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Technical and Industrial Education Committee

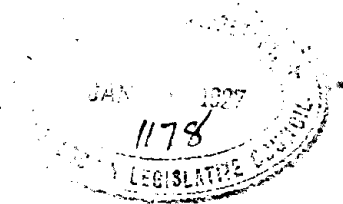
INTERIM REPORT

WITH

SUPPLEMENTARY NOTE



BOMBAY
PRINTED AT THE GOVERNMENT CENTRAL PRESS.
1921



Bombay,
3rd October 1921.

Committee on Technical and Industrial Education.

To

THE SECRETARY TO GOVERNMENT,

Educational Department.

Sir,

With reference to Government letter No. 3613, dated the 6th July 1921, I have the honour, on behalf of the Committee, to submit an Interim Report and a Supplementary Statement which embody a summary of our principal opinions and recommendations. The final Report of the Committee is under preparation.

I have the honour to be,

Sir,

Your most obedient servant,

M. VISVESVARAYA,

Chairman.

JAN 3 1927

MEMBERS OF THE COMMITTEE.

- Sir M. Visvesvaraya, K.C.I.E., B.A., L.C.E., M.Inst.C.E. (*Chairman*),
R. D. Bell, Esq., C.I.E., M.A., B.Sc., I.C.S.,
Rahimtoola Currimbhoy Ebrahim, Esq. (*up to 2nd May 1921*),
Leslie Platt, Esq., B.Sc. (Lond.), A.M.I.C.E., A.M.I.Mech.E.,
Dewan Bahadur K. R. Godbole, M.C.E.,
K. R. Kanitkar, Esq., M.A., B.Sc.,
J. A. Kay, Esq. (*from 30th May 1921*),
A. M. Masani, Esq., M.A., B.Sc.,
F. J. Page, Esq., O.B.E., M.I.Mech.E.,
J. C. K. Peterson, Esq., C.I.E.,
F. Power, Esq.,
F. O. J. Roose, Esq., M.I.Mech.E., M.I.E.E., F.C.S.,
A. J. Turner, Esq., B.Sc. (Lond.), F.I.C.,
K. H. Vakil, Esq., M.Sc., Tech. (Manch.), F.I.C., F.C.S.,
Major G. H. Willis, C.I.E., M.V.O., R.E., M.I.Mech.E., M.I.E. (Ind.)
F. W. Marrs, Esq., M.A. (*from 10th February to 5th July 1921: continues as Member only after latter date*).
G. N. Gokhale, Esq., B.Sc., L.C.E. (*from 6th July 1921*).

Member
and
Secretary.

TECHNICAL AND INDUSTRIAL EDUCATION COMMITTEE.

INTERIM REPORT.

This Committee was constituted in Government Resolution No. 973, dated the 17th February 1921, with instructions to enquire into the present equipment of the Bombay Presidency respecting technical and industrial education and to draw up a comprehensive scheme to meet its future needs.

Our terms of reference require the submission of proposals to supply technical education needed by organizers and experts to fill leading executive positions in business, to supply a class of technical assistants, superintendents, also foremen, etc., for subordinate positions, and to train the rank and file of workers for the various industries and industrial occupations of the Presidency.

Our final report is in the course of preparation and, as we understand that an early expression of our views is desired, we have the honour to present this Interim Report giving a brief summary of our leading conclusions and recommendations.

I

2. *Institutions of University Grade.*—For the highest class of training in Civil Engineering we recommend that the present College of Engineering in Poona should be enlarged and improved so as to accommodate at least 300 students and allow of an immediate increase in yearly admissions from 60 to 100.

We recommend the starting of a new College of Technology in the vicinity of industries in the City of Bombay to give instruction in mechanical and electrical engineering and technology. With a view to reducing the expense we are also submitting an alternative proposal for the amalgamation of the Royal Institute of Science, which has not yet commenced working, with the proposed College of Technology.

We consider that adequate provision should be made for research in the new college by necessary equipment, by the appointment of separate professors for the purpose and by instituting liberal scholarships to attract students of talent for the post-graduate courses. A sufficient number of scholarships should be awarded to picked University graduates to study advanced courses of engineering and technology in the United Kingdom and other foreign countries.

The courses of instruction should include mechanical engineering, electrical engineering, applied chemistry and textile engineering.

The Research Bureau when fully developed should keep in touch with similar institutions in all parts of the world and constitute a clearing house for industrial problems.

3. *Technical Institutes.*—The object of these institutes is to give the highest practical training in mechanical and electrical engineering and technology without demanding from the students knowledge of theory of a high standard. This class of instruction will be much in demand by candidates who have either no special aptitude for theoretical studies or who have had no opportunities for such studies in early life though possessing practical ability and executive talent of a high order.

It is proposed to help the Committee of the Victoria Jubilee Technical Institute to raise that institution to a higher standard and to increase the present accommodation from 300 to 600 students.

We consider that classes or courses should be opened in connection with the Engineering School in Karachi to provide education of the technical institute grade to students in Sind.

The subjects taught will be the same as in colleges of the University grade, but the standard of general culture, mathematics and science required will be much lower. The highest practical training possible will be given compatible with the comparatively lower general culture and equipment of the students.

Experimental and Demonstration Stations.—We also recommend that 2 or 3 experimental and demonstration stations may be started in selected centres in close association with technical and industrial schools of, or above, the middle grade. These institutions should carry on actual manufacture and demonstration in some half a dozen industries in each centre, so that manufacturers may go to them to learn the latest methods and processes of manufacture and the students to receive a short intensive course of training in any particular industry for which they may desire to qualify themselves.

4. *Middle Industrial Schools.*—The object of these schools is to give the training they need to persons who intend to manage and administer minor industries or to qualify as assistant foremen or hold subordinate technical positions in organised industries. In addition to these, teachers for schools of the lower grades and Supplementary Courses will be also trained at these institutions, special courses being added to the curricula as required.

For the training of foremen and chargemen in organised industries we recommend the establishment of Apprentice Schools attached to large workshops and factories.

Middle Industrial Schools may be established in cities and headquarter towns of districts and may be called City or District Industrial Schools as distinguished from Town or Taluka Schools, which will be industrial schools of the lower grade.

These may be of two varieties, namely, (1) technical schools in which the instruction given will be a basal preparation for industries, and (2) special industrial schools for instruction in the theoretical and practical work of particular trades.

It would be desirable to have one such school for every district, but from considerations of expense we have decided to recommend for the present the establishment of 12 schools only, each capable of accommodating about 250 pupils. Some of these schools will be located in industrial centres and others distributed regionally in proportion to population.

The estimated annual cost of the twelve schools will be about Rs. 5 lakhs.

The candidates for admission to the course should be not less than 14 years of age, and should have passed the III. Standard Anglo-Vernacular or VII Standard Vernacular.

The prestige of the Middle Industrial School should be maintained by the character and efficiency of the training given which should be such as to secure employment for the student as soon as he completes his course.

In Industrial Schools of both grades, instruction and training will be given, in addition to general subjects such as languages, mathematics and science, in mechanics, mechanical drawing, smithy, fitter's work, carpentry; in special trades such as tailoring, furniture making, photography, printing, boot and shoe making, etc.; and in manufacturing industries such as metal work, weaving, dyeing, pottery, painting and designing, building design and construction.

5. *Lower Industrial Schools.*—As in the case of middle schools, these schools may also be of two varieties, namely, (1) technical schools and (2) special industrial schools. For organised industries, instruction will be usually given in Apprentice Schools.

The boys who enter these schools should be at least 14 years of age and should have passed the Primary IV Standard. For boys who have passed the

Primary IV Standard but have not attained 14 years, the courses given will be pre-vocational.

There should be a great variety in the subjects taught. A list of all courses and subjects likely to be required should be maintained and each locality permitted to choose, under expert advice, a group of subjects suited to the requirements of local industries and the temperament and aptitudes of the people.

It is proposed to start 100 schools of this class at an aggregate outlay of Rs. 7 lakhs.

6. *Supplementary Classes or Courses.*—Supplementary classes or courses may be associated with any existing educational institution, preferably one giving instruction in technical or industrial subjects. These courses should be associated with Colleges, Technical Institutes and Middle Industrial Schools so that persons engaged in practical pursuits may be enabled to go through short intensive courses of training in the trade or occupation in which they are interested. The bulk of the supplementary classes should be associated with Lower Industrial Schools and primary or elementary grade schools maintained by the Department of Education. Supplementary classes started with the last-mentioned lower grade schools will include short courses in (1) correspondence and book-keeping, business discipline and training in good workmanship; (2) knowledge of tools, simple machines and labour saving appliances commonly required in agriculture and industries; (3) training in specific occupations and crafts; and (4) instruction in selected cottage industries.

Lists of all subjects in which instruction will be needed should be maintained as also types of courses and classes suited to particular conditions. Each local Committee might choose the type of class or group of subjects suited to its needs and environment. No single type will suit every case.

As a rule, no restrictions as to age or qualifications for admission should be insisted on, the object being to make a beginning in equipping the population with the elements of industrial education and efficiency, without the cramping formalities which under present conditions operate as a bar to such equipment.

It is proposed to provide training by means of these classes (or schools) for 7,000 persons in urban areas and 10,000 in rural areas at a combined outlay of Rs. 6 lakhs.

7. *Girls' and Women's Education.*—Women who desire to graduate in Technological courses of the University grade will be required to obtain their training in Colleges alongside with men.

It is proposed to start a Technical High School for women in Bombay, three Middle Schools for girls and women in three selected centres and a dozen schools of the lower grade distributed over the Presidency.

For the present the bulk of the education given will be in supplementary schools and women's industrial classes to be started in conjunction with existing educational institutions and lower industrial schools for girls.

The most elementary need of the day is to give opportunities to adult women of the lower middle and poorer classes to equip themselves with a knowledge of some industry or occupation to enable them to obtain skilled employment and earn higher wages. This education has to be given in short courses and where possible by the co-operative method.

The subjects which will naturally figure most prominently in the curricula of all grades of education for girls and women are home economics and the arts and crafts associated with home work.

The number for whom provision is made in regular schools is about 2,000 and in supplementary classes 7,000, and the estimated expenditure is Rs. 3.25 and Rs. 2.75 lakhs, respectively.

II.

8. *Recurring Expenditure.*—A statement is attached (*vide* App. I) giving particulars of the various institutions proposed. It gives a complete estimate of cost from which the following figures are abstracted :—

Main Heads.	Additional outlay proposed in 5 to 10 years, from commencement of scheme.	Additional expenditure to be reached in 3 years.
	Lakhs. Rs.	Lakhs. Rs.
Institutions of University grade	7.00	5.00
Technical Institutes	4.00	2.50
Middle Industrial Schools (and classes)	5.00	3.00
Lower Industrial Schools	7.00	4.00
Supplementary classes (or schools)	6.00	3.00
Women's and Girls' Education	6.00	3.00
Training of Teachers—(Special provision)	3.00	3.00
Supervision, Direction, Propaganda, etc.	3.00	3.00
	41.00	26.50
Present expenditure (approximate)	7.00	7.00
Total including present expenditure	48.00	33.50

9. The actual expenditure under technical and industrial education in 1919-1920 was Rs. 6,70,000, the share from Provincial revenues being Rs. 4,70,000. The additional expenditure now recommended is approximately Rs. 27 lakhs in 3 years and 41 lakhs in five to ten years from date and the totals will be Rs. 34 and 48 lakhs, respectively.

If Local Boards, Municipalities, manufacturers associations and philanthropic public bodies and individuals shoulder their share of the burden, the actual inclusive cost to Government at the end of 10 years will be roughly two-thirds of the above total expenditure, or Rs. 32 lakhs only.

10. *Capital Expenditure.*—The capital outlay required for buildings and equipment will be roughly Rs. 98 lakhs, as under :—

	Rs. Lakhs.
Institutions of University grade	30.00
Technical Institutes	15.00
Middle Industrial Schools	10.00
Lower Industrial Schools	10.00
Supplementary Schools and Classes...	10.00
Women's and Girls' Education	15.00
Training of Teachers (Special provision)	5.00
Supervision, Direction, Propaganda, etc.	3.00
	98.00

As this outlay cannot be postponed or spread over a long period without detriment to the progress of the scheme, we recommend that, in the event of other sources failing, it should be met from a Provincial loan repayable in 30 years, provision being made to the necessary extent from current revenues for meeting the charge on interest and sinking fund. We understand that a similar development loan is being floated by the Government of the United Provinces.

11. We are of opinion that Government should ordinarily be prepared to maintain all institutions of and above the grade of Middle Industrial Schools from Provincial revenues and that for institutions and courses of lower grades, Municipalities and Local Boards should bear part of the cost. If public bodies or philanthropic citizens come forward to start institutions of this class, Government should ordinarily provide half the cost, both capital and recurring.

In order to make an effective beginning, Government would do well to incur all the expenditure, even on schools of the lower grades, from Provincial funds until the public realise the importance and advantages of the new system of education. Later on, the grants may be gradually reduced to one-half in the case of Municipalities and to three-fourths in the case of Local Board areas. Schools and classes may be allowed to be started at once on obtaining an assurance that the local bodies concerned are willing to pay their share in three to five years' time.

12.—*A Programme and an Industrial Education Act.*—In order that the spread of this class of education may not be interrupted for want of money or accidental circumstances in any particular year, we consider that a policy and programme should be laid down for 10 years in advance. Provision should be made for the requisite expenditure for that period and a minimum amount fixed, below which the actual expenditure should not be allowed to fall in any year of the decennium.

We are also of opinion that the more important recommendations in our scheme including the ten-year programme and outlay referred to should be embodied in an Act of the Local Legislature.

III

13. At the age of 14, students may enter lower industrial schools if their general education is only up to the IV Vernacular Standard; or Middle Industrial Schools if they have studied up to III Standard Anglo-Vernacular or VII Standard Vernacular.

Our scheme takes no account of boys and girls under 11 years of age. Between 11 and 14, they may go through prevocational courses provided in lower industrial schools where suitable training will be given to qualify for admission to Middle Industrial Schools.

Candidates for admission to Technical Institutes should have passed the School Leaving Certificate Examination or the Matriculation examination. Candidates who have passed through the Middle Industrial Schools will be also eligible for admission.

We consider that in the prosecution of our scheme, the illiteracy of the masses will be one of the chief obstacles to contend with and the immediate extension of compulsory primary education will be a valuable aid to the promotion of technical and industrial education. No edifice of technical education can be reared except on a broad foundation of elementary education. As one way of assuring this we propose that education should be made compulsory on all half-timers and that their employment should be contingent upon the provision of suitable school accommodation by the employers, the instruction being provided by the State.

14. Imparting a practical bias to the whole educational system is another very important matter. We recommend that provision for manual training be made in all Government High Schools at an early date, and that other local and private bodies be liberally helped for this purpose. We would further suggest the introduction of the modern side into our High Schools by inducing large majorities of students to take up manual training and sciences as an alternative to classical languages and other subjects.

15. In any comprehensive scheme of education, vocational education should include industries, agriculture and commerce. Although the two latter subjects are outside the scope of this report, we consider it of the highest

importance that steps should be taken to draw up schemes to provide the people of this Presidency with parallel courses of instruction in agriculture and commerce at as early a date as may be feasible.

IV

16. In view of the changed world conditions and the necessity of preparing for the anticipated industrial development in the near future, the Committee is of opinion that the time has arrived for the adoption of bold measures and the initiation of a comprehensive scheme of technical and industrial education for this Presidency.

Our arrangement of the institutions proposed into suitable grades and classes closely follows the existing systems in countries like Canada and Japan which have successfully developed industries in recent years. Their example serves the purpose of an industrially backward country like India better than that of more highly advanced countries like England or Germany which have built up their prosperity on old foundations.

We have made provision for 15,900 pupils in regular colleges and schools at an estimated yearly outlay of Rs. 26.25 lakhs. The number for whom provision is made in supplementary schools, in which the bulk of the instruction given will be of an elementary character, will be 24,100 pupils and the outlay on them Rs. 8.75 lakhs. This is in addition to the existing number (2,100) and outlay (Rs. 7 lakhs).

17. It is difficult to obtain precise corresponding figures from other countries, but such figures as are available more than justify a scheme of the scope and character we have proposed. In England, for instance, more than 140 persons out of every 10,000 were attending technical schools and classes in 1914 before the war. In the province of Ontario in Canada, the corresponding number in 1919-1920 was 100 per 10,000. In the Bombay Presidency, the existing technical and industrial schools accommodate roughly one person for every 10,000 of population and, if our present proposals materialise, this will be increased to 20 per 10,000 perhaps at the end of ten years.

18. At every stage, we have kept in view the imperative need of placing severe limits to the expenditure. The present total annual expenditure on education in the Presidency is about Rs. 235 lakhs of which the contribution of the Provincial Government is about Rs. 182 lakhs. The additional expenditure now proposed for technical and industrial education will amount to Rs. 48 lakhs at the end of ten years or, if, as explained in paragraph 9 *ante*, the share debitable to Provincial revenues only is taken into account, Rs. 32 lakhs.

To emphasise the necessity for spending liberally under this head, it may be relevant to quote the opinion of Dr. H. A. L. Fisher, M.P., the present Minister of Education in Great Britain. "We were told," says the Minister, "to economise in our expenditure and food-stuffs. I suggest that we should economise in the human capital of the country, our most precious possession which we have too long neglected. The capital of the country lies not in cash and gold, but in the brains and bodies of the people."

19. We consider that, if our scheme is approved, an expert in this class of education, who is also something of an enthusiast, should be selected forthwith to work as a Director and Organiser and begin preparations to put the scheme in hand. Next to financial sanction to the expenditure, the measures which demand the earliest attention will be the selection of professors and the training of teachers, construction of buildings and provision of laboratory and workshop equipment. Local advisory boards or committees will be needed to keep the institutions and classes proposed in close touch with the trades.

In our opinion the expert Director should work under, or in close association with, a Central Provincial Council or Committee. We have not yet been able to arrive at a satisfactory decision among ourselves regarding the constitution and functions of this Central Council or Committee, nor have we

decided in what manner manufacturers, business men and representatives of the University, etc., should be associated with expert officials for the promotion of industries and industrial education. Some of the members favour a Central Advisory Committee with consultative functions and others a Provincial Development Council and Committee with powers of control and direction. On this and allied questions, we expect to be able to submit more precise recommendations in our final report.

M. VISVESVARAYA.
K. R. GODBOLE.
G. N. GOKHALE.
K. R. KANITKAR.
A. M. MASANI.
KAPILRAM H. VAKIL.

The following members sign the Interim Report subject to the views expressed in the appended supplementary statement.

R. D. BELL.
LESLIE FLATT.
JOSEPH A. KAY.
F. W. MARRS.
F. J. PAGE.
J. C. K. PETERSON.
FRED. POWER.
F. O. J. ROOSE.
A. J. TURNER.
G. H. WILLIS.

APPENDIX I.

TECHNICAL AND INDUSTRIAL EDUCATION.

Abstract of Cost of entire Scheme.

No.	Main Heads.	Approximate number of pupils (additional provision).	Additional expenditure to be reached in 5 to 10 years.		Additional expenditure to be reached in 3 years.	Capital outlay on buildings and equipment.	Remarks.
			By item.	Total.			
1	2	3	4	5	6	7	8
			Rs. Lakhs.	Rs. Lakhs.	Rs. Lakhs.	Rs. Lakhs.	
I	Institutions of University grade—						
	(1) Improvements to College of Engineering, Poona ...	150	1.00				
	(2) College of Technology ...	400	4.00				
	(3) Provision for Research ...		1.00				
	(4) Foreign deputation of students ...		1.00				
				7.00	5.00	30.00	
II	Technical Institutes—						
	(1) Improvements to V. J. Technical Institute ...	300	2.0				
	(2) Class of Technical Institute grade for Sind (to begin with mechanical and electrical engineering) ...	100	0.75				
	(3) Industrial Experimental and Demonstration Stations ...		1.25				
				4.00	2.50	15.00	
III	Middle Industrial Schools—						
	including Apprentice Schools (12 Schools and 3,000 pupils) ...	3,000					
				5.00	3.00	10.00	
IV	Lower Industrial Schools—						
	including Apprentice Schools (100 Schools and 10,000 pupils) ...	10,000					
				7.00	4.00	10.00	
V	Supplementary Schools and Classes—						
	(Urban 7,000; Rural 10,000; or a total of 17,000) ...	17,000	6.00				
				6.00	3.00	10.00	
VI	Women's and Girls' Education—						
	Technical High School in Bombay ...	150	1.05				
	Middle Schools (3 Schools with 200 pupils each) ...	600	1.20				
	Lower Schools ...	1,200	1.00				
	Supplementary Schools for Girls (both urban and rural) ...	3,100	1.50				
	Adult Women's Industrial Classes (both urban and rural) ...	4,000	1.25	6.00	3.00	15.00	
VII	Training of Teachers (Special provision).		3.00	3.00	3.00	5.00	
VIII	Supervision, direction, propaganda, etc.—			3.00	3.00	3.00	
	Total ...	40,000		41.00	26.50	98.00	
	Present expenditure (approximate) ...			7.00	7.00		
	Total including present expenditure ...	40,000		48.00	33.50	98.00	

SUPPLEMENTARY STATEMENT.

The signatories of this Supplementary Statement agree with the view that a strong effort must be made to raise the standard of all grades of technical and industrial education in the Bombay Presidency, and to extend technical and industrial education as rapidly as industrial and economic conditions permit. In this statement they desire to draw the attention of Government to the necessity of reaching a decision regarding the principles on which technical education should be organised. They desire further to express their views regarding the limits placed in practice on the extension of technical and industrial education by the actual industrial and economic conditions of the province.

2. The main principle for which the signatories to this statement contend may be stated as follows. The practical training of boys, youths and young men should be given, whenever possible, in workshops and factories under arrangements analogous to the so-called apprenticeship system. In their opinion, the skilled workman can as a rule be efficiently trained in his handicraft only in commercial workshops or by master craftsmen working on their own account. The school or class room should be reserved for the teaching of theory and practical demonstration. Therefore, no attempt should be made to *replace* the training of skilled artisans in workshops, factories and under master craftsmen by a training in workshops attached to technical and industrial schools. The signatories realise the difficulties in the way of improving and extending the facilities for practical training in private workshops and factories, but they consider, in the first place, that these difficulties are not insurmountable and, in the second place, that the alternative offered by workshops attached to colleges and schools is not a sound solution of the problem.

3. The signatories, who include all the members of the Committee engaged in the administration or management of industrial factories, believe that the view expressed in the preceding paragraph represents the emphatic opinion of every employer of labour.

4. The whole character of technical and industrial education must depend on whether Government support this view or the view taken in the Interim Report that young men can receive an adequate manipulative training in workshops attached to technical and industrial schools so as to enable them to take their place in industry as skilled artisans, foremen, chargemen and supervisors.

5. While the signatories strongly recommend as one of the best types of technical education the institution of apprentice schools attached to large workshops and factories, they dissociate themselves from the view expressed in paragraph 4 (2) that foremen and chargemen for organised industries can be automatically produced by this training alone.

6. The signatories have no fears that, for a great many years to come, young men who have received a suitable technical education of a lower grade than the University standard will find any difficulty in obtaining employment as skilled artisans, foremen, chargemen and supervisors, provided that they are well qualified in other necessary respects. Their view is, however, that the possibilities of extending technical and industrial education as described in paragraphs 4, 5 and 6 of the Interim Report have been greatly over-estimated. These paragraphs relate to (a) middle industrial schools, (b) lower industrial schools, and (c) supplementary classes or courses and provide for a total of 30,000 pupils at a total cost of 18 lakhs of rupees. The signatories agree that the expenditure contemplated should be incurred as rapidly as circumstances permit for the improvement and extension of technical and industrial education. But in the first place, they consider that the sum of 18 lakhs is insufficient to provide an efficient technical education for so many as 30,000 pupils, and, secondly, they are confident that this number cannot, in existing circumstances, be reached within a space of ten years. These circumstances may be briefly summarised as: (1) the backward industrial condition of rural areas and small towns and (2) the general lack of a suitable primary education.

7. On this point the opinions of the signatories are supported by the experience gained of the working of the existing institutions. The framers of the Interim Report in estimating a demand for technical education for 30,000 pupils have omitted to take account of the failures already incurred or to suggest methods of overcoming existing practical difficulties. In paragraph 4 they advocate a type of school and an entrance qualification which are exemplified in the Ranchodlal Chotalal Technical Institute, Ahmedabad. This institute has been a failure from every point of view, though it is situated in the second most important industrial city of the province. Nevertheless, the Interim Report suggests that at an annual cost of five lakhs, twelve such schools can be successfully established for the education of 3,000 pupils. The signatories do not regard as a practical solution of the problem the mere suggestion that "the prestige of these schools should be maintained by the character and efficiency of the training given which should be such as to secure employment for the student as soon as he completes his course." The lesson which the signatories draw from Ahmedabad and other places where technical schools now exist is that, so long as existing industrial and economic conditions

continue until public opinion of all kinds is aroused to the value of technical education, progress must be slow. Even the most efficient of the industrial schools have failed to attract more than a mere fraction of the 250 pupils which it is proposed to accommodate in each of the proposed schools described in paragraph 4. It is admitted on all hands that the pupils who at present seek a technical education are of a poor type and that the products of existing schools do not command the same wages as men who obtain a training under industrial conditions, even though they have received no theoretical education. The signatories desire, therefore, to warn Government that while they agree to an ultimate annual expenditure of 18 lakhs of rupees on schools and classes for the lower grades of technical and industrial education, they think actual conditions will render progress slow and that it is necessary to experiment in many directions before successful types of schools can be determined. Apart from all other considerations they think it most unlikely that the present poorly paid and inefficient teaching staff can be augmented and their efficiency improved so that within ten years they will be giving a really valuable technical education to ten or twelve times the present number of students.

8. Regarding subsidiary proposals to amend an scheme of technical and industrial education, the signatories prefer to express their opinion on the proposed loan suggested in paragraph 10 (2), as they doubt whether the financing of technical and industrial education can be rigidly separated from the other financial obligations and operations of Government. They also withhold their opinion on the Industrial Education Act proposed in paragraph 12 (2). Further, they prefer to offer no opinion on the proposals for agricultural and commercial education mentioned in paragraph 15 as these are outside the terms of reference.

9. The signatories hope to develop their views more fully in the final report, but take this opportunity of emphasising the great necessity of extending primary education amongst the artisan classes (paragraph 13 (4)) and the desirability of introducing a modern side in the high schools (paragraph 14).

R. D. BELL.

LESLIE FLATT.

JOSEPH A. KAY.

F. W. MARRS.

F. J. PAGE.

J. C. K. PETERSON.

FRED. POWER.

F. O. J. ROOSE.

A. J. TURNER.

G. H. WILLIS.