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# PUNJAB INDUSTRIES,

1911—1917.

BY

A. C. BADENOCH, I.C.S.,  
*Assistant Commissioner.*



Lahore:

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## PREFACE.

THIS little work, which is intended to bring Latifi's "Industrial Punjab" of 1911 up-to-date, and which should be read with that book, has been practically entirely written by Mr. Badenoch, Assistant Commissioner, under the general supervision of Mr. Maynard, Financial Commissioner, and Chairman of the Provincial Committee on Industries, and myself. Whatever merits are in it are entirely due to Mr. Badenoch. The opinions expressed in it are his own ; but they are, in my opinion, generally sound.

It has been written, primarily, for the benefit of the Industrial Commission ; it is hoped, however, that the general public will also find something of interest in it.

G. A. H. TOWNSEND,

*Director of Agriculture*

*and Industries, Punjab.*

*August 1917.*

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## INTRODUCTORY.

\*1. This note is intended merely to indicate the industrial position in the Punjab now in 1917 as compared with 1911,—the year of publication of Mr. Latifi's "Industrial Punjab,"— and to show what action has been taken by the Industries Department. It is too soon to undertake a thorough revision of the above-mentioned survey; the lustrum since 1911, including as it does the financial crisis of 1913, has been prolific in failure, but sterile in enterprise; thus a review of "Industrial Punjab" would ultimately reduce itself to the scoring out of certain paragraphs, and notes as to the dates when various companies went into liquidation: the more general causes at work in 1911 have not yet greatly modified the character of Punjab Industry.

Scope of note.

2. "Industrial Punjab" was written while this Province was on the crest of a wave of industrial and financial hope. Swadeshi Banking had been amazingly successful in eliciting capital from private hoards. The inability of the banks to find adequate and ready-made short term investments forced them to put their money into one new industrial company after another. Their enterprise in the development of the cotton industry was emulated by individuals and by Joint Stock Companies. Ginning factories, tanneries, etc., sprang up like mushrooms, and gave an illusory appearance of great prosperity,

Situation in 1911 and later.

of a coming miniature industrial revolution. In 1913 the wave broke, when the Peoples' Bank and the Amritsar Bank suspended payment ; the flood overwhelmed nearly all the Swadeshi Banks, sound and unsound, and many industrial concerns.

3. As a separate report on Banking and Industrial Failures is being submitted to the Industries Commission, there is no need to enlarge on this topic. Suffice it to say that Punjab Industry of 1917 is that of 1911, modified by this crisis, and to a smaller extent by the war.

Punjab Industries Department.

4. The Industries Department in the Punjab is as yet in its infancy. The Director of Industries is also the Director of Agriculture ; and in an agricultural province as the Punjab, naturally the latter branch engrosses most of the Director's time. A textile assistant, formerly a State technical scholar, assisted by a supervisor of the Central Weaving Institute, and a weaving master, a dyeing assistant, an embroidery mistress for the Zenana School, and subordinate instructors in hosiery, and weaving complete the staff.

Conferences on Industry and Industrial Education. Appendix I.

5. In 1911 an Industrial Conference was held in Lahore. Its proceedings lasted over four days, and the results are embodied in the appendix to this note. The recommendations in Part III have to a large extent guided the Department of Industries, but it has not yet been found practicable to make use of the suggestions contained



in Part I. At that conference the question of Industrial education was felt to be a peculiarly thorny one, and therefore in the following year 1912 Government appointed a special committee to enquire into, and report on this subject. A report of this committee is attached. Certain divergent views were elicited in this committee ; to secure a uniform policy in this most important branch of industrial development Government has appointed a permanent committee consisting of Director of Public Instruction (President), Director of Industries, Chief Engineer, P. W. D., Loco. Superintendent, North-Western Railway, Rai Bahadur Ganga Ram, C.I.E., and the Principal, Mayo School of Art. This committee is feeling its way, seriously hampered by the financial stringency created by the War.

Appendix IV

6. Of late years there has been a large increase in the number of Industrial schools—all financed by District Boards, or by Municipalities. A list of them is attached. The only school entirely financed by Government is the Mayo School of Arts and Crafts, Lahore, an institution which yearly grows and includes new subjects such as lithography, book-binding, and cotton printing. Proposals for the establishment of two large and well-equipped industrial schools in other centres of the Province are now under consideration, and will probably be put into concrete form whenever finances allow.

Industrial  
Schools.  
Appendix I

A proposal initiated by Mr. Carter Speers, Professor of Chemistry, Forman Christian College, for including technical chemistry among the subjects for the B. Sc. course of the Punjab University, and for teaching it in a new laboratory about to be erected in the College, has passed the Syndicate and is now in the stage of circulation for the opinion of Fellows of the University.

Technical  
Colleges.

7. The only two institutions which might be properly styled by the more dignified titles of Technical Colleges are "The Victoria Diamond Jubilee Hindu Technical Institute" and the "Rasul College of Engineering." The first named college is maintained from various grants-in-aid by Government, the Lahore Municipality, etc., by private subscriptions, and interest on investments. It is a pioneer college and has met with a pioneer's difficulties; though hampered by lack of funds it has had considerable success in the training of its students. It is at present engaged in special research in the possibility of the manufacture in India of various articles of which import is now hampered by war conditions. For this purpose Government has given it a special grant of Rs. 5,000. The College of Engineering at Rasul (the head-quarters of the Lower Jhelum Canal) is entirely a Government and a Departmental Institution, its aim being to train men of the overseer and sub-overseer class for Government service. The college was started on

the initiative of Sir Louis Dane, and the original intention was that it should include also a more general mechanical section, to include motor mechanics. The latter part of the scheme was abandoned, much to the sorrow of the European Superintendent of Workshops. Thus, the Rasul College being primarily a school of civil engineering, the larger part of the students' time is devoted to attending lectures; the practical portion of the course is meant merely to teach the students, as overseers how to superintend workmen. There is no doubt however that the school is an unqualified success, and, run as it is somewhat on English Public School principles, it is developing a good type of Public Works Department official. The college is managed by the Chief Engineer and the Director of Public Instruction, and has for its Principal a specially qualified officer of the Public Works Department. There are possibilities of development in this college which will be increased by the construction of an hydro-electric station at the head-quarters of the Lower Jhelum Canal, when and if that contingency occurs.

8. Commercial education in the Punjab is at present almost non-existent. Except for a Commercial School in Amritsar, which gives a rudimentary education in certain commercial subjects, there is no Government aided institution which devotes itself entirely to the teaching of commercial subjects. The Y. M. C. A.

Commercial  
Education.

in Lahore conducts evening classes in short-hand, type-writing, book-keeping, arithmetic and mathematics. For these classes Government gives a grant proportioned to attendance, and also pays a portion of the salary of the Principal, Mr. Hume. Already Mr. Hume is finding that there is a demand for day classes and a more ambitious course in commercial subjects ; it is recognised that, while the same scale of commercial education as required in Bombay and Calcutta is not necessary in the Punjab, yet something more elaborate and advanced should be obtainable. There are other commercial colleges with much more ambitious claims—such as the Punjab College of Commerce, the George Commercial College, and the Pioneer Commercial College. These are all private and money-making concerns. The Punjab College of Commerce has a well-qualified Principal, and does go some distance on the road towards efficiency, but all such colleges are hampered by the conditions of their existence. They may and do at times degenerate to being mere swindles. They rely on advertisement to attract a clientèle, and manage to pick up the discontented failures from schools and colleges. At present those interested in Commercial Education ask for an examination, diploma, certificate to work for, and some system of Government registration and inspection which will have the effect of preventing the establishment of inefficient and fraudulent institutions. The

Clerical and Commercial Examination of the Punjab University does not provide the test required. The University authorities are considering the matter.

9. To come to industry more particularly, subjects will be considered in the order of the chapters of Mr. Latifi's book, and notes as brief as possible will show the present position, and particularly any Government action.

Arrangement  
of notes.

## APPENDIX 1.

### *List of Members of the Punjab Industrial Conference held at Lahore on February 18th, 1911.*

The Hon'ble Mr. J. M. Douie, C.S.I., 1st  
Financial Commissioner, Punjab.

The Hon'ble Lieut.-Col. C. G. Parsons, Com-  
missioner, Lahore.

The Hon'ble Mr. H. P. Tollinton, Secretary  
to Government, Punjab.

The Hon'ble Mr. R. A. Mant, Financial Sec-  
retary to Government, Punjab.

Sir David Masson, Kt., C.I.E., Punjab Bank-  
ing Co., Limited, Lahore.

The Hon'ble Mr. J. Currie, Punjab Chamber  
of Commerce.

The Hon'ble Khan Sahib Sayad Mehdi Shah,  
Rais, Gojra, District Lyallpur.

Maulvi Abdul Ahad, Mujtabai Press, Delhi.

Mr. D. W. Aikman, Sanitary Engineer,  
Punjab.

Mr. W. Armstrong, Manager, New Egerton  
Woollen Mills Co., Limited, Dhariwal.

Mr. Ashford, Amritsar.

Mr. J. H. Barnes, Agricultural Chemist.

Commissioner F. Booth-Tucker, Salvation  
Army, Simla.

Rai Bahadur Lala Barkat Ram, Sub-Registrar, Gujranwala.

Mr. Biernacki, Loco. Superintendent, Lahore.

Bai Sahib Bishambar Nath, Executive Engineer, Delhi.

Mr. M. Crosse, Inspector of Schools.

Rai Sahib Dewan Daya Kishen Kaul, C.I.E.

Mr. H. D. Douglas, Director of Sericulture, Srinagar.

Mr. C. P. Fisher, Conservator of Forests, Punjab.

Mr. Fraustadt, Amritsar.

Sardar Ganda Singh, Uberoi, Honorary Magistrate, Sialkot.

Lala Gobind Ram, son of Lala Hari Ram, of the firm of Messrs. N. D. Hari Ram and Brothers, Rawalpindi.

Mr. W. S. Hamilton, Director of Industries and Land Records, Punjab.

Lala Harkishen Lal, Bar.-at-Law, Lahore.

Lala Jai Kishan of Amritsar.

Mr. A. Langley, Registrar of Co-operative Credit Societies, Punjab.

Mr. A. Latifi, Assistant Commissioner.

M. Mahbub Alam, "Paisa Akhbar," Lahore.

- Mr. W. Maxwell, Postmaster-General, Punjab.
- Mr. S. Milligan, Deputy Director of Agriculture, Punjab.
- Rai Bahadur Lala Mohan Lal, Lahore.
- Mr. F. Noel Paton, Director-General of Commercial Intelligence.
- Lala Panna Lal, Upper India Glass Works, Ambala.
- Mr. W. C. Renouf, Director of Agriculture, Punjab.
- Rai Bahadur Lala Ram Saran Das, Lahore.
- Sardar Bahadur Bhai Ram Singh, Principal, Mayo School of Art.
- Lala Raj Narain, Bar.-at-Law, Delhi.
- Professor Ruchi Ram, Sahni.
- Khan Bahadur Sheikh Ghulam Sadiq, Honorary Magistrate, Amritsar.
- Mr. J. Scrafton, Punjab Oil and Flour Mills, Lahore.
- Sardar Shabdev Singh Uberoi, Sialkot.
- Lala Shankar Lal, Hissar.
- Mr. F. C. Waller of Messrs. Waller and Co., Delhi.
- Rai Bahadur Sardar Boota Singh, C.I.E., Rawalpindi.



*Resolutions passed by the Punjab Industrial Conference on February 18th, 1911.*

I.—GENERAL MATTER.

1. (a) That the Department of Industry should be controlled by a Director of Industries who should be a whole time officer assisted by an Advisory Board.

(b) That the Board of Industry should consist of several members in addition to its head.

(c) That the members of the Board of Industry should be nominated by the Lieutenant-Governor and membership should be honorary, but travelling and halting allowance under the Civil Service Regulations should be paid.

(d) That the members of the Board of Industry should, by preference, be—

(a) A chemist or a chemist and metallurgist combined.

(b) A mechanical engineer with a knowledge of machinery as applied to industries.

(c) Two business experts with a sound practical knowledge of business.

(d) Two financial experts such as managers of banks.

(e) A mining engineer or mineralogist.

(f) A member of the educational department.

(g) The Registrar of Co-operative Societies.

2. That the duties of the department should be—

- (a) The collection and ledgering of information likely to be used in any of the industries in existence or suitable for creation in the Punjab and rendering such information available for the public.
- (b) The assisting of all enquiries on technical subjects by chemical investigation, advice regarding machinery and generally by information of all sorts.

*Note.*—The conference is of opinion that payment may reasonably be demanded for chemical analysis.

3. That it would be useful to appoint district correspondents to the Director of Industries.

4. That it is generally inadvisable for Government to establish model factories.

5. The Government can assist industries by—

- (1) exhibiting and demonstrating the use of improved appliances, machines and industrial processes :
- (2) publishing leaflets on industrial processes ;
- (3) encouraging district exhibitions ;
- (4) disseminating information through the agency of the press ;

6. That co-operative societies of workers are useful, provided that the industries for which the societies are found are commercially sound.

7. The disabilities under which the local bulk industries labour and the disadvantages which they encounter in comparison with similar products imported into the Punjab result very considerably from the irregularity of railway freights from and to the exporting port. The combination of unfortunate circumstances which affect so prejudicially the local manufactures may be summarised as follows :—

- (a) Comparative cheapness of carriage of raw material to Karachi due to the impression that the main Railway Goods Traffic is export.
- (b) Cheapness of carriage of imported manufactured goods on the plea that these come as a wind fall for the wagons which ordinarily should have travelled back empty.
- (c) Heavy rates of carriage of locally manufactured goods because of their being higher in value than raw materials.
- (d) The prejudicial working of a telescopic system of railway freights in the case of locally manufactured goods, as very often the raw material has to encounter several breaks in the journey.

The above factors combine to create a sort of protection in favour of foreign manufactures. It is therefore recommended that—

- (1) freights on raw materials and articles manufactured out of the same should be at the same rates, *e.g.*, freights on oil-seeds and oil should be at the same rates :
- (2) freights on the same articles whether manufactured in India or abroad should be the same, *e.g.*, freights on English yarn and Indian yarn be at the same rates to and from Karachi :
- (3) when a raw material has to travel to a factory and the manufactured article has to go out also by rail, freights for the two journeys should be equal to the freight which would have been payable if the raw material only had taken one journey from the starting station to the destination of the manufactured article ; and this can be done by giving proper rebates.

8. That with a view to the fostering of industries, the department of industries should move the Government to require that the accounts of joint stock companies should be submitted to competent audit. It seems most important to provide a large measure of protec-

tion for investors and thereby to inspire public confidence. There should also be stricter control by the institution of prosecution by Government in cases of dishonesty.

9. That the conference urges that Government should take early measures to remove the obstacles to the acquisition of sites required for factories and for industrial and commercial purposes caused by the existing provisions of the Pre-emption Act and the Land Alienation Act read with the executive instructions.

## II.—INDUSTRIAL EDUCATION.

10. That the conference, while recognising the value of the resolution of the sub-committee quoted below, is of opinion that there has not been sufficient time in which to frame an adequate scheme of industrial education. It therefore recommends that Government should appoint a small committee which shall, after considering the resolutions passed by the sub-committee, and after inviting opinions from persons competent to give them, frame a practical scheme of industrial education.

The conference further recommends that Government should inform the committee what funds will be available for industrial education in the near future in order that such a scheme may be prepared as may be introduced at once.

(i) That industrial schools should be established at the centres of important industries where

up-to-date methods (under expert management), especially applicable to the industries of that-locality, be taught—

- (a) To boys and girls from 5 years old and upwards,
- (b) Also to adult men and women, and
- (c) That to the more flourishing of such schools advanced classes of more technical type be added, as occasion demands.

That the said schools should endeavour to train instructors who could subsequently be employed in promoting the introduction of improved methods and appliances in trades carried on by artisans working in their own houses or in small workshops.

(ii) For the schools contemplated in resolution (i) the proportion of work hours should be as follows :—

*First stage.*— $\frac{2}{3}$  general education and  $\frac{1}{3}$  craft education.

*Second stage.*— $\frac{1}{2}$  general education and  $\frac{1}{2}$  craft education.

*Third stage.*— $\frac{1}{3}$  general education and  $\frac{2}{3}$  craft education.

Provided that any boy, if the Principal of the school so desires, may devote the whole of his time to craft work.

*Proviso I.*—These proportions should by no means apply to the adults mentioned in resolution (i) nor to the advanced classes mentioned therein who would devote all their time to craft work.

*Proviso II.*—“ Physical drill ” and “ Object lessons ” as the expressions are understood in the Education Department, should not be included in the proportion devoted to craft work.

*Proviso III.*—For the purposes of this resolution literary education shall (apart from drawing and clay modelling and such practical instruction) be understood to mean only education in ordinary vernacular, reading, writing, arithmetic and elementary geography (of India), and in the third stage a little English, comprising reading, writing and conversation so as to enable foreman's orders and instructions to be understood.

(ii) There should be no restriction on the classes of boys admitted to the schools, except that boys who are not the sons of artizans should be charged fees, which should be pitched low.

(iv) That Government schools should not be conducted as workshops working for a profit, and that in any case the products from such schools (if so conducted at all) should be sold to private orders and at prices which will not undersell the general market,

That grants by Government to private industrial schools should be regulated by the efficiency of the schools and given under grant-in-aid rules and not according to the profit or loss being made by the schools, and that the grant-in-aid system requires further development.

(v) That the individual or body contributing the funds should manage the schools, and that the functionary in immediate charge of each individual school should be a man who has received a technical education such as is contemplated by the schools now recommended, only to a higher and collegiate standard.

For example (a) a man might be sent for training at the expense of Government or of a local body to the Victoria Technical Institute, Bombay, the Rurkee College, or to the Serampur Weaving School, Bengal, or to other similar institution in India, or (b) it might be found more satisfactory to entertain such graduates of these institutions who had actual practical experience, or (c) even to entertain experts imported from foreign countries.

11. That the industries in which schools are required are —

1. Pottery.
2. Metal work, including cutlery.
3. Woodwork, including carpentry and cabinet making.



4. Cotton weaving.
5. Spinning and weaving of silk and wool.
6. Knitting and hosiery, particularly for women workers.
7. Lace and drawn thread work, particularly for women workers.
8. Kandla and gold and silver lace work.
9. Nickel plating.
10. Lacquer work.

That it should be left to the Advisory Board to advise in what places the schools should be established.

12. That industrial education should be administered by the Director of Industries and the Advisory Board assisted by an expert industrial inspector imported from Europe.

13. That particular stress is laid on the great efficacy of the apprentice system, and that it is not only legitimate but advisable to give grants to factories for the training of apprentices, provided, however, that the factory receiving a grant is required to permit official inspection by the Director of Industries or his officers, to see that the apprentices are receiving proper training.

### III—SPECIAL INDUSTRIES.

14. *Tanning*—Difficulty—Want of up-to-date technical knowledge.

*Recommendations* (1).—That the present system of curing hides and skins for the market is

defective and the department of industries should institute enquiries into the matter. (2) That there should be expert enquiries as to the places where improved methods of tanning could be introduced with advantage having regard to the supply of raw materials, to water, labour and tanning materials. (3) That Government should make arrangements for the practical training of youths in up-to-date tanneries already in existence in India by a system of premiums or otherwise.

15. *Oil-Pressing.*—Difficulty—Castor-seed. There is difficulty in disposing of castor cake at remunerative rates in the Punjab. Also the supply comes only from the United Provinces.

*Recommendations.*—That as the only use of castor cake is for manurial purposes, manure rate might be conceded by the railway.

16. *Cotton seed.*—Difficulties—(1) It is believed that if half the price of cotton seed can be obtained for the cake, pressing will pay.

(2) Inferiority of local seed out of which only 15 per cent. oil can be extracted.

(3) Dearness of seed—cost being greater in the Punjab than in the United Provinces.

*Recommendations.*—(1) That an experimental distribution of cotton cake on payment of one-half the cost of cotton seed be undertaken

by the agricultural department conjointly with an established factory in order to test the market for the by-product.

(2) That it is premature to start oil refineries.

17. *Fibres*.—The question of fibres is already receiving the special attention of the agricultural department, and the conference have no suggestions to offer.

18. *Wood pulping*.—Information is required on the following points :—

- (i) The tracts in which wood suitable for pulping can be found ;
- (ii) An estimate of the number of the trees available for pulping annually for an indefinite period and also the number per acre :
- (iii) The probable cost of the standing trees by girth measurement :
- (iv) Probable cost of carriage of the timber to the railway line where in all probability factories would be established.

19. *Match making*.—The monograph published recently by the Government of India contains all necessary information on the subject, and the conference have no further suggestion to offer.

20. *Glass making.*—Difficulties—The chief difficulties are—

- (1) Cost of alkali.
- (2) Cost of coal.
- (3) Want of skilled labour.
- (4) That any factory to pay must include the manufacture of window and plate glass and bottle making by machinery. This entails a larger capital than has been at the disposal of companies hitherto established.

*Recommendations.*—(1) In view of the above considerations great care should be taken in the starting of glass factories in the Province.

(2) With regard to existing concerns liberal conditions as to railway freights might be made.

(3) That a careful survey be made by Government of the quartzes and sands in the Punjab suitable for glass-making, samples being collected through local agencies to guide an expert of the Geological Department, who should carry out a detailed survey subsequently. That with a view to the establishment of glass factories in the province enquiries should include the location of the other substances necessary to the industry such as soda and lime-stone.

21. *Hosiery.*—*Recommendations.*—(1) That knitting classes, especially for *parda-nashin* women on the lines of the one at Bara Banki,

by the agricultural department conjointly with an established factory in order to test the market for the by-product.

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21. *Hosiery.*—*Recommendations.*—(1) That knitting classes, especially for *parda-nashin* women on the lines of the one at Bara Banki,

should be established in places such as Lahore, preferably in connection with existing educational institutions.

(2) That the establishment of a knitting machine industry is not sufficient to guarantee success, but proper arrangements must be made to supervise the necessary supplementary work such as stitching, washing, etc., and for the supply of material and the disposal of products.

22. *Dyeing.—Recommendations.*—That a class for the dyeing of yarns and fabrics with fast colours should be established in connection, if possible, with an existing educational institution in Lahore, on improved methods with both indigenous and foreign dyes.

23. *Sugar refining.*—That any improvement in sugar manufacture as distinct from gur making must depend upon concentration on a large scale by co-operation or otherwise, and until this is possible in the Punjab the matter is rather an agricultural than an industrial question.

24. *Weaving.—Difficulty.*—The want of up-to-date technical education.

*Recommendations.*—(1) That Government should give a further grant to the Ludhiana Weaving School to enable it to purchase dobbies and jacquered looms and to improve its dyeing and sizing processes.

(2) That travelling exhibitions of improved weaving appliances should be given a fair trial.

25. *Pottery and crockery*.—That the use of glazed pottery for domestic purposes is likely to increase rapidly in the province where there is already a small manufacture of cheap glazed pottery utensils. The investigation of the most useful type of firing kiln is recommended as this seems at present to be the weak point of the industry.

In view of possible extension, a survey of the clays, marls, quartzes and other pottery materials of the province is desirable.

26. *Gold and silver tinsel*.—The Delhi hand industry is very seriously affected by the competition of machine-made tinsel and wire from Europe, and seems likely to disappear altogether. The processes in use in Europe are jealously guarded. The best chance of success seems to consist in enquiries by the department of industries from the makers of machinery for rolling and drawing metals. It is noted that the Madras Government had instituted enquiries through Mr. Chatterton as regards the more economical European methods and have promised to apprise the Punjab Government of the result.

27. *Metal foundries*.—There appear to be no serious difficulties in the way of development.

28. *Chemical industries*.—There are two factories for sulphuric acid at Delhi and two at Lahore, the raw material being imported from



Sicily. These industries are favoured by the heavy freights on imported sulphuric acid. The Geological Department is making the necessary survey of the resources of the province as regards sulphur and sulphur compounds. As soon as a demand arises for sodium, carbonate, and caustic soda there would appear to be no difficulty in manufacturing these in large quantities in the Punjab from the existing deposits of sodium chloride, provided electric power is made available.

29. *Soap and glycerine.*—Two kinds of soap are in use—toilet soap and soap for washing clothes. The raw materials for both are available. Dhobi soap is largely manufactured locally and gives satisfaction. No action seems to be necessary in this connection. As regards toilet soap there is an up-to-date factory at Meerut, and there are some small institutions in the Punjab, but the local products do not compete successfully with imported soaps. The reason for this would appear to require investigation. Attention might especially be directed to a comparison of prices, qualities, distributing agencies and disposal of by-products, such as glycerine.

30. *Industrial alcohol distilling.*—The valuable note by Mr. Barnes may be taken as a guide for the department of industries in preliminary work needed in this connection.

31. *Use of waste products of tanning.*—The chief waste product of tanning is glue, and as there is a considerable export of hide parings the department should consider why capital is not attracted to the starting of a glue factory, especially as size is largely used in textile industry. The causes of inaction may be the cost of fuel or perhaps prejudice.

## APPENDIX II.

*List of Industrial Schools at present—1917—established in the Punjab.*

## LAHORE DIVISION.

## For Boys.

	<i>Established.</i>	<i>Industries.</i>
1. Mayo School of Art, Lahore ...	1875	Carpentry, metal work, pottery.
2. Railway Technical School, Lahore ...	1889	Carpentry, metal work.
3. M. B. Industrial School, Amritsar ...	1886	Ditto ditto.
4. V. D. J. Hindu Technical Institute, Lahore ... ..	...	...
5. St. John Mission Industrial School ...	...	Carpentry, metal work.
6. D. B. Industrial School, Kasuf ...	...	Ditto ditto.
7. Casson Industrial School, Gujranwala ...	...	Ditto and weaving.

## For Girls.

Industrial Girls' School, Pasrur ...	...	...
Mission Industrial School, Clarkabad ...	...	...

## JULLUNDUR DIVISION.

## For Boys.

8. D. B. Industrial School, Ludhiana ...	1896	Carpentry, metal work.
9. Dane Weaving School, Ludhiana ...	...	Weaving.
10. D. B. Industrial School, Ferozepore ...	1914	Carpeting, hosiery and lace making.
11. M. B. Industrial School, Hoshiarpur ...	1910	Tailoring & carpentry.

## AMBALA DIVISION.

## For Boys.

	<i>Established.</i>	<i>Industries.</i>
12. M. B. Industrial School, Ambala ... ..	...	Carpentry and tailoring.
13. " " " Delhi ... ..	1890	Carpentry and metal work.
14. Cambridge Mission Industrial School, Gurgaon ... ..	...	Shoe-making, tailoring and carpentry.
15. D. B. Industrial School, Hissar ... ..	...	Weaving.
16. " " " Rohtak ... ..	...	Carpentry.
17. " " " Jhajar ... ..	...	Shoe-making and weaving.
18. M. B. Industrial School, Rupar ... ..	...	Carpentry, modelling.
19. " " " Rewari ... ..	...	Carpentry.
20. D. B. Industrial School, Karnal ... ..	...	Ditto.
21. Primary Industrial School, Kot Khai (District Simla) ... ..	...	Ditto.

## For Girls.

Baptist Aided Indigenous School, Salamatpur (Gurgaon) ... ..

## MULTAN DIVISION.

22. D. B. Hardinge Technical School, Lyallpur ... ..	...	...
23. D. B. Primary Industrial School, Jhang ... ..	...	...
24. " " " " Chiniot ... ..	...	Carpentry and blacksmithy.
25. " " " " Muzaffargarh ... ..	...	Carpentry and weaving.
26. M. B. Technical Institute, Multan ... ..	...	Ditto. ditto.
27. D. B. Industrial School, Montgomery ... ..	...	Ditto ditto.
28. " " " D. G. Khan ... ..	...	Ditto ditto.

## RAWALPINDI DIVISION.

29. M. B. Industrial School, Kalabagh ... ..	...	Carpentry and blacksmithy.
30. D. B. Industrial School, Kot Fateh Khan ... ..	...	...

**APPEN**  
**WEAVERS'**  
*Balance*

Year.	Class of Society, i.e., I, II, III, IV, V or VI.	No. of Society.	ASSETS.										Total.
			Cash in hand and bank.	Value of investments.	Loans due by members.	Of which overdue.	Loans due by Societies.	Of which overdue.	Interest due to Society.	Value of stock in hand.	Other items.		
1	2	3	4	5	6	7	8	9	10	11	12	13	
<i>Weavers' Co-ops</i>													
1911-12 ...	...	13	8,654	40	6,751	63	3,903	...	58	5,983	...	25,339	
1912-13 ...	...	10	3,452	132	14,068	750	3,230	...	396	6,593	...	27,921	
1913-14 ...	...	12	3,621	212	16,416	195	3,954	...	825	5,033	...	29,991	
1914-15 ...	...	12	2,914	212	16,461	946	4,650	...	1,285	11,375	15	36,912	
1915-16 ...	...	12	2,713	927	18,486		977		1,883	15,248		39,684	

DIX III.

CO-OPERATIVE SOCIETIES.

sheet.

LIABILITIES.												
Loans and deposits from non-members.	Loans and deposits from other societies.	Loans from Government.	Deposits of members.	Share capital.	Interest and dividend due by society.	Cost of managements due.	Other items.	Reserve Fund, i.e. undistributed profits under section 38 of Act II of 1912.	Total.	Profit + and Loss —	Purchases.	Sales.
14	15	16	17	18	19	20	21	22	23	24	25	26
<i>tive Societies.</i>												
2,346	2,587	4,000	1,652	13,957	125	11	...	135	24,813	+ 576	34,311	31,053
4,396	7,518	4,000	1,075	8,791	274	89	..	452	26,595	+ 1,326	50,160	48,663
3,532	7,909	4,000	845	9,816	576	338	24	967	28,007	+ 1,984	47,490	50,845
6,054	9,308	4,000	2,051	9,720	445	381	49	1,138	33,646	+ 3,266	38,011	33,357
9,976	13,538	...	1,145	7,398	870	5	53	2,553	35,628	+ 4,056	58,043	58,797

## APPENDIX IV.

Report of the Committee on Industrial Education  
in the Punjab, 1911-12.

## PRELIMINARY MEETINGS.

*Scope of the enquiry.*

Composition  
of the Com-  
mittee.

The Committee appointed to draw up a scheme of Industrial Education for the Punjab consisted of—

The Hon'ble Mr. J. C. Godley, Director of Public Instruction.

W. S. Hamilton, Esquire, I.C.S., Director of Agriculture and Industries.

J. Ashford, Esquire, Public Works Department, Superintendent, Canal Workshops, Amritsar.

Khan Bahadur Sheikh Ghulam Sadiq, Amritsar.

Lala Gobind Ram, Sethi, Rawalpindi.

L. Heath, Esquire, Vice-Principal, Mayo School of Art, Lahore.

W. T. Wright, Esquire, Inspector of European Schools,—*Secretary*.

Previous to the assembling of the Committee a note by Mr. Hamilton regarding industrial education (in English and Vernacular) was circulated to all Deputy Commissioners and gen-

lemen likely to be interested in the question, together with a series of questions upon which views were asked.

2. The Committee assembled in Lahore on Monday, October 16th 1911, when all the members were present. The President (the Hon'ble Mr. J. C. Godley) opened the proceedings with an address dealing with the general questions to be discussed. He also drew the attention of the Committee to the various recommendations made in the past, especially to those of the Simla Educational Conference of 1901, which laid down that all technical instruction should be on a basis of general education, and that industrial schools should be craft schools and not concern themselves with general education.

Opening Meeting.

3. After a preliminary discussion the Committee decided to separate into two parties,—one, consisting of Mr. Godley, Mr. Ashford and Lala Gobind Ram, to visit centres of industries in the north-western direction, and the other, with Mr. Hamilton, Mr. Wright, Mr. Heath and Khan Bahadur Shaikh Ghulam Sadiq, to visit centres situated to the south-east.

Arrangements for visits to centres of Industries.

*Nature of the industrial instruction now given.*

4. The Punjab industrial schools are organized in classes in the same way as the schools for general education. In addition to the ordinary literary subjects taught in primary or middle schools, instruction is also given in

The Training afforded by the present Industrial Schools.



carpentry or metal work or both. The course of instruction in carpentry is prescribed in a rigid progressive series of exercises, which begin with elementary carving with chisels (kingri work) and pass through planing, sawing and the making of joints to the construction of simple articles of furniture, such as school stools. In metal work the teaching is almost always confined to the making of simple tools and iron padlocks, which includes a number of useful operations. The children enter the school as young as five or six years of age. The teacher of the craft is a bazar mistri ; he may be illiterate, or he may have been a student of the Mayo School of Art. In no case is he a man who has had any instruction in the methods of teaching others. He often has a large class of twenty boys to supervise : he receives a fixed salary, which is in nearly every case inadequate to attract a thoroughly trained man, and he has no financial incentive to do good work.

Amount of  
literary  
training  
given.

5. The amount of literary training given was reduced some years ago, with the result that the numbers in attendance in these schools subsequently decreased, especially on account of the curtailment of the course in English formerly taught. This measure has probably had the effect of removing pupils who did not seriously intend to take up one of the callings for which they were trained. The Committee consider the present proportion of time devoted

to general education and to industrial training to be on the whole satisfactory in the schools as at present constituted.

6. In the report on industrial education issued by the Committee appointed to consider the matter in 1903 the Punjab schools, unlike those of most other provinces, are said "to have attained moderate success, due perhaps to the natural bent of the people towards an industrial life rather than to the suitability of the methods adopted."

Report on Punjab Schools by the Committee on Industrial Education in 1903.

Since that date a few improvements in buildings and equipment have been carried out, but the lack of keen and efficient teachers on the industrial side remains.

7. A fair proportion of the pupils in these schools are carpenters and blacksmiths; a good many belong to children of other industrial classes, such as tailors or workers in gold tinsel; and the rest are boys of the higher castes in poor circumstances. Even where artisans are very numerous, as in Delhi, Amritsar and Ludhiana, the number of them who send their sons to the industrial schools is quite insignificant.

Classes from which pupils are recruited.

8. The school supplies the materials and the equipment, and any profits arising from the sale of articles are credited to the school account, and to this very small extent lessen the expense of maintenance.

Materials and equipment.

Schools at present maintained for industrial training.

9. The only institutions for industrial or technical education maintained by Government are the Mayo School of Art and the Railway Technical School in Lahore. There are industrial schools maintained by local bodies or by private societies in Amritsar, Delhi, Ludhiana, Gujranwala, Bhiwani, Ferozepore.

Schools controlled by Municipal Committees and District Boards are entirely supported by those bodies, and receive no grant-in-aid from provincial revenues. Aided schools maintained by Missionary bodies, the Arya Samaj, etc., receive grants based on industrial tests conducted by the Mayo School of Art.

Art Industries in the Mayo School of Art.

10. The class in art industries attached to the Mayo School of Art are undoubtedly successful, and the pupils generally find employment. The demands on the schools in connection with the Darbar of 1903 and the Coronation Darbar of last December have been heavy, and the work executed has been generally admired.

Schools maintained by Local Bodies.

11. The industrial schools controlled by local bodies do not appear to give artisan boys any better training in their handiwork than they can obtain in their fathers' cottages. Some of the causes of failure are noticed in paragraph 13. The root cause appears to be that steady application, accuracy, economy of time and material are not sufficiently inculcated. The mistri does not realize that these are necessary conditions of good work. The headmaster, invariably

a man of purely-literary qualifications, is apt to attach too little value to the industrial side of the school.

12. The production of complete articles from the earliest stage possible is not aimed at ; thus there is no stimulus for a boy to do good work, and his natural desire to produce a finished article, worked entirely by himself, is thwarted.

Need for the production of complete articles.

13. Other weak features are—

Weak features.

- (i) Neglect of effective supervision of the boys' work at every stage, due to lack of efficient teachers and faulty methods. The pay offered is too low to attract really good craftsmen and teachers.
- (ii) Lack of thoroughness in the work done.
- (iii) Faulty tools, almost invariably the tools used in the boys' carpentry work are badly kept, and little attention is given to their proper preparation and sharpening.
- (iv) The need of closer connection between the school and the trade, in order to enlist the interest and support of the people most nearly concerned in the well-being of the school.
- (v) In some cases it was found that boys could easily work through the course

in eight or nine months and were then made to go over and over the work again for the rest of the year. Progress is thus very slow. It was felt that the course in carpentry especially needed revision, and that too much time is given to kingri work. Boys are kept too long at making single joints, etc.

- (vi) Far too much time is spent in drawing from the flat. Object drawing of articles in every day use is not sufficiently practised. Too much time is given to model drawing of geometric objects, which does not appeal to pupils.
- (vii) Most of the schools appeared to be inadequately equipped with tools and appliances.
- (viii) The headmasters have had no industrial training; thus it is open to question whether they are the most suitable men to direct intelligently the industrial side of the work.
- (ix) The class system of instruction on the industrial side has been criticised, in that it tends to retard the brighter pupils. A boy who is good in the handicraft taught may be kept back because he cannot read as well as his class-fellows.

*Views expressed at Conferences and by artisans and people interested during the tour.*

14. The system of industrial instruction was enquired into in the schools visited, and the question was discussed with workmen and employers of labour in the shops. Some of the latter advocated the apprentice system, in which the craftsman is assisted by learners or apprentices. The aim of the trade workshop is, of course, to make a profit, and the training of apprentices is a secondary consideration. Beginners are not paid; but in a short time they are able to earn two or three annas a day. A craftsman would only have a few apprentices—three or four at the most—at one time.

Visits to schools and discussions.

15. There appeared to be a general demand for more thorough industrial training—

More thorough industrial training needed.

- (a) by teachers who, by their ability and zeal, were able to command the respect of people of the artisan class;
- (b) by the introduction of modern methods;
- (c) by the introduction of modern and improved tools and simple machinery.

16. As an inducement to good work, it was urged that pupils should receive the sale value of their work, less the cost of the material they use.

Pupils should receive the sale value of their work.

17. Night schools were not generally desired even for those who are at present working as apprentices in small shops. It was urged, in

Night schools are not generally desired.

regard to metal workers, that the men and boys are too tired to attend such classes, as the work is physically exhausting. Some employers thought that it might be practicable to curtail the hours of work in their shops for two days a week in order to afford an opportunity to attend night schools ; but at the same time they admitted that the wages of those who availed themselves of shorter hours would have to be reduced accordingly.

Views of Employers regarding the value of education for their workmen.

18. As a rule, employers thought that those who had gone through the ordinary primary course became more intelligent workmen, and that they were able to rise to a higher level and earn better wages than those who were illiterate. In Lala Janki Nath Joti Prasad's Copper Works at Delhi, however, the proprietor expressed doubts on the point.

Age for commencing industrial work.

19. In metal work and in some other trades boys are not strong enough to begin work in their fathers' shops till they reach the age of ten. Such boys, if Muhammadans, go to a Quran school for religious instruction till that age. Their fathers would prefer that they should spend this period in an industrial school if they were also taught the Quran.

Parents generally recognise the value of education.

20. Some employers were of opinion that parents would not send their boys to an industrial school after the age of 10 years, as they could then earn, to begin with, four annas a day in wages. But generally the fathers recognised

the value of education, and expressed themselves willing to send their sons to such schools, in order to train them to follow their own calling, if no fees were charged. Boys of seven years of age are often able to do light work in their own homes (filing, etc.), and thus to earn a little money; the parents, however, were in some instances willing to forego these earnings if their boys were admitted free to an industrial school and also received the price of the work done, even if the latter were less than the sum they could otherwise earn in their own homes.

21. Some headmasters of industrial schools considered that the eight years' work in (1) carpentry and (2) metal work, up to the middle standard, could be compressed into six years, and suggested that the syllabus needs revision accordingly, and that tinning and soldering should come before iron work. In all places visited there was a persistent demand for the teaching of new and improved methods and appliances, and in some cases for new industries.

Courses in  
Carpentry  
and Metal  
work need  
revision.

22. Before instruction can be given in improved methods and processes, and in the use of superior appliances, it is recognised that the instructors themselves must have gone through a complete course of training and acquired the necessary knowledge and skill. The most important industries need to be selected in which training should be given in industrial schools, and only thoroughly competent instructors should be

Need for  
competent  
instructors.



engaged for the work. It has been often urged that the head of such a school should be a European artisan,—one combining in himself the power of organisation and administration necessary to the well-being of a school, and also the expert knowledge of a mechanic or artisan for the industry in which a particular school would specialise. A school organised on these lines should be in a position to prove, by experiment, the value of improved methods and appliances, and might also be able eventually to train instructors.

23. At Amritsar it was suggested that the control of such schools should not rest with municipalities; that there should be half-yearly exhibitions for the sale of the goods made; and that the pupils should receive the price of their labour half-yearly.

*Views and Recommendations of the Committee.*

Schools of  
special  
industries.

24. While favouring the development, on sounder principles, of the industrial schools maintained by local bodies and private agencies, the Committee think that industrial schools of a more specialised type should be instituted experimentally by Government in selected localities. These schools of special industries should, they think, be placed under the charge of expert European artisans, who would probably be obtained on a salary of Rs. 350 rising to Rs. 500, or of Indians trained in Europe or America. Only industrial instruction should be imparted in these

schools, and no fees should be charged. As a rule, there should be a primary school attached as a feeder to these specialised schools in which ordinary general education should be given up to the primary standard combined with elementary manual instruction, the object being to attract children of the artisan classes. These specialised schools of industries should be open to all classes. Boys should not be admitted below the age of ten, and should have completed, if possible, the primary course of general education.

25. Localities suggested for the establishment of such schools are Sialkot and Rewari for metal work ; Ludhiana, Lahore, Hoshiarpur and Amritsar for weaving ; Kartarpur, Amritsar and Jullundur for wood-work. The members of the Committee who visited Sialkot formed the opinion that an expert English tool-maker in charge of a school of metal work might prove of much assistance to the local industries. The establishment of a school of pottery may also be eventually advisable ; but for the present the Committee recommend that the pottery section of the School of Art be developed on the lines of industrial experiment.

Places suggested for the establishment of specialised schools.

26. The Committee think that schools of special industries on the lines suggested above should be entirely financed by Government, and that they might suitably be controlled by the Department of Industries, assisted in each case by an advisory committee of local employers.

Control of schools of special industries.

The inspection of these schools should, as far as possible, be carried out by experts.

Existing Industrial schools.

27. The Committee consider that the aim of the training imparted in the existing industrial schools, which is to afford literary instruction of a simple character, combined with hand-and-eye training and elementary industrial work, is a sound one. They doubt, however, whether general education beyond the primary standard is necessary for boys of the class which it is desired to attract to industrial schools, as such instruction tends to make pupils disinclined to follow their hereditary callings. They recommend, therefore, that in the case of new industrial schools, middle departments for general education should not be instituted, and that such further education as is desired should be optional, and imparted, when possible, in evening classes.\*

Defects to be remedied.

28. The defects noticeable in the existing industrial schools are mainly due, in the opinion of the Committee, to unintelligent teaching on the industrial side, to insufficient equipment, and to inadequate supervision and guidance. Only competent teachers should be employed, and they should be paid a higher salary than they can otherwise earn in the bazar.

Grants to Industrial Schools.

In order to raise the standard of industrial schools maintained by local bodies and Mission-

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\* Lala Gobind Ram would also desire that some instruction in English should be imparted as part of the general education given.

ary societies, the Government should offer liberal grants-in-aid to schools which reach a standard approved by Government and make adequate arrangements for efficient instruction in crafts. It is hoped that private schools will thus be induced to raise their standards so as to earn these grants.

29. The Committee also consider that the Mayo School of Art should develop its teaching department with a view to the supply of specially trained craft teachers.

Mayo School  
of Art.

30. With regard to the internal economy of the schools, the Committee think that more elasticity of classification is advisable, pupils with a bent for industrial work being advanced to higher standards irrespective of their progress in classes for general education.

Elasticity of  
classification.

31. As an incentive to good work, pupils should be allowed to receive the sale-proceeds of such work as can be disposed of, less the cost of material.

Disposal of  
sale-proceeds.

32. The kingri work laid down in the course of studies is considered unsuitable as a preliminary course. It is thought that boys should first be taught the correct method of using the saw, the plane and the chisel in the order named, and that kingri work should only be begun after the boys have learnt to sharpen their own tools. From the earliest stage possible the production of complete articles by the boys should be aimed at.

Carpentry  
course.

Tools.

33. The Committee consider that the most efficient tools should be introduced at each stage, machine tools, such as the fret saw, etc., being also used; and that the instructor should be held responsible for the condition of the tools.

J. C. GODLEY.

W. S. HAMILTON.

J. ASHFORD.

GHULAM SADIQ.

GOBIND RAM.

L. HEATH.

W. T. WRIGHT.

NOTE OF DISSENT BY MR. HAMILTON FROM PARAGRAPHS 25 AND 27 OF THE REPORT OF THE COMMITTEE.

I differ from the other members of the Committee in regarding it as essential that the proposed primary departments should invariably be attached to the special craft schools, which the Committee recommend should be established. My reasons are that I cannot accept as rational any system of education which does not include the three Rs. The special schools proposed by the Committee are to take boys of 10 years of age and upwards even if they are illiterate. In fact, these schools are to be workshops, not schools, and will not provide any means for the general education of the boys of weavers, carpenters and metal-workers. The boys of these classes do not at present go to school at all, and there is very little hope of their going to the ordinary schools in the future. The almost general opinion of these artisans in all large centres in which I have enquired is that they would welcome primary schools where three Rs. plus a handicraft—weaving, carpentry, metal-working, etc.—are taught by really competent masters, and send their children to them. Such schools would not lead the boys towards petty Government service, but would prepare them to make the best use of the special schools (or workshops) proposed and eventually to become skilled craftsmen. If

you are to attract artisans' boys to schools, it must be in their early years.

The provision of adequate inspection of industrial schools of the existing type, no less than of any special schools which may be created, is a necessary part of any scheme of industrial education. But the only recommendation on the matter in the Committee's report is a single sentence in paragraph 26 "the inspection of these schools" (i.e., special schools) "should, as far as possible, be carried out by experts." In my opinion skilled inspection is essential and not a thing to be provided as far as possible, and the inspectors of existing industrial schools—on whose reports grants will depend—as well as of the special schools should be men with a practical knowledge of the craft taught,—where carpentry is taught the Principal, or Vice-Principal, of the School of Art might be the Inspector; where metal work is taught, an officer in the Locomotive Department of the North-Western Railway; where weaving is taught, the Textile Assistant to the Director of Industries. It would be better still if a special inspector of industrial schools where carpentry and iron work are taught was brought out from England and made responsible for the inspection of the literary side as well as of the craft work.

W. S. HAMILTON,

*Director of Agriculture and Industries.*

SUPPLEMENTARY NOTE BY THE PRESIDENT OF  
THE COMMITTEE.

I agree generally with the recommendations formulated by the Committee, except as regards the minimum age for admission to special schools of industries, which might, I think, be fixed at 12 or even 14 at the lowest, instead of 10.

I may perhaps be permitted to add a few supplementary remarks which may serve to dispel misunderstanding.

A school classed as industrial may help industries in two ways—

(a) *indirectly*, by giving general education to children of the industrial classes, combined with some manual training, the object being to improve the general intelligence of the workers ; and

(b) *directly*, by introducing more economical and efficient methods of industry, and thus raising up a generation of more skilful artisans.

It may also help to increase the number of workers, by attracting the children of non-artisans into industrial occupations ; and incidentally it may be a means of enabling orphans and children of indigent parents to earn a livelihood at an early age.

Now there is nothing in the history of industrial schools in the Punjab to show that (b)



has ever been proposed as an attainable object. The present scheme was originally drawn up in 1888, on the recommendation of a special committee, and the aim and scope of the schools were clearly stated by the Punjab Government in an explanatory letter to the Government of India. The scheme, it was said, was framed "with a special view to the fact that the son of the Punjab artisan, while receiving from his father or guardian instruction in manual work, has hitherto had no other education, and that when a workman's son attends school at all, it is almost always with a view to abandoning his hereditary pursuit. The object therefore is to do as little as may be to detach the young artisan from the workshop, and yet to give him, if possible, some useful theoretical and practical instruction. It has been decided to lay down a course of study for industrial schools embracing reading, writing, arithmetic, the geography of the district, of the Punjab, and of India, drawing and carpentry, of blacksmith's work, or such other handicraft as may be hereafter decided on. All industrial schools maintained or aided by local bodies will be required to conform to this course. They will be divided, like ordinary primary schools, into an upper and lower primary department, and will contain five classes. This measure will at least enable the sons of artisans to obtain some general education, and will tend, it may be hoped, to develop their

intelligence. Whether it will have any considerable effect in improving the artistic character or their workmanship can be seen only by actual experience, but His Honour considers that the experiment is worth a trial."

It will be seen from the foregoing that the programme was a comparatively simple one: there was no reliance on new and improved methods or the production of more technically skilled artisans. The main intention was to get certain classes of children into school, and the school course was modified so that they might receive an education suitable to their circumstances.

The fact that these schools have attracted a fair attendance, that most of the pupils have been children belonging to the industrial classes, and that most have taken subsequently to industrial occupations shows that the scheme has in some measure fulfilled the expectations of its originators. It need not be discarded as useless simply because the schools do not come up to a standard which there was no intention of applying.

This, however, is no reason why an attempt should not now be made to improve the character of the teaching in the existing industrial schools (which is largely a question of money) and also to set up schools of industry in the proper sense, *i.e.*, schools whose purpose is described in (b) above.

The Director of Industries appears to assume in the general note on the subject which he circulated before the Committee's enquiry that it is possible to give children from the ages of 5 to 14 a general education, while simultaneously turning them into skilled workmen at the end of the period. Such a feat has never been accomplished even in the most advanced European countries ; it implies a capacity in the school and the pupil which the best designed schemes cannot create. It is also suggested in the note that the mechanical processes of industry—of weaving, for example—are in themselves educative. But the mere acquisition of a mechanical aptitude does not necessarily quicken the intelligence. If it were otherwise, the children employed in the carpet-weaving factories of Amritsar might be said to be receiving education. Nor can the conditions of a school for elementary general education be assimilated to those of a workshop by the mere addition of industrial training, however excellent in its way, as part of the course. They are essentially different. In a workshop time, labour, and material must all be commercially profitable, and the boy is only employed on such work as he is fit for. If the same course were followed in a school, the backward pupils would not be given a chance of improvement. The headmaster cannot put himself in the position of an employer, and dismiss pupils whose work does not pay. The

school time is split up into periods of instruction, which interferes with the finishing of a job in a given time, and tends to make the industrial work a series of routine lessons.

The utmost that can be done at the elementary stage of education—say up to the age of 12—in the way of preparation for industrial callings is to give the children some form of manual training which will quicken their observation and reasoning powers and impart manual dexterity. Drawing and wood-work are generally acknowledged to be the most effective instruments, although the training may take a more specialised form to suit the locality. The pupil will not emerge an expert workman, but he will be equipped for using his brains and hands to good purpose afterwards in the calling of his choice.

The work of the continuation school or trade school or school of industry proper, begins *after*, not *during*, the elementary education stage in all European countries where such experiments are tried. The extent to which general education can be combined with special craft teaching must depend on circumstances. In common with most of the members of the Committee, I have doubts whether in this country a workshop or craft school should attempt to provide any instruction in literary subjects. If such instruction is deemed necessary, it should be quite subsidiary and introduced after working hours,

not sandwiched into the industrial work ; the school should be clearly defined as a workshop under an expert industrial instructor for the demonstration of improved tools and improved methods, not a school for general education with an industrial bias. The success of founding these schools will largely depend on the co-operation of local employers : pupils will not be attracted unless employment awaits them afterwards ; and the training must be adapted to the needs of the local industries. Hence a school should not, I think, be started in any locality where the residents have not asked for it and formed a representative committee to assist.

The recommendations made by the Committee on industrial education, it may be added, are in harmony with the general resolutions on the subject which were agreed to at the Simla Educational Conference of 1901, and subsequently accepted by the Government of India. "The Governor-General in Council," it was said, "attaches great value to the dissociation of technical education from ordinary literary education. The technical or industrial school should be strictly limited to scientific or technical courses. Every endeavour should be made to secure that students, before entering industrial schools, have been properly grounded in the simple forms of education mentioned in the fourth resolution of the Conference on the subject, but it is recognized that it may not always be possi-

ble to secure that the student, when he enters, shall already have received a due amount of ordinary education. In order to meet the cases of such pupils and to secure that they shall not, after leaving an industrial school, enter the world without any literary education whatever, it may be desirable to arrange for their instruction either in night schools or in special classes. But this education should not be conducted in the technical or industrial school itself."

I have endeavoured to outline the view of this question which is generally held by persons who have had practical experience of education. Any differences of opinion which have come to light in the course of the Committee's enquiry and discussion seem to be due to the tendency of outside critics to ignore or at least under-rate the practical difficulties of giving effect to educational ideals. Educational problems are not to be solved offhand, by generalizations on paper: they need patient experimenting. Of what may be called the offhand mode of dealing with such questions, I notice an example in the very interesting work by Mr. A. Latifi on Punjab Industries, which has recently been issued. After condemning the existing industrial schools, the authority says (page 219): "Industrial schools should aim not merely at teaching a handicraft, but also at preparing their pupils mentally, morally and physically for steady and strenuous manual labour for eight hours in the day."

It is absolutely futile to expect a boy who has played with a few tools for a couple of hours, and then scribbled on paper the rest of the day, to take kindly to a workman's life." And, one may add, it is equally futile to expect that a boy who spends eight hours—say from 10 to 6—daily in strenuous manual labour will pick up any general education worth having during the remainder of the day: it would be simpler to apprentice him to a craftsman and trust to a night school for the rest. The capacity of the child in this or any country for prolonged work and study is not that of an adult, and in planning out his day we have to take account of his limitations.

J. C. GODLEY.

*The 30th January 1912.*