may be added as and when found necessary.

### **Duration of Training.**

3. The duration of training should be 3-1/2 years of which the trainee should spend the first two in a training centre and the balance as an apprentice in a factory. The training centre should provide a predominantly practical training closely related to industrial practice, but attention should also be paid to theoretical subjects such as arithmetic, elementary theory of the trade in which training is being given, drawing, etc.

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\*See paragraph 5 on page 2.

4. A skilled craftsman will thus be trained in a substantially shorter period than the 5 to 6 years now usual. Experience of training during war-time has definitely shown that such a long training period is unnecessary, if intensive training is given according to a set programme consisting of a series of properly designed exercises. With further experience, it may soon be possible to reduce the total training period to 3 years.

5. In the case of trades marked with an asterisk in paragraph 2 above the arrangement will be as follows :—

Bricklayers and Masons—Training period two years only ; the whole time to be spent in a training centre.

Boiler-makers—After basic training, the remaining training to be carried out in workshops where training facilities exist, e.g., Railways.

Welders (Electric and Oxy-Acetylene)—Three years training to be provided ; two years in a training centre and one year in a factory.

#### Regional Technical Committees.

6. In each region, a Regional Technical Committee should be constituted to

(1) deal with the local administration of the scheme ;

(2) supervise the training, both at the training centre and during the apprenticeship training and see that the trainees and the employers are fulfilling their respective obligations under the apprenticeship agreement (see paragraph 24 below) ;

(3) arrange for trade tests on completion of the training both in the training centre and the factory ;

(4) keep a register of undertakings suitable and willing to train apprentices ; and

(5) arrange apprenticeship training for trainees who complete their training satisfactorily at the training centre.

7. The constitution of the Committee should be as follows :—

(1) A Government official nominated by the Government of India in consultation with the Government of the provinces concerned.—*Chairman*.

(2) Provincial Government representative.

(3) Nominated by private industry. }

(4) Nominated by Government industry including Railways { 1 or more each according to the size of industry in the region.

(5) Nominated by workers. 2

(6) Nominated by the Institution of Engineers. 1

(7) Regional Inspector of Technical Training.—*Secretary*.

Variations of the above may be necessary according to local circumstances.

#### Recruitment.

8. The responsibility for recruitment should rest with the Regional Technical Committee (vide paragraph 6). When recruiting apprentices employers generally (including Government Departments) give preference to the sons and relatives of their workmen. It will, therefore, be necessary to reserve some of the capacity of the training centre for boys who are recommended by Government Departments and firms participating in the training scheme. At the same time, it is not desirable to exclude others who may wish



to qualify for industrial employment by taking a course of training. After careful consideration, the Committee has come to the conclusion, that up to a maximum of one-third of the candidates to be admitted to a training centre should be from amongst applicants recommended by Government Departments and firms participating in the training scheme. Such applications will be forwarded to the Regional Technical Committee which will then make the final selection. These candidates must conform to the same educational, physical and other standards as other candidates. The remaining two-thirds of the vacancies at the training centre should be open to all. Modern and scientific methods of selection should be utilised as far as possible and Government should take steps to make the necessary facilities available to the Regional Technical Committees.

#### Age Limit.

9. The age limit for admission to the training centre should be from 14 to 18 years.

#### Educational Standard.

10. Boys admitted to training centres should have studied up to a standard two years below the matriculation or its equivalent. In the early stages, say for the next 5 years, it may be necessary for the Regional Technical Committee to relax this condition in the case of men recommended by certain employers (e.g., Railways) provided it is satisfied that the candidate is capable of absorbing the instruction and sufficient candidates with the requisite standard are not available.

#### Physical Standards.

11. No rigid physical standards should be laid down, but all candidates should be medically examined to ensure that they are physically fit for the work for which they are to be trained. Varying standards of fitness will be required in different trades.

#### Syllabuses.

12. Training should be given according to the syllabuses printed in Part II of this report. These have been drawn up on the basis of the experience gained of technical training during the war and the suggestions received from employers all over the country.

13. The engineering trades are divisible into two groups, each group being concentrated around what is called a 'foundation trade'. The intention is that there should be a basic training period of 6 months. A trainee selecting a trade in Group I should undergo 4 months' basic training in fitting and two months in carpentry, forging and sheet metal work. A trainee selecting a trade in Group II should undergo basic training for 4 months in carpentry and two months in fitting, forging and sheet metal work. The groups, with the foundation trade in each, are given below :—

##### Group I.

Draughtsmen (Mechanical) ; Electricians ; Fitters ;  
Grinders ; Instrument Mechanics ; Machinists ; Turners ;  
Wireless Mechanics ; Automobile Mechanics ; Electroplaters ; Blacksmiths ; Boiler-Makers ; Moulders ;  
Plumbers ; Shipwrights ; Tin and Coppersmiths ;  
Welders (Elec.) ; Welders (Oxy-acetylene).  
Foundation trade—Fitting.

**Group II.**

Bricklayers and Masons ; Carpenters ; Painters ; Trimmers (Upholsterers) ; Pattern-Makers.

Foundation trade—Carpentry.

The syllabuses may be reconsidered from time to time in the light of experience gained.

**Working Hours.**

14. The working hours should be 36 a week during the first 6 months at the training centre and 40 a week during the next 1½ years. During factory training, apprentices should be required to work normal factory hours except for two half-days a week when they should be released for educational instruction.

**Factory Training.**

15. An employer who participates in the scheme will have the advantage of obtaining workmen who have been partially trained at the expense of Government. In return, he should be required to provide apprenticeship training for not only those candidates who were admitted to a Government training centre from his factory, but also an equal number of other candidates who have satisfactorily completed their training at a Government centre. Thus, arrangements will automatically be provided for the apprenticeship training of two-thirds of the candidates passing out from Government training centres. For the remaining one third, arrangements should be made in other factories with the help of the employers' associations. The Committee was assured that there would be no difficulty in regard to this. Ultimately, it is hoped that all apprenticeship training in this country will be in accordance with this scheme or linked up with it.

16. The Regional Technical Committee will allocate trainees for apprenticeship training in factories. Before a trainee is assigned to a workshop, a training programme should be drawn up by the employer and approved by the Regional Technical Committee.

17. During factory training, general education and technical instruction should be arranged by the employer on two half-days a week on the same lines as at the training centre. If these classes cannot be arranged within the factory premises, the Regional Technical Committee should group the apprentices in a town and arrange for their instruction at the cost of the employers concerned.

18. It should be incumbent on the employers to provide a separate supervisory staff or at least to ask certain members of their staff specifically to see that the apprentices are receiving satisfactory training and proper treatment. The factories should afford all facilities to any person authorised by the Regional Technical Committee to inspect the work of the apprentices and the arrangements made for their training.

**Hostels.**

19. Experience of war-time training shows that it is necessary to insist on trainees residing in suitable hostels where arrangements can be made for their physical and moral well-being. Each training centre should be provided with a hostel, a Hostel Superintendent, and Physical Training Instructor. During apprenticeship training, proper housing facilities and welfare arrangements should be provided by the factories giving the training.

**Stipends.**

20. At the hostels, the trainee should be provided with free board, lodging, clothing, laundering and hair-cut. He should, in addition, be allowed a small amount of pocket money. The scale of the latter may be Re. 1|- per month, to begin with, and there should be half-yearly increments of Re. 1|- subject to satisfactory progress. At the time of passing out of the training centre, the pocket money will thus be Rs. 4|- per month.

21. Clothing should be supplied to trainees annually according to the following scale :—

| <i>Physical training kit.—</i>                     |    |    |    |          |
|--|----|----|----|----------|
| Canvas shoes                                       | .. | .. | .. | 2 pairs. |
| White vest   | .. | .. | .. | 1 pair.  |
| Black or navy blue shorts                          | .. | .. | .. | 2 pairs. |
| <i>Workshop kit.—</i>                              |    |    |    |          |
| Overalls, blue or mazri, with a distinctive collar | .. | .. | .. | 4.       |
| Workshop boot                                      | .. | .. | .. | 1 pair.  |

22. During factory training, apprentices should be provided by the employer with free board, lodging, clothing, laundering and hair-cut, as at the training centre. The employer should also pay pocket money at the following rates :—

- 1st six months of factory training—Rs. 4|- per month.
- 2nd six months of factory training—Rs. 5|- per month.
- 3rd six months of factory training—Rs. 6|- per month.

23. The chief factor which has operated against the employment during war-time of Government trainees in industry on any large scale is that the stipends paid at the training centre conflicted with the wage rates of permanent employees in industry. After careful consideration, the Committee has come to the conclusion that it would be preferable to split up the stipend and to provide for a small amount of pocket money, on a graded scale, as recommended above. This will avoid disparity between stipend and wages. As a result, there should be no difficulty in placing the trainee in a factory for his apprenticeship.

**Apprenticeship Agreement.**

24. It will be necessary to have a tripartite agreement between the candidate for training and/or his guardian, Government, and the employer who provides apprenticeship training. The points with which this agreement should deal are given below :—

(A) The trainee and/or his guardian to guarantee that the trainee will

(1) apply himself diligently to the training course and complete the training as prescribed by Government from time to time ;

(2) reside in the hostel if one is provided and obey all rules of the establishment ;

(3) on the successful completion of training at the Government training centre, undergo factory training in a factory as directed by Government and conform to the rules of the factory in regard to discipline, hours of work, etc. ;

(4) agree to serve as directed by the Regional Technical Committee for a period of 3 years after completion of training ;

(5) in the event of any breach of above, be liable to be discharged at any stage of his training. The trainee or his guardian may also be required to refund to Government any expenditure incurred in connection with his training.

(B) The Government to undertake

(1) to make all arrangements for training according to the syllabus which may be prescribed from time to time ;

(2) to make arrangements for hostel accommodation during training at the Government training centre ;

(3) to arrange for trade tests as below :—

(i) at the conclusion of the basic training period ;

(ii) at the conclusion of training at the Government centre ; and

(iii) at the conclusion of apprenticeship training in a factory ;

(4) to arrange for factory training at the conclusion of training at a Government centre ; and

(5) to pay stipends as prescribed during training at the Government training centre.

(C) The employing firm, where apprenticeship training is arranged, to undertake

(1) to provide facilities for training the apprentice on production work with a view to enabling him to learn his trade. The apprentice must not be employed on work not connected with the learning of his trade ;

(2) to provide educational instruction for 2 half-days a week and release the apprentice from the factory for this period without any prejudice to his emoluments ;

(3) to pay stipends as prescribed ;

(4) to provide as far as possible housing accommodation for the apprentice and place him under the charge of a Welfare Officer ;

(5) to permit any person authorised by the Regional Technical Committee to enquire into the methods and standards of training and to carry out, as far as possible, such suggestions for improvements as required by the Regional Technical Committee ; and

(6) to offer facilities for carrying out the trade test at the end of apprenticeship.

In the event of the employer failing adequately to observe any of the above conditions, the Regional Technical Committee may transfer the apprentice at any time to another employer for the completion of his training.

The Regional Technical Committee should have authority to act on behalf of Government in so far as this agreement is concerned.

#### Trade Tests.

25. Trainees should be subjected to the prescribed trade tests at two stages during the course of the training in a training centre, viz., (a) after completion of basic training, and (b) after completion of training in the centre.

26. No certificate should be issued in the case of the test held at the conclusion of the basic training, but a certificate should be forwarded to the factory on the completion of training at the training centre. For the benefit of candidates who fail, trade tests should be held every six months. A National Certificate of Craftsmanship should be awarded on the satisfactory completion of the apprenticeship training.

27. The Committee hopes that, as recommended by the Central Advisory Board of Education in its Report on Post-war Educational Development in India (1944), a National Council for Technical Education will be set up in due course for controlling policy on matters of technical education and training in India and for the award of a National Certificate of Craftsmanship. An independent organization under the National Council for Technical Education should be responsible for prescribing the standard of tests and for conducting them.

#### **Co-ordination with the Scheme Recommended by the Central Advisory Board of Education.**

28. The training centre recommended by the Committee will be roughly equivalent to the Junior Technical, Trade, or Industrial School contemplated by the Central Advisory Board in its report on the Postwar Educational Development in India (1944). Like the latter, it will be mostly fed by pupils from the Senior Basic (Middle) Schools. It is expected, however, that some boys, who have completed their course in a Technical High School, may also seek admission to the training centre. The time to be spent by this class of boys in the training centre may be somewhat curtailed though better results would be obtained if they took the full course. After completing their apprenticeship training, these boys will have better chances of rising to supervisory posts than those who join after completing the Senior Basic (Middle) School course.

#### **Co-ordination with other training schemes.**

29. The Committee's training scheme will also require co-ordination with the industrial and technical schools which have been established by Provincial Governments and local and private bodies. As stated before, education in these institutions is, generally speaking, over-academic and divorced from modern industrial practice. However, boys who have passed out of these institutions could, with advantage, be admitted under the scheme now proposed, due credit being given to them for the training they have undergone. They could then be put through a systematic course of apprenticeship under proper supervision and control to acquaint them with modern methods of industrial production.

30. Many industrial establishments are at the present time running their own training and apprenticeship schemes. If, in the opinion of the Regional Technical Committee, such schemes provide training of the requisite standard, they may be recognised as qualifying for the National Certificate of Craftsmanship.

#### **Legislation for the control of apprenticeship.**

31. The scheme drawn up by the Committee attempts to impose a measure of control over apprenticeship. The Committee is of the view that legislation, as in some other countries, may be introduced to make this control effective after obtaining the views of the Regional Technical Committees.

**Training facilities to be provided immediately.**

32. The Committee recommends that the following training facilities should be provided immediately :—

| <i>Region.</i>            | <i>Number of units.</i> | <i>Number of trainees</i> |
|---------------------------|-------------------------|---------------------------|
| Bengal & Assam .. .. .    | 48                      | 766                       |
| Bombay .. .. .            | 48                      | 768                       |
| Madras .. .. .            | 36                      | 576                       |
| United Provinces .. .. .  | 36                      | 576                       |
| Punjab .. .. .            | 36                      | 576                       |
| Bihar & Orissa .. .. .    | 36                      | 576                       |
| Delhi .. .. .             | 12                      | 192                       |
| Central Provinces .. .. . | 12                      | 192                       |
| Sind .. .. .              | 12                      | 192                       |
| N. W. F. P. .. .. .       | 12                      | 192                       |
| <b>Total .. .. .</b>      | <b>288</b>              | <b>4,606</b>              |

33. For the sake of economy and administrative facility, the minimum capacity of a centre should be 12 units, each unit consisting of 16 trainees. The minimum strength of any training centre will thus be 192 trainees.

34. The Committee recognises that 4,608 seats, the annual out-turn of which will be 2,304 trainees, is only a modest beginning. The figures collected at the instance of the Committee regarding the number of skilled and semi-skilled workmen employed in Government and private engineering works showed that the annual requirement of trained craftsmen is approximately 16,000 for which a total of 32,000 seats will be required. This is only a very rough estimate, but it is clear that every effort will have to be made to increase the training facilities if the needs of the industry are to be met in full.

**Finance.**

35. The Committee recommends that the entire cost of the training during the first two years should be met by Government, Central and/or Provincial, and that during apprenticeship by the employer concerned.

36. A rough estimate of the capital and the annual recurring expenditure that will be necessary to establish and run a training centre with a capacity of 192 seats, is given below :—

|  |             |
|--|-------------|
| capital expenditure, including cost of construction of new buildings for class rooms, workshops, hostels, staff quarters, tools, equipment, etc. .. .. . | Rs 6,05,300 |
| annual recurring expenditure, including stipends to trainees, pay of staff, consumable stores, maintenance of buildings, depreciation, etc. .. .. .      | Rs 1,35,300 |

Detailed estimates are given in Appendix I.

In actual practice it will be possible to utilise existing buildings such as those constructed for training centres under the war-time Technical Training Scheme, and a substantial proportion of tools and equipment required will be available from these centres.

## II—TRAINING OF INSTRUCTORS.

A technical training instructor should be :

- (1) a practical man thoroughly familiar with up-to-date workshop practice,
- (2) conversant with the elementary theory connected with his trade, and
- (3) able to impart his knowledge, i.e., possess the ability to teach.

Experience in connection with the Technical Training Scheme of the Labour Department shows that the above type of instructor is not generally available in India. About 2,300 instructors are employed in connection with the Technical Training Scheme, but very few of them can be regarded as suitable.

2. As a first measure to implement the training scheme for craftsmen, it is necessary to make arrangements for the training of good instructors. On a rough estimate, at least 2,500 instructors will be required in the post-war period. If a training centre with a capacity of 256 seats is set up, it will be possible to pass the entire number of instructors through the centre in five years. The centre will also provide training for the new instructors required to replace casualties resulting from death, superannuation, etc. To ensure that instructors are always up-to-date and conversant with the latest methods of production and teaching, refresher courses are essential, and it is recommended that after every three years, all instructors should attend a refresher course of about two months' duration.

3. There should be two courses of training every year with an intervening recess of one month. The duration of each course will thus be 5-1/2 months.

4. The working hours should not be less than 48 hours a week. The training course should provide, in addition to crafts training, instruction in drawing, theory pertaining to particular trades, methods of instructing and language. On an average, half the training time should be spent in the class-room and half in the workshops on practical training. Adequate class-room accommodation should be provided, and the shops should be equipped on modern lines, so that training can be given on the latest methods of workshop practice. The correct maintenance and use of modern equipment and tools should receive attention while drawing up syllabuses.

5. It should be obligatory for all instructors under training to reside in the hostel which should be provided with gymnasium, library, reading room, debating hall, sports ground, etc.

6. A detailed scheme for establishing a training centre for instructors with a capacity of 256 seats is given in Appendix II. The cost of this scheme is given below :—

|                                     |              |
|-------------------------------------|--------------|
| capital expenditure .. .. .         | Rs. 7,81,102 |
| recurring expenditure per year .. . | Rs. 2,05,035 |

## APPENDIX I.

## Training Centre for Craftsmen.

Estimate of capital and recurring expenditure for the establishment and maintenance of a training centre.

## Statement I.—Capital expenditure.

## (a) Buildings.—

|  | Rs.             |
|--|-----------------|
| 1. Building for training centre including office, class rooms, workshop, stores, etc...  | 2,42,000        |
| 2. Building for hostel (@ 60 sq. ft. per trainee) 11,520. sq. ft. @ Rs. 8 per sq. ft. ..                                       | 92,160          |
| 3. Quarters for Head of centre .. .. .   | 6,000           |
| 4. Quarters for Chief Instructor .. .. .   | 4,000           |
| 5. Quarters for Hostel Superintendent .. .. .  | 3,000           |
| 6. Quarters for Inferior staff (15 quarters @ Rs. 2000 each) .. .. .   | 30,000          |
| 7. Dining hall 100'×20' (2,000 sq. ft.) @ Rs. 8 per sq. ft. .. .. .  | 16,000          |
| 8. Kitchen, Stores, etc. 35'×20' (700 sq. ft.) @ Rs. 6 per sq. ft. .. .. .   | 4,200           |
| 9. Recreation hall 60'×20' (1200 sq. ft.) @ Rs. 8 per sq. ft. .. .. .  | 9,600           |
| 10. Dispensary 20'×15' (300 sq. ft.) @Rs. 8 per sq. ft. .. .. .  | 2,400           |
| 11. Latrines, baths, etc., (24 each; latrines, 4'×5'; baths—6'×8' @ Rs. 10 per sq ft. including drainage and fittings) .. .. . | 16,320          |
|  | <hr/>           |
|  | Rs. .. 4,25,680 |

## (b) Furniture.—

|  | Rs.   |
|--|-------|
| 1. Hostel furniture @ Rs. 50/- per trainee .. .. . | 9,600 |
| 2. Workshop furniture .. .. .                      | 3,500 |
| 3. Class room furniture .. .. .                    | 4,500 |
| 4. Office—   |       |
| Furniture .. .. .                                  | 750   |
| Typewriter, Duplicator, etc. .. .. .               | 1,500 |
| 5. Dining hall—                                    |       |
| 30 tables @ Rs. 30 .. .. .                         | 900   |
| 60 benches @ Rs. 15 .. .. .                        | 900   |
| 6. Recreation hall—                                |       |
| 30 chairs @ Rs. 10 .. .. .                         | 300   |
| 25 benches @ Rs. 30 .. .. .                        | 750   |
| 2 tables @ Rs. 40 .. .. .                          | 80    |
| 7. Reading room, library, etc. .. .. .             | 1,000 |
| 8. Furniture for quarters .. .. .                  | 2,100 |

## (c) Cinema Projector

## (d) Tools and Equipment\*

|  | Rs.             |
|--|-----------------|
|  | 25,880          |
|  | <hr/>           |
|  | 1,200           |
|  | <hr/>           |
|  | Rs. .. 1,52,513 |

| Trades.                                   | No. of Units. | Tools & Eqpt. for the units. | Tools & Eqpt. for the shop. | Total cost of tools & Eqpt. |
|---|---------------|------------------------------|-----------------------------|-----------------------------|
|   |               | Rs.                          | Rs.                         | Rs.                         |
| 1. Blacksmiths .. .. .                    | 1             | 6,795                        | 13,218                      | 20,013                      |
| 2. Electricians .. .. .                   | 1             | 2,219                        | 7,584                       | 9,803                       |
| 3. Fitters .. .. .                        | 2             | 8,178                        | 4,331                       | 12,509                      |
| 4. Grinders, Machinists & Turners .. .. . | 1             | 46,128                       | 5,211                       | 51,339                      |
| 5. Tin and Coppersmiths .. .. .           | 1             | 2,119                        | 2,275                       | 4,394                       |
| 6. Welders (Elec. & Oxy-Acc.) .. .. .     | 1             | 11,715                       | Nil                         | 11,715                      |
| 7. Automobile Mechanics .. .. .           | 1             | 2,097                        | 22,564                      | 24,661                      |
| 8. Bricklayers & Masons .. .. .           | 1             | 745                          | Nil                         | 745                         |
| 9. Carpenters .. .. .                     | 1             | 4,368                        | 5,677                       | 15,114                      |
| 10. Pattern Makers .. .. .                | 1             | 5,069                        |                             |                             |
| 11. Painters & Trimmers .. .. .           | 1             | 826                          | 1,394                       | 2,220                       |

\*The cost of tools and equipment for a typical centre, viz. with 12 units in all trades is shown here. The cost of tools and equipment for a unit in each trade is shown in Statement III. Separate tools will not be required for the Basic Training Course.

†These are the tools and equipment of general utility in the shop.



*Consolidated statement of capital expenditure.*

|                                 | Rs.                 |
|---------------------------------|---------------------|
| (a) Buildings .. .. .           | 4,25,680            |
| (b) Furniture .. .. .           | 25,880              |
| (c) Cinema Projector .. .. .    | 1,200               |
| (d) Tools and Equipment .. .. . | 1,52,513            |
| Total Capital Expenditure ..    | 6,05,273            |
|                                 | or say Rs. 6,05,300 |

*Statement II.—Recurring expenditure.*

|  | Per month. |
|--|------------|
|  | Rs.        |
| 1. Stationery, water, lighting, conservancy, etc. @ Rs. 1 per trainee per month for 192 .. .. .                                  | 192        |
| 2. Messing expenses @Rs. 20 per trainee p. m. for 192 .. .. .  | 3,840      |
| 3. Stipends (on the average) @ Rs. 2-8-0 per trainee per month for 192 .. .. .   | 480        |
| 4. Training fee (expenditure on consumable stores) @ Rs. 5 per trainee p.m. for 192  | 960        |
| 5. Medical arrangements—Doctor Rs. 100 ; Compounder Rs. 30 ; Dresser Rs. 24 and medicines @ As. 0-4-0 per trainee Rs. 48 .. .. . | 202        |
| 6. Clothing (for P. T. and Workshop kit) @ Rs. 3-4-0 per trainee p. m. for 192 ..  | 624        |
| 7. Sports grant @ As. 0-8-0 per trainee p. m. for 192 .. .. .  | 96         |
| 8. Pay of Head of centre @ Rs. 400—20—600 per month .. .. .  | 400        |
| 9. Pay of Chief Instructor (one per centre) @ Rs. 220—15—370 .. .. .   | 220        |
| 10. Pay of Supervisory Instructors (three @ 1 per 4 units) @Rs. 140—7½—215 p. m.   | 420        |
| 11. Pay of Artisan Instructors (twelve @ 1 per unit) @Rs. 100—5—150 .. .. .  | 1,200      |
| 12. Pay of Drawing Instructor (One per centre) @ Rs. 100—5—150 per month ..  | 100        |
| 13. Pay of Education Instructor (one per centre) @ Rs. 100—5—150 per month ..  | 100        |
| 14. Pay of Hostel Superintendent (one per centre) @ Rs. 80 per month .. .. .   | 80         |
| 15. Pay of Physical Instructor (one per centre) @ Rs. 60 per month .. .. .   | 60         |
| 16. Pay of Cinema Operator (one per centre) @ Rs. 60 per month.. .. .  | 60         |
| 17. Pay of Clerks (three per centre)   |            |
| 1 in the scale of 60—5—100—10—120 and .. .. .  | 150        |
| 2 in the scale of 45—5—60 (E.B.)—5—80 .. .. .  |            |
| 18. Store Keeper@ Rs. 60—5—80 (E.B.)—5—100—10—120 .. .. .  | 60         |
| 19. Inferior staff for hostel (4 sweepers, 4 water-carriers and 2 chowkidars) @ Rs. 15 per month each .. .. .                    | 150        |
| 20. Inferior staff for centres (six per centre @ Rs. 15 p. m. including 4 workshop coolies) .. .. .                              | 90         |
| 21. Leave salary for instructional and clerical staff @ 5% of pay .. .. .  | 143        |
| Total Rs. ..   | 9,627      |

Annual recurring expenditure Rs. 9,627 × 12 = Rs. 1,15,524.

*Consolidated statement of annual recurring expenditure:—*

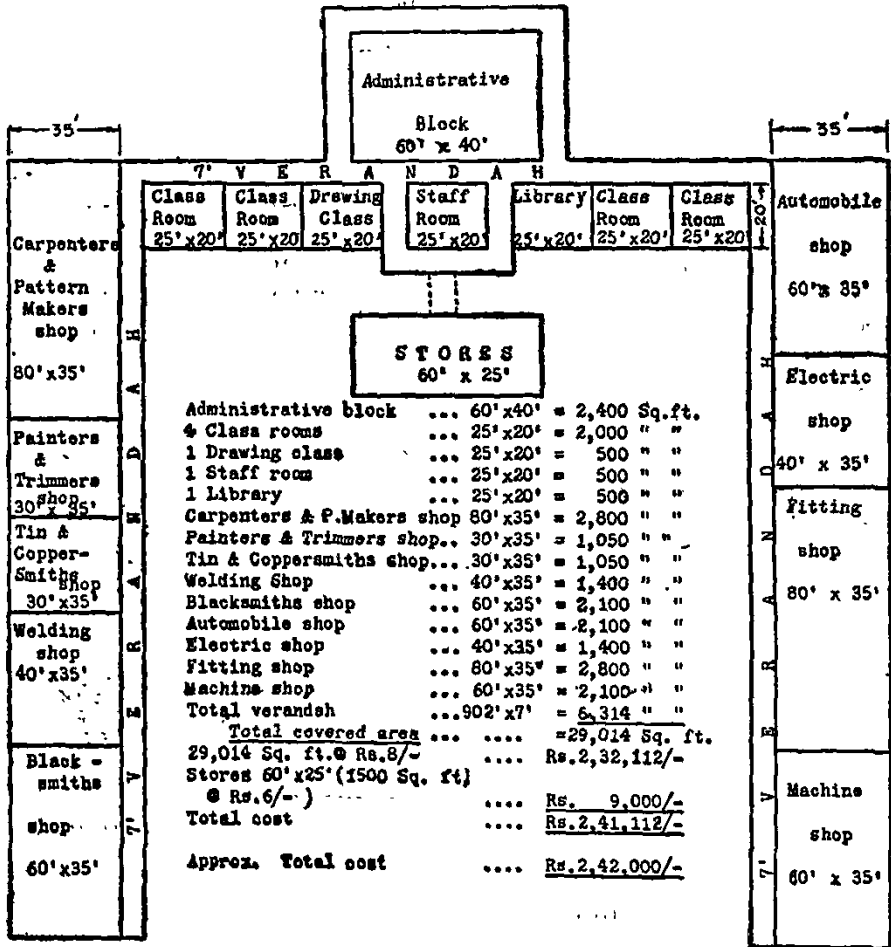
|  | Rs.      |
|--|----------|
| 1. Staff pay, training fee, etc. .. .. .               | 1,15,524 |
| 2. Maintenance of buildings and furniture @ 1% .. .. . | 4,515    |
| 3. Depreciation of tools and eqpt. @ 10% .. .. .       | 15,251   |
| Rs. ..   | 1,35,290 |
| or say Rs. ..  | 1,35,300 |

\* *Statement III.—Approximate capital expenditure on tools and equipment needed for a unit in each trade.*

| Trades.                          | Cost of tools and equipment per unit. |          | Cost of tools and equipment for the shop. |        |
|----------------------------------|---------------------------------------|----------|---|--------|
|                                  | Rs.                                   |          | Rs.                                       |        |
| 1. Draughtsmen .. .. .           | 2,520                                 |          | Nil                                       |        |
| 2. Electricians .. .. .          | 2,219                                 |          | 7,584                                     |        |
| 3. Fitters .. .. .               | 4,089                                 |          | 4,331                                     |        |
| 4. Grinders .. .. .              | 53,893                                |          | 7,137                                     |        |
| 5. Instrument Mechanics .. .. .  | 6,724                                 |          | 11,320                                    |        |
| 6. Machinists .. .. .            | 62,159                                |          | 2,735                                     |        |
| 7. Turners .. .. .               | 22,332                                |          | 5,762                                     |        |
| 8. Wireless Mechanics .. .. .    | 11,431                                |          | Nil                                       |        |
| 9. Automobile Mechanics .. .. .  | 2,097                                 |          | 22,564                                    |        |
| 10. Electroplaters .. .. .       | 2,202                                 |          | 1,250                                     |        |
| 11. Blacksmiths .. .. .          | 6,795                                 |          | 13,218                                    |        |
| 12. Moulders .. .. .             | 2,471                                 |          | 3,843                                     |        |
| 13. Plumbers .. .. .             | 1,550                                 |          | 3,411                                     |        |
| 14. Tin & Coppersmiths .. .. .   | 2,119                                 |          | 2,275                                     |        |
| 15. Welders (Oxy-Ace) .. .. .    | 8,365                                 |          | Nil                                       |        |
| 16. Welders (Elec) .. .. .       | 15,065                                |          | Nil                                       |        |
| 17. Bricklayers & Masons .. .. . | 745                                   |          | Nil                                       |        |
| 18. Carpenters .. .. .           | 4,368                                 |          | 5,677                                     |        |
| 19. Pattern Makers .. .. .       | 5,069                                 |          | 5,677                                     |        |
| 20. Painters .. .. .             | 440                                   |          | 1,394                                     |        |
| 21. Trimmers .. .. .             | 1,213                                 |          | Nil                                       |        |
|                                  | Rs. ..                                | 2,17,866 |   | 98,178 |

\*This will be of help in estimating the cost of establishing training centres with different combinations of trades.

Lay-out plan of building for class rooms, workshop, etc., for a typical centre of 12 units (192 seats).



**APPENDIX II.**  
**Training Centre for Instructors.**  
**Site.**

It is recommended that the training centre for instructors should be set up at the Bricklayers and Masons training centre of the Labour Department at Karolbagh, Delhi, near the Imperial Agricultural Research Institute. This centre is situated in 4 acres of land which will be sufficient for the proposed training centre. The buildings which have already been erected in connection with the training of bricklayers and masons may be retained as part of the accommodation required for the instructors' training centre.

Trades in which Training should be given.

2. To begin with training facilities should be provided in the following trades :—

1. Blacksmiths.
2. Bricklayers and Masons.
3. Carpenters (including Pattern-Makers).
4. Draughtsmen (Mechanical).
5. Electricians (including Electrical Artificers, Wiremen, Linesmen, and Armature Winders).
6. Fitters.
7. Grinders.
8. Instrument Mechanics.
9. Machinists.
10. Moulders.
11. Painters.
12. Plumbers.
13. Wireless Mechanics.
14. Tin and Coppersmiths.
15. Turners.
16. Trimmers.
17. Welders (Elec.).
18. Welders (Oxy-acetylene).
19. Automobile Mechanics.
20. Electroplaters.

3. It will not necessary to run training classes in all the trades mentioned in paragraph 2 at every session. The first session may include training in the trades mentioned below :—

| Trade.                      |    |    |    |    |    |    |    | No. of Instructor<br>trainees. |
|-----------------------------|----|----|----|----|----|----|----|--------------------------------|
| 1. Blacksmiths .. .. .      | .. | .. | .. | .. | .. | .. | .. | 16                             |
| 2. Carpenters .. .. .       | .. | .. | .. | .. | .. | .. | .. | 24                             |
| 3. Draughtsmen (Mech). ..   | .. | .. | .. | .. | .. | .. | .. | 12                             |
| 4. Electricians .. .. .     | .. | .. | .. | .. | .. | .. | .. | 16                             |
| 5. Fitters .. .. .          | .. | .. | .. | .. | .. | .. | .. | 48                             |
| 6. Instrument Mechanics. .. | .. | .. | .. | .. | .. | .. | .. | 12                             |
| 7. Machinists .. .. .       | .. | .. | .. | .. | .. | .. | .. | 12                             |
| 8. Moulders .. .. .         | .. | .. | .. | .. | .. | .. | .. | 16                             |
| 9. Painters .. .. .         | .. | .. | .. | .. | .. | .. | .. | 16                             |
| 10. Plumbers .. .. .        | .. | .. | .. | .. | .. | .. | .. | 12                             |
| 11. Tin and Coppersmiths .. | .. | .. | .. | .. | .. | .. | .. | 16                             |
| 12. Turners .. .. .         | .. | .. | .. | .. | .. | .. | .. | 12                             |
| 13. Trimmers .. .. .        | .. | .. | .. | .. | .. | .. | .. | 16                             |
| 14. Welders (Elec.) .. .. . | .. | .. | .. | .. | .. | .. | .. | 8                              |
| 15. Welders (Oxy-acetylene) | .. | .. | .. | .. | .. | .. | .. | 8                              |
| 16. Automobile Mechanics .. | .. | .. | .. | .. | .. | .. | .. | 12                             |
| Total .. .. .               |    |    |    |    |    |    |    | 256                            |

In subsequent courses other trades may be included according to the requirements from time to time.

**Staff.**

4. To run the centre efficiently the following staff will be required :—

| Administrative staff.                 | No. | Scale of pay.<br>Rs.                                  |
|---------------------------------------|-----|---|
| Principal .. .. .                     | 1   | 1,000—50—1,250 p.m.                                   |
| Workshop Superintendent .. .. .       | 1   | 800—40—1,000 p.m.                                     |
| <b>Workshop Staff.</b>                |     |   |
| Supervisors .. .. .                   | 5   | 375—25—500 p.m. each.                                 |
| Instructors .. .. .                   | 20  | 200—20—300 p.m. each.                                 |
| Drawing Instructors .. .. .           | 2   | 150—10—200 p.m. each.                                 |
| Cinema Operator .. .. .               | 1   | 100—10—150 p.m.                                       |
| Workshop Coolies .. .. .              | 14  | 20—1—30 p.m. each.                                    |
| <b>Office Staff.</b>                  |     |   |
| Head Clerk .. .. .                    | 1   | 100—10—200 p.m.                                       |
| Accountant-cum-cashier .. .. .        | 1   | 60—5—100—10—120 p.m.                                  |
| Senior Clerk .. .. .                  | 1   | 60—5—100—10—120 p.m.                                  |
| Junior Clerk .. .. .                  | 1   | 45—5—60 (E.B.)—5—80 p.m.                              |
| Store Keeper .. .. .                  | 1   | 60—5—80 (E.B.)—5—100—<br>10—120 p.m.                  |
| Assistant Store Keeper .. .. .        | 1   | 45—5—60 (E.B.)—5—80 p.m.                              |
| Inferior Staff .. .. .                | 3   | Local rates of pay not exceeding<br>Rs. 20 p.m. each. |
| <b>Hostel Staff—</b>                  |     |   |
| Hostel Superintendent .. .. .         | 1   | 100 p.m.  |
| Physical Training Instructors .. .. . | 2   | 60 p.m. each.   |
| Medical Officer (part-time) .. .. .   | 1   | 100 p.m.  |
| Compounder .. .. .                    | 1   | 30—2—40 p.m.  |
| Dresser .. .. .                       | 1   | 24—2—40 p.m.  |

**Tools and Equipment.**

5. The requirements of these are given in Statement I. The hand tools and most of the precision tools, machinery and equipment as well as many of the items required for the operation of the machinery will be available from training centres under the Technical Training Scheme.

**Buildings.**

6. (a) *Workshops and classrooms* :—

|   | size       | area                  |
|---|------------|-----------------------|
| Administrative block to contain rooms for Principal, Workshop Superintendent and Office .. .. .     | 60' × 40'  | 2400 sq. ft.          |
| Porch attached to the Administrative block .. .. .  | 20' × 15'  | 300 sq. ft.           |
| Room No. 1 Machine Shop .. .. .   | 85' × 35'  | 2975 sq. ft.          |
| Room No. 2 Fitting Shop .. .. .   | 60' × 35'  | 2100 sq. ft.          |
| Room No. 3 Carpenter's Shop .. .. .   | 60' × 35'  | 2100 sq. ft.          |
| Room No. 4 Automobile Shop .. .. .  | 30' × 35'  | 1050 sq. ft.          |
| Room No. 5 Electric Shop (including Linesmen, Wiremen, Armature Winders and Electroplaters) .. .. . | 75½' × 35' | 2642.5 sq. ft.        |
| Room No. 6 Wireless Mechanics Shop .. .. .  | 20' × 35'  | 700 sq. ft.           |
| Room No. 7 Class Room .. .. .   | 20' × 35'  | 700 sq. ft.           |
| Room No. 8 Class Room .. .. .   | 17½' × 35' | 612.5 sq. ft.         |
| Room No. 9 Class Room .. .. .   | 17½' × 35' | 612.5 sq. ft.         |
| Room No. 10 Class Room .. .. .  | 20' × 35'  | 700 sq. ft.           |
| Room No. 11 Instrument Mechanics Shop .. .. .   | 25' × 35'  | 875 sq. ft.           |
| Room No. 12 Paint Shop .. .. .  | 25' × 35'  | 875 sq. ft.           |
| Room No. 13 Tin and Coppersmiths Shop .. .. .   | 30½' × 35' | 1067.5 sq. ft.        |
| Room No. 14 Trimmers Shop .. .. .   | 35' × 35'  | 1225 sq. ft.          |
| Room No. 15 Welding Shop .. .. .  | 35' × 35'  | 1225 sq. ft.          |
| Room No. 16 Engine Room .. .. .   | 45' × 35'  | 1575 sq. ft.          |
| Room No. 17 Plumbers Shop .. .. .   | 40' × 35'  | 1400 sq. ft.          |
| Room No. 18 Blacksmiths Shop .. .. .  | 45' × 35'  | 1575 sq. ft.          |
| Room No. 19 Moulding Shop .. .. .   | 50' × 35'  | 1750 sq. ft.          |
| Room No. 20 Drawing Hall .. .. .  | 40' × 35'  | 1400 sq. ft.          |
| Room No. 21 Staff Room .. .. .  | 24' × 17½' | 420 sq. ft.           |
| Room No. 22 Library .. .. .   | 24' × 17½' | 420 sq. ft.           |
| Room No. 23 Class Room .. .. .  | 20' × 35'  | 700 sq. ft.           |
| Verandah total .. .. .  | 1132' × 7' | 7924 sq. ft.          |
| <b>Total covered area</b> .. .. .   |            | <b>39,324 sq. ft.</b> |
| Stores .. .. .  | 150' × 25' | 3,750 sq. ft.         |

(b) *Hostel*.—Two barracks for the hostel with a capacity to accommodate 160 trainees are already available at the Bricklayers and Masons training centre, Karolbagh. These may be partitioned into rooms to accommodate eight instructor trainees each. Two other buildings, one of which can be used as a dining hall and the other as a dispensary and store are available. The following construction will be necessary :—

|   | size     | area           |
|---|----------|----------------|
| Barrack to accommodate 96 trainees .. .. .                                | 260'×40' | 10,400 sq. ft. |
| Kitchen (partitioned) .. .. .   | 40'×15'  | 600 sq. ft.    |
| One building to contain cinema projector room and recreation room .. .. . | 75'×25'  | 1875 sq. ft.   |
| Bathing places (two each) .. .. .   | 28'×18'  | 1008 sq. ft.   |
| Latrines (two each) .. .. .   | 38'×7½'  | 570 sq. ft.    |
| Inferior staff quarters for 18  |          |                |

The hostel will be under the charge of a Hostel Superintendent and will have a small dispensary under a part-time medical officer and a compounder and dresser. A grant of annas four per head per mensem will be given for medical stores.

(c) *Staff quarters*.—The requirements of these will be as follows :—

|   |    |  |
|---|----|--|
| Officers bungalows .. .. .              | 2  |  |
| Supervisors' quarters .. .. .           | 5  |  |
| Quarters for instructors .. .. .        | 15 | [Twenty five percent of instructors are likely to be local men with their own accommodation available in Delhi.] |
| Hostel Superintendent's quarter .. .. . | 1  |  |
| Compounder's quarter .. .. .            | 1  |  |

7. Details of capital and annual recurring expenditure are given in Statements II and III.

*Statement I.—\*Cost of tools and equipment for the Instructors' Training Centre at Karol Bagh, Delhi.*

| Trade.   | No. of Trainees. | Rs.             | A. P.      |
|--|------------------|-----------------|------------|
| 1. Blacksmiths .. .. .                           | 16               | 20,005          | 0 0        |
| 2. Carpenters (including Pattern Makers) .. .. . | 24               | 12,622          | 0 0        |
| 3. Draughtsmen (mechanical) .. .. .              | 12               | 1,929           | 0 0        |
| 4. Electricians .. .. .                          | 16               | 9,796           | 0 0        |
| 5. Fitters .. .. .                               | 48               | 17,555          | 0 0        |
| 6. Instrument Mechanics .. .. .                  | 12               | 17,056          | 0 0        |
| 7. Machinists .. .. .                            | 12               | 49,983          | 0 0        |
| 8. Moulders .. .. .                              | 16               | 6,307           | 0 0        |
| 9. Painters .. .. .                              | 16               | 1,715           | 0 0        |
| 10. Plumbers .. .. .                             | 12               | 4,725           | 0 0        |
| 11. Tin and Coppersmiths .. .. .                 | 16               | 4,187           | 0 0        |
| 12. Turners .. .. .                              | 12               | 21,179          | 0 0        |
| 13. Trimmers (Upholsterers) .. .. .              | 16               | 1,205           | 0 0        |
| 14. Welders (Electric) .. .. .                   | 8                | 7,595           | 0 0        |
| 15. Welders (Oxy-acetylene) .. .. .              | 8                | 4,234           | 0 0        |
| 16. Automobile Mechanics .. .. .                 | 12               | 24,380          | 0 0        |
| Cinema Projector for the centre .. .. .          |                  | 1,200           | 0 0        |
| <b>Total .. .. .</b>                             |                  | <b>2,05,673</b> | <b>0 0</b> |

\*Prices have been taken from the latest available catalogues.

## Statement II.—Capital expenditure.

| (a) Buildings.   | No. | Reqd. | Estimated cost. |
|--|-----|-------|-----------------|
|  |     |       | Rs.             |
| 1. Building for centre, including office, class rooms, workshops, etc.<br>(39,324 sq. ft. @ Rs. 8 per sq. ft.) .. .. . | 1   |       | 3,14,592        |
| 2. Stores 150' × 25' (3,750 sq. ft. @ Rs. 6 per sq. ft.) .. .. .   | 1   |       | 22,500          |
| 3. Barrack to accommodate 96 trainees (10,400 sq. ft. @ Rs. 8 per sq. ft.) .. .. .                                     | 1   |       | 83,200          |
| 4. Kitchen partitioned 40' × 15' (600 sq. ft. @ Rs. 6 per sq. ft.)..   | 1   |       | 3,600           |
| 5. Building to contain cinema hall, reading room, etc. 75' × 25'<br>(1,875 sq. ft. @ Rs. 8 per sq. ft.) .. .. .        | 1   |       | 15,000          |
| 6. Principal's bungalow .. .. .  | 1   |       | 15,000          |
| 7. Workshop Supdt.'s bungalow .. .. .  | 1   |       | 12,000          |
| 8. Supervisor's quarters @ Rs. 6000 each .. .. .   | 5   |       | 30,000          |
| 9. Quarters for Instructors @ Rs. 4,000 each .. .. .   | 15  |       | 60,000          |
| 10. Hostel Supdt.'s quarters .. .. .   | 1   |       | 4,000           |
| 11. Compounder's quarters .. .. .  | 1   |       | 3,000           |
| 12. Bathing place for instructor trainees and latrines (1,578 sq. ft.<br>@ Rs. 10 per sq. ft.) .. .. .                 | 2   |       | 15,780          |
| 13. Quarters for inferior staff (18 @ Rs. 2,000 each) .. .. .  | 18  |       | 36,000          |
|  |     |       | 6,14,672        |
| (b) Furniture—   |     |       |                 |
| 1. Instructor trainees @ Rs. 50 per trainee .. .. .  |     |       | 12,800          |
| 2. Workshop .. .. .  |     |       | 5,000           |
| 3. Class rooms .. .. .   |     |       | 6,000           |
| 4. Office—   |     |       |                 |
| Furniture .. .. .  |     |       | Rs. 1,000       |
| Equipment such as Gestetner Duplicator, Typewriter, and<br>Electric Fittings .. .. .                                   |     |       | 2,000           |
|  |     |       | 3,000           |
| 5. Dining Hall—  |     |       |                 |
| 45 Dining Tables @ Rs. 30 each. .. .. .  |     |       | 1,350           |
| 90 Benches @ Rs. 15 each .. .. .   |     |       | 1,350           |
|  |     |       | 2,700           |
| 6. Recreation and Cinema Hall—   |     |       |                 |
| 50 Chairs @ Rs. 10 each .. .. .  |     |       | 500             |
| 45 Benches @ Rs. 30 each .. .. .   |     |       | 1,350           |
| 2 Tables @ Rs. 40 each .. .. .   |     |       | 80              |
|  |     |       | 1,930           |
| 7. Reading room, library, indoor games, etc. .. .. .   |     |       | 2,000           |
| 8. Two Officers' Bungalows @ Rs. 1,500 each .. .. .  |     |       | 3,000           |
|  |     |       | 36,430          |
| (c) Hand & Precision Tools, Machinery & Equipment—   |     |       |                 |
| 1. *Hand tools, machinery and precision tools .. .. .  |     |       | 1,20,000        |
| 2. Erection charges for machinery .. .. .  |     |       | 10,000          |
|  |     |       | 1,30,000        |
| Grand Total .. .. .  |     |       | 7,81,102        |

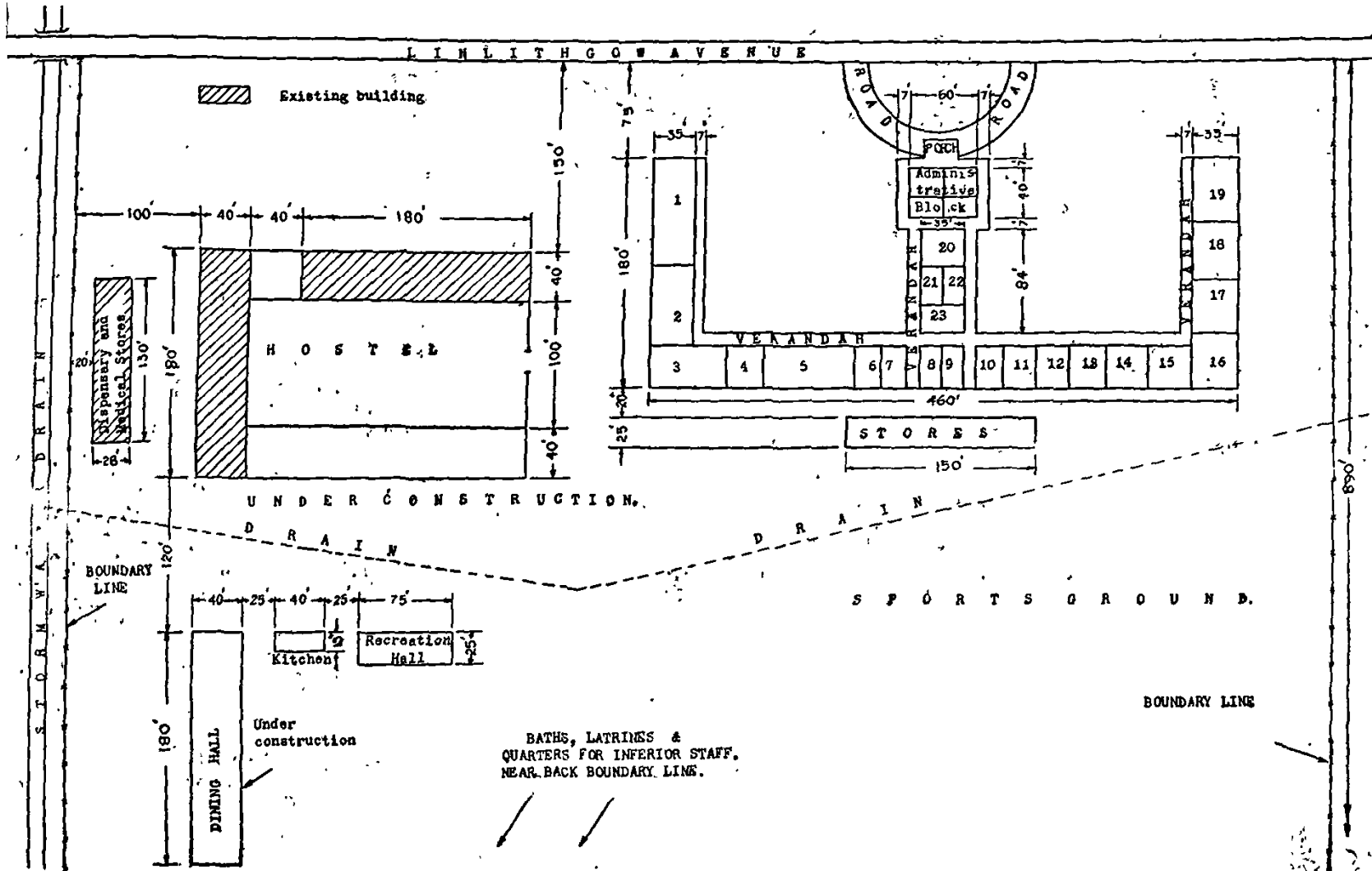
\*The cost would have been as given in Statement I on page 16 if new equipment had to be purchased. It is, however, expected that most of the hand tools and some of the machinery and precision tools will, be available from the stocks purchased in connection with the Technical Training Scheme. The cost is expected therefore to be as shown here. Some other equipment will probably be obtainable from the surplus stocks of the Defence Services.

## Statement III.—Annual recurring expenditure.

|  | 1st year of operation.. |                 |
|--|-------------------------|-----------------|
|  | Rs.                     | Per Year.       |
| <b>I. STAFF.</b>   |                         |                 |
| <i>Administrative staff—</i>   |                         |                 |
| One Principal @ Rs. 1,000 p.m.   | 1,000 p.m.              |                 |
| One Workshop Supdt. @ Rs. 800 p.m.   | 800 p.m.                |                 |
| <i>Instructional Staff—</i>  |                         |                 |
| 5 Supervisors @ Rs. 375 p.m. each  | 1,875 p.m.              |                 |
| 20 Instructors @ Rs. 200 p.m. each   | 4,000 p.m.              |                 |
| 2 Drawing Instructors @ Rs. 150 p.m. each  | 300 p.m.                |                 |
| 1 Cinema Operator @ Rs. 100 p.m.   | 100 p.m.                |                 |
| 2 P.T. Instructors @ Rs. 60 p.m. each  | 120 p.m.                |                 |
| <i>Ministerial Staff—</i>  |                         |                 |
| 1 Head Clerk on Rs. 100 p.m.   | 100 p.m.                |                 |
| 1 Accountant-cum-Cashier @ Rs. 60 p.m.   | 60 p.m.                 |                 |
| 1 Senior Clerk @ Rs. 60 p.m.   | 60 p.m.                 |                 |
| 1 Junior Clerk @ Rs. 45 p.m.   | 45 p.m.                 |                 |
| 1 Store Keeper @ Rs. 60 p.m.   | 60 p.m.                 |                 |
| 1 Asstt. Store Keeper @ Rs. 45 p.m.  | 45 p.m.                 |                 |
| <i>Inferior Staff—</i>   |                         |                 |
| 14 Workshop Coolies @ Rs. 15 p.m. each   | 210 p.m.                |                 |
| 3 Office Peons @ Rs. 15 p.m. each  | 45 p.m.                 |                 |
| 4 Watchmen @ Rs. 15 p.m. each (2 for Hostel)   | 60 p.m.                 |                 |
| 6 Sweepers @ Rs. 14 p.m. each (3 for Hostel)   | 84 p.m.                 |                 |
| <i>Medical Staff—</i>  |                         |                 |
| 1 Medical Officer part-time @ Rs. 100 p.m.   | 100 p.m.                |                 |
| 1 Compounder @ Rs. 30-2-40 p.m.  | 30 p.m.                 |                 |
| 1 Dresser @ Rs. 24—2—40  | 24 p.m.                 |                 |
| <i>Hostel Staff—</i>   |                         |                 |
| 1. Hostel Supdt. @ Rs. 100 p.m.  | 100 p.m.                |                 |
|  | 9,218 p.m.              | 1,10,816        |
| 2. Training expenses @ Rs. 5 per trainee per month for 256 trainees  | 1,280 p.m.              | 15,360          |
| 3. Contingent expenditure such as stamps, stationery, etc. @ Re. 1 per trainee per month   | 256 p.m.                | 3,072           |
| 4. Leave salary at 5% of pay of staff  | 436 p.m.                | 5,232           |
| 5. Library   |                         | 500             |
| 6. Games @ 0-8-0 per head per month for 256 trainees   | 128 p.m.                | 1,536           |
| 7. Medical Expenses @ 0-4-0 per trainee per month for 256 trainees   | 64 p.m.                 | 768             |
| 8. Maintenance of buildings and furniture @ 1% of cost   |                         | 6,511           |
| *9. Pay of temporary instructors appointed at training centres in the place of instructors deputed for training @ Rs. 80 p.m. for 64 instructors | 5,120 p.m.              | 61,44           |
|  | <b>GRAND TOTAL</b>      | <b>2,05,035</b> |

\*While under training the instructor trainees will receive pay from the training centre to which they are posted. It is estimated that in 75% cases it will not be necessary to appoint substitutes at training centres for instructors deputed for training.





Proposed site plan of Teachers' Training Centre near the Imperial Agricultural Research Institute, New Delhi. 19