

DIRECTORY

OF

Technical Institutions in India

INCLUDING

**Agricultural, Industrial, Technical, Commercial and
Science Schools and Colleges.**

COMPILED IN THE OFFICE OF THE GENERAL SECRETARY,
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INTRODUCTION.



HIS compilation has been prepared to meet a long felt want and to promote the advancement of scientific and technical instruction on which the economic and the moral progress of India depend in no small measure. While it is true that the great importance of technical education in industrial development has long since been recognised by Indian public opinion, it must be admitted that its supreme necessity was not adequately realized till recently either by the Government or by the people. There was what must be called only a vague idea that for the development of industries on any scale worth mentioning, it was necessary to have a supply of trained men to direct and work in factories and mills. But there was wanting the living and inspiring conviction that the well-being of the people was entwined with the permeation in all its ranks of the scientific spirit and with the creation of technical skill founded on a thorough grasp of principles. Nor was there among those who had control of the educational policy of the State or even among the leaders of public opinion any very clear conception of the principles which should regulate a scientific system of technical education at once suitable to the conditions and adequate for the requirements of the several provinces of the country. The recommendations of the Education Commission, though valuable so far as they went, were not sufficiently detailed. And the action taken on them was utterly insignificant and unsatisfactory. The subject was in 1888 taken up by Lord Dufferin, at whose instance Mr. A. P. (afterwards Sir Antony, and now Lord) MacDonnell, then Home Secretary to the Government of India, prepared an elaborate Memorandum setting forth the history, the actual condition, and the lines of future improvement of this branch of education. The memorandum* is an able document well worth study. The

* 'Papers relating to Technical Education in India, 1886-1904,' pages 1-36.

result of a survey of the state of affairs then existing was stated in the following terms :—

'The so-called Industrial Schools, modelled upon no considered plan,* never rise above mere workshops for the production of inferior articles at extravagant cost. For all purposes of practical training they are useless ; and it is no exaggeration to say that of the 45 Industrial Schools which now exist in India, hardly one serves any true educational purpose. If, therefore, anything effective is to be done in the way of Industrial training in Indian Schools, we must begin anew and construct a system of industrial education.'

Proceeding to consider the question, 'upon what principle and by what adaptation of means to ends can such a system be constructed,' Mr. MacDonnell laid it down that 'technical instruction must not be considered as something separate and apart from ordinary general education. On the contrary, he wrote, 'it should be regarded as a development of such education. The scheme of general education should therefore be so arranged as without any break of continuity to lead up to the instruction which we call technical.' And the defect of the present educational system from this point of view was laid bare in the following passage :—

'If this be the true principle on which to proceed, it is manifest that nowhere in India has our educational system given to that principle the prominence which it deserves. Leading, as it does, to university examinations and university degrees alone our educational system has always concentrated attention on literary subjects and literary training. But as Technology is the study of the practical application of science, a system of education which has for its aim the acquisition of literary knowledge only can never be a satisfactory introduction to technical instruction. As science is the foundation of every branch of technical instruction, the principles of science ought to underlie the education of those whose aim in life is the practice of the Industrial Arts.'

Among the recommendations made by that eminent administrator for such reform of the Indian educational system* were (1) 'that the study of drawing should be introduced at the earliest

* 'Preliminary education founded on the preceding principles would form the most appropriate introduction for all forms of technical instruction that could be devised, while it would help to give to the education of those not intended for Industrial pursuits that practical character which is now so wanting. Children under such a system would have their faculties of thought and observation trained, while now the only faculty that is trained is the memory.'

possible age, that it should be placed on the same footing as writing, and that it should be continued through all subsequent stages of the students' educational career'; (2) and that 'when some progress has been made in "the three R's" attention should be directed to Elementary Science.' Following on such a preliminary education, of which Reading, Arithmetic, Writing, Drawing, and Elementary Science, would form the prominent features would come, according to Mr. MacDonnell, that separation of studies which the student's proposed career in life would necessitate. Those who were intended for the learned professions, the Bar or Medicine, would follow the literary courses which lead to the existing Entrance Examination of the University. Those who looked to Art or Engineering, or Commerce or Agriculture, would pursue the 'modern' curriculum advocated by the Education Commission, and leading to an alternative Entrance Examination which the Universities should without unnecessary loss of time be invited to establish.' Those who looked to Industrial pursuits would enter the Schools of Technical training, 'if indeed they did not elect to push their preliminary education still further by going through the "modern" curriculum.' These three divergent courses 'should take off from the common stem at the end of the Middle School course, as recommended by the Madras Government. The High or Zillah Schools would thus in all cases consist of a "literary" and a "modern" side, which is in full accord with the recommendations of the Education Commission and with the declared policy of the Government of India.' The writer uttered the warning that 'if past experience proves anything it seems very clearly to prove the utter hopelessness of expecting that from isolated Industrial Schools any general good can come.'

Mr. MacDonnell said in conclusion that private enterprise alone could not be expected to do what was required 'In this matter of technical instruction' said he, 'the Government must pioneer the way, as it has pioneered the way in almost every enterprise which has changed the aspect of Indian life. If progress is to be made at once, the Government must, on fit opportunity and with due regard to local circumstances, establish in every division

or district a Technical School or a Technical Department of a school to which the instruction imparted in the "modern" side of the Middle or High School will furnish a fitting introduction.'

The Government of India dealt with the subject in the course of their Resolution of the 18th June 1888 (Home Department, Education), in which they said that 'hitherto little progress of a substantial character had been made in promoting technical education' and that 'the subject is of such extreme importance, and the insignificance of what has been attempted in India is so conspicuous, that the Governor-General in Council is deeply impressed with the necessity for action in whatever way may be practicable and sound.' They spoke of 'the need of industrial occupation for a population rapidly outgrowing the means of support supplied by a too conservative system of agriculture' and of 'the need for scientific methods to develop the material resources of India and to improve its agriculture, its products and manufactures, so that they may better hold their place in the markets of the world where competition is carried on with an intensity of purpose, which has been compared to the conditions of warfare.' Having urged that each Provincial Government should cause a survey to be made of the industries of the territory within its jurisdiction, the Government of India suggested that 'each Government and Administration should form a Committee of educational experts and professional men, who should make suggestions from time to time for the auxiliary supply of appropriate means of technical education: for such modifications of the state system of public instruction as may aid and encourage industries and industrial employment up to the full measure of such requirement at each provincial centre as may be found to exist; and, when the circumstances are opportune, for the establishment of a Technological Institute, for the enlargement of the Provincial Schools of Art and Design, and for the larger co-operation of the University in the promotion of the object in view.'

Of the two definite proposals for action made by the Government of India, industrial surveys have only lately been instituted in some provinces and *not yet* in others, while in no single

province has 'a committee of educational experts and professional men' been formed. In this resolution of 1888 the Government of India* accepted the obligation to 'support technical education as an extension of general education'; 'and, further more,' to 'promote and countenance such technical education of a special character as may be applied to the service of existing industries, which will profit by the aid of scientific research, scientific method and higher manipulative skill.' How far have these objects been accomplished in the intervening space? There is not as yet a thoroughly equipped Technological Institute anywhere in the whole country, while efforts to add a 'modern' side to high school education are in an incipient stage in one or two provinces and are non-existent in others.

The following excerpts from two official publications on the progress of education tell their own eloquent tale which needs no enforcing by additional comment:—

'The engineering colleges and schools are conducted with a general view to the recruitment of the several branches of the Public Works Department.' *Progress of Education in India, 1897-98, 1901-02. Fourth Quinquennial Review.* R. Natham, C. I. E., I. C. S. P. 246.

'The mining industry is becoming of such great importance in India that it is necessary to give it a section in this chapter (chapter VIII, Professional and Technical Education), although, from the educational point of view, there is very little to be said. * * These industries (the coal mines of Bengal, the salt mines of the Punjab, the gold mines of Mysore, the manganese ore of the Central Provinces, and the mica of Bengal and Madras) offer a fairly wide, and a growing, field for the employment of mining engineers and experts, but the more important posts are, in general, filled by persons engaged out of India. There is no school of mines in this country, and the facilities for special instruction in mining afforded in connection with the engineering colleges or otherwise are still inconsiderable.'—*Ibid*, pp. 263-4.

'There is very little commercial teaching in India of an advanced character and the subject is not recognised by any of the universities except for a school examination held by the university of the Punjab.'—*Ibid*, p. 279.

'It may be admitted at the outset that the endeavours made up to the end of the quinquennium under review to provide through state agency, or under state control, a system of technical education better than the routine training of the bazar have met with little success.'—*Ibid*, p. 286.

* 'Papers relating to Technical Education in India, 1886-1904,' p. 37.

'The account given above shows how little co-ordination there has hitherto been between the course of instruction in the industrial schools and the local industries of the provinces.'—*Ibid.* p. 299.

'The lack of trained teachers, with a knowledge both of their craft and of the manner in which it should be imparted, is recognised in most provinces to be a serious defect of the industrial school system, and there are practically no institutions from which instructors possessing the necessary qualifications can be procured.'—*Ibid.* p. 295.

'From what has already been said regarding the difficulties which stand in the way of any industrial school system in India, and regarding the character of the instruction given in such industrial schools as have already been established, the reader will be prepared to learn that these schools have in general, failed to attract boys of the artisan class, and that the ex-pupils of the schools rarely follow the trades which they were taught.'—*Ibid.* p. 296.

'The review we have now made of the existing industrial schools shows that the system has been wanting in definiteness both of methods and objects, and that its effect upon technical training and industrial development has been small. The more patent defects may be classed as follows:—

- (1) The schools have not been established in accordance with any sustained policy.
- (2) A large proportion of the pupils have no intention of pursuing an industrial career.
- (3) No clear differentiation has been made between general and technical studies.
- (4) The instruction has not been co-ordinated with local industries.
- (5) The quality of the instruction is in many cases poor * * * It is not to be expected that any wide scheme of successful industrial schools can be at once introduced, but it may be hoped that, with the adoption of better methods directed by a definite policy, it will be possible to give substantial aid to the improvement and development of local industry.'—*Ibid.* p. 297.

'In the first place it is essential to remember that engineering colleges and schools are conducted with a general view to the recruitment of the several branches of the Public Works Department.'—*Progress of Education in Bengal, 1902-03 - 1906-07. Third Quinquennial Review, W. W. Hornell, Indian Educational Service. Chapter VII, Professional and Technical Education. P. 94.*

* * * No real advance is manifest. Indeed as regards existing schools.... there is still apparent that lack of definiteness both of methods and objects, that want of co-ordination with local industries or trades, and that uncertainty of initiative and support which will always prevail so long as the schools have to depend upon the volition of local bodies rather than upon any sustained

policy of Government, * * * It must, however be admitted that the effect of the existing schools on the industrial development of the province is practically negligible'—*Ibid*, p. III.

'The reason for this want of progress is not far to seek. A system of industrial schools co-ordinated to the trades and industries of the Province can never be created except on the initiative of a department or at least an officer whose business it is to study those industries. If any real and steady progress is to be made, there must be at least one officer possessed of the required capacity who, while it will be his business to be generally acquainted with the larger industries of the Province, will be available to conduct special investigations into the conditions of any particular industry which either he or others may think it desirable to develop by some such scheme as that proposed at Serampore. * * It is recognised that industrial development even in that aspect of it which is called industrial education, lies outside the proper scope of the Education Department.....It is hoped that this appointment (of a 'Superintendent of Industries and Inspector of Technical and Industrial Institutions') will lead in time to the creation of a Department of Industry to the control of which all technical and industrial institutions will be transferred.'—*Ibid*, p. III.

To the foregoing may be added Sir John Hewett's declaration at the Naini Tal Industrial Conference that 'there is probably no subject on which more has been written or said while less has been accomplished', and that though the discussions on the subject 'have travelled far and wide and been extended over nearly a quarter of a century, they have produced little tangible results in this province' (the United Provinces of Agra and Oudh).

Before leaving this part of the subject we may cite a few figures which explain the present position. We take them from the *Statistics of British India, Part VII, Educational, First Issue*, published in 1908.

There were in the whole of British India on the 31st March 1907, four Engineering Colleges, the same number as in 1902-03, and their strength was 1,243 against 923 in the former year. Of Agricultural Colleges there were three in either year, with 98 students in 1902-03 and 205 in 1906-07. There were seven Schools of Art in 1902-03 and 10 in 1906-07, with 1,469 students in the former and 1,664 in the latter year. Eleven Engineering and Surveying Schools gave education to 643 students in 1902-03, while in the year 1906-07 the former increased to 26 and the

latter to 1,120. The number of Technical and Industrial Schools increased in the same period from 84 to 147, and that of the students therein from 5,193 to 6,820. Commercial Schools increased only by one from 11 to 12, and the students therein only by 12 from 572 to 584. There was actual reduction in the number of Agricultural Schools—from 7 to 5, and of the students therein from 320 to 168. Let us next see what was the outlay on these institutions. The expenditure on Engineering Colleges was Rs. 4,66,538 in 1902-3 and Rs. 6,27,390 in 1906-07; on Agricultural Colleges, Rs. 70,535 and Rs. 67,565 respectively; on Schools of Art, Rs. 1,61,588 and Rs. 1,42,434; on Engineering and Surveying Schools, Rs. 1,05,492 and Rs. 1,37,101; on Technical and Industrial Schools, Rs. 3,30,756 and Rs. 5,91,095; on Commercial Schools, Rs. 32,434 and Rs. 25,343, and on Agricultural Schools, Rs. 28,916 and Rs. 26,747. The value of the scholarships awarded to students in Technical and Industrial Schools was Rs. 54,637 in 1902-03 and Rs. 48,171 in 1906-07. The total of these figures is Rs. 12,40,896 for 1902-03 and Rs. 16,65,846 for 1906-07, which is an increase of a little less than Rs. 4½ lakhs in five years. And no increase worth mentioning has taken place since.

The Governments of some of the Indian States have been doing notable work by the maintenance of institutions such as the Kala Bhavan of Baroda, but it cannot be pretended that the action taken by these states as a whole meets the requirements of the people of those tracts in anything like an adequate measure.

Some local bodies here and there—municipal and district boards—contribute a portion of their revenues to local schools. But ordinarily their financial condition does not permit of their performing even their more immediate and urgent duties efficiently and satisfactorily; what to say of their supporting technical education.

Nor can one turn with greater complacency to private philanthropy. Instances there undoubtedly are which it is grateful to record. There is, to start with, the Indian Institute of Science, Bangalore, which the country owes to the princely generosity, the

practical genius and the rarely selfless patriotism of Jamsetjee Nusserwanjee Tata. And the Victoria Jubilee Technical Institute, Bombay, is the outcome of the combined sagacity and philanthropy of the wealthy citizens of Bombay. There are besides, not a few institutions of local importance which owe their inception to private effort.

Much has been achieved by Christian -Missions in this as in other branches of education, and the people of India owe a debt of gratitude to these philanthropic bodies for their noble services in the cause of industrial education.

But, all said and done, what has been accomplished till now is little as compared to what has to be achieved. It is the State alone with its large resources in men and money which can effect any mighty improvement, as Lord MacDonnell wisely pointed out more than twenty years ago. And Indians of all classes and sections look to the Government of India and the several Provincial Governments to initiate measures calculated to provide the country with institutions of higher and lower grades for imparting instruction in every branch of industry for the development of which favouring conditons exist. Do they look in vain? It is hoped not, when we bear in mind the utterances and the sympathetic attitude of the statesmen and administrators who are at the helm of affairs now. Said Lord Minto in his Legislative Council on the 28th March 1906 :—

'Technical instruction in other countries is growing apace....Competition has forced it upon us. We must not lag behind, The success of modern industries and the preservation of indigenoüs industries is becoming every day more and more dependent upon scientific and technical knowledge, and if the resources of India are to be developed by the people of India, such development must depend largely upon local enterprise, upon the investment of Indian money and upon a recognition of the absolute necessity of expert training'

Of the broad progressive sympathies as well as of the special friendliness to scientific and technical education of his Excellency Sir George Clarke the country has had so many proofs that it is needless to say anything. Nor is it necessary to dwell on Sir John Hewett's zeal for the cause. As the result of the Industrial

Conference held at Naini Tal year before last he has sent up to superior authority a scheme for the establishment of a College of Technology at Cawnpore and of smaller institutions at other centres of the United Provinces which will cost about Rs. 15½ lakhs on capital outlay and about Rs. 4½ lakhs a year on recurring charges. This has been approved by the Government of India and is awaiting the sanction of the Secretary of State. Sir Arthur Lawley, Sir Edward Baker, Sir Louis Dane, Sir Lancelot Hare, Sir Herbert White and the Hon. Mr. R. H. Craddock will, it is trusted, not be less disposed to move in the desired direction than the heads of other Governments.

The awakening of the people to the necessity for technical education is not the least hopeful aspect of the situation. Of the practical turn this has taken, we have signal instances in the Bengal Technical Institute and the Technical Department of the Bengal National College. Still more cheering it is to think that the youth of the country have been stirred and show a distinct disposition to take to industrial and commercial careers instead of becoming additions to the wealth-consuming sections of the population. The bearing which this has on the future of the movement for the development of Indian industries cannot be stated better than it was by Sir Thomas Holland, the distinguished head of the Geological Survey of India, in his very interesting paper read before the Benares Industrial Conference:—

'Our poverty is not in material, but in men capable of turning the natural material into the finished product. We want more than Government provision for technical scholarships: we want a reformation in the tastes of our students; we want them to learn that the man with technical dexterity is of more use to the country than the writer of editorials or the skilful cross-examiner; that applied science now belongs to the highest caste of learning, and is a worthy field for the best ability we can obtain. * * * But until we find the chemical, metallurgical and mechanical workshops as attractive to our high-caste students as the class-rooms for law and literature now are the cry of *Swadeshi*, no matter how worthy the spirit it embodies, will remain but an empty word.'

It is bare justice to acknowledge that a reformation of the inclinations of India's young men in the direction eloquently

pointed out here has taken place to a remarkable extent in the last three years. Consequently the demand for technical education has increased and constant enquiries are made as to where suitable instruction in different branches of it can be obtained, to what extent and under what conditions. For some years in the beginning the favourite and fashionable idea was to go to a foreign country—England, Japan, or the United States—to acquire what eventually turned out to be very rudimentary knowledge. In the first flush of enthusiasm it was not borne in mind that before one went to a foreign country it was necessary in the first instance that all the theoretical knowledge and practical experience and training which could be obtained in this country should be acquired and that only then should one proceed abroad to supplement and complete that education. The result in but too many cases was failure and disappointment, and an unjust suspicion of the utility of the knowledge obtainable in those countries. It has to be frankly recognised that there is no material advantage to be gained by all sorts and conditions of young men spending their parents' or the public's money in going to a far off land for learning elementary things or acquiring superficial ideas. There must be not only a thorough preliminary grounding in the elements of the different sciences, but the principles of the particular art or industry which it is proposed to learn must be mastered and practical knowledge and manipulative skill acquired by working in the workshops, the laboratory, the studio, so far as this may be possible, in India itself. It is only when one has equipped oneself with the knowledge, experience and skill obtainable in India that one should be encouraged to attempt higher things in the more advanced countries.

With a view to help students and their parents and guardians in finding out what are the various departments of science, industry and art in which they can receive real education in the country, the compilation of this Directory has been taken in hand. The many and frequent enquiries addressed to the office of the Indian Industrial Conference for information of the kind

embodied in the present publication led the General Secretary to conclude that a Directory of Technical Institutions in India would meet a largely felt want, and he accordingly proceeded to collect the material for it. The following excerpt from a letter received from Mr. B. Heaton, Principal, Civil Engineering College, Sibpur, in reply to the General Secretary's circular, shows that the need for a Directory had struck other minds also and that the task was not undertaken a day too soon:—

'The idea of a Directory of Technical Schools in India has my most hearty approval. It is a project that has been very much needed for the last few years and is one that is far best developed by an association outside of Government than by Government. It could not be compiled by any provincial authority and unless undertaken by the Government of India or by a public body like the Indian Industrial Conference, could never be accomplished.

'I have felt for many years the need of some means of putting in front of the rising generation of Indians while still in their school careers and of placing in the hands of guardians reliable information as to the means of training lads for Industrial work and of letting them know where and the conditions under which training is available in India.

'In the course of the year I have many enquiries to answer to which it is impossible for me to do full justice. I cannot write long letters to every applicant and I fear that many lads are deterred from preparing themselves for industrial work by this very difficulty of getting information. In many cases they cannot know to whom to apply.

'This reacts in a serious way both upon the country and upon the development of the institutions already existing that attempt to deal with this problem.

'Likely workers in existing industries and likely pioneers in the development of new industries may be somewhat neglected and the heads of the institutions cannot properly determine the trend of the demand for technical education as it develops from time to time, there is therefore a danger of these institutions not becoming so useful as they might.

'Your Directory is likely therefore to be of the greatest benefit to India and I give it most hearty support.'

It is quite needless to add to the above.

It remains to acknowledge, which I do with the utmost thankfulness, the ready response which those who were in a position to supply information have made to the request of the General Secretary for the same. It is obvious that but for their assistance and co-operation the compilation could not have been undertaken, and to them all I tender my grateful acknowledgments.

With one last remark this brief Introduction may be concluded. I request heads of institutions and others who can render similar assistance, to freely point out any omissions and errors regarding institutions which have found a place in the Directory, as also to supply particulars of other institutions of which by inadvertence or lack of information no notice has been taken, so that the requisite alterations and additions may be made in a subsequent edition, should one be called for by the public demand for copies. To those who will so help, I beg to accord thanks in anticipation.

AMRAOTI: }
The 6th May, 1909. }

R. N. MUDHOLKAR,
*General Secretary, Indian
Industrial Conference.*