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Memorandum On A Scheme Of Technical Instruction For The City Of Dublin With Recommendations By George Fletcher : Pamphlet

City of Dublin Technical Education Committee

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City of Dublin
Technical Education Committee.

MEMORANDUM

ON A

Scheme of Technical Instruction for the
City of Dublin,

WITH RECOMMENDATIONS,

BY

GEORGE FLETCHER,

Senior Inspector Department of Agriculture and Technical Instruction.

[The following Memorandum was submitted to a Meeting of a Sub-Committee of the City of Dublin Technical Instruction Committee on March 25th, 1903, as a basis for discussion, and was ordered to be printed.]

By the distribution of funds under the Agricultural and Technical Instruction Act (Ireland), 1899, the City of Dublin is entitled to an annual sum of £9,240, in addition to its present income. As yet no scheme has been proposed for the administration of this annual sum, and there is, therefore, at the present time a sum of £27,720 which has accumulated during the triennial period, and this is available for the purposes of a Scheme. Of this, however, a sum not exceeding £5,000 has been allocated for the purposes of capital grants to Day Secondary Schools. (See Report No. 1 from the Secretary Technical Education Committee).

It is not advisable that a completely detailed Scheme should be formulated in the earliest stages of such a large development of work in the City as is made possible by these funds; but it is obviously important that the objects to be attained should be kept steadily in view, and that the *direction* of the development should be clearly realised. Owing to the operations of the Department this is now possible of accomplishment, and difficulties in the way of a solution of the question have been removed. The question occupied the attention of the Technical Instruction Committee of the City about the time that the Department was called into existence; and it may be useful to set out briefly a statement of the previous progress and present position of Technical Instruction in Dublin.

City of Dublin
Technical
Schools.

The Technical Schools grew out of the Artisans' Exhibition of 1885, a Provisional Committee having been formed and funds collected. It was subsequently decided to vest the School premises in the Corporation; the Subscribers and the Dublin United Trades Council to have representatives; and the Corporation to subsidise the Science and Art Classes under the Public Libraries Act. The School was opened in 1887 with 10 teachers and 78 students. Steady progress followed, and in 1893 the Corporation adopted the Technical Instruction Acts and made more liberal grants to the Schools. The limited accommodation was soon overtaxed, and students had to be refused admission. The attendance, however, continued to grow, and in the Session ending June, 1897, there were 925 on the roll. Larger accommodation was at length secured; and last Session (1901-2) there were 1,274 students enrolled; the total class entries in the 31 subjects taught being 1,671.

Previous
proposals and
recommendations.

Suggestions and recommendations in reference to an enlarged Scheme were made in—

- (a.) A "Letter from the Secretary," pointing out the necessity for a complete Scheme of Technical Instruction in the City, with suggestions thereon. (Nov. 30, 1899.)
- (b.) A "Memorandum adopted by the Technical Education Committee for the City of Dublin, with a view to the

larger development of Technical Education in connection with the Agriculture and Technical Instruction (Ireland) Acts, 24th day of January, 1900."

- (c.) "Suggestions for Scheme of Technical Instruction for the City of Dublin, etc.," submitted by Mr. Arnold Graves and Mr. W. Vickers Dixon, Secretary.

(This last was submitted to a meeting of the Committee held 1st August, 1901, and, after some important revision, adopted.)

The recommendations contained in the last-mentioned paper dealt with suggestions respecting Manual Instruction, etc., in Primary Schools, Continuation Schools, and Night Schools, matters in which action has been taken by the National Board. Also with other questions which the Department have taken under control. There are, however, one or two suggestions which apply to the present situation, viz., recommendations—

- (a.) to take steps to establish a School on the North side of the City;
- (b.) to establish Day Technical Schools in the City;
- (c.) to aid Schools not under Corporate management;
- (d.) to establish a Scheme of Scholarships tenable at eight different types of Schools.

It may be said at once that the nature of the problem before the Technical Education Committee has entirely changed since these suggestions were made. The reorganisation of the Royal College of Science, the partial and proposed further reorganisation of the Metropolitan School of Art, and the establishment of a Scheme of Instruction in Experimental Science and Drawing in Secondary Schools, with a grant in aid of equipment from the City Council—these developments involve a restatement of the problem. The training of teachers has been undertaken by the Department.

The nature of the problem has undergone a change.

What, then, is the function to be performed by an extended Scheme of Technical Instruction in the City? It is of paramount importance that in its operations it should *supplement*

The problem stated.

not *supplant* other agencies. Overlapping, with consequent waste of effort, should be avoided. One of the first points that appears on consideration of the existing educational Institutions is that there is, either actually or potentially, adequate provision for Day Instruction in higher Technical and Art Education. Outside Trinity College there are the Royal College of Science, the Metropolitan School of Art, the Catholic University College, a Training School for Teachers of Domestic Economy, besides some 22 Secondary Schools which have made provision for the teaching of Experimental Science and Drawing. It may be desirable to develop some of these Secondary Schools along certain lines (and this is dealt with subsequently); but the means are already to hand.

On the other hand, Evening Science and Technological instruction, even of a very high character, is capable of great development in Dublin. The existing provision is quite inadequate for the needs of a City of 290,638 inhabitants. Not only is there pressing need for extending the scope of the instruction, but also for bringing it nearer to the people who are to benefit by it. Evening instruction will probably be necessary under any conditions of Day Education. The development of Technological teaching, both in its lower and higher branches, is desirable. The industrial situation demands that the workers should receive instruction in the principles underlying their work.

The more important questions that arise for solution are:—

- I. What is the type of School or Schools required?
- II. Where should they be located?
- III. How should they be administered?
- IV. How should they be related to the existing School?

I.

This first question is the most important, and controls the others. Should there be one School of the *polytechnic* type on the North side of the City, or several Schools of the *monotechnic* type. Ten years ago such a question would not have been asked, but three things now make such a consideration necessary. They are:—

- (1.) The reforms effected in Primary and Secondary Education are changing the *raison d'être* of the Evening Technical School.
- (2.) The ever increasing specialisation in various industries renders it more than ever necessary that artisans should learn something of those branches of their industry closely related to that they follow, which it is important they should understand, but which modern industrial conditions do not allow of their acquiring in the course of their daily work.
- (3.) The stress of industrial competition renders more than ever necessary the highest development and specialisation of teaching technical in character as well as in name.

It may at once be said that Dublin demands special consideration. The facts presented by a study of its educational and industrial condition are such as to make it difficult to find a parallel case. The absence of any one "staple" industry, and, indeed, of any considerable industry, are noticeable features. Hence it is that little assistance can be got from a consideration of such cities as London, Birmingham, Manchester, or Edinburgh, though the last named most nearly resembles Dublin in its population and in the absence of a "staple industry."

The needs of
Dublin.

The tendency in London has recently been towards specialisation in trade teaching. Technological Classes have for long existed in connection with the various Polytechnics, but, unlike Dublin, London has a number of well-marked industrial "quarters." Thus, Woolwich is noteworthy for its Engineering trades, Shoreditch and Bethnal Green for Cabinet-making and French Polishing, Stepney for Tailoring, and Southwark, Holborn and Finsbury for Printing and Lithography.

The problem in
London.

In the Metropolitan Borough of Woolwich, there are 53.8 per 1,000 of population engaged in the Engineering trades. In Bethnal Green 36.2 per 1,000 are engaged in the Cabinet-making and French Polishing trade. In Stepney 40.3 per

1,000 in the Tailoring trade. In Southwark 22.5 per 1,000 in the Printing and Lithography trades. In view of these facts, it is not a difficult problem to determine the desirable location of a School to deal with such Industries. Hence there have been established at—

WOOLWICH—An institution dealing largely with Engineering trades;

SHOREDITCH—A Technical Institute dealing mainly with the Woodwork and Furniture trades;

HOLBORN—A School of Photo-Engraving and Lithography in Bolt Court, Fleet Street, and St. Bride's Foundation Institute, giving complete courses of instruction in Typography, Letterpress, Lithographic and Collotype Printing;

together with such Schools of monotechnic type as the—

The City and Guilds Leather Trade School in Bethnal Green Road.

The British Horological Institute in Northampton Square.

Herald's Institute (Leather Dyeing and Tanning) at Bermondsey.

Others of a severely technical type, though not monotechnics, are—

The Trades' Training School, Great Titchfield Street.

The L. C. C. Central School of Arts and Crafts, Regent Street.

The Borough Polytechnic (School for Bakers and Confectioners).

Particulars respecting some of these are given in Appendix I.

Other English
Centres.

In other parts of England such specialised instruction is being given. Thus we have the Weaving and Dyeing School of the Yorkshire College, Leeds. In Coventry, where the principal industries are Bicycle manufacture, Silk Ribbon Weaving and Watchmaking, the Technical Institute has a strong Engineering Section, a Silk-weaving Shed, and a

Horological Department. On the Continent Trade Schools are common.

The case of London, however, and the other centres mentioned must be carefully interpreted. London has a population of over $4\frac{3}{4}$ millions—it is some 16 times as populous as the City of Dublin. It may be regarded—so far as industries are concerned—as consisting of a group of towns. It is clear that for such a city with industrial “quarters” it is necessary to take the instruction to the worker. Unquestionably, too, this should be the aim of a City such as Dublin, but such an aim is limited by certain other considerations. It is scarcely possible to demonstrate the existence of such quarters in the City of Dublin. Having no staple industry, its various small industries are scattered over the whole area, though it is possible to indicate industrial centres. Appendix II. is compiled from the Census Returns of 1901, and shows the number of persons employed in such industries as can be dealt with in a Technical School. It is manifestly an imperfect statement, but is of value. Care has been taken as far as possible to exclude the non-productive class, such as sellers or dealers, but the form in which the returns are rendered makes this impossible in all cases. There are a number of smaller occupations not entered in the Appendix.

Absence of industrial “quarters” in Dublin.

From a consideration of these figures, it may be well now to ask whether future developments should take the direction of one or more Schools of the Polytechnic or of the Monotechnic type. A careful examination shows that, with two *exceptions*, the case for monotechnics is weak. The industries which do employ a large number of workers are those which do not appear to call for very specialised treatment. The Tailoring trade is a case in point.

The chief exception referred to above is the Building trades. The large number of workers employed in the trades concerned with building operations (see Appendix III.) appears to justify a carefully directed effort on their behalf. It is true that classes dealing with some of these subjects form part of the programme at Kevin Street, but the extent of the industry

The Building Trades.

A "Building
Trades" School
desirable.

appears to justify the establishment of a Building Trades School—one having a well-defined aim—in close touch with the leaders of the industry and adequately equipped and staffed. Such Schools are not common in these islands. Indeed there does not appear to be a single School dealing solely with the Building Trades. A School which seems most nearly to do so is the Trades' Training School at Great Titchfield Street, London, W. (see Appendix I.). Such Schools, however, are well known on the Continent, and there are excellent examples in the "Baugewerkschulen" of Berlin and Nuremberg, referred to in Appendix II.

The case for
monotechnics.

It may be well here to examine more closely, and as briefly as possible, the arguments in favour of the monotechnics. The popular tendency is rather in the direction of "Polytechnic" instruction, for the needs of a varied industrial population are diverse; but it has frequently been urged in regard to Technical Education that it is not sufficiently practical; and that there is not sufficiently close interaction between the class work and the methods and practices which obtain in the particular trade involved. In regard to this, it may be observed that while it should not be forgotten that the function of a Technical School is to supplement not to replace the training which can only be properly secured by following and practising a trade, it must be admitted that the objections have some weight. Such defects are almost inseparable from an institution of the polytechnic type, where the attention devoted to any one of the many subjects of instruction may be said to vary inversely as the number of subjects taught. The growth of a particular class—especially if it be a trade class—must necessarily be conditioned by the claims of other classes, it becomes necessary to restrict the accommodation and limit the attendance, even of eligible students. Such a class is usually, and unavoidably, "out of touch" with the industry itself. In the case of many trades, monotechnics are out of the question. They must take their place in the Polytechnic, and should be fostered as carefully as may be. But, with an important group of allied trades, such as the Building industry, the case is different.

The numbers engaged in them justify special provision. To concentrate these in an institution created and existing for the one special purpose of dealing with the education of those engaged in the Building Trades is a very distinct gain. Such a School has one definite end and aim. It receives the undivided attention of a Committee consisting largely of experts administering a School in which development and growth may take place without coming into conflict with rival interests, and in which the staff and equipment are provided with a generous appreciation of the importance of the aim. The legitimate needs of the instruction are unhampered by the claims of rival "subjects," and receive a ready response from an administration whose duty it is to secure efficiency and development.

An added dignity attaches to teaching under such circumstances, and this reciprocally confers dignity upon all the trades concerned.

It may not be out of place to remark here that it is not sufficient merely to provide Technical Instruction to meet the needs of existing industries. In the "Report of the Special Sub-Committee on the application of Science to Industry," made to the London County Council last year, occurs the following:—

Not sufficient to meet existing needs. Future needs should be anticipated.

"If it is asserted that England has fallen so far behind in the application of Science to Industry, that it is useless to expend large sums of money in an attempt to regain a position which has been irrevocably lost, we would reply that there is no *finality* in any industry; that all industries, if they are to survive, must become scientific industries; and that if machinery is set in motion by which new knowledge is created, old industries will be developed and new industries will arise."

The attitude expressed here is worthy of adoption. Consideration should be extended not only to the industries which exist in Dublin, but to those which *might* exist, and for the development of which the fostering influence of a Technical

Retention of freedom for development.

School, manned by technical experts and equipped with first-rate plant will be needed. Just as there is no finality in any industry, there can be no finality in Technical Instruction, and freedom for development along the lines which experience proves and forethought suggests to be the best, should be retained.

Industries and Art Training.

It has frequently been observed that a gulf exists between Art teaching and Technology. That productions otherwise excellent suffer from defective design and the want of artistic finish; that, on the other hand, Art has been a thing too much apart from life, and that co-ordination between the higher forms of Art Instruction and certain crafts is a thing much to be desired. There is no doubt as to the truth of this. Some effort has been made to remedy this state of things, and Schools of Artistic handicraft have been formed. In Birmingham a branch School of Art at Victoria-street has by a happy *rapprochement* between the School and the Jewellers and Silversmiths' Association been made to play a very important part in gold and silver work, and there is the closest possible relationship between the craftsmen and the artistic designer, the tendency indeed is to combine them in one individual. The greatest advantage has followed. In Bromsgrove (Worcester) an Arts and Crafts Guild was formed in connection with the School of Art, and has developed into an industry of some magnitude. In London the London County Council Central School of Arts and Crafts in Regent-street, and many others involving the same idea, are working a slow revolution in industries having an artistic side.

Bromsgrove

London Central School of Arts and Crafts.

A Printing Trades School for Dublin.

A consideration of Appendix III. (especially Group C) will show the opportunities and need for such instruction in Dublin. The large numbers engaged in connection with Printing Trades in Dublin and the further consideration of the necessity for developing artistic printing, bookbinding, and illustration, suggests the advisability of establishing a School dealing with book production and artistic printing.

Other forms of craft teaching, such as stained glass work, enamelling on metals, etc., are being developed in the Metropolitan School of Art.

There remains one important branch of the work which calls for attention here, viz., Instruction in Home Management. The training of teachers of Domestic Economy has been undertaken by the Department, and there are classes in Cookery no doubt capable of further development at the Kevin Street School. It is nevertheless obvious that such instruction as has been attempted up to the present fails to meet the needs—needs perhaps not yet realised—of the great mass of the people, particularly the artisans and poorer classes—they will not come to a Central Technical School. The instruction should be taken to them. It is suggested that several teachers of Home Management (including Cookery, Laundry, Sewing, Maintenance of Health, Rearing of Children, &c.) should be appointed. Their work would be largely itinerant, and instruction of a simple, homely, efficient kind should be given in the densely populated wards near the homes of the people. In certain centres the Convents would co-operate and provide rooms. In others a tenement house could readily be obtained, simply furnished and equipped for the need of such instruction. The need is great, the means comparatively simple. It would be well to proceed tentatively, and start with, say, two or three teachers, who should, it need scarcely be said, be carefully chosen.

Instruction in Home Management.

Such instruction should be taken to the people.

It seems highly desirable that such work should be commenced without delay, its initiation need not await the rest of the scheme.

The provision of a more complete training in Domestic Economy can best be dealt with under the Scholarship Scheme.

II.

The second question is, where should these schools be located? It has already been pointed out that there does not appear to be any well-marked centres for particular industries in the city, and such tendency to segregation as exists would be secondary in influence to other considerations, such as density of population, neighbourhood of tram service and availability of sites. The question of density of population is important. Appendix IV. shows the distribution of population in the various Wards of the city. A study of this and the position of the larger manufactures

Location of proposed Schools.

indicates that the suggested Building Trades School should be situated on the North side, and if possible in either the North City Ward, the western part of the North Dock Ward, or the southern parts of the Rotunda or Inns Quay Ward.

As to the suggested Printing Trades School, the locality would depend more upon (a) availability of sites, (b) neighbourhood of tram routes.

III.

Administration The question of administration is a most important one. For some years at all events the new Schools would require close touch with their respective Committees of Management. It is thought that such Committees, which would naturally be Sub-Committees of the City Technical Education Committee, might with advantage co-opt such persons connected with the various trades concerned as would assist by their advice in keeping the work of the Schools in the closest possible touch with the need and possible development of the various industries.

**A Director
required.**

A large amount of organisation would obviously be necessary in the establishment and maintenance of the Schools. To be successful, the Schools would require highly skilled direction, and in order to secure co-ordination and avoid wasteful overlapping, it would be well to appoint a Director, who would take an important part in the teaching either of the Kevin Street School or of the Building Trades School. He would also act as Principal of one of them. This officer would be primarily responsible for the general working of all the Schools. He would advise the Sub-Committees and General Committee, and, under their direction, secure co-ordination between, and harmonious working in, the Schools. The onerous and responsible duties of this position would call for a person of education and large experience, possessing above all things tact and organising power; and to secure these an adequate salary would have to be offered. A Secretary, whose duties would extend over the whole area of the Scheme, would be a necessity. The Committee, however, already possess a Secretary, hence further reference to the question is unnecessary.

A highly trained technical staff of teachers would be required—Technical Teachers. teachers who have had actual experience in the trades in which they are to impart instruction, and who have also an adequate theoretical knowledge. Each School should also be directed by a Principal, who should take an important part in the training. Such should be chosen with a view to their technical and teaching experience.

IV.

How should the proposed Schools be related to the existing one? It has already been suggested that the general direction of all the Schools should be vested in one responsible head, who would be responsible for the detailed working of either Kevin Street or the Building Trades School, and carry out the instructions of the Committee. It would be desirable that, concurrently with the provision of the suggested Schools, the work carried on at Kevin-street should be developed along approved lines. In view of the work in Science and Drawing which is now being done in the Primary and Secondary Schools, it seems certain that the Evening Science and Art Classes will need to be developed in their higher branches. Higher Scientific and Technological Instruction a necessity. The demand will be rather for higher, applied or specialised forms of Science instruction than for Elementary instruction. There is pressing need to develop, up to the highest attainable pitch of efficiency, the departments dealing with Mechanical, Electrical and Chemical Science. The removal of classes in the Building Trades to the suggested School would increase the accommodation for instruction in the branches referred to, and increased equipment and specialisation in these branches would be rendered possible. Thus, the existing School would be benefited, and an opportunity afforded of specialising in certain directions. Beyond this it is not proposed to disturb its polytechnic character.

It is suggested that the proposed Building Trades School should be complete in itself—that it should have a course of instruction in every branch of the trade. It would no doubt be found possible and desirable to employ the same teachers of certain subjects (*e.g.*, Mathematics and Practical Geometry) at two schools.

Reference has already been made to the question of the teaching Secondary Schools. Pro-

posed special
equipment
grant for
Mechanical
Course for
artisan
students.

of Science and Drawing in Secondary Schools. The Technical Education Committee have already recognised the importance of this teaching in relation to their own special work, and have already given grants in aid of equipment. It is suggested that one of these Schools should be selected and encouraged by means of a grant to provide a special equipment to enable instruction to be given in a specialised course of Mechanics in the third and fourth years of the Science Course. Such equipment of a Mechanical Laboratory need not exceed £500, and pupils of the artisan class would be encouraged to remain for the complete course, which they would leave prepared to take up work in the Mechanical Trades. The attendance might be encouraged by making a limited number of Scholarships tenable at such Schools.

The foregoing remarks and recommendations may be summed up in the following suggestions :—

Summary of
recommend-
ations.

1. The establishment on the North side of the City of a Building Trades School. A suitable building to be erected and adequately equipped. This would deal with every branch of the building trade, and also with house decoration and furniture making. Courses of instruction suitable for Masters and Foremen, and others for Apprentices, to be organised. The course would include :—The Principles of Building Construction, Drawing, Carpentry, and Joinery, Brickwork and Masonry, Stone Carving, Slaters' Work, Plumbing, Plasterers' Work, House Painting and Decoration, Cabinet-making and Upholstery, and allied subjects.

The cost of building and equipment for such a School need not exceed £20,000 or £25,000.

2. The establishment of a School of Printing and Book Production. The curriculum would include courses of practical instruction in process work of various kinds, collotype, photolithography, &c. Also Letterpress, Artistic Book-binding, &c.


It is hardly possible or desirable to further particularise at this stage.

3. Equipment Grant to a selected Secondary School to provide special equipment for the teaching of Practical Mechanics to selected boys of the Advanced Course.
4. The appointment of a Director, whose duties would be to organise and co-ordinate the work of the several Schools, and to act as Principal of one of these.
5. The appointment of itinerant teachers of Home Management to conduct simple courses of instruction in populous centres of the city.
6. The establishment of a Scheme of Scholarships.

The question of Scholarships is of such far-reaching importance that it would be premature to discuss it in a Preliminary Report, and before the other large questions had been decided.

FINANCE.

The cost of erection and equipment of the Building Trades School might roughly be estimated at £25,000; its annual maintenance at £4,000. The cost of building and equipping the Printing Trades School may be put down at £15,000; its annual maintenance £2,500. Thus, £1,000 per annum would be available for instruction in Housewifery, and £1,500 per annum for a Scholarship Scheme.

It seems probable that by  the time the proposed Schools could be erected the accumulated funds would enable the outlay to be met without borrowing.

Attention is drawn to the accompanying (six) Appendices.

APPENDIX I.

SHOREDITCH TECHNICAL INSTITUTE, PITFIELD STREET, N.

In addition to the Technical Day School in this Institute, there is an Evening Department dealing largely with Cabinet-making and allied trades. The object of this class is—

- (1.) to help to establish and maintain a high standard of skill in the Cabinet and Building trades, and in the trades connected with them;
- (2.) to afford a distinct advantage to artisans in widening their knowledge;
- (3.) To enable young craftsmen to study the best methods of work under the best teachers;
- (4.) to encourage and foster original design in the trades represented.

Classes are held in Cabinet-making and Inlaid Work, Carving, French Polishing, Furniture Enamelling, Chair-making, Upholstery (for both sexes), Drawing for Upholsterers and Furniture Draftsmen, Furniture Design and Workshop Drawing for Cabinet-makers. There are other classes in Carpentry, Joinery, Building Construction, Plumbing, Plasterer's Work, etc. The School contains 8 large and well-equipped Workshops in various Laboratories, Studios, and Class-rooms. During last Session over 900 students attended the various classes. The Institute is under the management of the Technical Education Board of the London County Council. The Trade Classes are restricted to those who are actually engaged in the various trades, and who are earning their livelihood thereby. Fees are graduated according to the earnings of the artisan students, and improvers, learners and apprentices, under 21 years of age, are admitted free.

The expenditure under the head of maintenance in the case of this School for the year ended 31st March, 1902, was £1,827 17s. 2d., and there appears under the receipts an item of £52 12s. as students' fees.

L. C. C. SCHOOL OF PHOTO-ENGRAVING AND LITHOGRAPHY.

This School was established by the Technical Education Board for the purpose of providing instruction in the technology and practice of the various branches of Photo Mechanical Engraving. The subjects taught comprises the various branches of Negative Making, Collotype, Photo Lithography, Zinc, Line and Tone Etching on Copper and Brass, Tri-colour Lithography, Design and Drawing. The School, which has been highly successful, has now nearly 250 students who are actually engaged in some branch of work connected with illustration. The work done has attracted the attention of foreign educational authorities. It is situated in the neighbourhood where such industries are carried on, and though the rooms of the house which were secured are small, and not entirely convenient, they are well equipped, and everything points to a serious and successful work. Special attention is given to the teaching of Drawing. Frequent excursions are made to the Museums, the Royal Gardens of Kew, and the Royal Botanic Society's Garden, for the purpose of study. A School exists solely for those engaged in the various branches of the trades concerned; but youths who are not actually engaged in the trade may join the classes if satisfactory evidence is forthcoming that they are about to enter it. The mere amateur is excluded. Instruction in Typography and Letterpress is given in the neighbourhood, St. Bride's Foundation Institute. The expenditure on maintenance for this School was, for the year ended 31st March, 1902, £2,321 18s. 5d.

TRADES' TRAINING SCHOOL, 153 GREAT TITCHFIELD STREET, LONDON, W.

This School, though not wholly, is largely concerned with the Building Trades. It has evening classes for Carpenters, Joiners, Masons, Painters, Plasterers, Plumbers, Smiths, Stone Carvers, Tylers and Bricklayers, Wheelwrights and Woodcarvers. The Class is very largely attended, and is controlled and supported by the Worshipful Companies of Carpenters, Joiners, Stainers, Plasterers, Tylers, Bricklayers and Wheelwrights.

BATTERSEA POLYTECHNIC, LONDON, S.W.

This Polytechnic has important Day Science and Technical Courses, and attention may be drawn to the Day Department for the Building and Engineering Trades. It is excellently equipped, and the Mechanical Engineering and Building

Trades' Section possesses excellent Laboratories, equipped with a Tonton Testing Machine, a Cement Testing Machine, an Experimental Petroleum Engine, Steam Engine, and other equipment for high-class teaching.

APPENDIX II.

BERLIN BUILDING SCHOOL.

This is a high-class School for masters and foremen. Students must have at least two half-year's work in the trade. The building is temporary. The fee charged is 100 marks for a half-year. There are about 390 students, and the average age is about 18. Ten per cent. have Free Scholarships earned by progress in the School. It has been established for 17 years. Students who are to become architects pass from here to the Technical High School. A final examination, lasting for six days, is given, and a theoretical diploma issued. A further certificate, involving practice, can be obtained from the Trade Guild. There is no Evening School here. Excellent work is done, and some of the drawings lent by the School were placed at the service of the City of Dublin Technical Schools for a short period. One method adopted in the School may be noted as well calculated to cultivate self-reliance, namely, that of setting a task requiring much thought and investigation, such as having to design a complete building, having certain conditions given. It is understood that over 1,500 Master Builders in Berlin have passed through this School.

NUREMBERG BUILDING CONSTRUCTION SCHOOL.

This School has for its object the training of workmen, foremen, and employers in the various branches of the Building Trades. There has also been established in connection with it a School dealing with Metal Work and Machine Construction. The School is maintained by the town, but is subventioned by the State. It consists of (a) a Day School having about 600 students, (b) an Evening School having about 600 students. Day students pay 38/- per annum, and Evening students 4/- per semester for 6 hours per week. Students attend from 7 to 12 and 2 to 6, and the School week is about 50 hours. Students must have had a year's practice in the Building Trade. The School draws students which have been through the Real-schulen Elementarschulen and the Gymnasia.

APPENDIX III.

STATEMENT (based upon the Census of 1901) SHOWING CERTAIN
OF THE OCCUPATIONS OF THE PEOPLE IN THE CITY OF DUBLIN
(Largely excerpt from Class V., Industrial Class).

GROUP A.				MALES	FEMALES
Engine and Machine Makers	..	..	..	421	—
Millwrights	..	..	..	30	—
Fitters and Turners	..	..	..	671	—
Boiler Makers	..	..	..	202	—
Tool Makers, (Cutlers, &c.)	..	..	..	64	—
Electrical Apparatus Makers	..	..	..	216	—
Coachmakers	..	..	..	81£	—
Bicycle and Tricycle (Makers and Dealers)	..	..	..	205	—
Saddler, Harness, and Whip Makers..	..	..	..	308	—
Shipwrights and Carpenters	..	..	..	75	—
Chemists and Druggists	..	..	..	345	—
Brewers	..	..	..	1127	—
Woollen Cloth Manufacturers	..	..	..	30	23
Silk Goods Manufacturers	..	..	..	79	77
Linen Goods Manufacturers	..	..	..	—	73
Tailors	..	..	..	1378	1682
Boot and Shoe Makers and Dealers..	..	..	..	1389	—
Brush and Broom Makers..	..	..	..	121	105
Willow, Cane, Rush Workers and Dealers	..	..	..	101	—
Gas Work Service	..	..	..	468	—
Glass Manufacture	..	..	..	99	—
Iron, Iron Goods Manufacture	..	..	..	341	—
Blacksmiths	..	..	..	703	—
Brass, Bronze Manufacture	..	..	..	274	—
Artisans and Mechanics (undefined)	..	..	..	283	—
Tin Plate Workers and Dealers	..	..	..	162	—
Teachers	..	..	..	366	1080
Coopers	..	..	..	629	—
GROUP B.				MALES	FEMALES
Architects	..	..	..	76	—
Builders	..	..	..	1103	—
Carpenters and Joiners	..	..	..	2576	—
Bricklayers	..	..	..	1266	—

GROUP B—continued.				MALES	FEMALES
Masons	..	..	..	196	—
Slaters and Tilers	—	..	..	286	—
Plasterers, &c.	..	..	..	425	—
Plumbers	..	..	..	877	—
Painters and Glaziers	..	..	..	1857	—
Wood Turners, Box Makers	..	..	..	163	—
Stonecutters, Dressers, and Dealers	..	..	..	267	—
Cabinet Makers and Upholsterers	..	..	..	622	104
French Polishers	..	..	..	34	425
Gas Fitters	..	..	..	133	—
Wood Carvers	..	..	..	63	4

GROUP C.				MALES	FEMALES
Bookbinders	..	..	..	267	771
Printers	..	..	..	1762	—
Lithographers	..	..	..	121	—
Carvers and Gilders	..	..	..	79	—
Goldsmiths, Silversmiths, Jewellers	..	..	..	253	—
Engravers (Artist)	..	..	..	10	—
Sculptors	..	..	..	40	—
Photographers	..	..	..	95	96

NOTE.—Under Class V. 14,657 persons were returned as
 “General Labourers.”

APPENDIX IV.

STATEMENT (1901 Census) shewing area, population, and population per statute acre in each Ward or Electoral Division in the City of Dublin.

Total area of the City	...	...	7,911 Statute acres.
„ Population	...	...	290,638.
Population per statute acre	...	...	36.7

Ward or District Electoral Division.	Area in Statute acres.	Population	Population density (population per statute acre).
Arran Quay Ward	569	31,109	55
Clontarf East	742	3,081	4
Clontarf West	696	3,849	6
Drumcondra	722	7,545	10
Fitzwilliam	202	12,455	62
Glasnevin	852	6,273	7
Inns Quay	226	24,940	110
Mansion House	114	11,892	104
Merchants' Quay	313	25,434	81
Mountjoy	221	24,840	112
New Kilmainham	906	8,783	10
North City	82	8,784	107
North Dock	565	23,634	42
Rotunda	138	14,580	106
Royal Exchange	71	7,648	108
South City	54	4,385	81
South Dock	403	14,766	37
Trinity	160	12,331	77
Usher's Quay	712	23,655	33
Wood Quay	159	20,654	130

APPENDIX V.

Reference was made to the following literature in writing this Report:—

- (1.) Final Report of the Commission on Manual and Practical Instruction in Primary Schools under the Board of National Education in Ireland.
- (2.) Census of Ireland, 1901. Part I., Vol. I., No. 2 (a) City of Dublin.
- (3.) London County Council. Annual Report of the Technical Education Board, 1901-1902.
- (4.) London County Council. Technical Education Board. Report of the Special Sub-Committee on the application of Science to Industry.
- (5.) Journal of the Society of Arts, No. 2330-2331, Vol. XLV. (July 16th, July 23rd, 1897). "International Congress on Technical Education."
- (6.) Ibid. No. 2579, Vol. L. (April 25th, 1902). "Optotechnics," by Professor Sylvanus P. Thompson, F.R.S.
- (7.) Ibid. No. 2621, Vol. LI. (February 13th, 1903). "Technical Education in connection with the Book Producing Trades," by Douglas Cockerell.
- (8.) City of Dublin Technical Schools, and Science and Art Schools, 1902-3.
 City of Dublin Technical Education Committee, Report, 1900-1.
 City of Dublin Technical Education Committee, "Statement of the Views."
 City of Dublin Technical Education Committee, "Memorandum," January 24th, 1900.
 City of Dublin Technical Schools, Report of the outgoing Governors, June 30th, 1897.
 City of Dublin Technical Education Committee, "Letter from the Secretary," November 30th, 1899.
 City of Dublin Technical Education Committee, "Suggestions for Scheme," July, 1900.

- (9.) London County Council. School of Photo-Engraving and Lithography. Prospectus and Time Table for 1902-3.
 London County Council. Shoreditch Technical Institute. Prospectus and Time Table, 1902-3.
 London, Trades' Training School, Report of the Judges, 1901-2.
- (10.) Baugewerkschule zu Berlin, 1901.
- (11.) Lehrplan and Jahresbericht der Baugewerkschule, Nuremberg, 1900-1.
- (12.) Department of Agriculture and Technical Instruction for Ireland.
 "Technical Education of Letterpress and Lithographic Printers," by Charles Harrap.

APPENDIX VI.

GENERAL SCOPE OF SUBJECTS TO BE TAUGHT IN PROPOSED SCHOOLS.

TECHNICAL SCHOOLS, KEVIN STREET.

Chemical Department	Chemistry, Chemical Technology and Metallurgy
Mechanical Engineering Department	Theoretical and Practical Mechanics, Engineering Laboratory, Engineering Workshops, Prime Movers, Transmission of Power, Steam Generators, Machine Design, Testing of Materials, Brass Finishing, [Drawing, Office Work, &c.
Electrical Engineering Department	Physical and Electrical Engineering Laboratories, Power Distribution, Telegraphy, Telephony, &c., Electrical Instrument Making, Electro-Metallurgy, &c., &c., Jointing, &c.

Technological Department	Boot and Shoe Making, Bakery and Confectionery, Tailoring and other Technological subjects.
Elementary Commercial Department	Book-keeping, Shorthand, &c., only of an elementary character.
Mathematical Department	Courses generally of an <i>applied</i> character.
General Science	„

BUILDING TRADES SCHOOL.

Courses of practical instruction (both from the Art and Technological standpoints) in every department of the Building Trades (including Furniture Making), including—

- A.—Architecture, Principles of Construction, Modelling and Stone cutting, Bricklaying, Masonry, Plasterers' Work, Sheet Metal Work, Plumbing, Building Sanitation, Carpentry and Joinery, &c.
- B.—House Painting and Decoration. Sign Writing and Graining.
- C.—Design for Cabinet Makers and Metal Workers, Furniture Design, Cabinet-making and Inlaying, Wood Carving and Gilding, Upholstery, French Polishing, and Furniture Enamelling.

PRINTING AND BOOK TRADES SCHOOL.

Bookbinding, Typography, Tricolour, Process Work and Colour Photography, Collotype and Photolithography, Etching, Lithography, Design in Illustration, Paper and Inks, Electrotyping and Stereotyping, &c.