


1923

Architecture and Building: Prospectus of Courses 1923-24

City of Dublin Vocational Education Committee

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1923-'24.

ÁRD-ÁDOIRSE AGUS FOIRNEOIREACT

CLÁR NA SCÚRSAÍ

SRÁID BOLTÚIN

ARCHITECTURE AND BUILDING.

Prospectus of Courses.

BOLTON STREET.

9A
3049

City of Dublin Municipal Technical Schools.

BOLTON STREET TECHNICAL INSTITUTE.

SCHOOL OF MECHANICAL AND MOTOR ENGINEERING.

SCHOOL OF ARCHITECTURE AND BUILDING TRADES.

SCHOOL OF BOOK PRODUCTION AND PRINTING TRADES.

KEVIN STREET TECHNICAL INSTITUTE.

SCHOOL OF ELECTRICAL ENGINEERING.

CHEMISTRY, PHYSICS, AND WIRELESS TELEGRAPHY.

ART, ART CRAFTS AND MISCELLANEOUS TRADES.

SCHOOL OF DOMESTIC SCIENCE.

PARNELL SQUARE TECHNICAL INSTITUTE.

SCHOOL OF COMMERCE.

SCHOOL OF DOMESTIC SCIENCE.

31 SOUTH WILLIAM STREET AND CHATHAM ROW.

SCHOOL OF MUSIC.

NOTE.—The General Prospectus of the Technical Schools is divided into seven parts, issued separately in booklet form. Each booklet is complete as regards the arrangements, Time Tables, Syllabuses, etc., of the particular Department and classes dealt with. The following is a list of the booklets:—

- No. 1. MECHANICAL AND MOTOR ENGINEERING AND ALLIED TRADES
- No. 2. ELECTRICAL ENGINEERING, WIRELESS TELEGRAPHY, PHYSICS AND CHEMISTRY.
- No. 3. ARCHITECTURE AND BUILDING TRADES.
- No. 4. BOOK PRODUCTION AND PRINTING TRADES.
- No. 5. COMMERCE.
- No. 6. DOMESTIC SCIENCE.
- No. 7. ART AND ART CRAFTS AND MISCELLANEOUS TRADES.

A special leaflet will be issued dealing with PRIZES and SCHOLARSHIPS, etc.

Copies of any of the booklets may be had at any of the Technical Institutes, at the Public Libraries of the Corporation, or by post (2d.) from the Offices of the Technical Schools, 18 Parnell Square, Dublin.

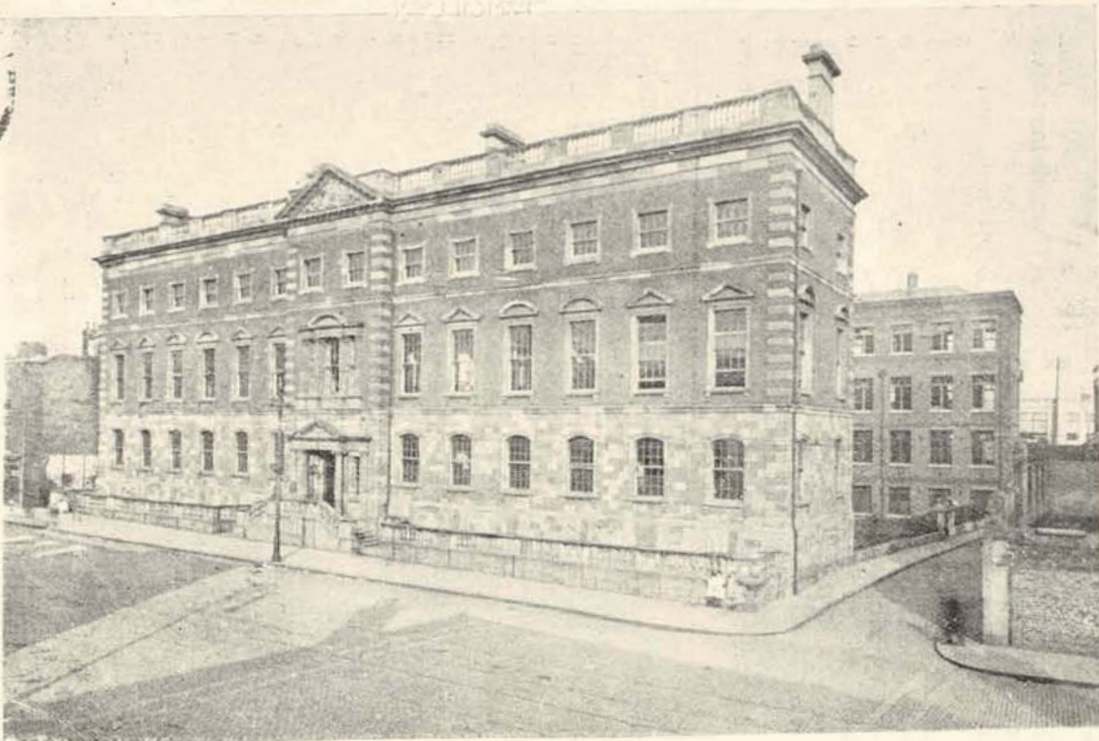
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BOLTON STREET TECHNICAL INSTITUTE.



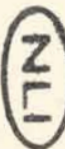
KEVIN STREET TECHNICAL INSTITUTE.



PARNELL SQUARE TECHNICAL INSTITUTE.



National Library of Ireland



Coirte Ceapto-Ordeacair Baire Áta Cliaí,
Technical Education Committee for the City of Dublin.

Chairman—ALDERMAN PROFESSOR B. F. SHIELDS, M.A.

Vice-Chairman—COUNCILLOR J. RUSSELL STRITCH, J.P.

THE RIGHT HONOURABLE ALDERMAN LAURENCE O'NEILL, Lord Mayor.

ALDERMAN J. HUBBARD CLARK, J.P. COUNCILLOR MRS. MCGARRY.

COUNCILLOR JAMES BRENNAN.	"	PATRICK MCINTYRE.
" PATRICK T. DALY.	"	PATRICK V. MAHON.
" JOHN FARREN.	"	WILLIAM PAUL.
" THOMAS FARREN.	"	MRS. J. WYSE-POWER.
" THOMAS KENNEDY.	"	MRS. H. SHEEHY-
" JAMES V. LAWLESS.		SKEFFINGTON.

MR. THOMAS MURPHY AND MR. —
(Representatives of the Subscribers and Founders).

PROFESSOR JOHN J. DOWLING, M.A.
(Representative of the National University of Ireland).

PROFESSOR JAMES T. JACKSON, M.A.
(Representative of Dublin University).

PROFESSOR WM. BROWN, B.Sc., M.I.E.E.
(Representative of the College of Science, Ireland).

MR. EDWARD GIBSON
(Representative of the Dublin Guild of Master Painters).

MR. WILLIAM M. THOMPSON
(Representative of the Dublin Master Builders' Association).

MR. THOMAS BOYLE, MR. THOMAS IRWIN AND MISS ROSE TIMMINS
(Representatives of the Dublin Workers' Trades' Council).

Principal Executive Officer and Secretary—LOUIS ELY O'CARROLL, B.A., B.L.

Oifigi: Ceapto-Sgoileanna,
 18 Ceapnós Parnell.

Office: Technical Schools,
 18 Parnell Square.

Sgoileanna Ceapto agus Ealaídan,
 Baire Áta Cliaí.

CITY OF DUBLIN MUNICIPAL TECHNICAL SCHOOLS.



LOUIS ELY O'CARROLL, B.A., B.L.

Principal Executive Officer.

WILLIAM J. LYONS, B.A., A.R.C.SC. (Lond.); Headmaster of the Kevin Street Technical Institute, and Head of the School of Electrical Engineering	JOHN C. MACGUIGAN, Dip. Econ. (Lond.); Headmaster of the Parnell Square Technical Institute, and Head of the School of Commerce.
--	---

WILLIAM DAVIDSON, F.B.I.C.C., Head of the School of Architecture and Building Trades.	ERNEST E. JOYNT, M.I.M.E., Head of the School of Mechanical and Motor Engineering.
---	--

WILLIAM H. JOHNSON, Acting Head of the School of Book Production and Printing Trades.	MISS KATHLEEN O'SULLIVAN, Head of the School of Domestic Science.
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COUNCIL OF STUDIES.

The Council of Studies will consist of the Principal Executive Officer and the Heads of the several departments. For Examinations, representatives of the Part-time Teaching Staff, Employers' Associations and Trade Unions will be included.

All enquiries or communications should be addressed to the Principal Executive Officer.

OFFICES: 18 PARNELL SQUARE.

SESSION 1923 24.

CALENDAR AND MEMORANDA.

1923.

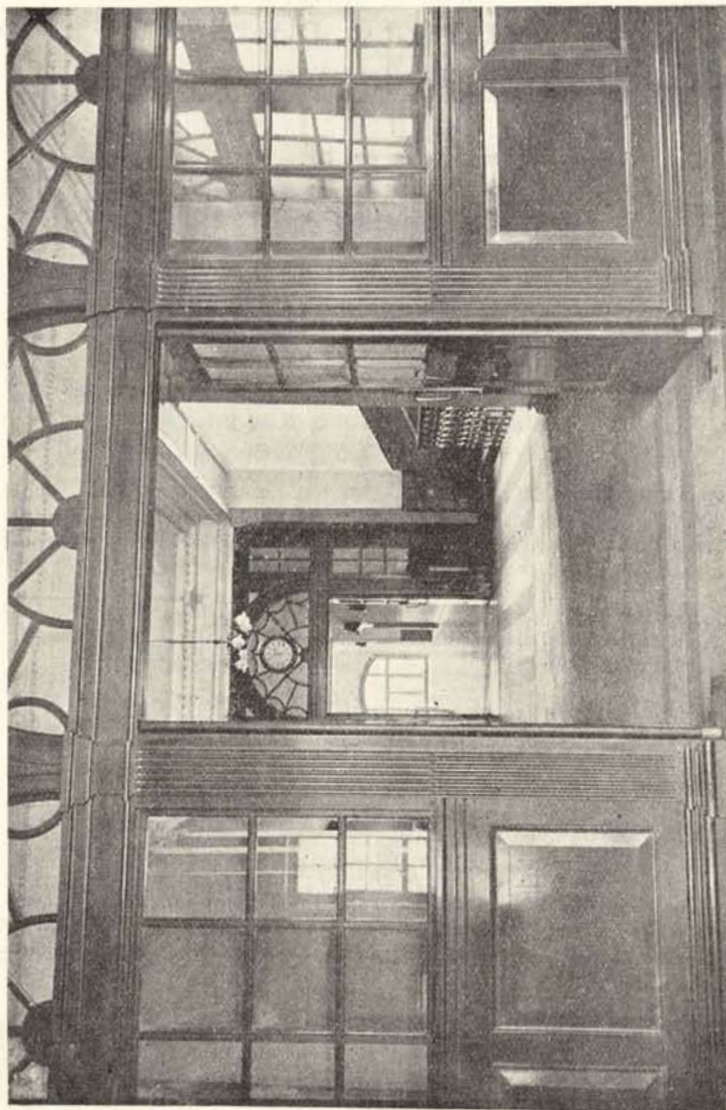
- Wed., 12th Sept. First Term, School of Music, begins.
- Mon., 17th Sept. Entrance Examinations and Enrolment of Students for Day and Evening Technical Classes begin.
- Mon., 24th Sept. Instruction in all Technical Classes begins during this week.
- Wed., 19th Dec. Final Meetings of Classes before Christmas.

1924.

- Wed., 2nd Jan. Classes resume after Christmas.
- Mon., 14th Jan. Second Term, School of Music, begins.

FEBRUARY Entries for Public Examinations are made about the end of this month. Exact dates will be notified to the Classes.

- Mon., 17th March St. Patrick's Day. No Classes.
- Wed., 16th April Final Meetings of Classes before Easter.
- Thurs., 24th April Classes resume after Easter.
- Fri., 9th May All Evening Classes close except Special Classes preparing for Examinations.
- Sat., 17th May School of Music closes.



BOLTON STREET TECHNICAL INSTITUTE—ENTRANCE HALL.

PREFACE.

The City of Dublin Municipal Technical Schools were founded in October, 1887, as an outcome of the Artizan's Exhibition, held in the City in 1885. The Schools were originally housed in an historic but unpretentious building in Kevin Street. From the foundation, and practically without interruption, the record of progress and expansion has been continuous, and now the Schools occupy three very large Technical Institutes at Bolton Street, Kevin Street and Parnell Square, and several classes are accommodated in other buildings throughout the City, affording in all accommodation for upwards of 5,000 students.

CURRICULUM.

The present curriculum of the Schools provides complete Courses of Instruction in

Mechanical Engineering and Allied Trades.
Electrical Engineering and Allied Trades.
Motor Engineering.
Naval Architecture.
Architecture and Building Trades.
Book Production and Printing Trades.
Applied Chemistry.
Art and Art Crafts.
Music.
Commerce.
Domestic Science
and numerous Miscellaneous Trades.

EVENING COURSES.

Evening Courses are provided in all the subjects above outlined, and enable those engaged in the day-time to acquire an intimate knowledge of the principles that underlie the processes carried out in their daily work.

DAY COURSES.

Day Courses and classes are arranged in most of the Departments of the Schools. The DAY APPRENTICE SCHOOL provides whole-time two years' Courses in selected trades for boys who have just left school. The Day School of Commerce also gives a whole-time training to similar boys and girls.

Special Day Courses are provided for those actually engaged in trades—arrangements being made with employers whereby their apprentices can attend the Schools during part of several days each week. At present it has only been possible to arrange such Courses in a few cases—notably the Printing Trades—but it is hoped, with the co-operation of the employers to gradually extend this system to all Trades.

ARRANGEMENT OF COURSES.

The Courses in all Departments, both Evening and Day, are arranged progressively to cover from two to five Sessions, according to the nature of the subject. The Courses in general include two or more subjects bearing on the main subject, and the instruction is given in such a manner as to illustrate the application of the principles of Science and Art to the daily work of the students.

ADVANCED WORK.

The laboratories and workshops of the Schools are very completely equipped with the best and latest apparatus and machinery, and senior students are given every facility for advanced or research work.

NEW CLASSES.

The Technical Education Committee are prepared at all times to consider the inauguration of new or additional classes in trade or other subjects. If it can be shown that there is a demand for a new class, the Committee will provide the teacher and any necessary equipment.

ENTRANCE EXAMINATIONS

In the present year Entrance Examinations will be held at the Bolton Street, Kevin Street, and Parnell Square Technical Institutes every evening during the week commencing 17th September, and on as many evenings afterwards as may be necessary. All new Students are advised to attend at 7.0 p.m. Those who can produce the Junior or any Higher Grade Certificate of the Intermediate Education Board, or the Higher Grade Certificate of the National Board, or some equivalent Certificate, need not sit for the Entrance Examination, and should make application for admission early in the Session.

The Entrance Examination consists of easy papers in English, Arithmetic, and Elementary Drawing, and First and Second Class Passes will be awarded. Those who pass in the First Class are eligible to take any Specialised Course.

These Examinations are not obligatory for trades' students.

SPECIALISED COURSES.

The Official Specialised Technical Courses are open to all Students who pass the Entrance Examination in the First Class, or are otherwise qualified. Each one is to take up, under advice or approval, the particular Course which most nearly meets his requirements, and is to adhere to this definite programme without any subsequent variation. If he ceases to attend any component subject of this Course he is liable to forfeit his entire Ticket.

No Student may attend for more than two Sessions in any one stage of the same subject.

Teachers, Pupil Teachers, and Monitors may enter for Special Courses that suit their needs, apart from the Official Courses. Such a Course will be regarded as an Official Technical Course.

The same privileges will apply to Students whose needs are not met by the Official Courses. In their case the Course Subjects must be arranged and sanctioned by the Head Teacher.

The stage of any subsidiary subject may be changed to fit the Student's particular grade of knowledge, the special evening allotted to Laboratory or other work may be altered, and a Student may be drafted from one class to an equivalent one. Any such changes must be sanctioned by the Head Teacher.

PREPARATORY COURSES.

Those who pass the Entrance Examination in the SECOND CLASS or who have spent one year in the Sixth Standard of a National or Secondary School may enter one of the "Introductory" Courses. Those who pass in the Third Class, or have not passed the Sixth Standard, are only at liberty to join one of the "Preliminary" Courses.

The Introductory Course Classes are of such a nature as to fit students to take up a Specialised Course of Technical Instruction in the following School Session. The subjects of instruction are:

- (a) English.
- (b) Elementary Mathematics and Arithmetic.
- (c) Drawing or Elementary Science or Elementary Domestic Economy.

The Preliminary Courses are similar to the Introductory, but of a more elementary character.

The FEE for either Introductory or Preliminary Course is *Five Shillings* for the whole Session.

Any Trade Student who is taking an Introductory Course may attend the First Year Practical Class in his particular trade, on payment of an extra fee of 2s. 6d. for the Session.

A class in Irish may be added to the Introductory or Preliminary Courses, if desired, without extra fee.

FEES.

All Fees are payable in advance, and cover the full Session or Term. Fees are not returnable.

The Fee set forth at the head of each Course covers all the classes in the Course, and any alteration in or addition to the Course that may be sanctioned by the Head Teacher.

If a Student takes a single Class only, the Fee payable is the same as for the Course which includes the Class. In the case of a few Classes, special Fees are named, and for a Course which includes any of these Classes this special fee will be payable, provided it is not less than the usual course fee.

If a Student wishes to take up an extra Class not sanctioned as above, as part of his or her Course, the particular Fee for that Class is to be paid as well as the Course Fee.

The Class Fee admits a Student to the Lecture and corresponding Laboratory or Workshop, if any, for the hours and days named in the Lists of Courses.

Similarly, the Course Fee admits a Student to all the Classes of the Course sanctioned, and each Class is to be interpreted as is described in the last paragraph.

The fees paid may be refunded at the close of the Session to Students whose attendances and progress are satisfactory.

GENERAL NOTICES.

The general enrolment of Students commences on Monday, 17th September, 1923.

Applicants for admission to Evening Courses or Classes must be at least fourteen years of age.

Pupils actually in attendance at a Day National School or Day Secondary School are not eligible for admission to Evening Courses or Classes.

Teachers may be consulted on their class nights as shown in the Time Tables.

Changes of address should be promptly notified to the Office (18 Parnell Square).

If any Student is absent from three consecutive meetings of any Class, unless for valid cause shown before the third meeting, his Ticket for the Class, or for the whole Course of which it is a part, is liable to be cancelled without further warning.

The Trade classes are intended for those engaged in the several trades. Others will not be admitted before November 7th, and then only if there be room, and on payment of a quadruple fee.

A laboratory or workshop class can only be taken in conjunction with an approved lecture or drawing class. No Student will be allowed to remain in a laboratory or workshop class if his attendance at the lecture or drawing class proves unsatisfactory.

A class may be discontinued in the event of an insufficient number of Students joining or attending; and the number of evenings allotted weekly to any class may be reduced if there be a falling-off in the attendance of Students. The right is reserved to close classes for any other reason whatever.

Students are to make good any damage done by them.

Strict order must be observed at all times within the precincts of the Schools.

DAY APPRENTICE SCHOOL.

The Scheme for a Day Apprentice School was adopted by the Conference on the Industrial Training of Apprentices, by the Technical Education Committee, by the Department of Agriculture and Technical Instruction, and by the Corporation of Dublin

The object of the Scheme is to link technical education closely with industry by giving a specialised training from the outset of a boy's industrial career.

TERMS OF THE SCHEME.

Apprenticeship scholarships—approximately one hundred—are awarded annually by the Technical Education Committee for the County Borough of Dublin on the results of examinations to boys of not less than fourteen years of age. The Scholarships entitle the holders to a free training for two years in the Apprentice School, together with a payment of £15 12s. for the first year and £20 16s. for the second year; books and instruments will also be supplied. In addition to the Scholarships a number of free places are awarded, entitling the holders to two years' free training (with books, instruments, etc.) in the Apprentice School.

The Scholarships and Free Places are *strictly confined* to boys whose parents or guardians are resident in rate-paying houses within the boundaries of the City of Dublin.

The course of instruction is altogether in the daytime; it covers 30 hours weekly for 46 weeks in each year; approximately one-third of the time in the first year and two-thirds in the second year are devoted to a thoroughly practical and theoretical training in the trade for which the boy is preparing.

Each pupil is allowed to select as far as possible the trade which he desires to follow. On the conclusion of the two years' course an examination will be held, and on the results of this examination the Committee, in conjunction with the Employers' and Trade Associations, will allocate the boys to the vacancies then existing.

An attendance of not less than eight hours weekly at the Technical School will be required during the terms of apprenticeship (*i.e.*, after the boy has left the Apprenticeship School).

The Courses at present in operation are: (1) *Plumbers*; (2) *Carpenters*, and (3) *Printers*. The date and full particulars of the next Entrance Examinations will be duly announced in the Schools and in the Dublin Press from time to time.

PROGRAMME AND TIME TABLE

OF THE

SCHOOL OF ARCHITECTURE

AND

BUILDING TRADES

FOR THE

SESSION 1923-24.

School of Architecture and Building Trades.

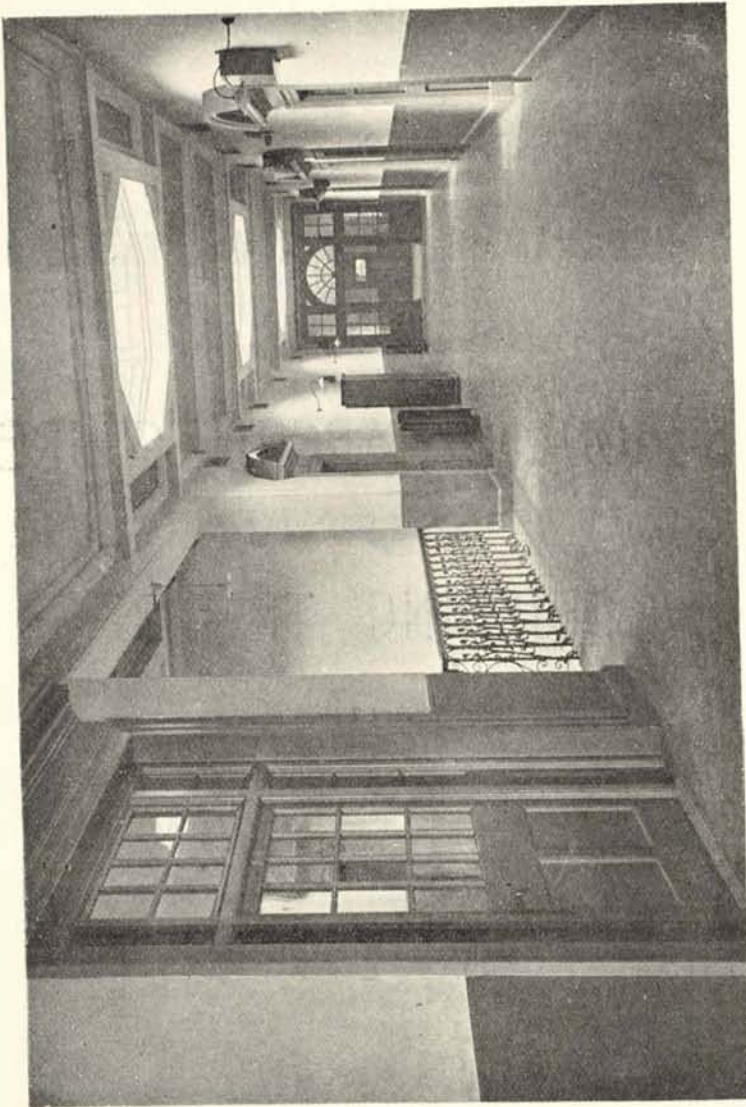
STAFF.

WILLIAM DAVIDSON, F.B.I.C.C.	...	Head of Department.
ALOYSIUS HANWAY	...	Manual Instruction.
WILLIAM D. HORGAN, B.A.	...	Physics, etc.
HENRY C. CLIFTON, B.A.	...	Mathematics.
JAMES J. MCCORMICK, B.A.	...	English, etc.

PART TIME LECTURERS AND DEMONSTRATORS.

MARTIN J. BURKE, M.S.A., F.S.I., L.R.I.B.A.	...	...	Building Construction and Quantities.
GEORGE J. OSBORNE	...	...	Building Construction and Drawing.
JOHN O'CALLAGHAN	...	...	Carpentry and Joinery.
JAMES F. CLEARY	...	...	Carpentry and Joinery (Asst.)
JAMES HICKS	...	...	Cabinet-making.
HENRY HICKS	...	...	Cabinet-making (Asst.)
JOSEPH F. MATHIEWS	...	...	Cabinet-making (Asst.)
JAMES J. BURKE	...	...	Drawing for Cabinet-making.
JOSEPH KING	...	...	Painting and Decorating.
MORROW, JOHN C.	...	...	Design (Mural and Ecclesiastical).
JAMES SAUNDERS	...	...	Plastering.
THOMAS KELLY	...	...	Coach and Motor Body Building.
FRANCIS F. DELANEY	...	...	Coach Painting.
WILLIAM J. SNOWE	...	...	Coach Trimming.
DENIS TREACY	...	...	Wood Cutting Machinery.
JAMES P. COLLINS	...	...	French Polishing.
JAMES MCNAMEE	...	...	English and Mathematics.
DAVID S. MACEOIN	...	...	Irish.

BOLTON STREET TECHNICAL INSTITUTE—TOP FLOOR CORRIDOR.



EXPLANATORY STATEMENT.

The programme of this Department includes Architecture, Building in all its branches, Furnishing and Coach-building Trades,

EQUIPMENT.

The Architecture and Building Trades Department occupies a number of rooms on each of the floors B, C and D of the Bolton Street Technical Institute. The drawing offices and workshops are very fully equipped for conducting the instruction in a thoroughly practical manner.

COURSES.

A complete course of study in any section generally occupies about three years.

Where possible, separate classes for journeymen will be arranged in trades subjects.

SPECIAL WORK.

Arrangements will, as far as possible, be made to enable highly qualified students to carry on drawing or practical work of a special nature. Students who desire to take advantage of this privilege should make application to the Head of the Department.

COURSES AND TIME TABLES.

No. of Course	SUBJECT	Day	Hour	Room	TEACHER
INTRODUCTORY COURSE—Fee, 5s. for Session.					
40 ^B	English—C ...	Fri.	7.30-8.30	B8	J. McNamee.
	Workshop Arithmetic—C ...	Fri.	8.35-9.35	B8	J. McNamee.
	Building Drawing—A ...	Wed.	7.30-9.30	B5	G. J. Osborne.
GENERAL BUILDING CONSTRUCTION COURSE.					
For Architects, Builders, Clerks of Works, and Others—Fee, 7s. 6d. for each Year of Course.					
FIRST YEAR.					
42 ^B	Building Construction—I ...	Mon.	7.30-9.30	B10	G. J. Osborne.
	Practical Mathematics—I.A ...	Thurs.	7.30-9.30	B5	H. C. Clifton.
	Practical Geometry—I.B ...	Tues.	7.30-9.30	B10	G. J. Osborne.
SECOND YEAR.					
43 ^B	Building Construction—II.	Wed.	7.30-9.30	B10	W. Davidson.
	Geometry and Mechanics—II. ...	Thurs.	7.30-9.30	B10	W. Davidson.
THIRD YEAR.					
44 ^B	Building Construction—III.	Wed.	7.30-9.30	B10	W. Davidson.
	Applied Mechanics—III. ...	Thurs.	7.30-9.30	B10	W. Davidson.
FOURTH YEAR.					
45 ^B	Building Construction—IV.	Wed.	7.30-9.30	B10	W. Davidson.
	Applied Mechanics—IV. ...	Thurs.	7.30-10.0	B10	W. Davidson.
ARCHITECTURE COURSE—Fee, 7s. 6d. for each Year of Course.					
FIRST YEAR.					
46 ^B	Building Construction—I.	Mon.	7.30-9.30	B10	G. J. Osborne.
	Practical Mathematics—I.A ...	Thurs.	7.30-9.30	B5	H. C. Clifton.
	Practical Geometry—I.B ...	Tues.	7.30-9.30	B10	G. J. Osborne.
	History of Architecture ...	Thurs.	7.30-9.30	B11	—
SECOND YEAR.					
47 ^B	Building Construction—II.	Wed.	7.30-9.30	B10	W. Davidson.
	Geometry and Mechanics—II. ...	Thurs.	7.30-9.30	B10	W. Davidson.
	History of Architecture—II.	Fri.	7.30-9.30	B11	—
THIRD YEAR.					
48 ^B	Building Construction—III.	Wed.	7.30-9.30	B10	W. Davidson.
	Perspective and Drawing from Antique History of Architecture ...	Fri.	7.30-9.30	B11	—

The above Course is intended to cover about five years. The Fourth and Fifth Year Subjects will be included in the Time Table later.

BUILDING TRADES' COURSES.

No. of Course	SUBJECT	Day	Hour	Room	TEACHER
---------------	---------	-----	------	------	---------

CARPENTERS' AND JOINERS' COURSE—Fee, 7s. 6d. for each Year of Course.

FIRST YEAR.

50 ^B	Carpentry and Joinery, Practice—I. ...	Tues.	7.30-9.30	C8	J. O'Callaghan.
	Practical Geometry and Calculations—I.B. ...	Fri.	7.30-9.30	B10	A. Hanway.
51 ^B	Carpentry and Joinery, Practice—I. ...	Wed.	7.30-9.30	C8	J. O'Callaghan.
	Practical Geometry and Calculations—I.B. ...	Fri.	7.30-9.30	B10	A. Hanway.

SECOND YEAR.

52 ^B	Carpentry and Joinery, Practice—II. ...	Mon.	7.30-9.30	C8	J. O'Callaghan, J. F. Cleary.
	Carpentry and Joinery, Lecture and Drawing—II. ...	Thurs.	7.30-9.30	C8	J. O'Callaghan, J. F. Cleary.

THIRD YEAR.

53 ^B	Carpentry and Joinery—Practice—III. ...	Mon.	7.30-9.30	C8	J. O'Callaghan, J. F. Cleary.
	Carpentry and Joinery, Lecture and Drawing—III. ...	Thurs.	7.30-9.30	C8	J. O'Callaghan, J. F. Cleary.

PLUMBERS' COURSE—Fee, 7s. 6d. for each Year of Course.

FIRST YEAR.

55 ^B	Plumbers' Work, Lecture and Drawing—I. ...	Tues.	7.30-9.30	D10	J. T. Bolton.
	Plumbers' Work, Pract.—I. ...	Mon.	7.30-9.30	D10	J. T. Bolton.

SECOND YEAR.

56 ^B	Plumbers' Work, Lecture and Drawing—II. ...	Fri.	7.30-9.30	D10	J. T. Bolton.
	Plumbers' Work, Pract.—II. ...	Thurs.	7.30-9.30	D10	J. T. Bolton.
	Chemistry and Physics for Plumbers ...	Tues.	7.30-9.30	A6	W. D. Horgan.

THIRD YEAR.

57 ^B	Plumbers' Work, Lecture and Drawing—III. ...	Fri.	7.30-9.30	D10	J. T. Bolton.
	Plumbers' Work, Pract.—III. ...	Thurs.	7.30-9.30	D10	J. T. Bolton.
	Chemistry and Physics for Plumbers ...	Tues.	7.30-9.30	A6	W. D. Horgan.

No. of Course	SUBJECT	Day	Hour	Room	TEACHER
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PLASTERERS' COURSE—Fee, 7s. 6d. for each Year of Course.

FIRST YEAR.

59	Plasterers' Work, Lecture and Drawing—I. ...	Mon.	7.30-9.30	D3	J. Saunders.
	Plasterers' Work, Practice—I. ...	Fri.	7.30-9.30	D3	J. Saunders.
	Modelling for Plasterers—I. ...	Thurs.	7.30-9.30	D3	J. Saunders.

SECOND YEAR.

60 ^B	Plasterers' Work, Pract.—II. ...	Fri.	7.30-9.30	D3	J. Saunders.
	Do. Lecture and Drawing—II. ...	Mon.	7.30-9.30	D3	J. Saunders.
	Modelling for Plasterers—II. ...	Thurs.	7.30-9.30	D3	J. Saunders.

THIRD YEAR.

61 ^B	Plasterers' Work, Pract.—III. ...	Fri.	7.30-9.30	D3	J. Saunders.
	Do. Lecture and Drawing—III. ...	Mon.	7.30-9.30	D3	J. Saunders.
	Modelling for Plasterers—IV. ...	Thurs.	7.30-9.30	D3	J. Saunders.

PAINTERS' AND DECORATORS' COURSE—Fee, 7s. 6d. for each Year of Course.

FIRST YEAR.

63 ^B	Painters' Work, Pract.—I. ...	Tu., Fri.	7.30-9.30	C10	J. King.
	Drawing and Design—I. ...	Mon.	7.30-9.30	C11	J. C. Morrow.

SECOND YEAR.

64 ^B	Painters' Work, Pract.—II. ...	M., W.	7.30-9.30	C10	J. King.
	Design (Mural and Ecclesiastical) ...	Fri.	7.30-9.30	C11	J. C. Morrow.

THIRD YEAR.

65 ^B	Painters' Work, Pract.—III. ...	Mon.	7.30-9.30	C10	J. King.
	Design (Mural and Ecclesiastical) ...	Tu., Fri.	7.30-9.30	C11	J. C. Morrow.

CABINET-MAKERS' COURSE—Fee, 7s. 6d. for each Year of Course.

FIRST YEAR.

67 ^B	Cabinet-making, Lecture and Drawing—I. ...	Wed.	7.30-9.30	C2	J. Hicks, J. J. Burke.
	Cabinet-making, Pract.—I. ...	Tues.	7.30-9.30	B6	J. Hicks.

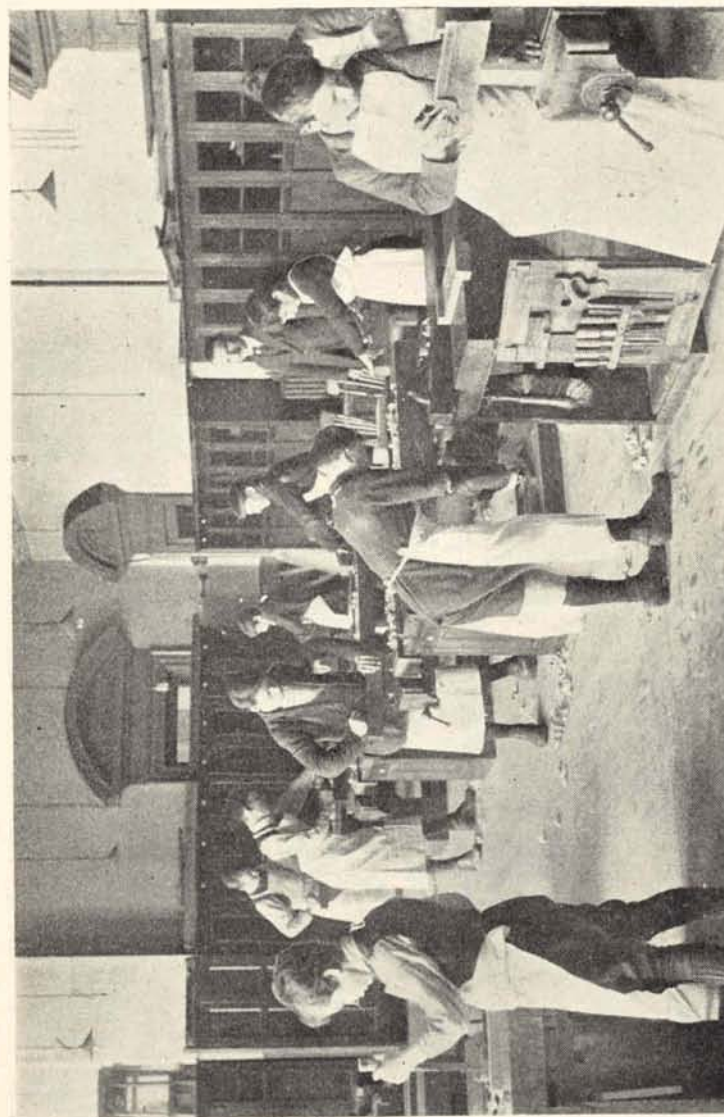
SECOND YEAR.

68 ^B	Cabinet-making, Lecture and Drawing—II. ...	Wed.	7.30-9.30	C2	J. Hicks, J. J. Burke.
	Cabinet-making, Pract.—II. ...	Mon.	7.30-9.30	B6	J. Hicks.

THIRD YEAR.

69 ^B	Cabinet-making, Lecture and Drawing—III. ...	Wed.	7.30-9.30	C2	J. Hicks, J. J. Burke.
	Cabinet-making, Pract.—III. ...	Mon.	7.30-9.30	B6	J. Hicks.

N ^o . of Course	SUBJECT	Day	Hour	Room	TEACHER
COACH AND MOTOR BODY BUILDERS' COURSES.—Fee for each Course, 7s. 6d.					
FIRST YEAR.					
71 ^b	Coach and Motor Body Building—I. (Lect. and Drawing)	Mon.	7-30-9-30	B11	T. Kelly.
	Do. (Practical) ...	Thurs.	7-30-9-30	B4	T. Kelly.
SECOND YEAR.					
72 ^b	Coach and Motor Body Building—II. (Lect. and Drawing)	Wed.	7-30-9-30	B11	T. Kelly.
	Do. (Practical) ...	Fri.	7-30-9-30	B4	T. Kelly.
FIRST YEAR.					
73 ^b	Coach Painting—I. (Pract.)	Thurs.	7-30-9-30	C10	F. F. Delaney.
	Do. (Drwg. and Lettering)	Wed.	7-30-9-30	C11	F. F. Delaney.
SECOND YEAR.					
74 ^b	Coach Painting—II. (Pract.)	Wed.	7-30-9-30	C10	F. F. Delaney.
	Do. (Drwg. and Lettering)	Thurs.	7-30-9-30	C11	F. F. Delaney.
FIRST YEAR, &c.					
75 ^b	Coach Trimming	Wed.	7-30-10-0	A14	W. J. Snowe.
WOODCUTTING MACHINISTS' COURSE.—Fee 7s. 6d. for each year of Course.					
FIRST YEAR.					
77 ^b	Woodcutting Machinery—I. (Drwg. and Practical)	Wed.	7-30-9-30	C9	D. Treacy.
	Practical Geometry and Calculations ...	Fri.	7-30-9-30	B10	A. Hanway.
SECOND YEAR.					
78 ^b	Woodcutting Machinery—II. (Drwg. and Practical)	Wed.	7-30-9-30	C9	D. Treacy
BRICKLAYERS' COURSE.—Fee 7s. 6d. for Session.					
FIRST & SECOND YEARS.					
79 ^b	Bricklaying (Practical) ...	Fri.	7-30-9-30	A13	—
	Bricklaying (Drawing) ...	Wed.	7-30-9-30	A13	—
MISCELLANEOUS CLASSES.					
Fees: 7s. 6d. each Subject for Session, except Land Surveying and Levelling, 30s. If taken as part of a Special Course the fee for the Course would be 7s. 6d., or 30s. if Land Surveying and Levelling is taken.					
	Manual Instruction (Wood)	Mon.	7-30-9-30	B4	A. Hanway.
	Builders' Quantities—I. ...	Fri.	7-30-9-30	B5	M. J. Burke.
	Land Surveying and Levelling	Mon.	7-30-9-30	C5	—
	French Polishing ...	Tu., Th.	7-30-9-30	B7	J. P. Collins.
	Geometrical Handrailing	Tues.	7-30-9-30	B4	W. Davidson.
SPECIAL CLASSES IN IRISH.					
	Irish—IA.	Mon.	7-30-9-30	B1	D. S. MacEoin.
	Irish—IB.	Thurs.	7-30-9-30	B1	D. S. MacEoin.
PRELIMINARY COURSE.—Fee, 5s. for Session.					
	English	Tues.	8-30-9-30	—	J. McNamee.
	Arithmetic	Tues.	7-30-8-30	—	J. McNamee.
	Drawing	Thurs.	7-30-9-30	C3	J. McNamee.



DAY APPRENTICE SCHOOL—CARPENTRY AND JOINERY WORKSHOP.

ARCHITECTURE AND BUILDING TRADES.

COURSES AND SYLLABUSES.

NOTE.—All students of Building Subjects are advised to take an Art Class in addition to the Technical Course. Art Classes are held on several Evenings, 7.30-9.30, on Floor C, Rooms 2 and 3.

INTRODUCTORY BUILDING COURSE.

Subjects:

1. ENGLISH.
2. WORKSHOP ARITHMETIC.
3. BUILDING DRAWING.

ENGLISH.

Reading: Reading from a text book on building subjects—correct meanings to words—correct spelling. *Letter Writing:* The essentials of good letter writing—forms of address in business letters—the beginning and ending of a letter. *Writing Reports and Descriptions:* Preparing the outline of a report on building work—matters with which the report should deal: progress, causes of delay, difficulties of obtaining materials, delay in transit of materials, trouble in obtaining suitable local labour, and other likely matters—how to describe simply and tersely any building process points in such a description—outstanding features—more particular descriptions of selected portions.

WORKSHOP ARITHMETIC.

Arithmetic signs: units—units of area—simple fractions—decimals—area of triangle, rectangle, irregular quadrilaterals, walls of room, sides of tank, etc.—the circle, circumference, area, etc.—volumes and weights of rectangular solids, cylinders, etc.—capacity of tanks, cylindrical pipes—surface area of cone, pyramid and cylinder—proportions by unitary method—percentages—square root—calculating costs from areas and volumes.

BUILDING DRAWING.

Drawing instruments—general setting out and arrangement—plain scales—scale drawing—the protractor—decimal scale—drawing quadrilateral figures, cutting out in paper and finding area—square root and its graphical representation—relation diameter of circle to circumference—area of circle—comparison of areas of similar figures—elliptic and segmental curves—drawing in three dimensions—plans, elevations, and sections—simple development of surfaces—isometrical representation of solids.

FIRST YEAR COURSE IN GENERAL BUILDING CONSTRUCTION.

Subjects:

1. BUILDING CONSTRUCTION.
2. PRACTICAL MATHEMATICS.
3. PRACTICAL GEOMETRY.

BUILDING CONSTRUCTION.

In this class the student will be familiarised with the more common building materials. Practice in freehand pictorial sketching of building details will be given, and students will be required to make therefrom proper working details to scale.

During the session occasional visits will be paid to buildings in course of erection for the purpose of examining and sketching details of construction.

FIRST YEAR.

Foundations: foundations and footings in ordinary soils—damp-proof courses. *Brickwork:* simple bonds of brickwork in plain walling—sleeper walls—segmental and semi-circular gauged arches—various kinds of bricks, and the purposes for which each is fitted.—*Masonry:* varieties of rubble and ashlar walling—plain work on sills—wall copings—characteristics of sandstones and limestones. *Carpentry and Joinery:* single floors—trimming around well-holes and fireplaces—stud partitions—ordinary roofs, including king post trusses.—construction of ledged and braced and panelled doors.—door frames and plain jamb linings—fixing of skirtings and architraves—construction of casement frames and double hung sashes.—casement frames and sashes. *Slating:* terms used in slaters' work—cutting and fixing of slates—treatment at eaves and ridges. *Plumbing:* lead gutters and flashings. *Plastering:* composition of various coats of plaster—ordinary lathing and plastering of internal walls, ceilings, and partitions.

TEXT BOOK.—C. F. Mitchell: Elementary Building Construction and Drawing.

FIRST YEAR.

PRACTICAL MATHEMATICS.

Approximate calculations—fractions—areas of triangle, rectangle, parallelogram, trapezium, irregular quadrilateral, etc.—evaluation of formulæ—algebraic symbols—rules as algebraic formulæ—mensuration of the circle, prism, cone, cylinder, pyramid—Easy simple equations—transposing formulæ—square root—the right-angled triangle, sine, cosine, and tangent of an angle and use of tables—percentages—averages—graphs—areas of irregular curved figures and average values by mid-ordinate rule.

FIRST YEAR.

PRACTICAL GEOMETRY.

Construction and use of scales—plotting of angles by protractor, or trigonometric tables—division of lines in giving proportions—measurement of angles in degrees—sine, cosine, and tangent of an angle—their values by graphical methods.—construction of a triangle from given data—location of points by rectangular co-ordinates—construction of polygons—similar figures—enlarging and reducing figures by radial projection—areas of triangles, polygons, and curved figures—construction of circles from specified data—tangents—angles in a segment—methods of defining positions in space, of points, lines, and planes—horizontal and vertical traces—inclinations of lines and planes to planes of projection.—prisms and pyramids—the regular tetrahedron—the sphere—the right circular cylinder and cone—plans, elevations, and sections of these solids.

SECOND YEAR COURSE IN GENERAL BUILDING CONSTRUCTION.

Subjects:

1. BUILDING CONSTRUCTION.
2. GEOMETRY AND MECHANICS

BUILDING CONSTRUCTION.

The instruction in the second year will give a more extended knowledge of the subjects dealt with in the first year syllabus, including the following:—

SECOND YEAR.

Foundations: precautions in excavations in various soils, with necessary strutting and timbering—concrete foundations for walls and piers—damp proofing of basements and ventilating of underground floors. *Brickwork*: bonding in junction of walls at right angles, in fireplaces and flues—finishing of chimney stacks—hollow walls and methods of bonding them—construction of flat/elliptical and pointed arches—corbelling. *Masonry*:—stone dressings—joints and fastenings in stonework—string courses and cornices—corbelling, arches—well-known building stones, quarrying, cutting, etc. *Carpentry and Joinery*: double floors—centres for segmental and circular arches to 15 ft. span—"Fitch" beams—queen-post and composite roof up to 40 ft. span—preparing flat roof for plumbing—box and taper gutter—trimming around skylights, chimneys, etc.—self-supporting wood partitions—doors in hard and soft woods—methods of finishing panels, framed and panelled jamb linings—vestibule doors and Frames—french casement windows—pivot hung windows—skylights—dog leg and open newel stairs with trimmings. *Slating*: roof coverings, methods of fixing. *Plumbing*: leadwork on roofs, gutters and flats, with rolls, drips, etc.—joints used in plumbing. *Sanitary Work*: principles of sanitation, laying and jointing of glazed stoneware and iron pipes—connection with main sewer—ventilation of drains—varieties of traps and gullies—testing of drains by smoke and by water. *Plastering*: Plasterers' work of all kinds, with knowledge of composition of materials used. *Painting and Glazing*: properties and qualities of pigments, varnishing, oils, and other materials, used in house painting and window glazing.

TEXT BOOK.—Mitchell: Advanced Building Construction.

GEOMETRY AND MECHANICS.

SECOND YEAR.

Areas of irregular plane figures by squared paper—mid-ordinate rule, and Simpson's rule—mensuration of geometrical solids—volumes and weights of girders, floors, roof coverings—amount of excavation in trenches for walls—volume of concrete in foundations, etc.—more difficult examples in plane geometry—construction and chief characteristics of the ellipse—further examples of plans, elevations, and sections of solids—development and interpenetration—general problems on lines and planes—intersecting planes and the angle between them, with practical applications—parallel and perpendicular lines and planes—dihedral angle.

Graphical statics—the triangle and polygon of forces—stresses in frames—parallel forces—reactions of supports—unit of force—measurement of force—composition and resolution of forces—moments of couples—centre of gravity and stability—efficiency of machines, lifting tackle—friction—stress, strain and elasticity.

THIRD YEAR COURSE IN GENERAL BUILDING CONSTRUCTION.

Subjects:

1. BUILDING CONSTRUCTION.
2. APPLIED MECHANICS.

BUILDING CONSTRUCTION.

In this year of the Course the student will obtain a wider knowledge of the subjects already dealt with. More time will be given to the making of finished drawings. Colouring, tracing and inking-in will receive some attention.

THIRD YEAR.

Drawing: inking-in, tracing, colouring and lettering of drawings. *Foundations*: natural and artificial foundations upon land and under water—timbering for excavations—damp sites and their treatment. *Brickwork*: bonds of all kinds—composite walls—retaining walls—ornamental construction in brickwork—sewer construction—brick manufacture—terra-cotta and artificial stones—their manufacture and uses. *Masonry*: various kinds of stones—their characteristics and chemical composition and suitability for different climatic conditions—construction of tracery windows—arches—stone stairs. *Carpentry and Joinery*: shoring and underpinning—scaffolding and staging—cannies and derrick towers—temporary buildings and half-timber work—centres for arches, and methods employed to fix and ease them—open timber and other forms of roof trusses—dormers—turrets—window frames and sashes of all kinds—shutters—lantern lights—shop fronts—planning and construction of stairs—timber: characteristics, defects, conversion, modes of seasoning, causes of decay, and means of preservation. *Plumbing and Sanitary Work*: domestic hot and cold water supply—baths, lavatories, sinks, and w.c. fittings—waste pipes, soil pipes, and ventilating pipes—sewage disposal for an isolated house—manufacture of lead and its general uses. *Ironwork and Fireproof Construction*: modern roof trusses up to forty-five feet span—steel joists and stanchions—fireproof construction in floors, roofs and stairs.

TEXT BOOK.—Mitchell: Advanced Building Construction.

APPLIED MECHANICS.

THIRD YEAR.

Revision of the Second Year's work on moments, couples and centres of gravity—graphic statics—Bow's notation—space and force diagrams—link polygons for parallel and non-parallel forces—further consideration of stresses in frame structures, such as roof trusses up to 45 ft. span—dead load and wind pressure diagrams—diagrams for structures not in one plane, such as are required for the stresses in shear legs, derrick cranes, etc.—stress and strain—elastic limits—elastic constants—working stresses—factors of safety—the testing of materials by compression, tension, and bending—concentrated and distributed loads on beams and cantilevers—shearing force and bending moment diagrams—the use of vector and link polygons in determining shearing forces and bending moments—theory of simple bending—distribution of stress intensity—moment of resistance—application of formulae for moments of inertia—section modulus—strength of beams of standard sections—combined bending and direct stress—common examples of eccentric loading—pillars and application of well known formulae—various forms of stanchions and built-up struts—the use of manufacturers' pocket-books in the choice of sections for beams and struts, stanchion bases and caps, connections for roof trusses, etc.

FOURTH YEAR COURSE IN GENERAL BUILDING CONSTRUCTION.

Subjects :

1. BUILDING CONSTRUCTION.
2. APPLIED MECHANICS.

BUILDING CONSTRUCTION.

FOURTH YEAR.

House planning—production of complete drawings of a small building with simple specifications and such working drawings as are usually supplied to a builder—heating systems—ventilation—methods of house sewage disposal in town and country—gas and electric lighting in their relation to building work—fireproof floors—steelwork generally—the manufacture, characteristics, and general uses of all classes of building materials, and the tests applied to ascertain their behaviour under various conditions.

APPLIED MECHANICS.

FOURTH YEAR.

Various types of roof trusses and spans for which they are suitable—determination of stresses by the method of sections—design of roof truss members—outline of design of plate or braced girder of uniform depth—calculations for deflection of a beam under specified conditions of loading—permissible deflection—camber—columns under eccentric and central loads—design of long struts in braced structures—simple calculations relating to masonry dams, retaining walls, piers and buttresses, foundations, small span arches, chimney—safe pressure on foundations in different classes of earth—distribution of pressure—resultant pressure in retaining walls—the importance of wind pressure in lofty structures—fluid pressure—changes of velocity and pressure along the stream lines in fluids—friction in pipes—simple hydraulic machines.

HONOURS COURSE IN GENERAL BUILDING CONSTRUCTION.

Subject :

1. BUILDING CONSTRUCTION.

FIFTH YEAR.

Ferro-concrete beams and floors, roofs, columns, chimneys, retaining walls, tanks, conduits, bridges, piles, etc., and calculations thereon—various well-known systems of ferro-concrete construction and their relative advantages—practical details concerning ferro-concrete work—materials and specifications.

FIRST YEAR COURSE IN ARCHITECTURE.

Subjects :

1. BUILDING CONSTRUCTION.
2. PRACTICAL MATHEMATICS AND PRACTICAL GEOMETRY.
3. HISTORY OF ARCHITECTURE.

BUILDING CONSTRUCTION AND PRACTICAL MATHEMATICS AND PRACTICAL GEOMETRY.

(Syllabuses as for First Year General Building Construction Course).

HISTORY OF ARCHITECTURE.

FIRST YEAR.

Egyptian, Greek and Roman Architecture—free sketching and drawing of typical mouldings and examples of construction.

This work may be supplemented by modelling and casting by the preparation of templets and the running of mouldings in plaster.

SECOND YEAR COURSE IN ARCHITECTURE.

Subjects :

1. BUILDING CONSTRUCTION.
2. GEOMETRY AND MECHANICS.
3. HISTORY OF ARCHITECTURE, PLANNING AND DESIGN.

BUILDING CONSTRUCTION AND GEOMETRY AND MECHANICS.

(Syllabuses as for Second Year Course in General Building Construction.)

HISTORY OF ARCHITECTURE, PLANNING AND DESIGN.

SECOND YEAR.

Romanesque and Byzantine Architecture—characteristic mouldings and examples of construction.

This work may be supplemented by modelling, drawing from the antique, etc. Attention will be given to the planning and design of simple structures.

THIRD YEAR COURSE IN ARCHITECTURE.

Subjects :

1. BUILDING CONSTRUCTION.
2. PERSPECTIVE AND DRAWING FROM THE ANTIQUE.
3. HISTORY OF ARCHITECTURE.

BUILDING CONSTRUCTION.

(Syllabus as for Third Year Course in General Building Construction.)

PERSPECTIVE AND DRAWING FROM THE ANTIQUE.

THIRD YEAR.

In perspective, architectural examples will be chosen. These will be carefully graded to suit the ability of the individual. In drawing from the antique the examples will be chosen in the same way.

HISTORY OF ARCHITECTURE.

THIRD YEAR.

Mediaeval Architecture and the Renaissance—Italian Renaissance Architecture.

NOTE.—An extension of this Course will be considered.

FIRST YEAR COURSE IN CARPENTRY AND JOINERY.

Subjects :

1. CARPENTRY AND JOINERY (PRACTICAL).
2. PRACTICAL GEOMETRY AND CALCULATIONS.

CARPENTRY AND JOINERY (PRACTICAL).

FIRST YEAR.

Examples to suit students' ability will be chosen. The necessary tools and timber will be provided by the Schools.

PRACTICAL GEOMETRY AND CALCULATIONS.

FIRST YEAR.

See Syllabuses for Practical Geometry and Practical Mathematics of First Year Course in General Building Construction.

SECOND YEAR COURSE IN CARPENTRY AND JOINERY.

Subjects :

1. CARPENTRY AND JOINERY (PRACTICAL).
2. CARPENTRY AND JOINERY (DRAWING AND LECTURE).

CARPENTRY AND JOINERY (PRACTICAL).

SECOND YEAR.

Examples to suit the student's ability will be chosen.

CARPENTRY AND JOINERY (DRAWING AND LECTURE).

SECOND YEAR.

Choice and preparation of scales.—plans and elevations, including sections—examples of joints and fastenings—oblique and isometric projection of common joints—simple forms of centres, turning pieces, rib centres; segmental and elliptical—common floor joisting—common floor coverings—trimming around chimney breasts and well-holes—couple roof—collar brace roof—king post truss—setting out the commoner forms of mouldings—door frames and jamb linings—doors; braced and sheeted, four panelled—case-moment frame—sash frame and sashes—skirtings, grounds, and fixing—growth and structure of timber, conversion, seasoning, etc.—tools, mechanical principles involved.

TEXT BOOK.—Wilson : Carpentry and Joinery.

THIRD YEAR COURSE IN CARPENTRY AND JOINERY.

Subjects :

1. CARPENTRY AND JOINERY (PRACTICAL).
2. CARPENTRY AND JOINERY (DRAWING AND LECTURE).

THIRD YEAR. CARPENTRY AND JOINERY (PRACTICAL).

Examples to suit the students' ability will be chosen.

CARPENTRY AND JOINERY (LECTURE AND DRAWING).

THIRD YEAR.

Panel doors of various kinds—jamb linings and solid door frames—diminished stile doors—swing doors—double-margin door and details—framed, ledged, and braced doors—yard gates—cased frames and double-hung sashes—casement frames—French windows—pivot-hung sashes—hospital light—circular-headed sash frames, cased and solid—partitions, common and trussed—king post truss with details—queen post truss—mansard truss—bevels for oblique work generally—roof bevels—lengths and bevels for hip, valley, and jack rafters—roof bevels for purlins—backing for hips and valleys—strength of joists and beams—single, double, and framed floors—details of floors, trimming around hearths, etc.—dog-legged stairs, with details—open newel and geometrical stairs—details of strings, newels, rails, carriages, etc., in stairs—construction of triangular and circular louveres—nature and properties of various timbers—raking, flying, and dead shores—exercises in the use of the steel square.

TEXT BOOK.—Wilson : Carpentry and Joinery.

BOOKS OF REFERENCE.—G. Ellis: Modern Practical Carpentry, and Modern Practical Joinery.

FOURTH YEAR COURSE IN CARPENTRY AND JOINERY.

Subjects :

1. CARPENTRY AND JOINERY (PRACTICAL).
2. CARPENTRY AND JOINERY (DRAWING AND LECTURE).

CARPENTRY AND JOINERY (PRACTICAL).

FOURTH YEAR.

Examples to suit the student's ability will be chosen.

CARPENTRY AND JOINERY (LECTURE AND DRAWING).

FOURTH YEAR.

Roofing of difficult plans, cuts and bevels for members—open timber roofs; hammer-beam and collar-beam—trusses of special form, groin roofs—turret roofs, circular and polygonal—niches—lantern lights—centres for large spans; elliptical, segmental, etc.—raking, horizontal and shoring for shop fronts—timber bridges—platform gantry and scaffolding—traveller gantry—derrick-tower gantry—geometrical staircase—staircase details and ornamental finishings—wreath for quarter circle stair—wreath for half-turn stair—wreath for quarter space of winders—wreath for scroll shank—solid mullioned, single and double boxed, venetian sash frames—balancing shutters—boxing shutters—various joinery fittings, cupboards, enclosures, etc.—circle-on-circle; door frames, with radiating and with parallel jambs—circle-on-circle; cased frames and sashes—shop fronts, with roller shutters and sun-blind—airtight show cases; floor cases and wall cases—counter cases, square and round ended—exercises in the use of the steel square—wood-working machinery, planer, spindle, circular saw and band saw.

TEXT BOOK.—Wilson : Carpentry and Joinery.

BOOKS OF REFERENCE.—Modern Practical Carpentry, and Modern Practical Joinery, by George Ellis.

FIRST YEAR COURSE IN PLUMBERS' WORK.

Subjects:

1. PLUMBERS' WORK (LECTURE AND DRAWING).
2. PLUMBERS' WORK (PRACTICAL).

PLUMBERS' WORK (LECTURE AND DRAWING).

FIRST YEAR.

Elementary Science: effect of heat on solids, liquids and gases—cause of frost burst, and methods of preventing it—effect of heat in causing motion in liquids and gases—its application to hot water circulation and the ventilation of pipes—thermometers—measurement of quantity of heat—relation of quantity of heat applied to rise of temperature in air, water, lead, zinc, and other substances used in plumbers' work—properties and composition of air and water. *Alloys, Solders, etc.*: various alloys used for valves and cocks—solders, their composition, preparation, and uses—fluxes, their action and uses—methods of soldering—blowpipe, copper bit, wiping, etc.—special advantages of lead burning. *Workshop Appliances*: the lever, pulley block, screws—behaviour of lead under great pressure—pressure due to action of liquids and gases—head of water—nature of a water seal—action of the syphon—principles and construction of traps and valves. *Tools*: their forms, uses, etc.—fitting up and equipment of workshop—varieties of pipes used in plumbing. *Calculations*—quodecimals—mensuration of plane figures—areas of sloping and curved roof surfaces—pyramidal, conical and spherical roof coverings—estimating quantity and cost of materials—calculating capacities of pipes, tanks, boilers, cylinders, etc. *Geometry*: application of geometrical construction to cutting out sheet metals for covering dormers' gutters, lantern lights, etc.—development and interpenetration as applied to pipes, ventilators, roofs, vessels, etc.—projection—plans, elevation, sections, and details of pieces of work in plumbing, sheet metal work, etc.

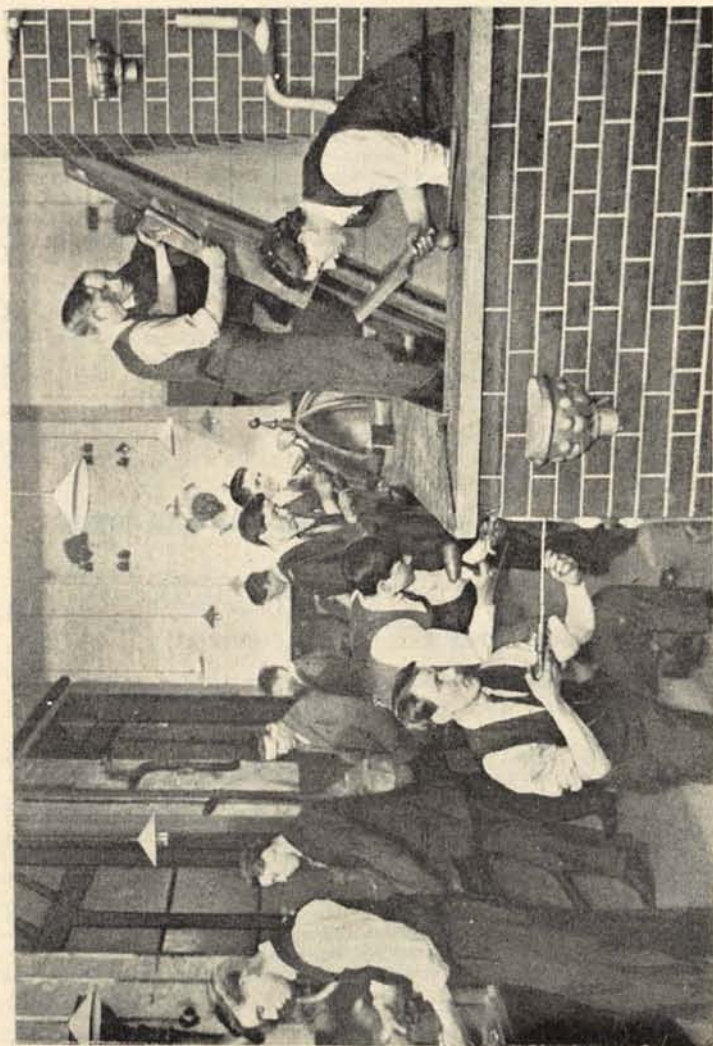
In the subsequent years of the course the Calculations and Geometry will be of the same practical nature, but of a more advanced type.

TEXT BOOK.—Bennett: Technical Plumbing.

PLUMBERS' WORK (PRACTICAL).

FIRST YEAR.

See Syllabus under Third Year Course.



PLUMBERS' WORKSHOP.

SECOND YEAR COURSE IN PLUMBERS' WORK.

Subjects :

1. PLUMBERS' WORK (LECTURE AND DRAWING).
2. PLUMBERS' WORK (PRACTICAL).
3. PHYSICS AND CHEMISTRY.

This Course will be found suitable for those applying for Certificate of Registration.

PLUMBERS' WORK (LECTURE AND DRAWING).

SECOND YEAR.

Properties and Uses of Materials: relative strengths, under various pressures, of lead, cast iron, wrought iron, and copper tubes—nature and uses of seamless lead pipes, tin and tin-lined pipes, sheet lead pipes, and method of joining. *External Roof Work:* covering of flats, gutters, cesspools, dormers, skylights, etc.—principles of jointing sheet lead by rolls, welts, drips, and passings—development of surfaces—making of working drawings. *Hot Water Apparatus:* principles of hot water circulation for domestic and other purposes—cylinder and tank systems—boilers and taps—material used in valve seatings, packing, etc., systems in use for prevention of furring of pipes and boilers. *Sanitary Appliances:* water-closets, their fittings and supply—water-waste preventers—baths, lavatories, sinks, etc.—traps—momentum, waving out, and syphonage of traps and methods of preventing same—house cisterns, their construction and fitting—traps, pipes, fittings, and other materials used in house drain construction. *Mechanical Appliances:* the multiplication of power by water pressure, as illustrated by hydraulic press—pumps—construction and uses of different kinds of pumps—hydraulic ram, etc.

TEXT BOOK.—S. S. Hellyer : Principles and Practice of Plumbing ; or W. P. Buchan : Plumbing.

BOOK OF REFERENCE.—W. R. Maguire : Domestic Sanitary Drainage and Plumbing.

PLUMBERS' WORK (PRACTICAL).

SECOND YEAR.

See Syllabus under Third Year Course.

PHYSICS AND CHEMISTRY.

SECOND YEAR.

See Syllabus under Third Year Course.

THIRD YEAR COURSE IN PLUMBERS' WORK.

Subjects :

1. PLUMBERS' WORK (LECTURE AND DRAWING.)
2. PLUMBERS' WORK (PRACTICAL).
3. PHYSICS AND CHEMISTRY.

Students will find the instruction given in this Course suitable for the Final Examination of the City and Guilds of London Institute, and for the Examination of the Royal Sanitary Institute.

PLUMBERS' WORK (LECTURE AND DRAWING).

THIRD YEAR.

Water: sources, properties, qualities ; deep and shallow wells, springs—storage, filtration, and distribution—pollution : causes and prevention—quantity per head for private purposes—rain fall—flow of water in channels and pipes—calculations of velocities. *Hot Water and Heating:* method of obtaining large supplies—heating buildings by hot water or steam—high and low pressure systems—sizes of pipes, and boilers—radiating surfaces for heating—heating surfaces of boilers. *Ventilation:* systems of ventilation for private dwellings and public buildings. *Drainage:* setting out town and country house drainage—sewers—storm overflow—sewage gas, and ventilation of sewers—sewage disposal for isolated country houses—testing drains and waste pipes—arrangement and fitting of sanitary appliances. *Plans and Specifications:* preparation of specifications and quantities, making of working drawings to scale—measuring work. *Bye Laws:* Local Authorities Bye-Laws and Regulations.

TEXT BOOK.—S. S. Hellyer : Principles and Practice of Plumbing.

BOOKS OF REFERENCE.—As for Second Year Course.

PLUMBERS' WORK (PRACTICAL).

FIRST, SECOND AND THIRD YEARS.

Straightening sheet lead and tin, lead pipes, etc.—preparation of seams for soldering sheet lead and tin—soldering sheet lead with fine, tinman's, and plumbing solder—preparation of solder, soil, etc.—preparation of joints for soldering with iron, blowpipe, and plumbing metal—joint making (copper bit, blowpipe, plumbing)—caulking joints with lead and rust cement—joints of earthenware and stoneware pipes—lead working into various forms—pipe fixing—pipe bending—lead burning.

An exhibition of students' practical work will be held at the close of the Session.

PHYSICS AND CHEMISTRY FOR PLUMBERS.

This subject is of the greatest importance to Plumbers, and forms part of the Second and Third Year Courses.

SECOND AND THIRD YEARS.

General Properties of Matter: measurement of length, area and volume—determination of density—measurement of force—centres of gravity—the lever—the principle of work. *Fluid Pressure:* nature and modes of measurement of pressure of liquids and gases—variation of pressure with depth in liquids—atmospheric pressure—the barometer—Boyle's law—the principles of physics in connection with water supply, pumps and syphonic action. *Heat:* expansion of solids, liquids and gases—temperature and thermometers—heat as a quantity—the caloric and the therm—thermal capacity and specific heat—change of state—melting and boiling points—latent heats of fusion and vaporisation—change of volume resulting from change of state—the spheroidal condition and the physics of fluxes—convection, conduction and radiation. *Chemistry:* oxidation—reduction—composition of water and its action on metals—acids and salts—hydrochloric acid and "killed spirit"—elementary chemistry of lead, iron, zinc, tin and copper—composition and properties of red lead, litharge, white lead, etc., and cements made from them.

COURSE IN PLASTERERS' WORK.

Subjects :

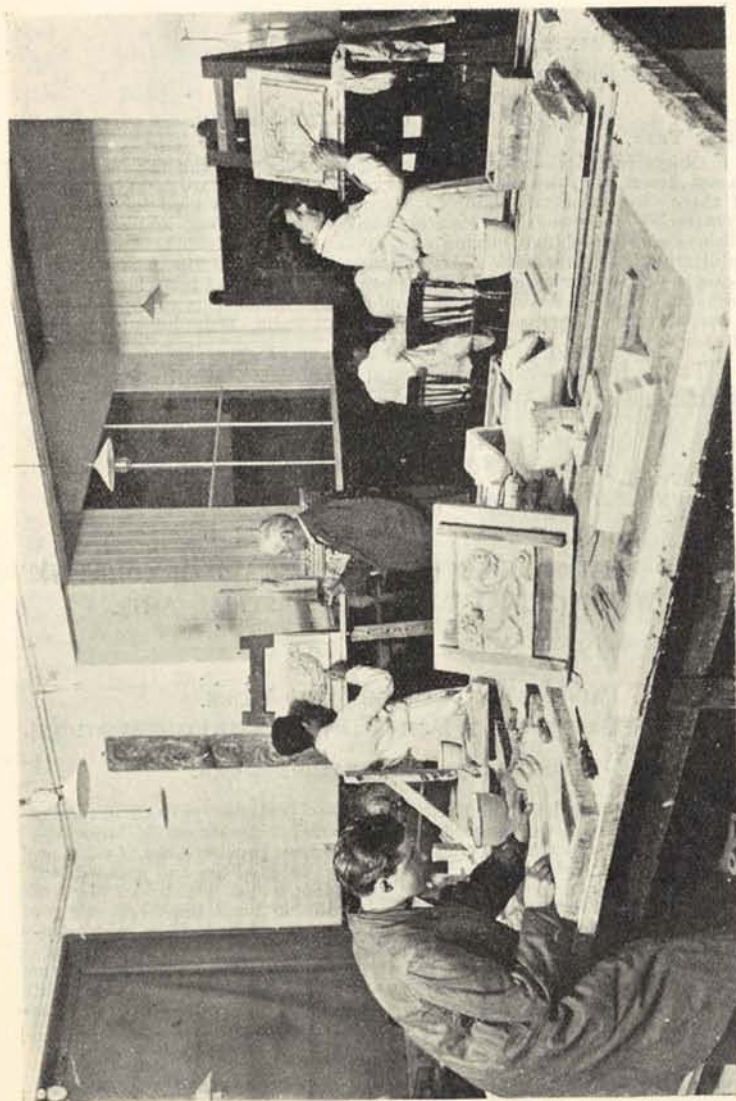
1. PLASTERERS' WORK (LECTURE AND DRAWING.)
2. PLASTERERS' WORK (PRACTICAL).
3. MODELLING AND CASTING.

PLASTERERS' WORK.

General Syllabus of full Course.

FIRST AND SECOND YEARS.

Tools used—various lines and suitability for different work—sands : preparation and admixture with limes and cements—substitutes for sands—lathing internal walls, ceilings and partitions—preparation of bracketing for plasterers' work—preparing brick and stone walls for plaster—fibrous plaster—Portland cement—Keen's, Parian, Admant, Marbalite, Sirapite and other cements—cast concrete work—mixing, tempering and manipulating—cutting moulds—moulding and casting in plaster wax, gelatine, sulphur and Phelph's metal—piece moulding—moulding from life—moulding from high relief and the round—Scagliola making and polishing—materials, quantities and manipulations for Sgraffito work—pouncing, cutting and clearing out—gesso, composition, carton-pierre, fibrous plaster, plain face and fibrous slabs—modelling in clay, plaster stucco, gesso and cement—description and drawing of observed examples of work.



PLASTERERS' (MODELLING) WORKSHOP.

FIRST YEAR COURSE IN PAINTERS' AND DECORATORS' WORK

Subjects :

1. PAINTERS' AND DECORATORS' WORK.
2. DRAWING AND DESIGN.

PAINTERS' AND DECORATORS' WORK.

FIRST YEAR.

Object in painting surfaces—principles underlying the use of paints—names, description, and uses of brushes and other tools—care and preservation of these—the principal pigments, thinners, and driers used in painting—*Preparation of Grounds for Painting*: stopping, filling up, and surfacing—*Plain Painting*: simple mixing and application—*Distemper*: composition, application and preparation of grounds—graining and the preparation of grounds—*Sign Writing and Lettering*: principal styles of lettering and their forms and names—setting out of simple signs—dimensions of paper-hanging—preparation of pastes—the preparation of walls—stripping and hanging of ordinary papers.

TEXT BOOK.—Ellis Davidson: House Painting, Graining, Marbling, and Sign Writing for all classes.

DRAWING AND DESIGN.

FIRST YEAR.

See Syllabus under Third Year Course.

SECOND YEAR COURSE IN PAINTERS' AND DECORATORS' WORK (MURAL AND ECCLESIASTICAL ART).

Subjects :

1. PAINTERS' AND DECORATORS' WORK.
2. DRAWING AND DESIGN (MURAL AND ECCLESIASTICAL).

PAINTERS' AND DECORATORS' WORK.

SECOND YEAR.

Faults in painting and their avoidance—preservative and decorative aspects of painters' work—economy in working—cleanliness in working—composition of, and the material used in painters' brushes—use of plant and appliances—oils and diluents; their properties, qualities and uses—driers—their composition, nature and action—permanence and fugacity of pigments—washable and firm distempers—water paints; limitations—selection of papers for walls and ceilings—setting out for and hanging relieve materials—artistic use of graining and marbling—grounds and methods of working—graining of different woods—oak, walnut, etc.—notice and advertising lettering—elaboration and emphasising of lettering, flattening, enamelling, etc.—woods suitable for staining—preparation and application of stains—faults in varnishing and their cure—mixed tints and colours—general hints on paint mixing.

DRAWING AND DESIGN (MURAL AND ECCLESIASTICAL).

SECOND YEAR

See Syllabus under Third Year Course.

THIRD YEAR COURSE IN PAINTERS' AND DECORATORS' WORK (MURAL AND ECCLESIASTICAL ART).

Subjects :

1. PAINTERS' AND DECORATORS' WORK.
2. DRAWING AND DESIGN (MURAL AND ECCLESIASTICAL).

PAINTERS' AND DECORATORS' WORK.

THIRD YEAR.

Selection of plant and tools for jobs, the testing of steps, ladders, etc.—arrangement of scaffolding for painters—testing colours, pigments, oils, turpentine, and driers—quantities for given work—action of successive coats of paint upon preceding coats—arrangements of men when painting large surfaces—painting ornament, and gilding on distemper—use of distemper on other than plaster grounds—stencilling—punctuation, gilding and preparation of grounds, etc., for sign writing and lettering—use of imitative effects of material and texture such as bronze, ivory, etc.—representation of inlays marquerie, etc.—polychromatic stencilling—matt and burnish gilding, etc.—chemical staining—preparation of stain—comparative value of water, oil and spirit staining—colour values and qualities—how to decide a colour scheme.

DRAWING AND DESIGN (MURAL AND ECCLESIASTICAL).

FIRST, SECOND AND THIRD YEARS.

Designs for friezes, dado borders, string courses, plasters, panels, corner pieces, breaks, centres, diapers—heraldic devices—ornamental lettering, short texts to scale—drawings for imitation of inlaid woods and marbles—rough sketches for schemes of decoration—scales and working drawings for schemes of decoration—working out sketches with measurements taken from existing buildings, and setting to given scale—drawing of historic ornament—sketches of Lunette, Cartouche.

FIRST YEAR COURSE IN CABINET-MAKERS' WORK.

Subjects :

1. CABINET-MAKING (DRAWING AND LECTURE).
2. CABINET-MAKING (PRACTICAL).

CABINET-MAKING (DRAWING AND LECTURE).

FIRST YEAR.

Nature and properties of various kinds of wood used in cabinet-making, with ports or places from which they are obtained—most suitable woods for construction—groundwork and veneers—best methods of seasoning and preparing for use—cabinet-making tools—names and uses—plain joints; dowelling, tonguing, dovetailing—methods of setting out and constructing mouldings; different names—preparation of working drawings—veneering surfaces—proper use of veneer—preparation of grounds and veneers, with methods of making work stand after veneering—cabinet brass work: hinges, joint stays, bolts and locks—methods of fixing and their different advantages—methods of measuring and setting out shaped window seats, cornice poles, and drapery laths—hints with regard to the fitting up and completion of furniture for the showroom.

TEXT BOOK.—Bitmead: Cabinet-making.

CABINET-MAKING (PRACTICAL).

This class forms part of the Course and must be taken in conjunction with the Drawing and Lecture Class in Cabinet-making.

The object of this Class is to afford the Student an opportunity of applying in a practical manner the knowledge gained at the theoretical and drawing lessons.

FIRST YEAR.

Tools: principles underlying their construction—proper method of sharpening and using—making of joints as used in cabinet work, including dowelling, tonguing, dovetailing—construction of simple mouldings by hand—preparation of machine made mouldings for the polisher. *Veneering:* preparation of groundwork—veneering with caul and hammer, including rails and panels in straight and curved work, crossbanding circular rims, cleaning up veneered surfaces—proper methods of affixing hinges, joint stays, bolts and locks—fitting up furniture for the showroom, including proper methods of fastening glass—proper methods of affixing cornice poles, window seats, and cosy corners.

The necessary tools and timber will be provided by the Schools.

SECOND AND THIRD YEAR COURSE IN CABINET-MAKERS' WORK.

Subjects :

1. CABINET-MAKING (DRAWING AND LECTURE).
2. CABINET-MAKING (PRACTICAL).

CABINET-MAKING (DRAWING AND LECTURE).

SECOND AND THIRD YEARS.

Nature and properties of the various kinds of wood used in cabinet-making, their suitability for decorative work, their diseases and how to minimise their effect before and after being converted into furniture—mechanical actions, such as are used in cylinder fall desks, writing tables, dumb waiters, etc.—different methods of expanding dining tables—cabinet brass work: hinges, joint stays, bolts, and locks—best methods of fixing—inlaying and veneering with tortoiseshell, ivory, mother-of-pearl, and metals—preparation and methods of applying veneers to flat and sweep work—styles of furniture and the periods to which they belong—joints; plain copper, dowelling, tonguing, and dovetailing, secret lap and secret mitre dovetailing—methods of setting out—construction of working drawings from student's own designs.

TEXT BOOK.—Bitmead: Cabinet-making.

CABINET-MAKING (PRACTICAL).

In this Class difficult pieces of Cabinet work will be undertaken, and the complete setting out and working of pieces of furniture.

SECOND AND THIRD YEARS.

More advanced work on the first year Course, and, in addition:—

Inlaying and veneering with tortoiseshell, ivory, mother-of-pearl, and metals—preparation of groundwork and veneering of difficult pieces of cabinet work—making of joints, such as secret lap and secret mitre dovetail knuckle rule, and finger—construction of difficult Roman and Grecian mouldings by hand.

Students taking the City and Guilds Final Examination in cabinet-making will find this Class suitable for the construction of the specimen of practical work to be submitted to the Examiners.

The necessary tools and a supply of ordinary timber will be provided by the Schools.

TEXT BOOK.—Bitmead: Cabinet-making.

COURSE IN COACH AND MOTOR-CAR BODY BUILDING.

The Course will occupy two Sessions.

GENERAL SYLLABUS—LECTURE, DRAWING AND PRACTICAL WORK.

FIRST AND SECOND YEARS.

Construction of scales and their use—timber used in Coach Building and Motor Body work—measuring and valuing—natural and artificial seasoning, and the use of bent timber—iron and steel; process of forging and welding—how to tell the quality of steel and iron—precautions when forging or tempering various kinds of iron and steel—aluminium and other metals used for panels, wings, etc.—designing and drawing side view, plan and back view of carts, waggonettes, landaus, victorias, broughams and other carriages, open or closed, and motor bodies—designing, drawing and making joints in coach-building—sizes of poles, bars and shafts for various horses or ponies—position of tug stops and staples, etc.—varieties of under-carriages—wheels with wooden spokes, including artillery patterns—sections of hubs, spokes and tyres, channels, pneumatic tyres, etc.—sizes and shapes of axles and springs and motor axles—spring making and methods of testing springs and axles; setting them true and fixing—shock absorbers—ironwork on bodies and carriages—lever brakes—foot brakes—wind screen—ironwork for luggage, tyre carriers, grids, etc.—tools used by body builders; sketches and descriptions—common workshop appliances and machinery—designing and drawing all kinds of motor bodies—making working drawings for use in the shop, such as drawings of ironwork, sections of framing and of naves—calculating the sizes of wheels, springs, axles, and the quantity of timber required—writing out workshop orders—specifying the work to be done to a carriage or motor car when worn or damaged—estimating the cost of repairs—the general principles of costing—remedying of defects such as noise or vibration—methods of overcoming difficulties of construction, as in making folding hoods and seats, movable canopies and brougham tops, landalette pillars, and door tops.

COURSE IN COACH PAINTING.

The Course will occupy two Sessions.

GENERAL SYLLABUS—LECTURE, DRAWING AND PRACTICAL WORK.

FIRST AND SECOND YEARS.

Painting; materials used and process of painting and varnishing—preparation of paint from crude or dry colour—properties of oils, varnishes and other materials used—lettering, crests, etc.—tools used by painters, care and use—workshop appliances.

COURSE IN COACH TRIMMING.

The Course will occupy two Sessions.

GENERAL SYLLABUS—LECTURE AND PRACTICAL WORK.

FIRST AND SECOND YEARS.

Trimming materials: leather cloth, lace, etc.—methods of sewing stuffing, etc.—marking out materials, especially with a view to appearance and economy—flat and curved work—tools and appliances employed.¹

COURSE IN WOODCUTTING MACHINERY.

Subjects:

1. WOODCUTTING MACHINERY (THEORY AND PRACTICE).
2. PRACTICAL GEOMETRY AND CALCULATIONS.

The Course will occupy two Sessions.

WOODCUTTING MACHINERY (THEORY AND PRACTICE).

FIRST AND SECOND YEARS.

General Woodworking Machinery covering the following branches:—

Saw Mill Work: circular sawing (feed and hand)—deal frame sawing—log frame sawing—four cutter moulding machine.

Joinery, Machine Work: planing machines—bandsawing machines—three cutter moulding machines—spindle moulding machines (French and English)—tenoning and scribing machines.

Shop Fitting and Cabinet Machine Work: spindle moulding (French and English)—handsawing—fretsawing—circular sawing—mortising.

GENERAL.

Making cutters for specific purposes—bandsaw brazing, jointing and sharpening—brazing and tempering—circular saw sharpening and setting—belt stitching and lacing—belt jointing—machining of doors—drawing; economical conversion of timber—cutter balance and setting up of machines—preparation of cutters and running of mouldings of all kinds—grooving, tenoning and mortising.

PRACTICAL GEOMETRY AND CALCULATIONS.

See Syllabus under First Year Course in Carpentry and Joinery.

COURSE IN PRACTICAL BRICKLAYING.

The object of the course is to provide opportunity for the practical setting out, cutting and laying of brickwork in arches, and other work of a special character.

The class will meet on two evenings per week, and the course will occupy two sessions. The necessary tools, materials and appliances will be provided by the School. Students should provide themselves with a bricklayer's ordinary measuring rule and spirit level.

GENERAL SYLLABUS—DRAWING AND PRACTICAL WORK

FIRST AND SECOND YEARS.

Setting out, cutting and laying of brickwork in the following arches:—single-ring segmental, plain ope; double-ring segmental, plain ope; double-ring segmental recessed jambs; camber arch over window ope; complete window ope with arches and reinforced concrete lintel.

The more advanced work will comprise the following arches:—Gothic, equilateral, reduced and lancet; elliptical and three-centred; Tudor or four-centred; Venetian pointed and Florentine; Queen Anne and ogee.

In addition to the above, brickwork of a special kind may be undertaken, such as weathering to buttresses, corbelling, inverted arches, squint piers, pilasters and columns—the proper setting of kitchen ranges—construction of smoke flues—sanitary work—method of laying drains—construction of manholes and egg-shaped sewers.

COURSE IN GEOMETRICAL HANDRAILING.

(Open only to Journeymen Carpenters).

The accommodation available for this course being limited preference will be given to applicants who are past students of the Schools. Those who wish to secure a place should make early application.

SYLLABUS.

Setting out wreath for quarter circle plan—method of obtaining the face mould and bevel—practical work—Cutting wreath from the plank, bevelling, squaring, and moulding—setting out wreath for semi-circular plan, arrangement of risers—How to obtain the face moulds and bevels for equal and unequal pitches—cutting wreath from the plank, bevelling and squaring, joining to straight rail, etc.—setting out terminal scroll and wreath—method of obtaining bevels, face moulds and falling lines, jointing and moulding complete—Setting out wreath over quarter space of winders; obtaining face mould and bevels; working and moulding wreath—setting out wreath for ship's stair, with quadrant well and level landing, the wreath being in two pieces.

Students will require to provide themselves with the ordinary drawing instruments and drawing paper. The Schools will supply the necessary woodworking tools and timber.

COURSE IN BUILDERS' QUANTITIES.

The class is intended to supply a course of elementary instruction in Quantity Surveying as practised in Dublin and District, to Architects', Surveyors', and Builders' pupils and assistants, and others engaged in the building trade. Intending students should have a practical knowledge of Building Construction and Drawing, and be versed in the elements of mensuration. Instruction will be given in the usual methods of taking off, abstracting, and putting into estimating form, the materials and labour required in the various trades.

The instruction will be given mainly by lectures illustrated by blackboard sketches; in addition, questions for homework will be set weekly.

Students will be required to provide themselves with a set of paper scales.

SYLLABUS.

Quantities and Specifications: general explanation of both, with their essential differences. *Taking-off*: explanation and description of various methods of taking-off, with simple examples; squaring dimensions.

Abstracting: explanation: general hints and simple examples reducing the alternative estimates. *Billing and Pricing*: explanation; general hints and simple examples.

The mode of measurement and description of the following:—

Excavator and Drainer: excavations over surface, and for basements and trenches; disposal of material; strutting and planking—drains: pipes, bends, junctions, traps, inspection chambers, connections to sewers. *Bricklayer*: concrete in foundations; floors and walls; common brickwork, including party walls; chimney breasts; boundary walls; openings; battered and circular work; work in cement; damp courses; pointing; cuttings; beam filling; trimmer and relieving arches; facings; moulded courses, etc. *Mason*: rubble walling; wallstone and ashlar facing; dressings, including plinths, sills, strings, cornices, copings, heads, templates; flagging steps, square and spandril; hearths; landings. *Carpenter and Joiner*: centring; floors; roofs; partitions; windows; doors, staircases, etc. *Ironfounder and Smith*: cast-iron work in pillars; pipes; beams and gutters; rolled and built steel girders; and iron roofing. *Slater and Tiler*: straight; circular and vertical; eaves course; cuttings; ridges; hips and valleys. *Plumber and Zinc Work*: flats; gutters; cisterns; flashings; bends; stock gutters and pipes in cast-iron; bath and lavatory fittings, etc. *Glazier*: sheet, ground, rolled, and polished plate and lead lights. *Plasterer*: lime washing walls; rendering on walls; lath and plastering ceilings and partitions; cornices; enrichments; soffits; cement dadoes and skirtings. *Painters*: Painting on walls, wood and iron, external or internal; graining, staining, varnishing, and lettering.

TEXT BOOK.—W. E. Davis: Quantities and Quantity Taking.

COURSE IN LAND SURVEYING AND LEVELLING.

The Course is intended to give a sound theoretical and practical knowledge of Surveying, to give facility in the use of the various instruments, in plotting surveys, and in making finished plans. It will be found of service to Engineers' and Architects' assistants, Auctioneers, Land Agents, and others, as well as for the examinations of the Surveyors' Institute, the Institution of Civil Engineers, the Auctioneers' Institute, etc. It also covers much of the work required for the various foreign examinations for surveyors.

The course will comprise *eighteen* lectures and *ten* practical demonstrations—some devoted to field work, and some to office work. The dates and places for the field work will be announced in class as the course proceeds.

All apparatus and instruments for field work are provided by the Schools, but students must provide their own plotting scales, survey book, level book, drawing instruments, and materials.

SYLLABUS.

Surveying with the Chain: object in making a survey—apparatus used: chain arrows, rods, etc.—testing chain for length—measures of length and area. *Simple Surveying Operations*: ranging a line, fixing position of a point relative to a line, setting out a perpendicular to a line, connecting points invisible from one another—optical square. *Chaining*: duties of leader and follower—chaining on slopes—stepping—clinometer. *Simple Surveys*: stations—main lines—triangles, well and ill conditioned—offsets—offset rod—methods of dealing with fields, town plots and small estates of regular or irregular outline, obstacles, such as buildings, lakes, rivers. *Booking the Survey*: forms of field book—methods of entering the notes—conventional signs. *Magnetic Compass and Magnetic Bearings*: variation of the compass—prismatic compass. *Traversing with Chain*: setting out curves. *Levelling*: instruments employed; level—construction of telescope—level staff—Abney level—clinometer—aneroid barometer. *Simple and Compound Levelling*: bench marks—datum line—curvature of earth—refraction. *Methods of booking levels*: rise and fall methods—collimation method—reduction of levels and method of checking—check levels. *Sections*: cross sections and longitudinal sections—working sections. *Plotting Sections*: horizontal and vertical scales—information required on the plotted section. *Principles of Contouring, Permanent Adjustments of Level*: office work—scales—meaning of representative fraction—scales used on ordnance plans—plotting scales. *Materials* required, such as brushes, colours, instruments—plotting the field notes—mode of procedure—styles of writing and printing—north points—colouring—ornament generally—preparation of finished plans. *Copying Plans*: tracing—heliography—enlarging and reducing—pantograph. *Mensuration of areas*—method of triangles—method of ordinates—Simpson's rule—planimeter—computing scale.

An examination in the theory and practice of surveying will be held at the close of the course, and certificates will be awarded to successful students.

COURSE IN MANUAL INSTRUCTION (WOODWORK).

The main objects of the Class are to afford a training in the proper use of woodworking tools to give a knowledge of the proper proportion and suitability of joints for different purposes, to enable students to make articles of domestic, personal, or other use, and to provide a medium for the learning of mechanical drawing and sketching.

FIRST YEAR.

Drawing: Simple projection, as required for the working drawing of each model. *Woodwork*: Exercises in planing, sawing, and chiselling—Making of woodworking joints—Models of a useful nature, involving the use of these joints. *Theory*: Construction of the various tools, grinding and sharpening of edged tools. *Timber*—woods in common use, growth, sources of supply, nature and properties; seasoning of timber.

SECOND YEAR.

In this year of the course the work will be chiefly the making of models of a utilitarian nature, and students will be allowed some freedom in their choice of models.

The necessary tools and timber are provided by the School.

FRENCH POLISHING.

FIRST AND SECOND YEARS.

The art of French polishing—manufacture and use of various stains and polishes—colouring and lacquering—varnishing and glazing—gums and their use—colours and their use—aniline dyes and chemicals used in stains—methods of polishing different woods, wooden carvings and statues—imitations, inlay transfers, papers, various methods of polishing; German, Scotch, English, American, Swedish and French.

IRISH LANGUAGE.

All Students of the Schools are entitled to attend a class in Irish if they so desire, without extra charge. Classes in the First Year only are held in the Bolton Street Institute, but more advanced students will be provided with instruction in any stage at the Technical Institute, Parnell Square.

IRISH.

FIRST YEAR.

Oral: Conversation lessons (questions, answers and general remarks) to afford each student the necessary practice to attain reasonable fluency in conversing on simple matters such as the following:—name and home or residence—salutations on meeting and parting—the clock—days of the week—months and seasons—the weather—money—easy counting—colours and other ordinary properties of common objects—location of objects in the classroom and immediate neighbourhood—parts of the body and clothing—giving and carrying out simple orders. With the conversational lessons, the student will be familiarised with the ordinary constructions in regard to the use of *is*, *seadh*, *ní headh*, *an eadh*, *nach eadh*, *gurb eadh*, *se*, *ní he*, *an e*, *nach e*, *gurb e*, *cad e*, *an bhfuill*, *níl*, *ta*, *go bhfuill*, *nach bhfuill*, *an raibh*, *ní raibh*, *bhí*, *go raibh*, *nach raibh*; and of some of the more commonly used verbal nouns such as *suidhe*, *seasamh*, *teacht*, *siubhal*, etc.

Written Work: Each student will keep a note-book to record salutations, simple phrases, his own name and address, etc., in correct Irish. Rough notes may also be written according to English phonetics or otherwise to aid in the memorising and pronunciation of words and phrases.

Cultural: Students will be taught to memorise simple songs, rhymes, stories, recitations, etc., so as to be able to repeat them with correct *blas*. Verses, etc., will be according to Gaelic metres, and stories or recitations by Gaelic authors.

TEXT BOOK: "An Tarbh Breac"—Dr. Hyde.

PRELIMINARY COURSE.

Subjects:

ENGLISH.

ARITHMETIC.

DRAWING.

This course is arranged for junior trade students who have had to leave school while still in the lower standards, in order to provide them with the opportunity of qualifying for the Introductory and specialised courses. Students are permitted to take a practical class in their trade subject by payment of an extra fee, provided there is room for their admission.

ENGLISH.

Spelling, correct pronunciation and grammar—formation of sentences—use of verbs, adverbs, prepositions, etc.—simple descriptive compositions.

ARITHMETIC.

Multiplication tables—simple multiplication and division—easy compound addition, subtraction, multiplication and division—simple mental arithmetic.

DRAWING

Simple freehand sketches from blackboard, familiar objects and from memory—geometrical exercises with compass and set squares—angles, squares, rectangles, circles, etc.

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PRIZES, SCHOLARSHIPS AND REFUND OF FEES.

A special leaflet will be issued at the opening of the Session detailing the numerous Prizes and Scholarships which will be available for competition, and the conditions to be fulfilled by students who qualify for a refund of fees paid.

