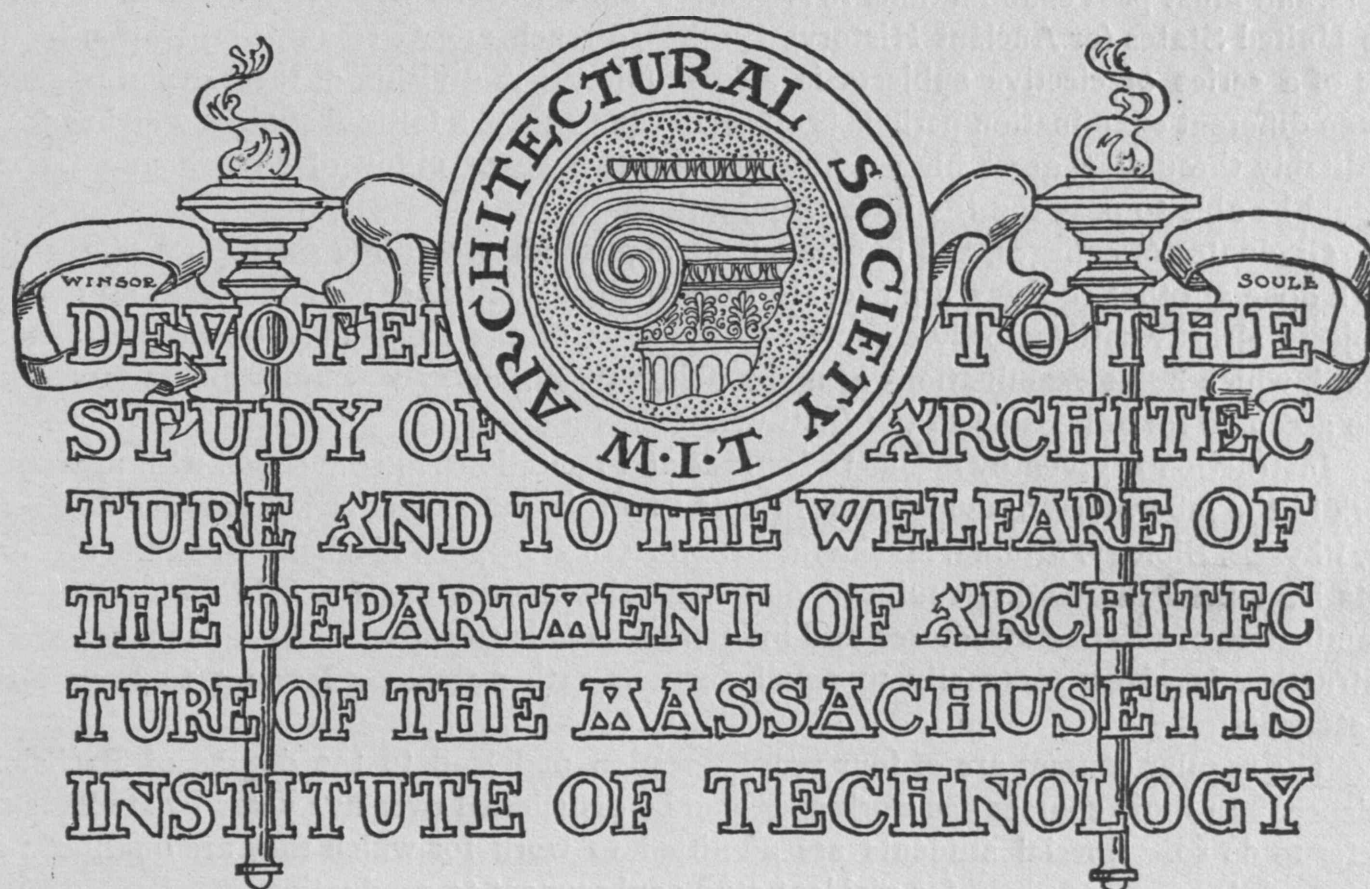


VOL. 2 · NO 1

AUGUST · 1908

THE TECHNOLOGY ARCHITECTURAL RECORD



PUBLISHED QUARTERLY BY THE
M.I.T. ARCHITECTURAL SOCIETY

THE
Massachusetts
Institute of Technology

BOSTON, MASS.

THE MASSACHUSETTS INSTITUTE OF TECHNOLOGY aims to give thorough instruction in CIVIL, MECHANICAL, CHEMICAL, MINING, ELECTRICAL, and SANITARY ENGINEERING; in CHEMISTRY, ARCHITECTURE, PHYSICS, BIOLOGY, GEOLOGY, and NAVAL ARCHITECTURE. The Graduate School of Engineering Research, leading to the degree of Doctor of Engineering, and the Research Laboratory of Physical Chemistry offer unusual opportunities for advanced students.

To be admitted to the Institute, the applicant must have attained the age of seventeen years, and must pass examinations in Algebra, Plane and Solid Geometry, Physics, History of the United States (or Ancient History), English, French, and German. Preparation in some one of a series of elective subjects is also required. A division of these examinations between different examination periods is allowed. In general, a faithful student who has passed creditably through a good high school, having two years' study of French and German, should be able to pass the Institute examinations.

Graduates of colleges, and in general all applicants presenting certificates representing work done at other colleges, are excused from the usual entrance examinations and from any subjects already satisfactorily completed. Records of the College Entrance Examination Board, which holds examinations at many points throughout the country and in Europe, are also accepted for admission to the Institute.

Instruction is given by means of lectures and recitations, in connection with appropriate work in the laboratory, drawing-room, or field. To this end extensive laboratories of Chemistry, Physics, Biology, Mining, Mechanical Engineering, Applied Mechanics, and the Mechanic Arts have been thoroughly equipped, and unusual opportunities for field-work and for the examination of existing structures and industries have been secured. So far as is practicable, instruction is given personally to small sections rather than by lectures to large bodies of students.

The regular courses are of four years' duration, and lead to the degree of Bachelor of Science. In most courses the work may also be distributed over five years by students who prefer to do so. Special students are admitted to work for which they are qualified; and advanced degrees are given for resident study subsequent to graduation.

The tuition fee, not including breakage in the laboratories, is \$250 a year. In addition, \$30 to \$35 per year is required for books and drawing-materials.

For catalogues and information address

ALLYNE L. MERRILL, SECRETARY,
491 Boylston Street, Boston.

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

DEPARTMENT OF ARCHITECTURE

ARTHUR E. NOYES	(Acting) PRESIDENT
FRANCIS R. HART	TREASURER
ALFRED E. BURTON	DEAN
ALLYNE L. MERRILL	SECRETARY OF THE FACULTY
ROBERT P. BIGELOW	LIBRARIAN
FRANK H. RAND	BURSAR
WALTER HUMPHREYS	REGISTRAR
O. F. WELLS	RECORDER

General correspondence should be addressed to the Secretary

Officers of Instruction in Architecture

FRANCIS W. CHANDLER, Architect, A.I.A.	PROFESSOR OF ARCHITECTURE ; IN CHARGE OF THE DEPARTMENT
DESIRÉ DESPRADELLE, Architect, A.I.A.	1st, 2d GRAND PRIX DE ROME, ROTCH PROFESSOR OF ARCHITECTURE
WILLIAM H. LAWRENCE, S.B.	ASSOCIATE PROFESSOR OF ARCHITECTURAL ENGINEERING
HARRY W. GARDNER, S.B., Architect	ASSISTANT PROFESSOR OF ARCHITECTURE

Special Teachers and Lecturers

TRUMAN H. BARTLETT Sculptor	MODELING	GUY LOWELL, A.B., S.B. Architect, A.I.A.	LANDSCAPE ARCHITECTURE
ALLEN H. COX Architect, Messrs. Putnam & Cox	ARCHITECTURAL DESIGN	SAMUEL W. MEAD Architect.	ARCHITECTURAL DESIGN
DAVID A. GREGG Architectural Illustrator	PEN AND PENCIL	ROSS TURNER Artist	WATER-COLOR
ELEAZER B. HOMER, S.B. Architect, A.I.A., Messrs. Clarke, Howe & Homer	HISTORY OF ARCHITECTURE	C. HOWARD WALKER Architect, A.I.A., and Director of Department of Design, Museum of Fine Arts	HISTORY OF ORNAMENT
JOHN G. JACK Dendrologist, Arnold Arboretum	LANDSCAPE HORTICULTURE	W. FELTON BROWN	INSTRUCTOR IN FREEHAND DRAWING AND LIFE CLASS

Officers of Instruction in Other Related Departments

CHARLES R. CROSS, S.B. THAYER PROFESSOR OF PHYSICS; DIRECTOR OF THE ROGERS LABORATORY	HENRY P. TALBOT, PH.D. PROFESSOR OF INORGANIC AND ANALYTICAL CHEM- ISTRY
GAETANO LANZA, C.E. PROFESSOR OF THEORETICAL AND APPLIED MECHANICS	CHARLES F. A. CURRIER, A.M. PROFESSOR OF HISTORY AND POLITICAL SCIENCE
GEORGE F. SWAIN, S.B. HAYWARD PROFESSOR OF CIVIL ENGINEERING	THOMAS A. JAGGAR, JR., PH.D. PROFESSOR OF GEOLOGY
WILLIAM T. SEDGWICK, PH.D. PROFESSOR OF BIOLOGY	JOHN BIGELOW, JR. PROFESSOR OF FRENCH
DAVIS R. DEWEY, PH.D. PROFESSOR OF ECONOMICS AND STATISTICS	JOHN O. SUMNER, A.B. PROFESSOR OF HISTORY
HARRY W. TYLER, PH.D. PROFESSOR OF MATHEMATICS	S. HOMER WOODBRIDGE, A.M. ASSOCIATE PROFESSOR OF HEATING AND VENTILATION
ARLO BATES, A.M., LITT.D. PROFESSOR OF ENGLISH	CHARLES L. ADAMS ASSOCIATE PROFESSOR OF DRAWING AND DESCRIPTIVE GEOMETRY

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

DEPARTMENT OF ARCHITECTURE

The Course of Instruction

THE instruction offered at the Institute is intended to supply the preliminary training required for the practice of Architecture. It recognizes that Architecture is a fine art, and that its practice must be based on a broad training in design, and on the principles underlying sound construction.

The studies begin with Freehand and Mechanical Drawing, and the Descriptive Geometry which later is to aid in solving the problems of Shades and Shadows, Stereotomy, Perspective, etc. Courses in Applied Mechanics, Graphical Statics, and Strength of Materials prepare the way for professional work in constructive design, which teaches the application of the principles already learned to the solution of structural problems likely to occur in modern practice.

The studies of materials used in building, and of working drawings and specifications, are carried far enough to enable the student to take immediate advantage of office opportunities on graduation.

The course on The Influence of Materials on Architecture deals with the methods of construction resulting from the building-material used, and the constructive principles involved, in the growth of the great architectural styles. The courses in the History of Architecture afford instruction in the principles governing design in the Classic, Mediæval, and Renaissance work, and the proper use to be made of precedent. The importance of a broader æsthetic and historical training is also recognized, and amply provided for in the history course on European Civilization and Art; and the historical development of ornament and a consideration of the motives influencing architectural composition are given in the course on the History of Ornament.

Four years' instruction in Freehand Drawing, from the cast and the living model; a year's course in modeling; and extended courses in water-color, and pen-and-pencil drawing, based as much as possible upon architectural subjects, enable the student to associate at once the principles of draughtsmanship with architectural form.

The instruction in Option 2, a specialized course in Architectural Engineering, includes advanced courses relating to Applied Mechanics, the Theory of Structures, and practical problems in Structural Design.

The instruction in Landscape Architecture, offered as a Graduate Course, is mainly devoted to Architectural and Landscape Design, Landscape Horticulture, History, and to the necessary branches of Civil Engineering, Geology, and Biology.

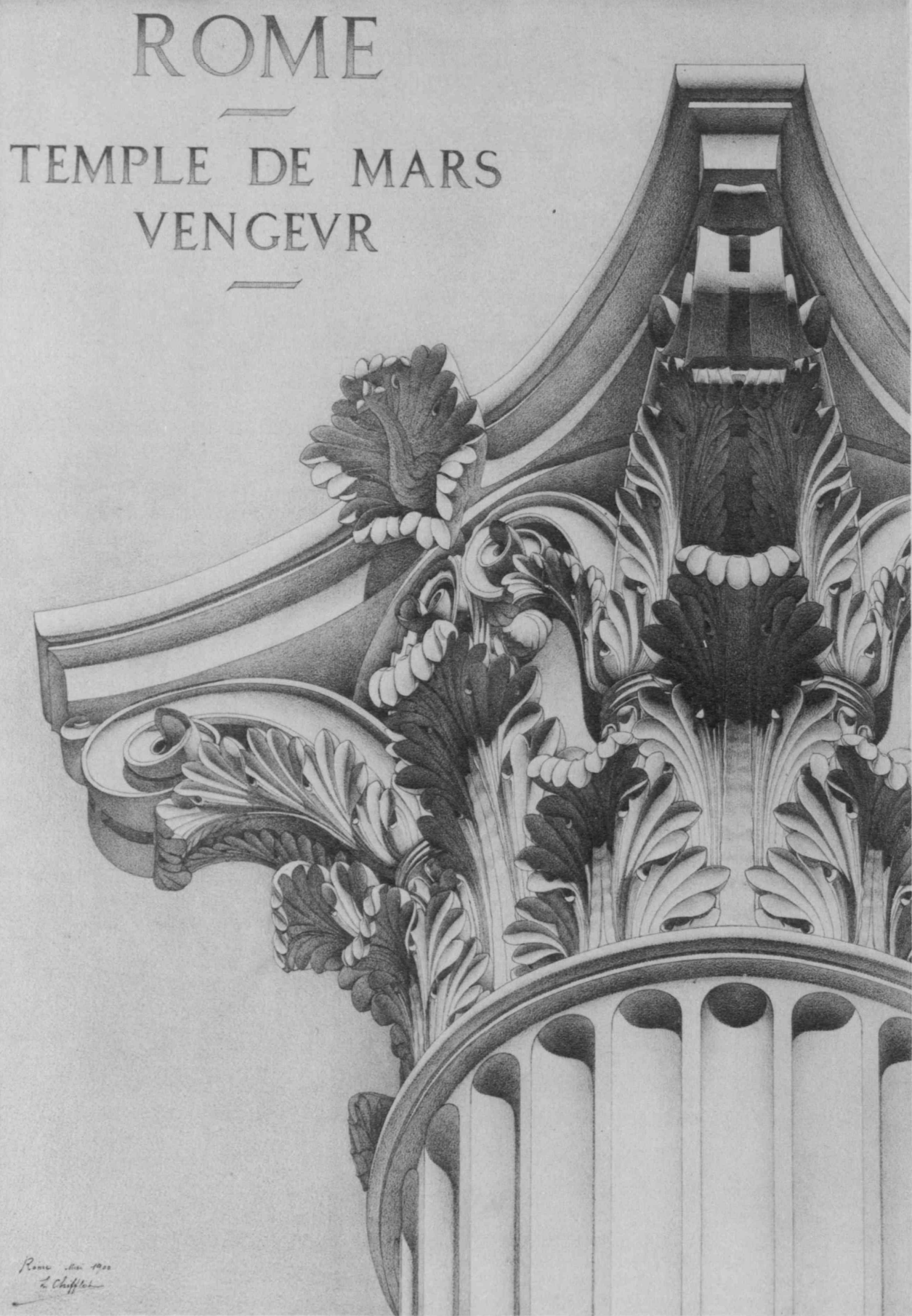
The department offers opportunities for one or more graduate years of advanced study, to be spent in professional work, and leading to the Master's degree.

The student is strongly advised to spend part of the summer in an architect's office, for this practical experience is a great aid to him in the clearer understanding of his school work.

The Bachelor's degree of the Institute admits the holder to candidacy for membership in the American Institute of Architects, without the examination ordinarily required of candidates for membership.

A circular of the department will be sent on application to

ALLYNE L. MERRILL, SECRETARY,
491 Boylston Street, Boston.



ENVOI DE ROME BY L. CHIFFLOT, 1900.

The original of this plate is in the
Gallery of the Department of Architecture.

The Technology Architectural Record

Vol. II

August, 1908

No. 1

Published by the Architectural Society of the Massachusetts Institute of Technology. One dollar per annum.

The proceeds of this publication are devoted to a Scholarship Fund, founded by the Architectural Society for students of the Department of Architecture of the Institute.

COMPETITION, which we have seen grow so actively strenuous in mercantile affairs, is also making itself felt in the same way in architectural instruction. In our own case, we hear more of the opinion that because we are called a department of the Institute of Technology we must of course teach architecture mainly on its technical side, and not as a fine art. Considered simply as a department, we are certainly open to such a misconception of our aims—a misconception, therefore, which can be easily encouraged by our rival schools with university backgrounds. In fact, the word "school" might be substituted for "department" with the best results, a school implying a complete and interrelated group of studies, while department implies a special portion of some larger group, and when associated with a technical training bases all its professional work upon a foundation of pure or applied science. This is by no means true of our course in architecture. A proper course in architecture can never be in anything like so strict a sense a department of a scientific school. It may with great advantage be closely related to a scientific school, and, as in our own case, may draw much of its nourishment from the same sources as the other departments, but its real source of inspiration and ideals is not in science, but in art.

We appreciate to the fullest extent the fact that the Institute has made the Architectural Course, and that the character of the Institute has given it great strength. Any real relaxation of the ties binding them together would be a serious injury to us. The study of art and history is, however, as important in the training of an architect as are mathematics, physics, and chemistry in the training of an engineer. The architect makes use most assuredly of the sciences, and would not be worthy of a place in the profession without a proper knowledge of their principles and application; but in actual practice all large problems of a technical nature, such as occur in construction, testing of materials, heating and ventilation, sanitation, plumbing, etc., are left to specialists in those different branches. The architect's knowledge of the technical side of his subject should be more general than specific, more to enable him to control and to judge wisely the work of the specialist than for his own practice.

All the science and all the engineering in the world will not make an architect. His most essential qualities are based upon something else, without which the engineer may still be a good engineer and the scientist a good scientist.

The appreciation by the Institute of this necessary difference is what enables us to offer such a course as we have given a suggestion of; for architecture is looked upon at the Institute not merely as a department of engineering,

but as a liberal and creative art; and we can speak truly in emphasizing the fact that the opportunities here for a broad, cultural, and æsthetic training in architecture are as great and of as high standard as in schools connected with universities.

On Tuesday evening, April 7, the Crystal Room of the Parker House was the scene of the monthly dinner and meeting of the Boston Society of Architects, at which was awarded the prizes won in the annual competition among the fourth-year students of the Architectural Department. The successful competitors were Messrs. R. J. Batchelder, regular, and M. P. Meade, special student. The subject of the competition was "The Bay Windows of a City House." All of the designs were unusually interesting, and several of them appear in this number of the RECORD. After the presentation of the prizes, Mr. R. A. Cram gave a very entertaining talk, illustrated with lantern-slides, about his Calvary Church recently completed in Pittsburg. He told of his particular efforts for choice woodcarving and stained glass, which led to such attractive results. Mr. Cram was followed by Mr. George Dexter, whose discourse was on "Some of the Hill Towns of Italy," and which was illustrated by most charming colored slides, many of them representing his own handiwork.

In this number of the RECORD, the first of its second volume, begins a series of articles on building-materials and their application. The various subjects will be treated from the point of view that the student is entirely ignorant of their qualities and uses, and must be taught the first principles of everything.

The articles begin with Limes, Cements, Mortars, and Concretes, and will be followed by others on Terra-Cotta, Paints, Varnishes, etc., etc.

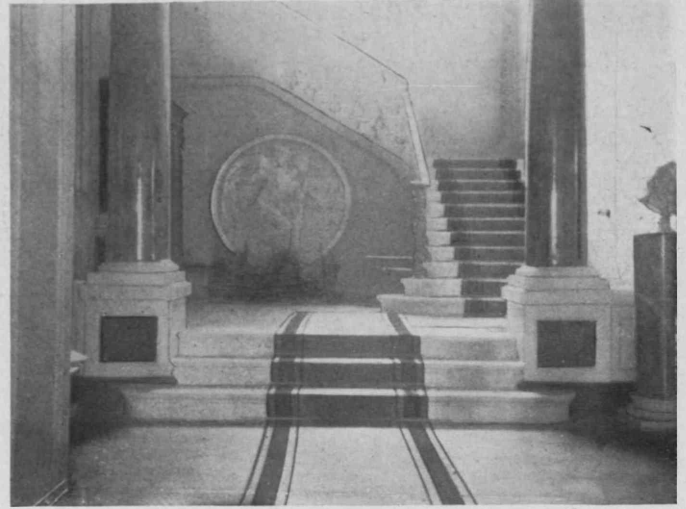
In the last number of the RECORD we spoke of Mr. Ernest Farnum Lewis, a 1907 graduate, who had been greatly honored by the Executive Committee of the American Academy in Rome in having their choice fall upon him to become the scholarship man in architecture at the Academy.

Mr. Lewis reported himself there last October for work. He is enthusiastic over these opportunities offered by the Academy; and because of the great interest the architectural profession must take in this institution we asked Mr. Lewis to prepare the paper which appears on another page. He has done it well, and he writes us that it has been supervised and approved by Mr. Breck, the Director.

Lewis Stewart, 1900, son of the late Judge John H. Stewart, of Trenton, N. J., has died at his home at Newark, N. J., from typhoid fever, after an illness of about two weeks, in his thirty-third year. He attended the Model School in Trenton, afterward going to Lawrenceville. He worked in an architect's office in Philadelphia for two years, and later was graduated from the Massachusetts Institute of Technology. He then spent a year and a half in study; and after three years at the Beaux-Arts, in Paris, studying architecture, took up his profession in New York, and was associated with various architects. On Oct. 12, 1906, Mr. Stewart married Miss Martha Nye Jackson, who, with their infant daughter, survives him. Mr. Stewart was a member of the Episcopal Church, and belonged to the Delta Psi Fraternity, the St. Anthony Club, and the Beaux-Arts Society.



THE VILLA MIRAFIORI



THE ENTRANCE HALL

The American Academy in Rome

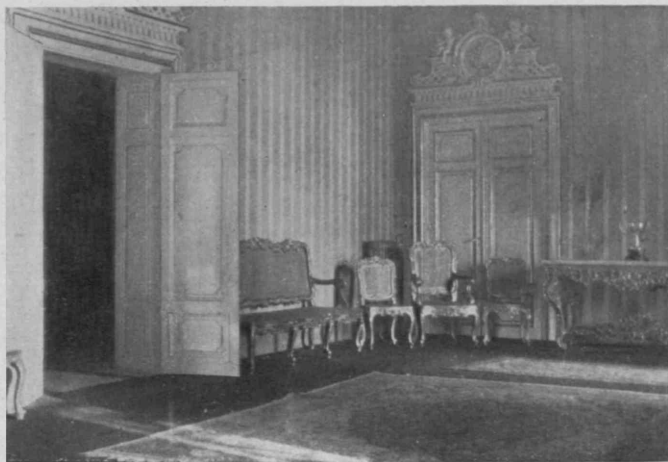
By ERNEST FARNUM LEWIS, '07

Holder of the Prize of Rome in Architecture

THE American Academy had its origin in the American School of Architecture established in Rome shortly after the World's Fair of 1893. A group of artists who had been working on the Chicago Fair, hoping to raise the standard of national art, planned to give American students the opportunity to study the best classic examples under the most favorable conditions. The Palazzo Torlonia was secured for the home of the school, and Mr. Austin W. Lord appointed its first director. The students were mostly the men on such scholarships as the McKim, the Rotch, and the Stewardson Memorial. Within a year after the founding of the School of Architecture those interested became convinced that its scope should be broadened to include the allied arts of sculpture, painting, and music. Accordingly, representative American sculptors, painters, architects, and others interested in the project decided in 1896 to found an American Academy in Rome on lines similar to the French Academy. In June of that year the American Academy was incorporated under the laws of the State of New York. In 1901 the United States Government granted articles of incorporation and authorized the Ambassador at Rome to accept the position of trustee *ex officio* of the Academy. The Ambassador was further directed to secure for the Academy all the privileges and exemptions that are given by the Italian government to like institutions of other countries. The incorporators of the Academy included the leading architects, painters, and sculptors of the country, the presidents of the great universities and technical schools, the Secretary of State, and men known throughout the United States for their interest in art and art education. The government of the corporation is vested in a board of eighteen trustees, three of whom must be architects, three sculptors, three painters, and nine laymen. The president of the Board of Trustees is

Mr. Charles F. McKim, who has been the leading spirit in the founding of the American School of Architecture, as well as that of the Academy. The trustees select a director who acts as the executive officer of the corporation in Europe and superintends the work of the students. The present director is Mr. G. W. Breck, the mural painter, and the first holder of the Lazarus scholarship. After obtaining the recognition of the government as a national institution, and after organizing the governing body, the next thing was to place the Academy on a firm financial footing. Within the past few years \$700,000 has been subscribed towards a permanent endowment, and it is hoped that the necessary million will soon be obtained.

The rules and regulations for competitions and work required are practically the same as at the French Academy. Competitions are open to properly qualified unmarried citizens of the United States. In the different arts the competitions vary a little, but in general they are all divided into preliminary and final examinations. In the case of the architects candidates are required to be (1) graduates of one of the architectural schools mentioned below; or (2) graduates of a college of high standing who hold certificates of at least two years' study in one of the following architectural schools: Harvard University, Columbia University, Massachusetts Institute of Technology, University of Pennsylvania, George Washington University at Washington, Cornell University, University of California, Washington University at St. Louis, University of Illinois; or (3) Americans who have received the diploma of the École des Beaux-Arts at Paris. Competitors are required to do a fourteen-hour *en loge* problem, and from these sketches submitted the committee selects not more than four competitors for the final competition. The successful candidate is required to present himself in Rome on the first day of November following the competition. Each beneficiary receives his travelling expenses direct to Rome, and on the completion of his term of study receives his expenses to his home in the United States. One thousand dollars per annum is paid each pensioner, given as follows: one hundred dollars is retained each year by the director as a reserve fund to the account of the beneficiary, which amount is paid to him on the completion of his term of study. Ten dollars per month is retained by the director to be paid to the beneficiary when



THE RECEPTION-ROOM



THE DINING-ROOM

he enters upon his annual term of travel in Italy or in other countries. Twenty dollars per month during the beneficiary's residence at the Academy is retained by the director as payment for board. The remainder after these deductions have been made is paid in advance to the beneficiary in equal monthly instalments. Studio and sleeping-rooms at the Academy are provided for the beneficiary without charge.

During the first year of their term students of architecture, sculpture, and painting are obliged to remain in Rome and Central Italy, and are not permitted to leave without special authorization from the director. During the second year of their term they are to travel in Italy and Sicily; and during the remainder of their term, in Italy, Sicily, and Greece, and in those countries where classic and Renaissance remains exist.

The beneficiaries are required each year to execute certain works which may be exhibited at Rome and thereafter sent to the Board of Trustees as records of accomplishment. Drawings, paintings, and sculpture may be retained by the Board of Trustees at their discretion as the property of the Academy. The architects during the first year are required to study classic art. They must execute a set of drawings of some antique remains with plan, elevations, section, and details. Collateral reading, travel in Italy, study at Pompeii, and such other places as the director approves are required. The second year is occupied mainly with the work of the Renaissance. Travel in Siena, Florence, and Venice is required. In addition, beneficiaries must execute drawings in coöperation with the painters and sculptors for the purpose of studying the relations of pictorial and sculptural decoration to architecture. In the third year beneficiaries are required to execute drawings of one of the following subjects chosen with the approval of the director: (a) the restoration of an antique building or a group of buildings in Sicily or Greece; (b) a city square in Italy, or group of buildings with historical and descriptive sketch; or (c) a villa of the Renaissance period. The beneficiaries are also required to travel not less than a total of eight months in the third year. Should the Board of Trustees extend the scholarship of any beneficiary through a fourth year, a special program for that year will be duly arranged.

Since 1896 various scholarships — as the Rinehart, Lazarus, Rotch, Stewardson, Appleton, McKim, and

Technology — have been affiliated with the Academy. No actual Academy scholars were sent out until 1907. That year the Executive Committee selected a painter, a sculptor, and an architect; and in 1908, a sculptor and an architect, no painter being chosen. The men thus far have been selected on the basis of work done and on the recommendations of the heads of the various schools. It is hoped to hold, next year, competitions for those scholarships which will be eventually of the importance of the annual Grand Prix de Rome competitions in France.

From 1895 to the fall of 1907 the home of the Academy was at the Villa Aurora, situated on the Pincian Hill not far from the Villa Medici, the home of the French Academy. Finding it impossible to purchase the Villa Aurora and make the desired improvements for a permanent location, it became necessary to find new quarters. Through the generosity of Mr. Henry Walters the Villa Mirafiori, with five and one half acres of the grounds, was purchased, and last fall the Academy took possession of its new home. The Villa Mirafiori was built about 1874, by King Victor Emmanuel II, for the Countess Mirafiori, who later became his wife. It is about a mile from the Porta Pia, on the ancient Via Nomentana and on the edge of the Campagna. The Villa has been put in good condition for habitation. It is convenient, well appointed, and makes an attractive home. On the ground floor are the large hall, a grand staircase going up to the second floor, the director's office, library, large reception-room, dining-room for the director's family, the large dining-room for the men, rooms used for drafting purposes by the architects, and coat and service rooms. The second floor is occupied by the director's family, and the third floor by the students. The Academy has some fine architectural books, plaster casts, photographs, and pictures. The studios of the sculptors and painters are being built around the Villa, to take the place of the temporary studios now hired in town. As soon as possible a large drafting-room will be built for the architects, and minor alterations made so that in a short time there will be ample accommodations for the full quota of scholarship men. The completion of the endowment, the purchase of a much-desired strip of land to complete the block, and the improvements which time can make will bring the home of the American Academy on a par with that of any of the other national academies at present represented in Rome.

IRA G. HERSEY

*Contractor and
Builder*



166 Devonshire Street
Boston

**CYRUS T.
CLARK CO.**

PAINTERS
DECORATORS
AND
HARD-WOOD
FINISHERS

45 WAREHAM STREET
BOSTON

The Architectural Society

1907-1908

President
Vice-President
Secretary
Treasurer

E. I. WILLIAMS, '08
KURT VONNEGUT, '08
H. H. BENTLEY, '08
H. D. CHANDLER, '08

Executive Committee

W. F. DOLKE, Jr., '08, Chairman; R. G. CRANE, '08, H. F. KUEHNE, '08

Election Committee

C. H. PRESTON, '08, Chairman; M. FLAGG, '09

Publication Committee

W. F. DOLKE, Jr., '08, Chairman; F. B. SCHMIDT, '07, L. H. KING, '09

Tracing Committee

F. J. ROBINSON, '08, Chair.; H. D. CHANDLER, '08, R. F. HASKELL, '08,
H. E. MYERS, '09, T. H. ATHERTON, '09, J. C. BOLLENBACHER, '09,
F. A. BURTON, '10

Entertainment Committee

KURT VONNEGUT, '08, Chair.; R. J. BATCHELDER, '08, J. M. HATTON, '08,
C. YOUNGERMAN, '08, R. KIBBEY, '08, A. F. MENKE, '09

Examination Committee

P. NORTON, '08, Chairman; D. W. PHELPS, '09

Visiting Committee

W. D. REED, '08, Chairman; D. W. GIBBS, '09, H. D. BOUNETHEAU, '09

ONE of the most enjoyable smoke-talks of the year was given at the Union Thursday evening, March 26, by Mr. C. H. Blackall, who presented an enlightening account of the modern architectural development in Germany. The talk was fully illustrated with lantern-slides. Mr. Blackall went abroad last winter on a mission having for its object the study of European theatres. In London, his first stop, he found architecture to some degree in an inactive state. Architects work in their offices till one or two in the afternoon, then go out to tea or tennis. Across the Channel in Paris, while there is much activity and enthusiasm, there seems to be a lack of a spirit of progression, and one gains the impression that the French are inclined to rest on their laurels — magnificent laurels, it is true, but a faulty substitute for vital and energetic growth. In Germany, on the other hand, where Mr. Blackall had not been for twenty years, he found conditions of extraordinary vitality and enthusiasm, and instead of gaining no new ideas in his study of theatres, as he had expected, he discovered new and invaluable contributions in design and construction. A country that was twenty years ago still an assembly of small and disunited States has become a magnificent nation with a fine spirit of coöperation in all branches of activity, and nowhere is this truer than in architecture.

During the Gothic period Germany, including what is now Austria, produced architecture that placed it in the front rank with the other nations of Europe. This was also true during the Renaissance, and the later rococo work surpasses in many instances that of France and Italy. In the modern period, however, architecture as a fine art went to pieces in Germany: it degenerated into a cold and monotonous formalism, repeating the forms but not the soul of the classic style; and, preëminent as the Germans have been in the thorough and logical study of Greek and Roman archæology, they have failed utterly as architects to produce anything living and vital. Thus from 1810 to 1890 practically no serious architecture was produced. The Royal Palace in Berlin is typical in its faulty proportions, poor massing of detail, and violations of good taste. The Berlin Exchange is better, but still lacking in any individual merit.

About 1890 a change began to make itself evident — a change that

was natural and all-pervading, and due, as much as it was due to any one man, to Bismarck. He was a layer of foundations; and rough and brutal as he was in many ways, he bequeathed to modern Germany an invaluable legacy in its sense of discipline and willingness to be ruled. Emperor William has promoted growth along these lines, and though he may impress some as being bumptious and meddlesome, results certainly show that his methods have been wise and far-reaching. The Germans have the faculty of pulling together, and we Americans, unique as we are among the nations of the world in our wealth, energy, and genius for accomplishing things, may gain from an observation of their methods a valuable antidote to the curse of conceit and self-satisfaction that threatens us. Much of the later German work is indeed faulty, but it all shows that they are always thinking, which we are not.

Before entering Germany Mr. Blackall discussed one day with his companion, a gentleman of experience and breadth of mind, and possessed of a great knowledge of architecture, the possibility of finding anything valuable in the so-called Art Nouveau. His friend sniffed at the prospect, and when several buildings had been found which presented certain merits, he classified these each in turn as Greek, or Gothic, or Renaissance. This is true, too, for the Art Nouveau architect does not disregard existing styles; indeed, a consensus of opinion seems to define it as a combination, with a view to solving new problems, of all styles, with the exception of that of the Ecole des Beaux-Arts. Mr. Frank Wright, of Chicago, whose work has been recently illustrated in THE ARCHITECTURAL RECORD, told Mr. Blackall that he believed the Art Nouveau originated in Chicago in Louis Sullivan's office, and from there spread to France, Germany, and Austria. However this may be, the Art Nouveau architects, wherever they are found, are able to show in their work a recognition of these few cardinal principles: to do only what is right and not what one is told to do; to be straightforward and to seek the truth; to be original, even if crude, and bold, even if rough. All of their work is not good; at its worst it is very bad. It most emphatically cannot be studied as a system of architectural design. Its great virtue is that it is vigorous and independent.

The new railway-station at Wiesbaden is typical; its plan is logical and complete, and satisfies all requirements; its elevations, while not along traditional lines, show a straightforward and logical expression. This building is representative of what is being carried out in nearly all of the larger German cities: everywhere are being built great railroad-stations, thoroughfares, and public buildings. The Germans have reduced the laying-out of cities to a science, and plan all things on a big scale. Neither are they destroying the old monuments and thoroughfares, but preserve them and combine them with the new.

The entrance to the art museum at Mannheim is one of the best of recent designs; it is distinctly Art Nouveau in its treatment of simple surfaces, massing of detail, and emphasis about the doorway. It shows that its architect kept his ultimate purpose unflinchingly before him. That is really what makes architecture, and it is a feature that most school designs do not possess. Nothing could be simpler than the temporary exhibition-building built in Berlin, where the cornice was a mere projection emphasizing the roof, the windows of just the desired size and placed just where needed, with an elimination of all unnecessary features.

An example of work in the more strictly academic style, of which there is much being built, is the new hotel at Wiesbaden. It shows how bad the Germans can be in such work, and suffers severely by contrast with the better Art Nouveau. This contrast appears strongly in the new Hotel Adlon, Berlin, designed mostly in the most atrocious modern French, but with some Art Nouveau in the interior decoration that is the height of restfulness in comparison. On the other hand, the interior of the concert-hall in the Kur Haus, Wiesbaden, is a fine example of academic design. As a concert-hall it is far ahead of anything in the country, and would be hard to equal in Europe. Great marble columns, mahogany furniture, a rich panelled ceiling with gold ornamentation, produce an effect palatial and at the same time in good taste. Lighting, acoustics, and other practical details have been successfully solved.

National Fire-Proofing Company

MANUFACTURERS OF

Terra-Cotta Hollow Tile

CONTRACTORS FOR

Fireproof Construction

IN

STANDARD TERRA-COTTA

OR

**REINFORCED TERRA-COTTA
AND CONCRETE**

Old South Building Boston

Offices in large cities throughout the
United States

SCHOTT RADIATION SCALE

COPYRIGHTED

BOTH STEAM AND WATER
RADIATION; REGULAR and
SPECIAL CASES ALL
FIGURED BY ANY ONE, IN
SECONDS INSTEAD OF
MINUTES. NO CHANCE
FOR ERROR.

Price, Complete, \$1.00

(Add Chicago exchange to personal checks)
Money back if you wish to return scale.

W. H. SCHOTT
ENGINEER

American Trust Building, Chicago

THE ALLAN McINTOSH COMPANY

Established 1872

PLAIN AND ORNAMENTAL
PLASTERING

OUTSIDE PLASTERING A
SPECIALTY

Estimates in any part of the United States
or Canada cheerfully given

No. 166 Devonshire Street, Boston

HIGGINS'

DRAWING-INKS
ETERNAL WRITING-INK
ENGROSSING-INK
TAURINE MUCILAGE
PHOTO-MOUNTER
DRAWING-BOARD PASTE
LIQUID PASTE
OFFICE PASTE
VEGETABLE GLUE, ETC.

AT DEALERS
GENERALLY

Chas. M. Higgins & Co.
271 NINTH ST., BROOKLYN, N. Y.
BRANCHES: CHICAGO, LONDON

One of the conspicuous examples of Art Nouveau is the Rheingold Restaurant in Berlin, on which it is said \$3,000,000 have been spent. It is a large building of several floors, with numerous large and small dining-rooms,—a sort of German Sherry's,—and while somewhat lacking in refinement as a whole, is very successful. Certain features, as, for example, a combination of pier and arch in the great dining-room, bear a striking resemblance from the structural point of view to the Gothic. This is also evident in the use of statuary, with a strong accentuation of the vertical quality.

When it comes to theatres, the feature in which Mr. Blackall was especially interested, he found that the Germans have made advances that place them far ahead of the rest of the world. In logical planning, regard for practical and æsthetic considerations, scale of expenditure, and also in equipment and acting, they are unrivalled. The theatre is considered as an educational medium that reaches the people as no other method can, and the government puts millions into their construction and operation, just as we in America have spent millions for public libraries. For instance, in the city of Dortmund—a little-known place hardly mentioned in Baedeker—the municipality has built a great, splendid playhouse, with spacious foyer and approaches and an exterior banquet-garden, the whole being on a scale that would be inconceivable in an American city of many times the size.

The theatre at Cologne was the first that Mr. Blackall saw, and it quite took him off his feet. An American, accustomed to our method of using every possible square foot to increase the capacity of the auditorium, is especially impressed by the generous treatment of approaches, stairways, and other accessory features. The stage is one hundred and fifty feet deep, and beyond it is a great hall for storing scenery—a million marks were spent on scenery equipment alone. The dressing-rooms are numerous, and are all large and comfortable; the great foyer, promenade, and restaurant are developed on a similar scale; and all this built at public expense. The façade is much less successful than the plan, and shows Art Nouveau in its more unfavorable aspect.

At Nuremberg a still larger scheme has been carried out in the new Municipal Theatre, which includes a great fest-hall and a concert garden in addition to the theatre itself, which is one of the largest and handsomest in Europe. The foyer here was one of the most beautiful pieces of Art Nouveau design that Mr. Blackall saw. It had a vaulted ceiling, supported on big, square piers, treated very simply, with few mouldings, and relying for effect upon color ornamentation. It should be remembered that color is indispensable in Art Nouveau decoration, and one gets little of the effect from black-and-white reproductions. The tympanum at one end of the foyer contained a mural painting; and at the other, an ingenious arrangement of mirrors, arranged in square panes with bevelled edges, increased the feeling of spaciousness without the deceitful effect of greater space that is usually felt when mirrors are thus used in one large, unbroken surface.

The development of the city of Nuremberg shows the care with which the historical landmarks are preserved in Germany. Old Nuremberg is kept in a state of cleanliness and good preservation, and figures as the city's chief asset, while the new parts are building up around it.

The Germans are quick to introduce innovations which add to the comfort of the audiences. In the newer theatres every seat has a corresponding hook in the coat-rooms at the side, where one may leave his hat and coat and be comfortable and unencumbered. Almost everybody leaves the hall between acts to eat, drink, and promenade. The eating and drinking between acts is a characteristic German feature, and explains the attention given in the plan to restaurants and buffets.

Mr. Blackall went to a performance of Sophocles's "Electra" at the Kammerspiel House in Berlin, a very small and high-toned little theatre seating about two hundred; the prices were of course very high, and the audience throughout one of culture and refinement. To an American it was highly amusing to enter the foyer, fresh from the intense atmosphere of the Greek tragedy, and see ladies in low-neck dress busily engaged with a stein of beer and a plate of sausage and cheese.

The Art Nouveau is being successfully used in churches as well as in theatres and municipal buildings. A church at Dresden has an interior charming in form, though the color-scheme is not pleasing. Another church shows Romanesque feeling in its structural masses, though the carefully studied detail is wholly Art Nouveau.

If the new school had produced nothing but the Berlin Elevated Railway it would be fully vindicated. No harder problem is found in municipal planning than a harmonious treatment of that awkward straddlebug, the elevated road; and while there is yet room for much development, the Berlin road offers the most successful solution yet found. As treated there it has ceased to be offensive. A thoroughly architectural quality is given to the stations, and they are carried to the ground, avoiding the appearance of being perched in the air. The monotony of the long lines is broken by masses of masonry at street-intersections, and the stations are largely of masonry. A recent innovation is painting all the steel construction white; and this, though it seems a small thing, adds to the attractiveness and produces the feeling of cleanliness that one feels on a steamboat. One of the finest stations is at the Hollendorf Platz, where a fine new theatre has been built recently — evidence that the site is not considered to be materially injured by the proximity of the Elevated.

Other classes of structures have Art Nouveau as a satisfactory medium of expression. The Maximilian Bridge at Munich is an interesting part of a general scheme of municipal development. A factory near Leipsic, with scarcely any pretense to architectural treatment, nevertheless has a certain pleasing quality in its direct simplicity. One of the most interesting of all Art Nouveau buildings is the Wertheim Department-Store in Berlin — as far a step from White's or Macey's as is conceivable. One must see the building itself to appreciate it. Judging it only from photographs, it might easily seem far-fetched; but when once inside its spacious, brightly lighted interior it is logical and convincing, and at the same time charming in a high degree. A striking feature of the interior are the bridges, fifty feet long, across the light-well. The walls of the light-well are marble, and the bridge itself of repoussée copper.

Mr. Blackall showed a number of slides of domestic interior work. This is the best-known phase of Art Nouveau in this country, largely because of the fine display of interiors shown by the Germans in their excellent exhibit at the World's Fair in St. Louis. Some of the designs have a feeling like that in our early Colonial work; the better work relies for effect upon a simple arrangement of lines and surfaces, with little decoration.

One need not accept everything the Germans are doing in this new style, but their work certainly deserves recognition and will repay the study spent on it. They are wide awake, they are thinking and studying, and they know what is being done everywhere. A German architect told Mr. Blackall some things about one of his own buildings in Boston that he himself did not know — an incident illustrating their alert condition of mind. To appreciate what they are doing does not imply any intention to belittle the fine methods of instruction of the École des Beaux-Arts; the young architect who goes to Paris to study should remember that there are other methods and influences worthy of notice, and he will find evidence of it in the sincerity and directness of much of the Art Nouveau in Germany.

H. H. BENTLEY.

Mr. Ross Turner, who has so long been identified with the instructive corps of the department, last May won the William T. Evans prize of three hundred dollars with his picture, "The Dawn," which was adjudged to be the one most meritorious water-color in the current exhibition of the American Water-Color Society.

W. F. K E A R N S CO.

**Contractors and
Engineers
Reinforced Concrete
and
Fire-proof Construction**

**161 Devonshire Street
BOSTON, MASS.**

ESTABROOK'S SPECIALTIES

Sisson's Insertable Joint
Estabrook Grease Trap
Estabrook Catch Basin
Boston Grease Trap
Estabrook Deep Seal Cesspool
Boston Blow-Off Tank
Estabrook Sewer Valve
Success Cleanout
Boston Cleanout
Estabrook Conductor Trap
Plain Cesspool (sleeve outlet)
Newton Gate Box

R. ESTABROOK'S SONS
FIRST ST., COR. C, SO. BOSTON, MASS.

Graduates of the Class of 1908

Degree of Master of Science

TITLE OF THESIS

ARMEN HAIGOUNI TASHJIAN

A Study of Some Properties of Concrete at High Temperature.

Degree of Bachelor of Science

TITLE OF THESIS

MABEL KEYES BABCOCK, A.B.

Design for the Campus for the Northwestern University, Evanston, Ill.

RALPH JOHNSON BATCHELDER

Design for a Post-office and Custom-house for a Large City.

HARRY HOWE BENTLEY

Design for a Preparatory School.

CHALMERS STEVENS CLAPP

Design for a City Club-house.

RUSSELL GILBERT CRANE

Design for a Capitol for a Small State.

WILLIAM FREDERIC DOLKE, JR.

Design for an Opera-house.

HOWARD SPENCER HAZEN, JR., B.S.

Design for a State University.

RINKER KIBBEY

Design for a Hunt and Polo Club.

HUGO FRANZ KUEHNE, C.E.

Design for a Conservatory of Music.

PAUL WILLARD NORTON, B.A.

A Study of the Use of Reinforced Concrete in

Architectural Construction, with Some Reference to the Most Economical Design for a Small Warehouse.

CLIFFORD HAMILTON PRESTON, A.B.

Design for a Church in a City Parish.

FRANK JOHN ROBINSON

Design for a Municipal Group of Buildings for Recreations.

FREDERIC BECKER SCHMIDT

Design for the Building of Honor of a University.

JOHN RODNEY TABOR, B.S.

Design for a City Church.

ARAM TOROSSIAN

Design for an Armenian Church.

KURT VONNEGUT

Design for a Municipal Bath-house.

EDGAR IRVING WILLIAMS

Design for a Large Establishment in the Country for the Celebration of Musical and Histrionic Festivals.

CONRAD YOUNGERMAN

Design for a Country Club House.

Special Students

CHESTER ANDERSON BROWN

HENRY DALAND CHANDLER

STILES OLIVER CLEMENTS

ALEXANDER MORTON EMERSON

CHESTER COOK FORD

JOHN MATHEWS HATTON

JOSEPH MCGINNIS

PETER FRANCIS McLAUGHLIN

MAURICE P. MEADE

THOMAS OWINGS

EDWIN MORGAN PRICE

WALTER DICKSON REED

FRANK WELLER SHARMAN

Design

AWARDS FOR FIRST TERM (CONTINUED) AND SECOND TERM

1907-1908

Fourth Year of Design

MONUMENT IN MEMORY OF AUGUSTUS ST. GAUDENS

1st mention: A. N. REBORI. 2d mention: F. B. SCHMIDT.
" " W. B. KIRBY.

A SMALL STUDY OF IRREGULAR PLAN

(Sketch Problem)

No 1st mention 2d mention: A. N. REBORI.

A SUMPTUOUS AND IMPORTANT RESIDENCE

1st mention: W. B. KIRBY. 1st mention: R. B. BARNES.
" " A. N. REBORI. 2d " F. G. DEMPWOLF.

A SMALL GOLF CLUB-HOUSE

(Sketch Problem)

1st mention: A. N. REBORI. 2d mention: R. B. BARNES.

A MONUMENTAL ENTRANCE TO A LARGE AVENUE IN AN AMERICAN CITY

1st mention: W. B. KIRBY. 2d mention: R. BUCKLER.
" " R. B. BARNES. " " F. B. SCHMIDT.
" " J. A. KANE.

THE END OF A ROOM

1st mention: C. L. PITKIN. 2d mention: R. B. BARNES.
" " J. A. KANE.

THE BUILDING OF HONOR OF A SCIENTIFIC UNIVERSITY ("1908 Traveling Fellowship")

Prize: A. N. REBORI. Honorable mention: W. B. KIRBY.

Third Year of Design

A COUNTRY RESIDENCE INSPIRED BY THE TRIANONS AT VERSAILLES

1st mention: F. J. ROBINSON. 2d mention: H. F. KUEHNE.
" " E. I. WILLIAMS. " " R. G. CRANE.
2d " S. O. CLEMENTS. 3d " H. H. BENTLEY.
" " H. S. HAZEN, JR. " " C. H. PRESTON.

A BAY WINDOW

(Boston Society of Architects Prize)

REGULAR STUDENTS

Prize: R. J. BATCHELDER.

1st mention: E. I. WILLIAMS.
" " H. H. BENTLEY.
2d " H. S. HAZEN, JR.
" " C. S. CLAPP.
" " J. R. TABOR.
3d " R. G. CRANE.

SPECIAL STUDENTS

Prize: M. P. MEADE.

1st mention: S. O. CLEMENTS.
" " T. OWINGS.
2d " C. C. FORD.
" " A. M. EMERSON.
3d " E. M. PRICE.

A MONUMENTAL COLUMN

(Sketch Problem)

1st mention: S. O. CLEMENTS. 2d mention: J. MCGINNESS.
" " H. D. CHANDLER.

A PRIVATE CHAPEL OF A LARGE COUNTRY RESIDENCE

(For special students only)

1st mention: S. O. CLEMENTS. 2d mention: E. M. PRICE.
" " J. M. HATTON. " " C. A. BROWN.
2d " C. C. FORD. 3d " P. F. MCLAUGHLIN

Second Year of Design

A MASTER BUILDERS EXCHANGE

1st mention: H. D. BOUNETHEAU. 2d mention: V. J. SEIBERT.
" " Miss H. M. LONGYEAR. " " P. L. FOLEY.
" " C. J. BROWN. " " L. SVARZ.
" " T. G. MACHEN. 3d " H. M. GLAZIER.
" " A. F. MENKE. " " L. H. KING.
" " D. W. GIBBS. " " W. A. MEANOR.
" " T. H. ATHERTON, JR.

A BRIDGE OVER A SMALL STREAM

(Sketch Problem)

1st mention: L. SVARZ. 3d mention: D. W. GIBBS.
2d " Miss H. M. LONGYEAR. 4th " T. H. ATHERTON, JR.

THE MAIN ENTRANCE TO THE PRINCIPAL ROOM OF THE MASTER BUILDERS EXCHANGE

(Sketch Problem)

1st mention: L. SVARZ. 3d mention: T. H. ATHERTON, JR.
2d " T. G. MACHEN. 4th " H. M. GLAZIER.

A SMALL BUILDING TO BE USED AS A LOGGIA OR TEA- ROOM IN A GARDEN, ALSO AS A GUN-ROOM FOR THE PROPRIETOR OF THE ESTATE

(Sketch Problem)

1st mention: L. SVARZ. 2d mention: A. G. KELLOGG.
" " M. FLAGG. " " T. H. ATHERTON, JR.
" " A. F. MENKE. " " W. A. MEANOR.
" " H. D. BOUNETHEAU.
" " H. M. GLAZIER.

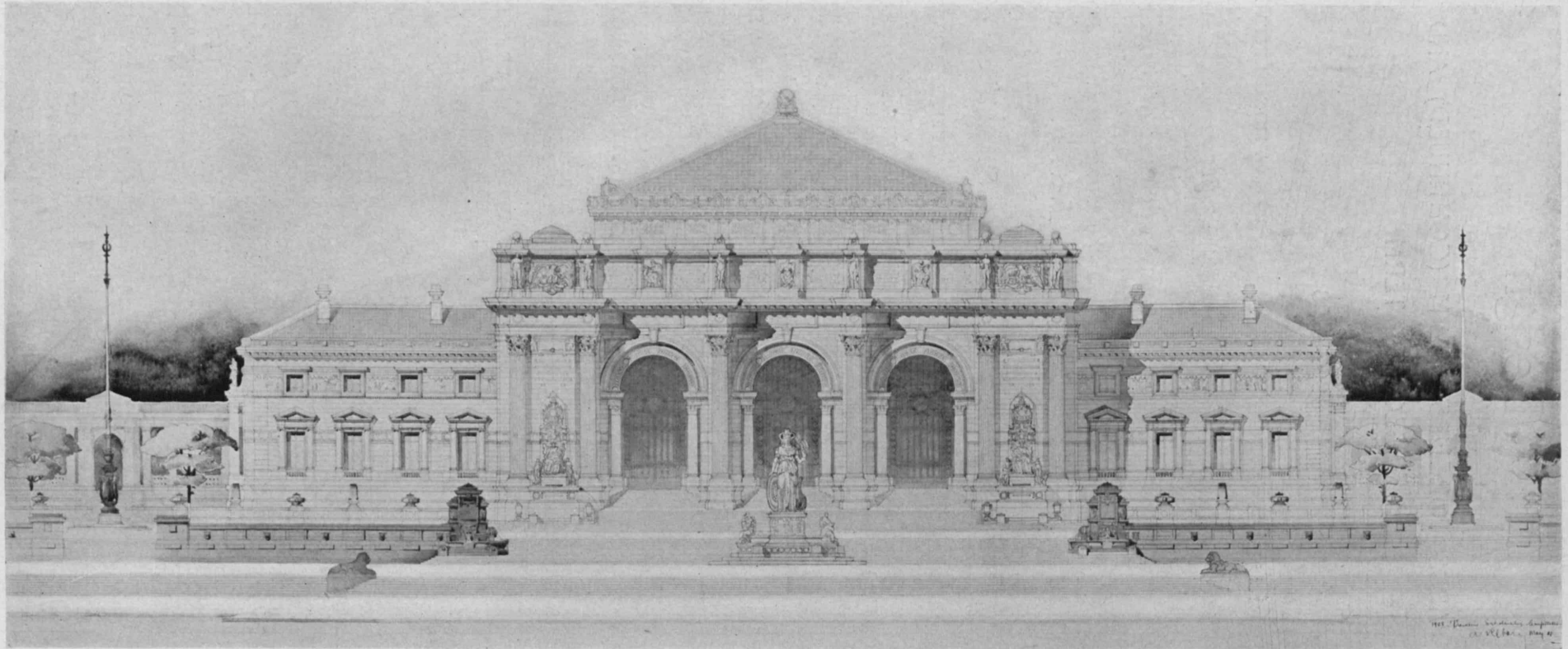
A GYMNASIUM AND SWIMMING-POOL

1st mention: L. SVARZ. 2d mention: L. H. KING.
" " T. G. MACHEN. " " C. J. BROWN.
" " V. J. SEIBERT. 3d " H. D. BOUNETHEAU.
" " D. W. GIBBS. " " A. F. MENKE.
" " W. A. MEANOR. " " Miss H. M. LONGYEAR.
" " " " Miss R. H. THOMPSON.

A WATER-TOWER FOR AN ESTATE IN THE COUNTRY

(Sketch Problem)

1st mention: D. W. PHELPS. 2d mention: T. H. ATHERTON, JR.
" " T. G. MACHEN. " " V. J. SEIBERT.
" " A. G. KELLOGG. " " H. M. GLAZIER.
" " L. SVARZ. " " P. L. FOLEY.
" " " " H. D. BOUNETHEAD.

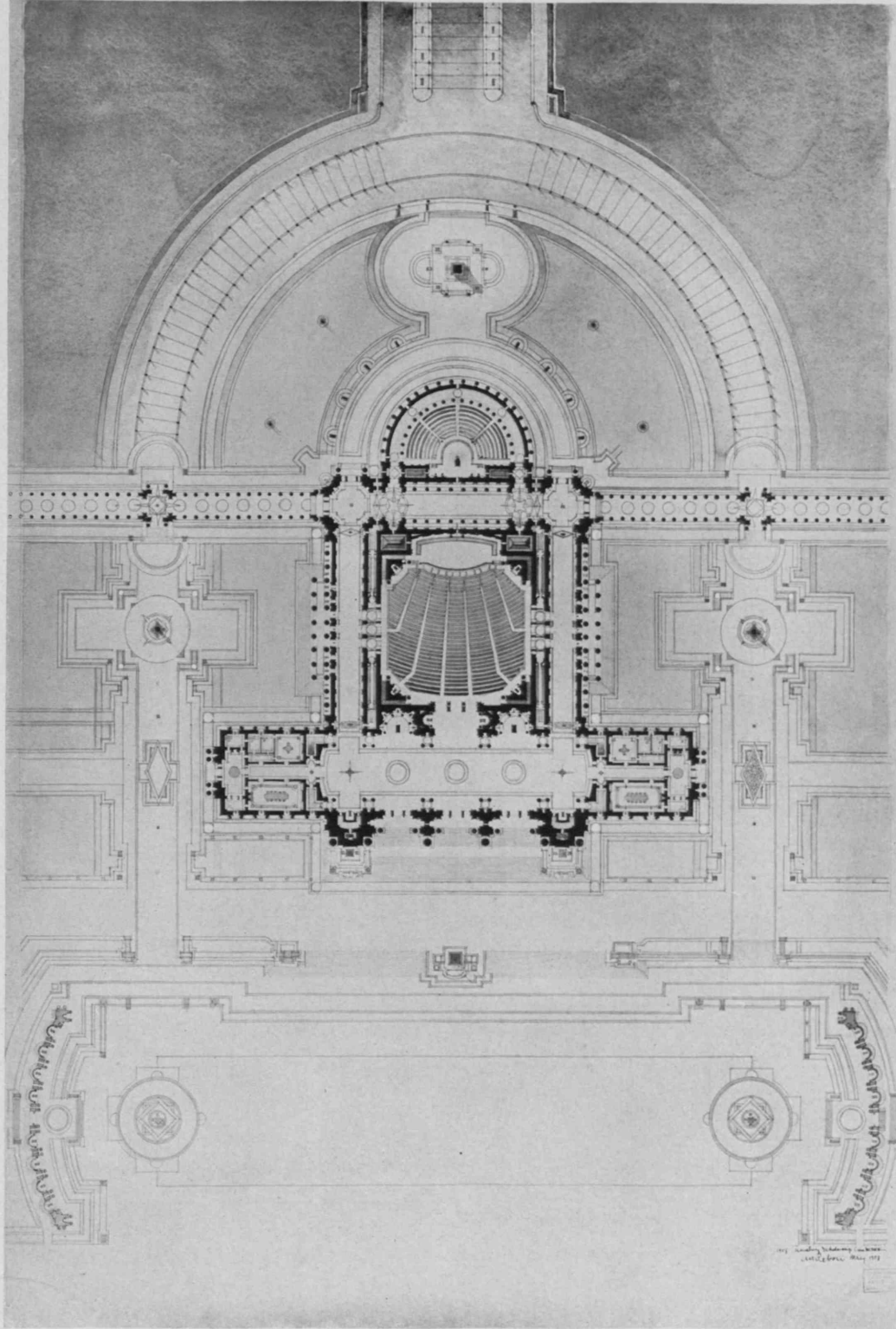


1908 Traveling Scholarship Competition

PRIZE DESIGN

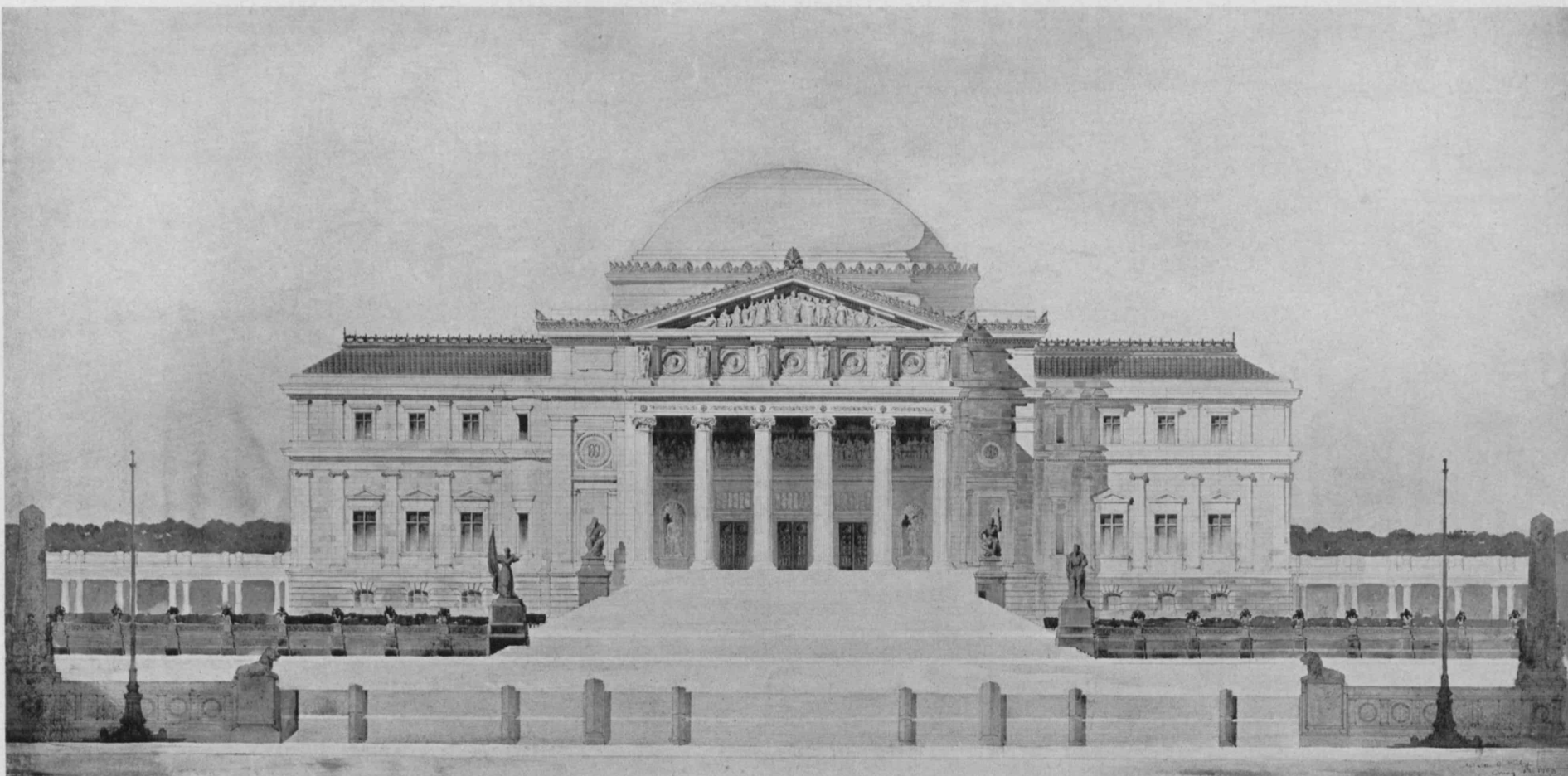
THE BUILDING OF HONOR OF A UNIVERSITY

BY ANDREW R. REBORI



THE BUILDING OF HONOR OF A UNIVERSITY

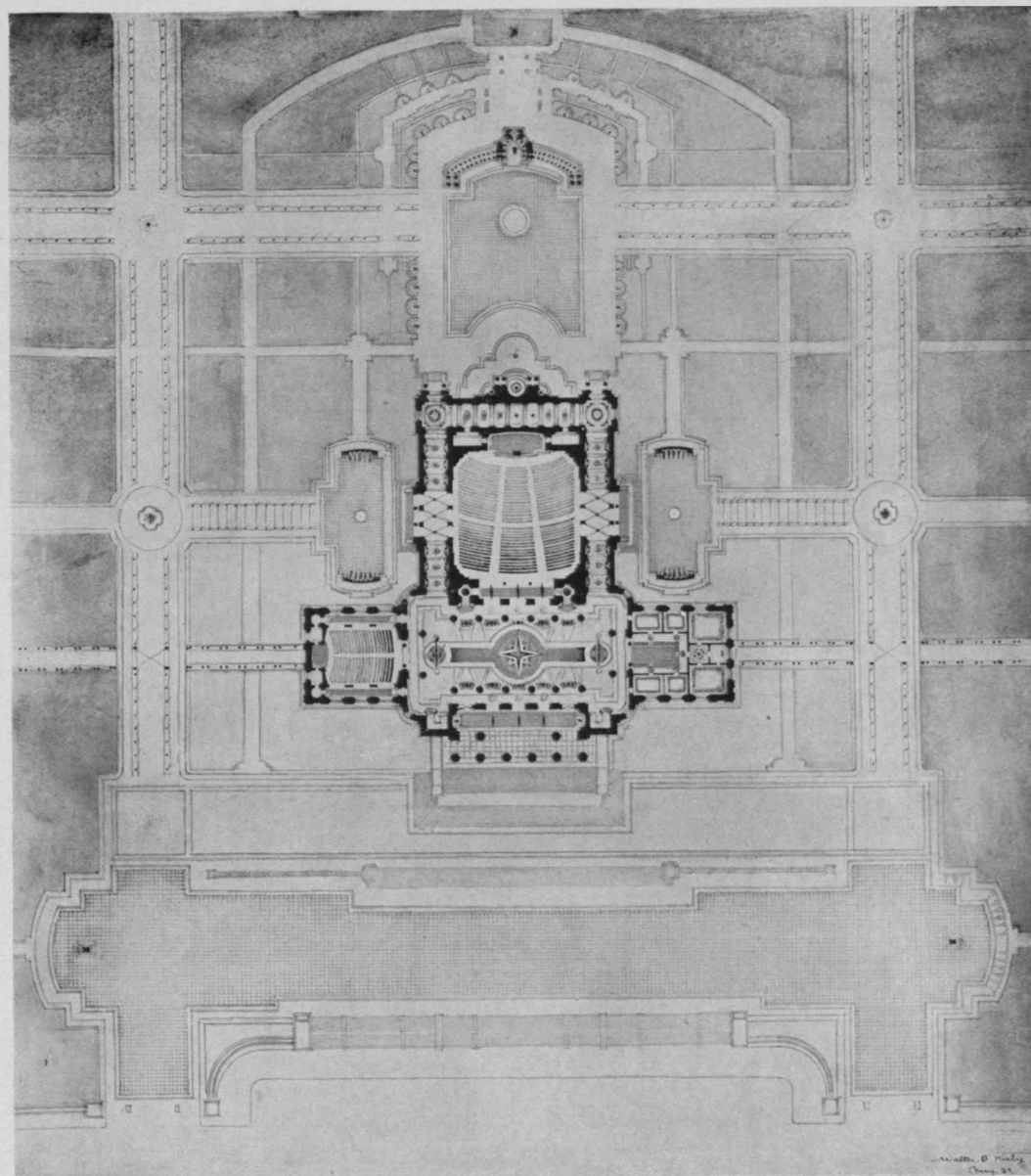
BY ANDREW R. REBORI



THE BUILDING OF HONOR OF A UNIVERSITY
BY WALTER B. KIRBY

1908 Traveling Scholarship Competition

HONORABLE MENTION

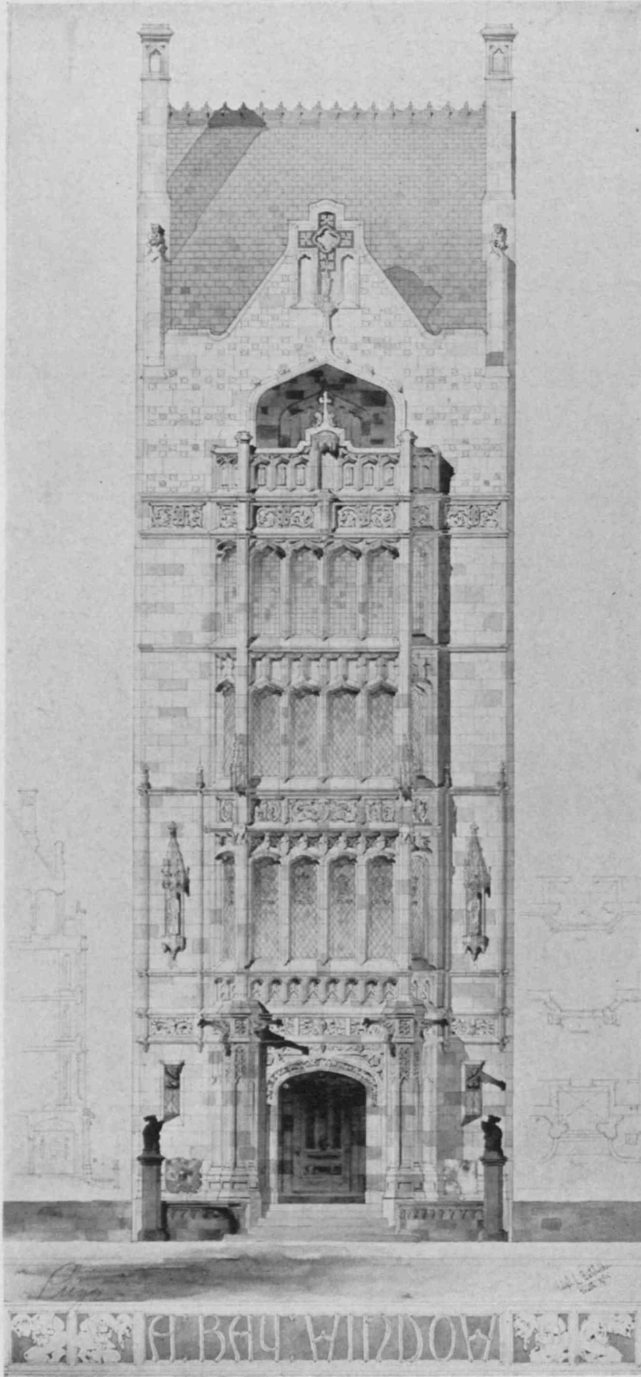


THE BUILDING OF HONOR OF A UNIVERSITY

BY WALTER B. KIRBY

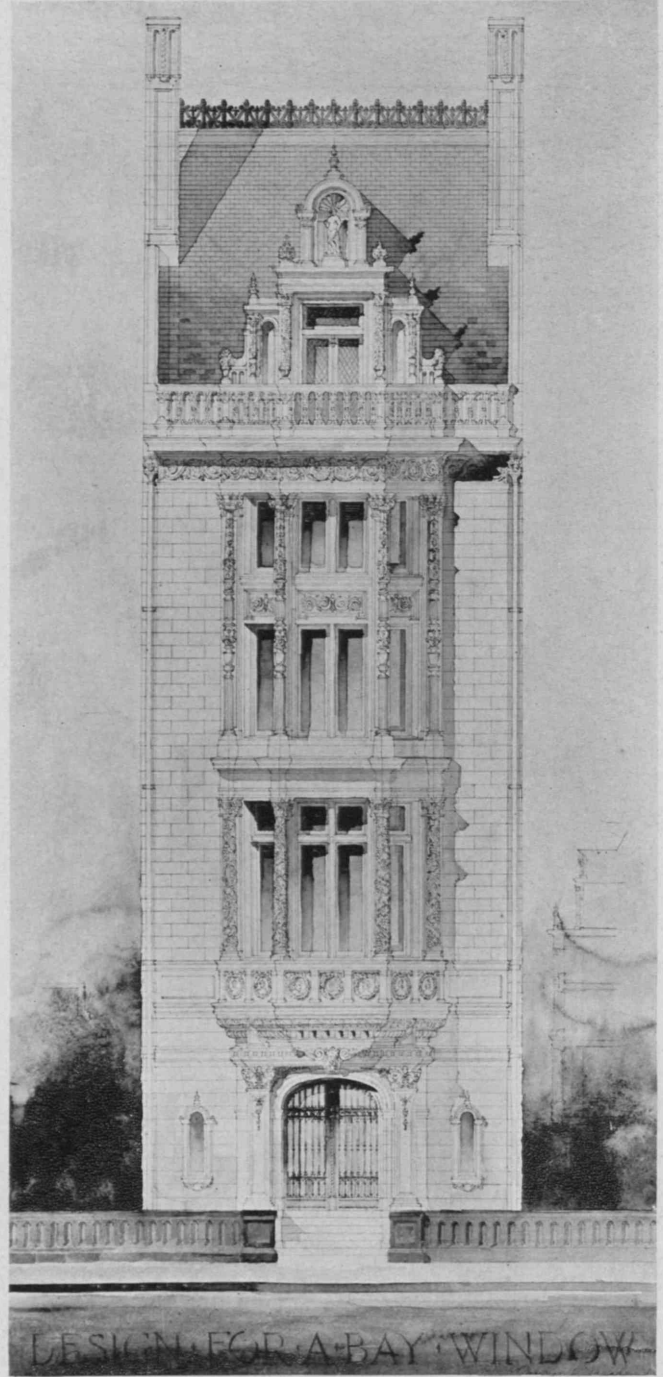
Competition for the Boston Society of Architects Prizes

A BAY WINDOW



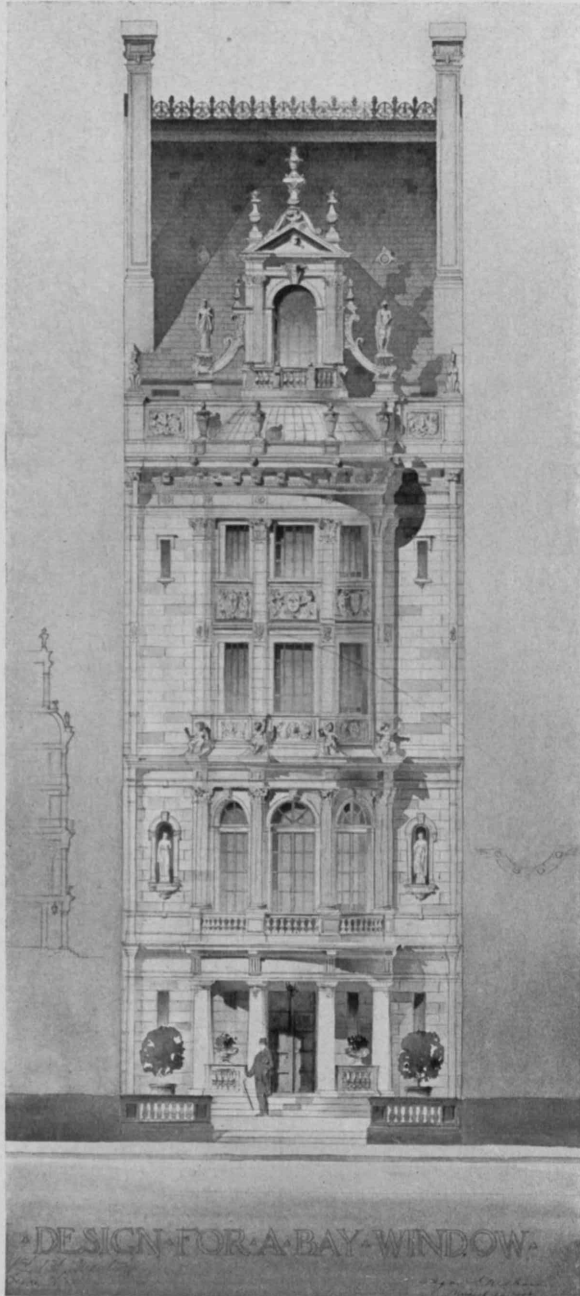
PRIZE DESIGN FOR REGULAR STUDENTS

BY R. J. BATCHELDER



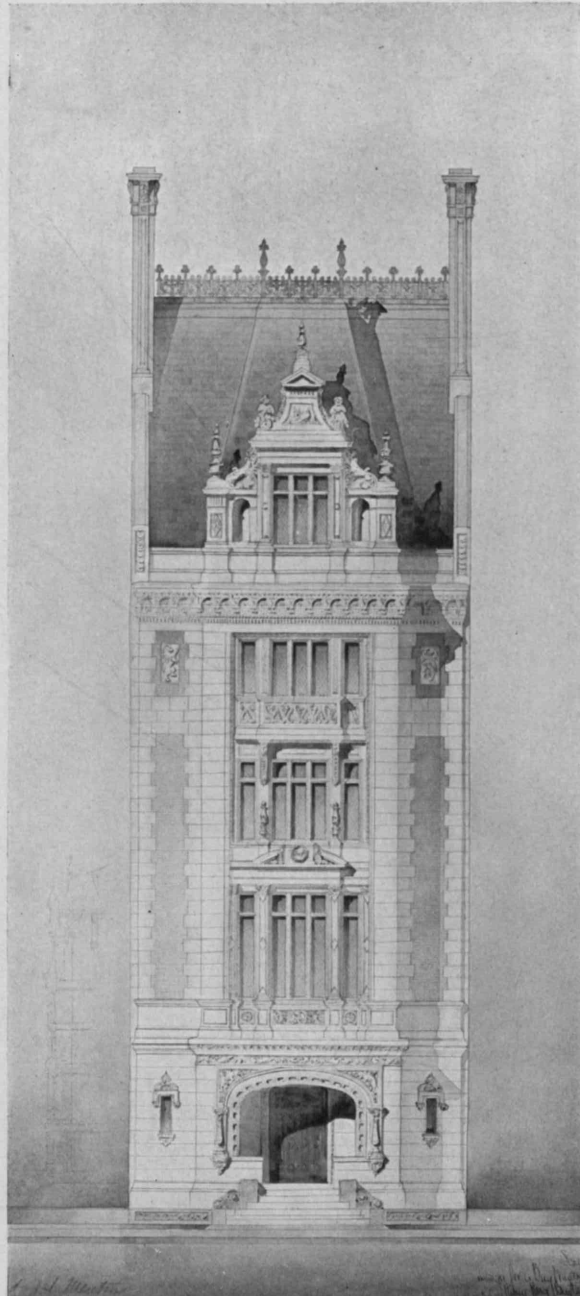
PRIZE DESIGN FOR SPECIAL STUDENTS

BY M. P. MEADE

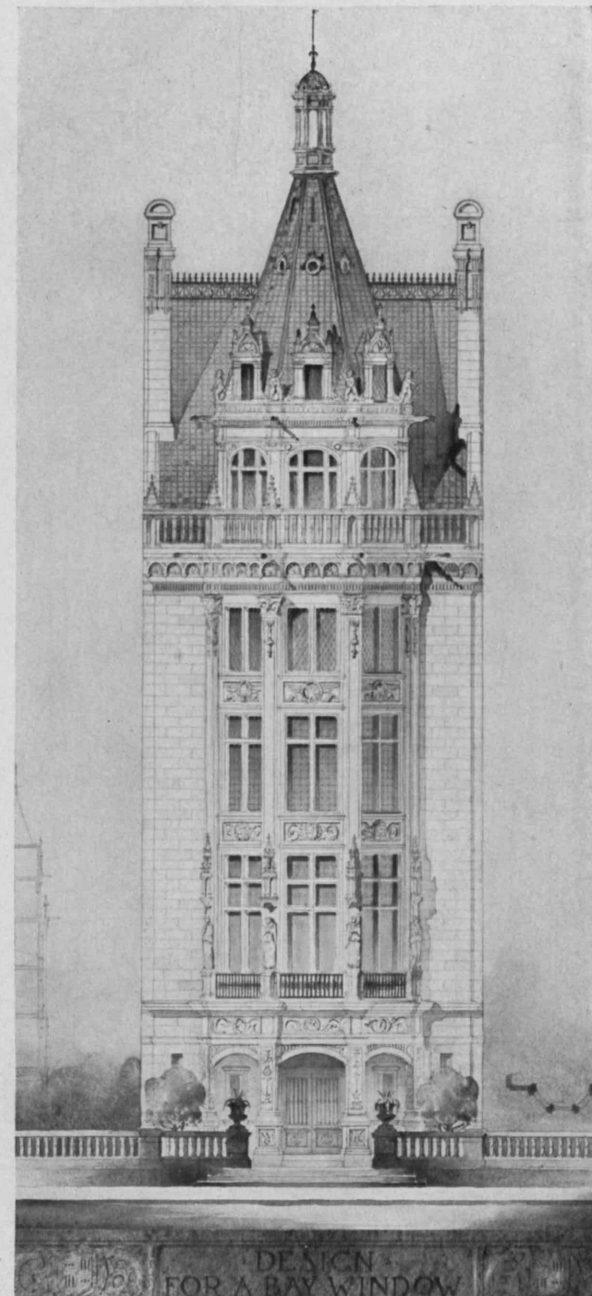


DESIGN FOR A BAY WINDOW.

FIRST MENTION BY E. I. WILLIAMS

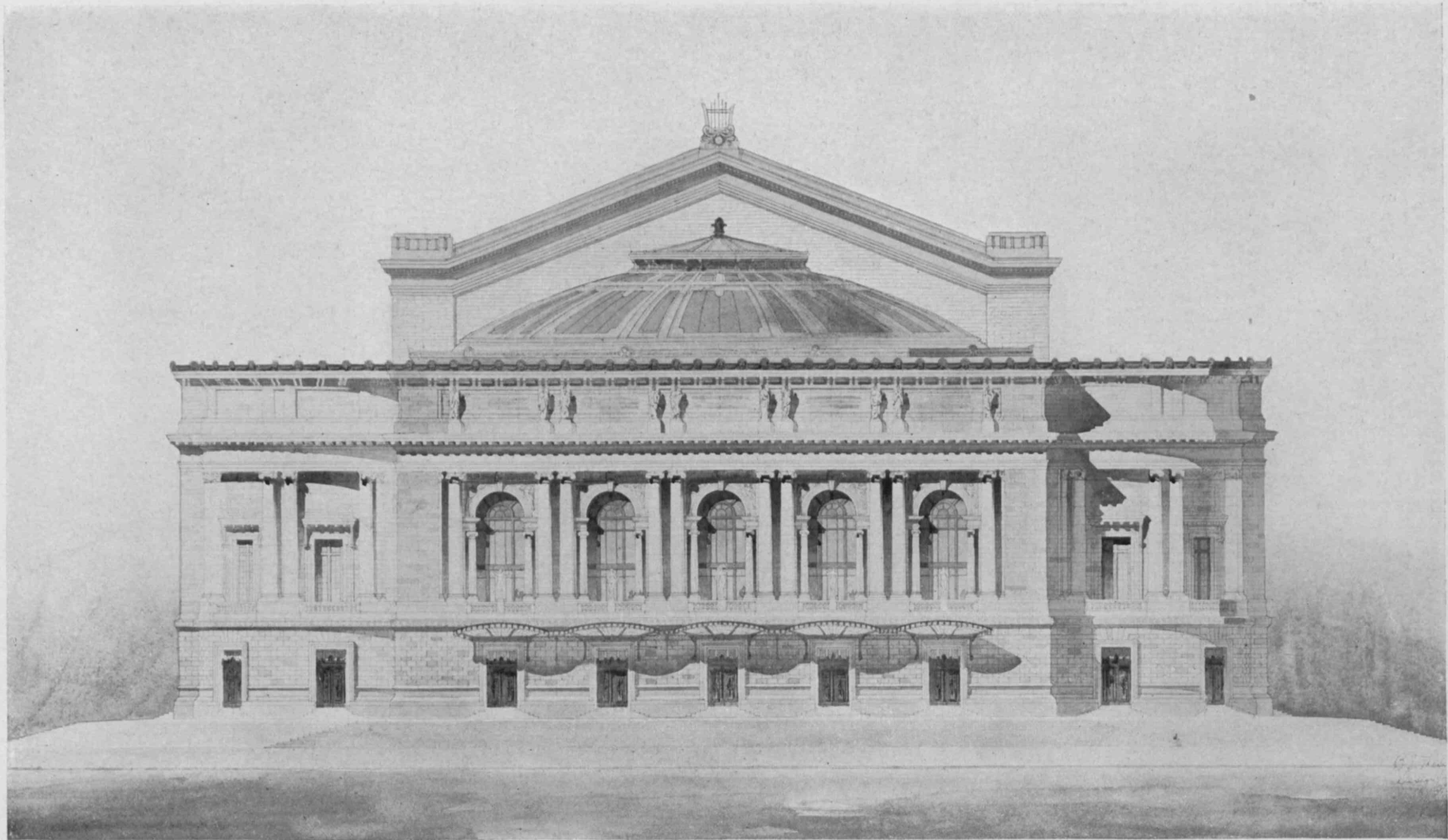


SECOND MENTION BY H. H. BENTLEY



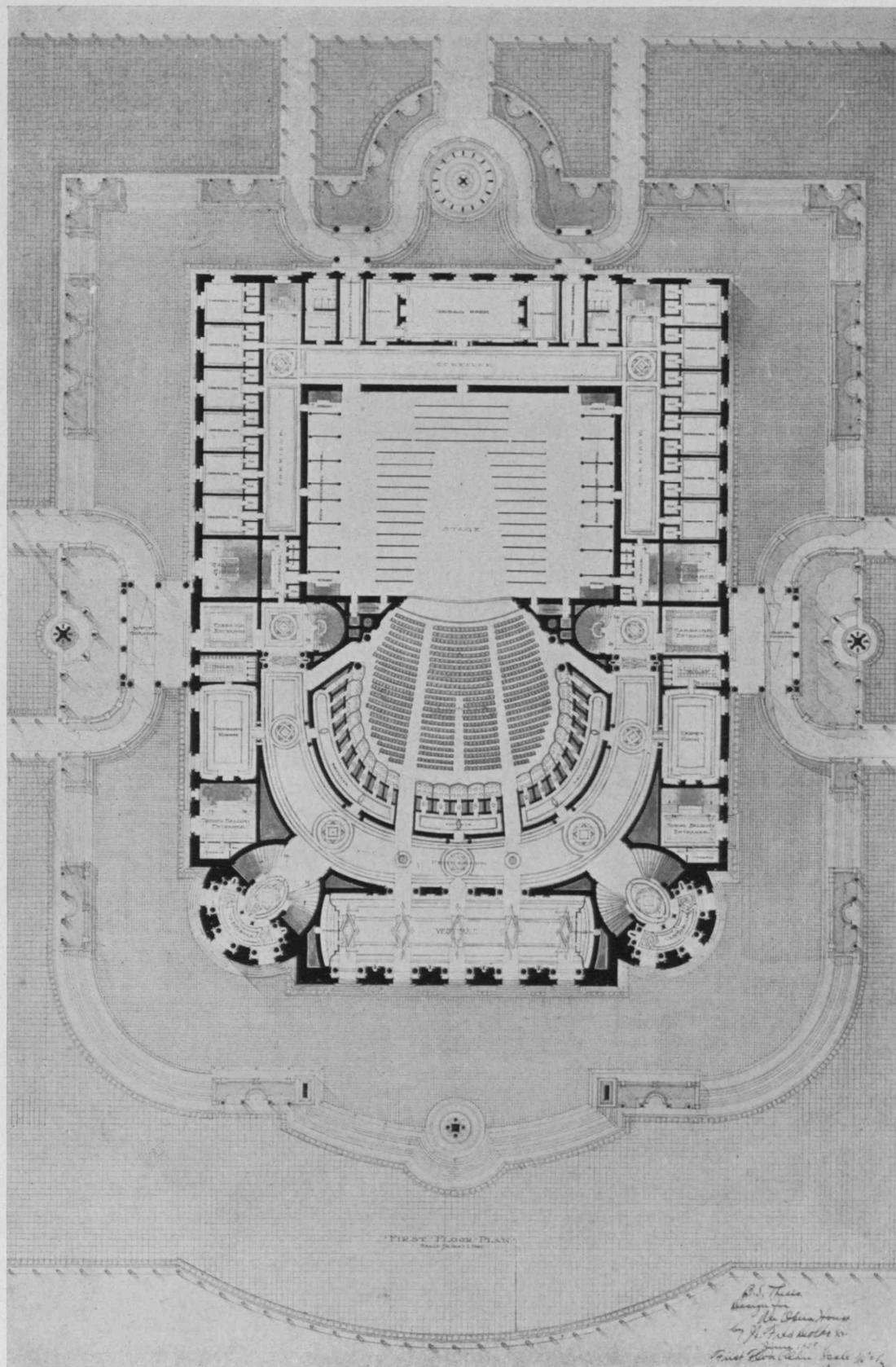
DESIGN FOR A BAY WINDOW.

FIRST MENTION BY S. O. CLEMENTS

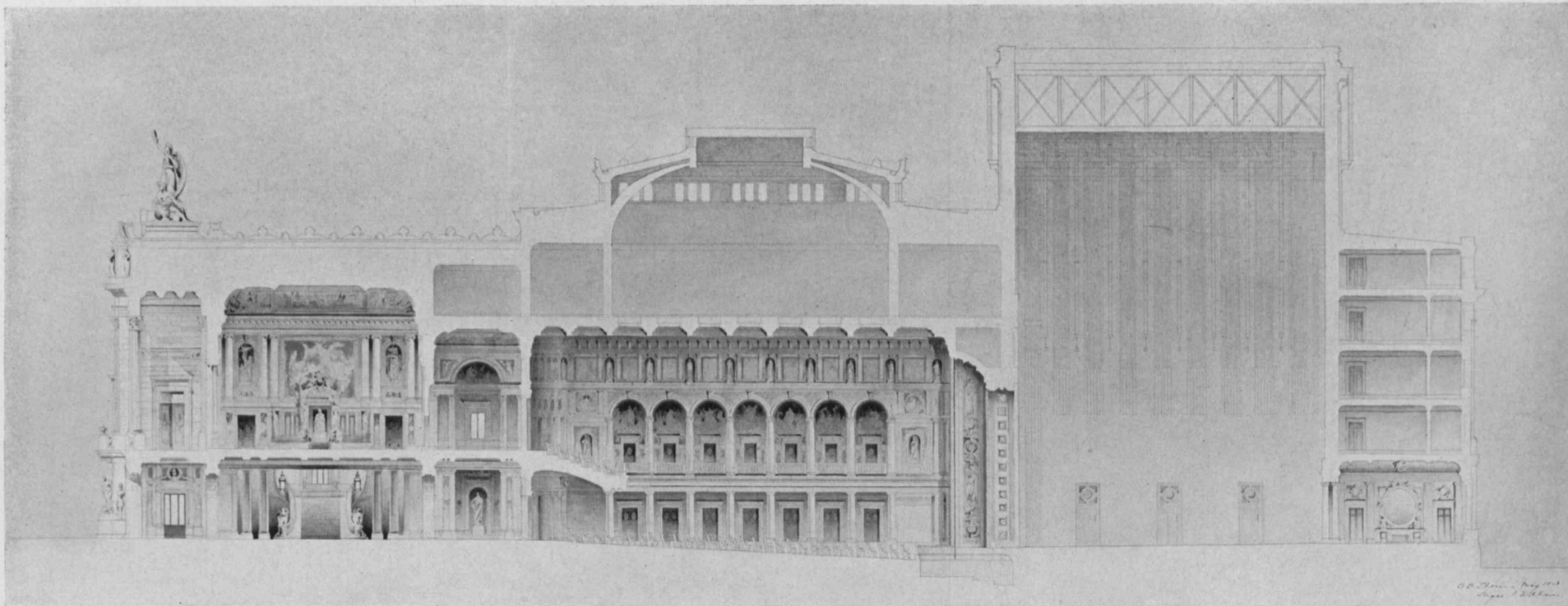


Thesis Design for an Opera House

BY W. F. DOLKE

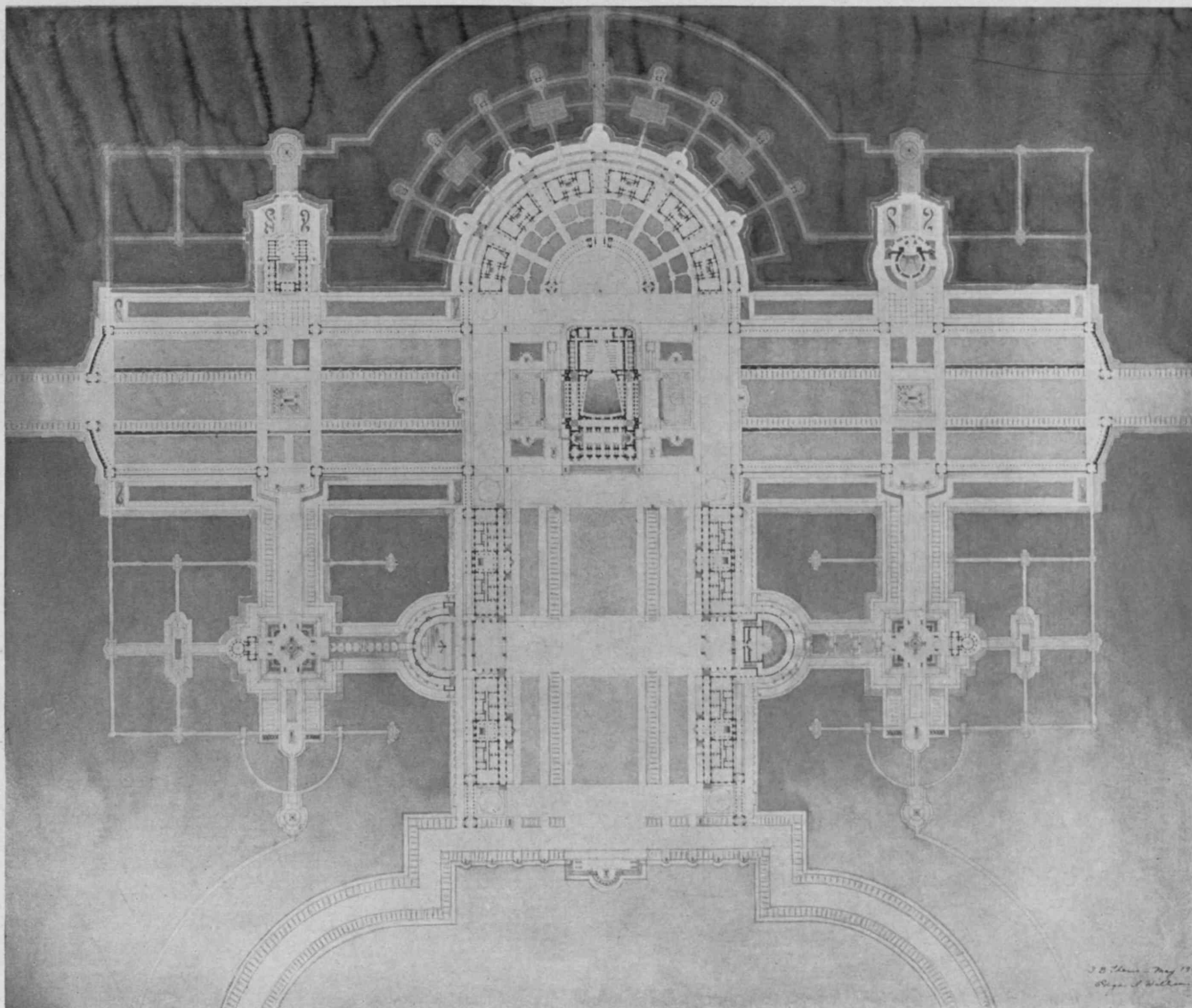
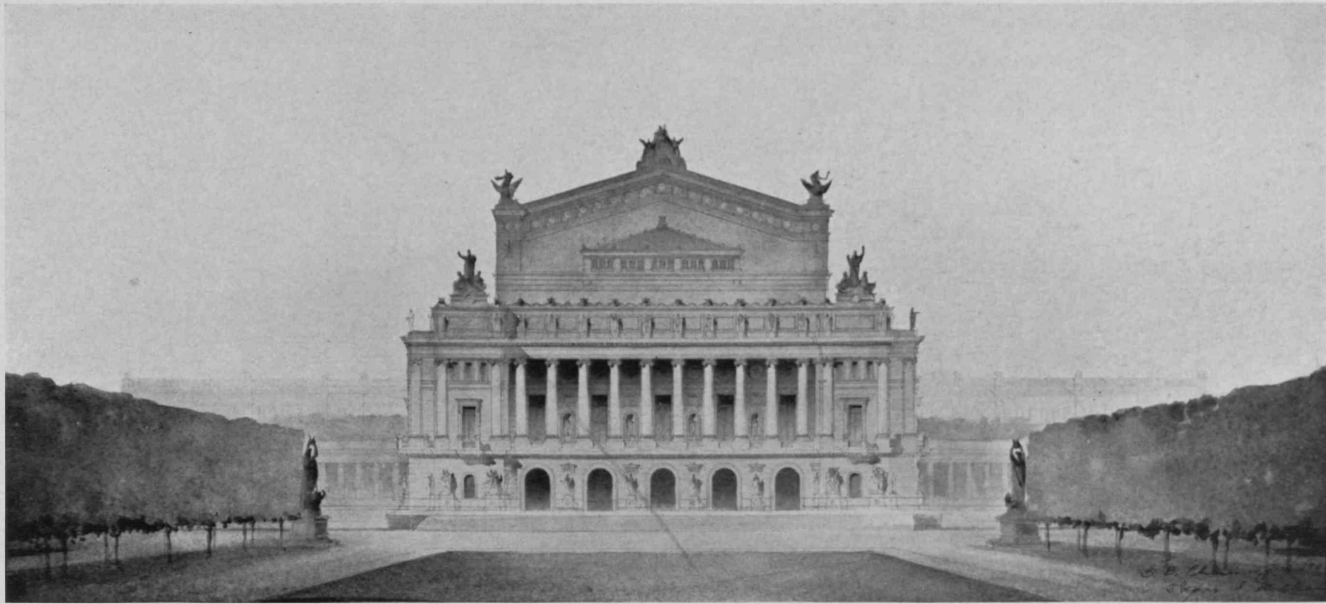


THESIS DESIGN FOR AN OPERA HOUSE
BY W. F. DOLKE



Thesis Design for a Large Establishment in the Country
for Musical and Histrionic Festivals

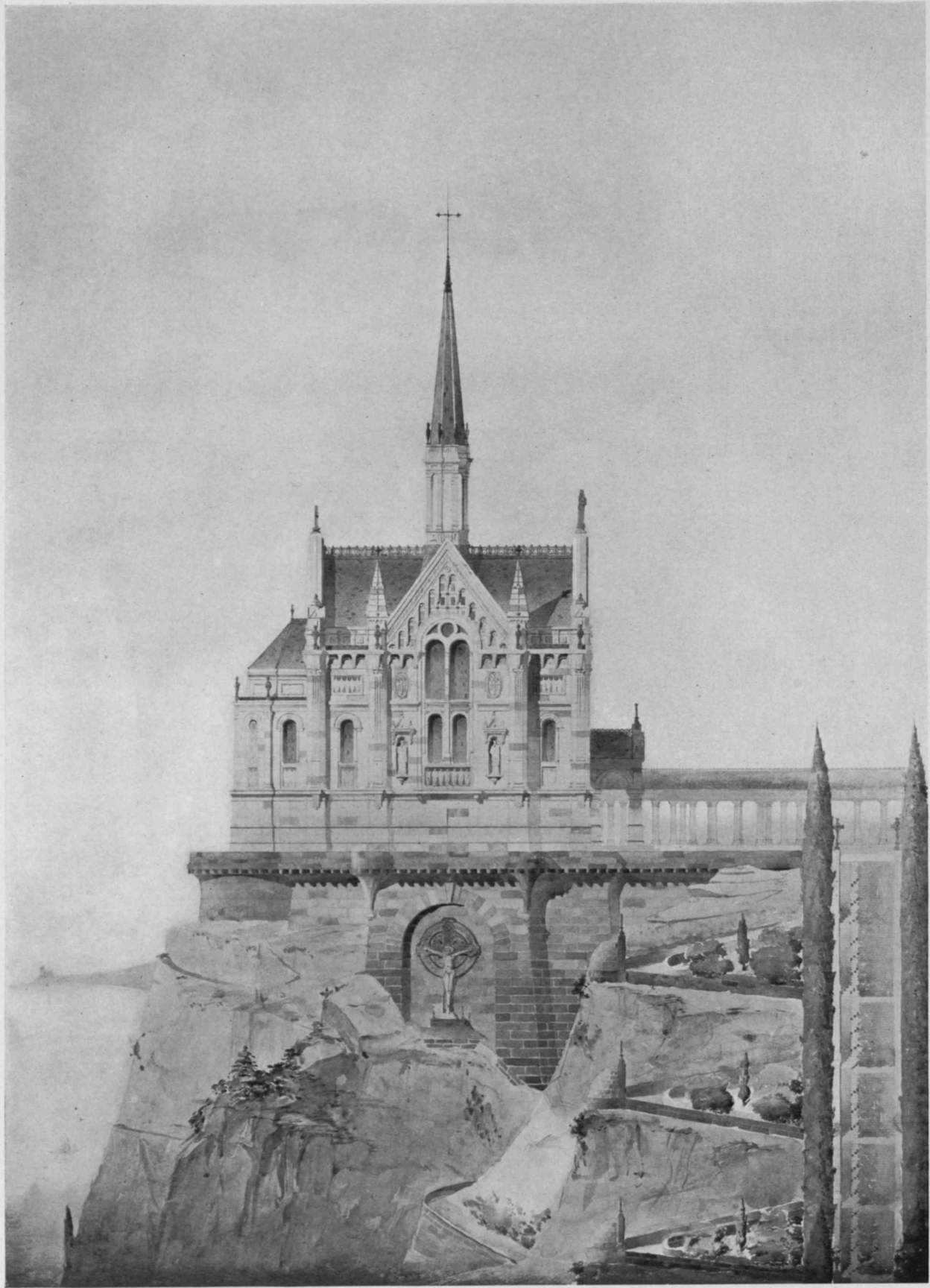
BY E. I. WILLIAMS



THESIS DESIGN FOR A LARGE ESTABLISHMENT IN THE COUNTRY
FOR MUSICAL AND HISTRIONIC FESTIVALS

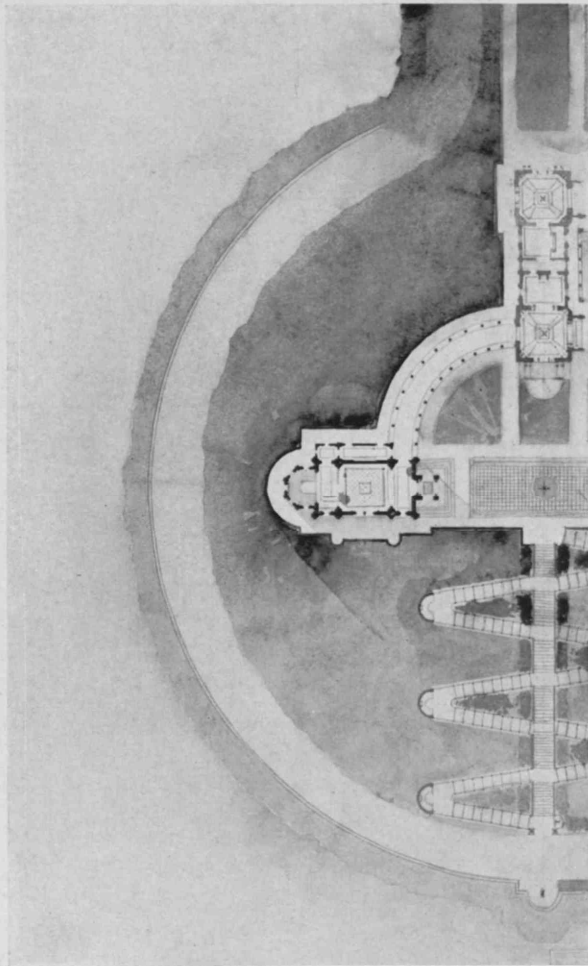
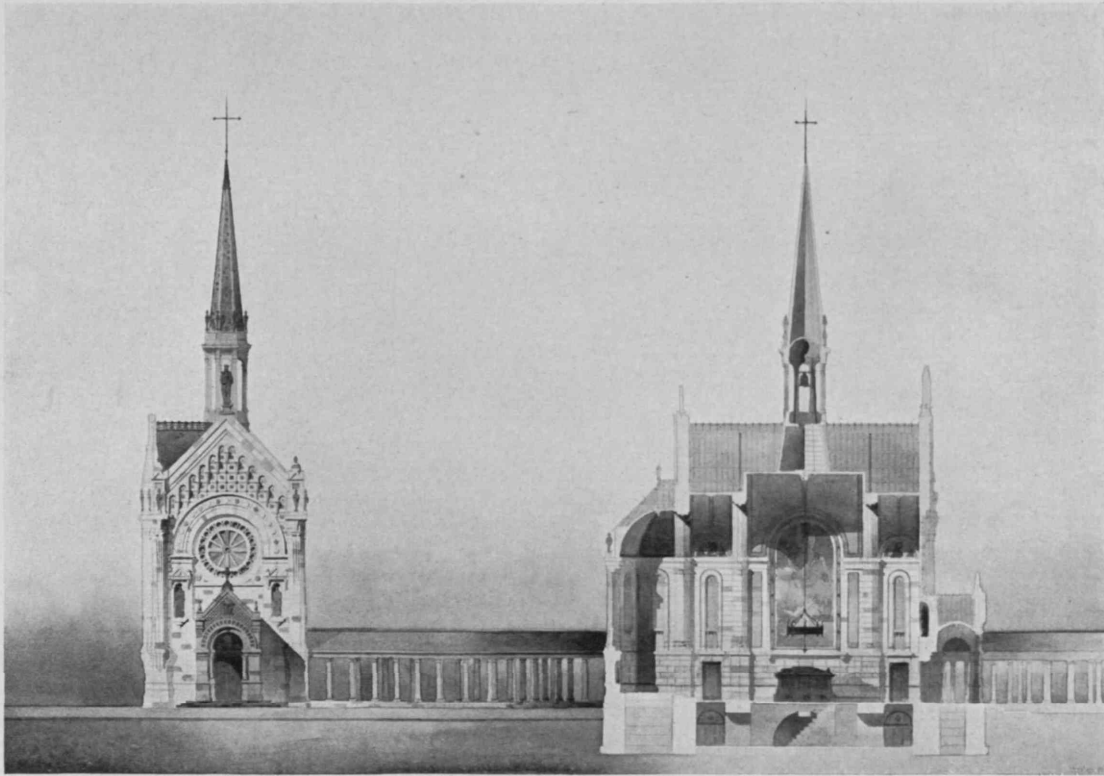
BY E. I. WILLIAMS

*J. B. Stone - May 1911
Rogers & Williams*



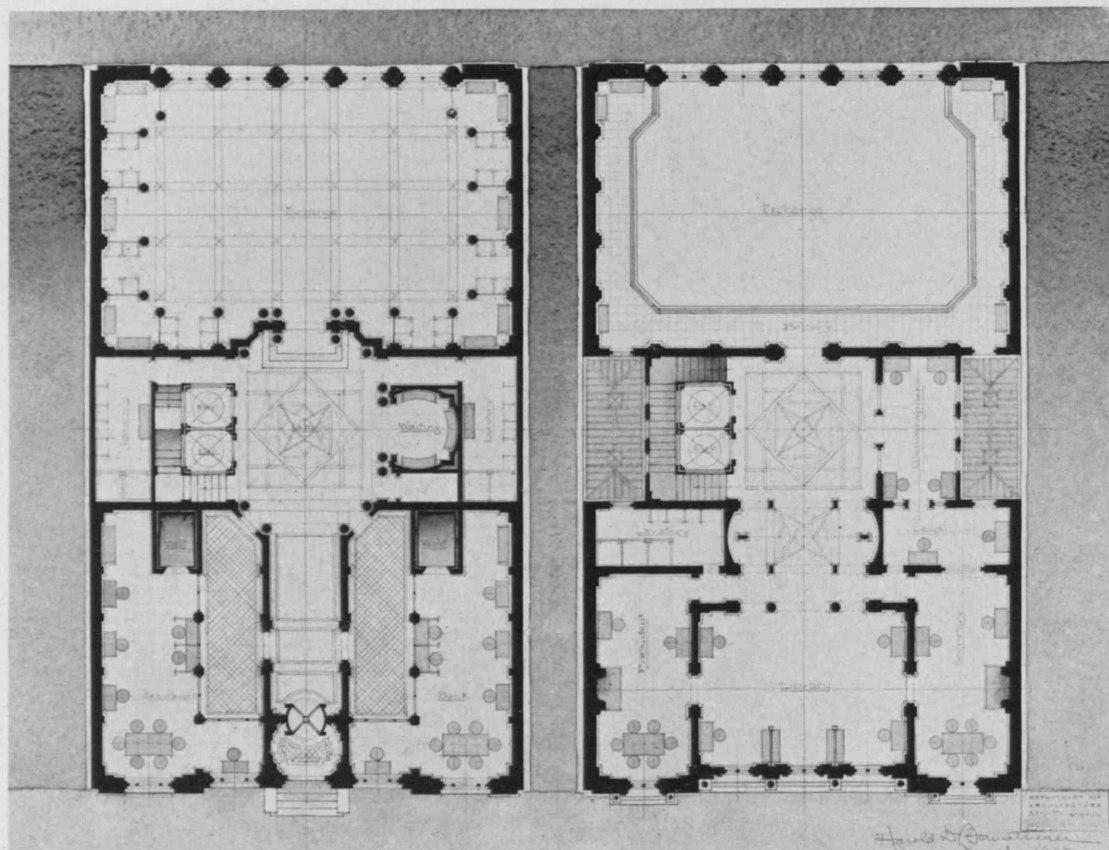
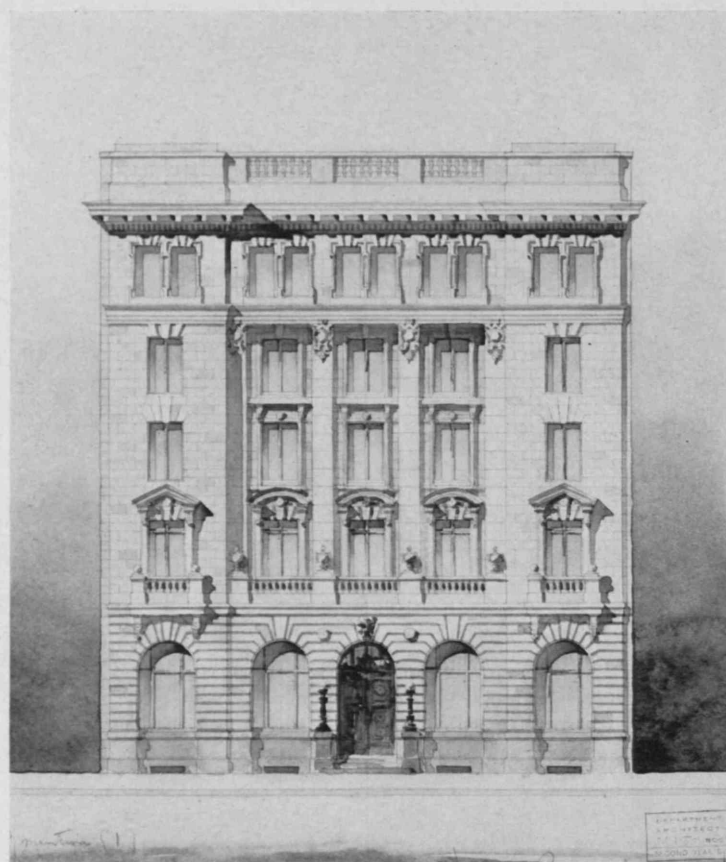
A PRIVATE CHAPEL OF A LARGE COUNTRY RESIDENCE

BY S. O. CLEMENTS



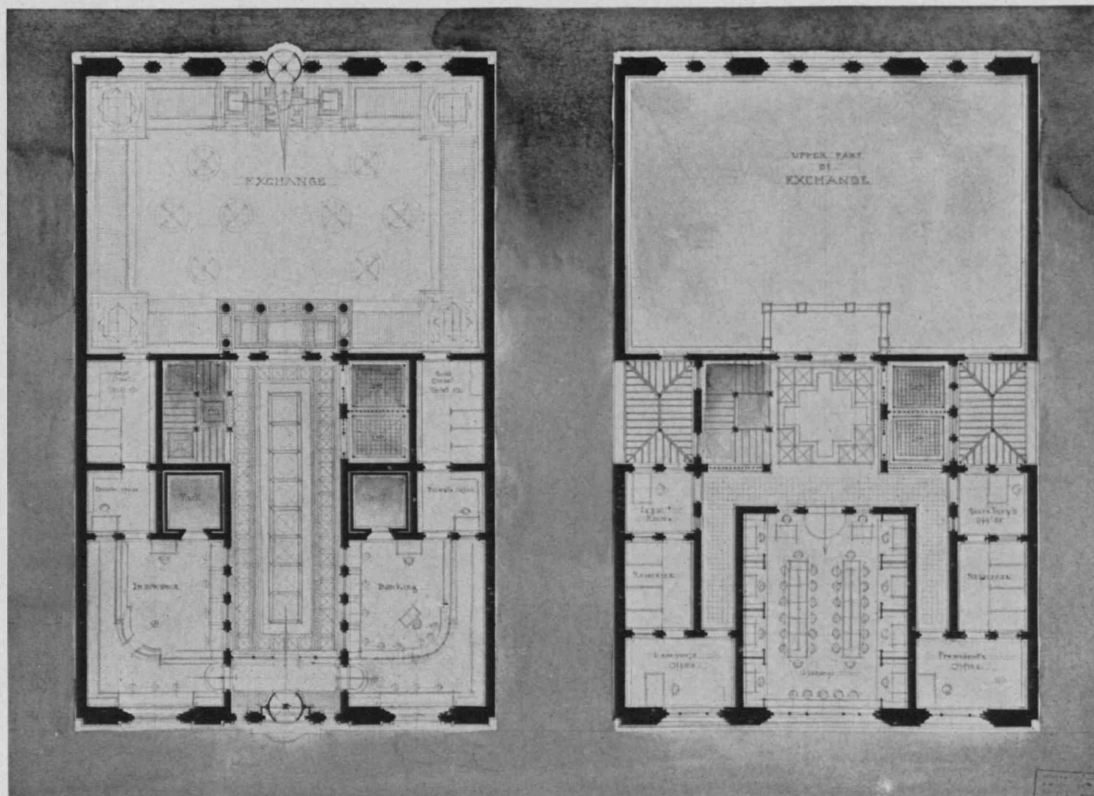
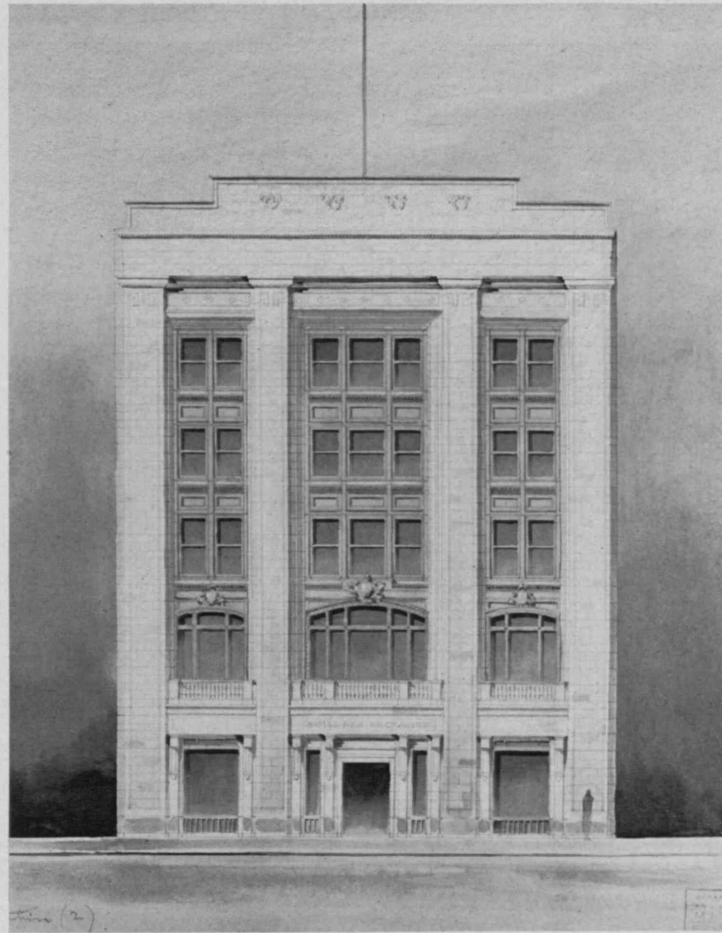
A PRIVATE CHAPEL OF A LARGE COUNTRY RESIDENCE

BY S. O. CLEMENTS



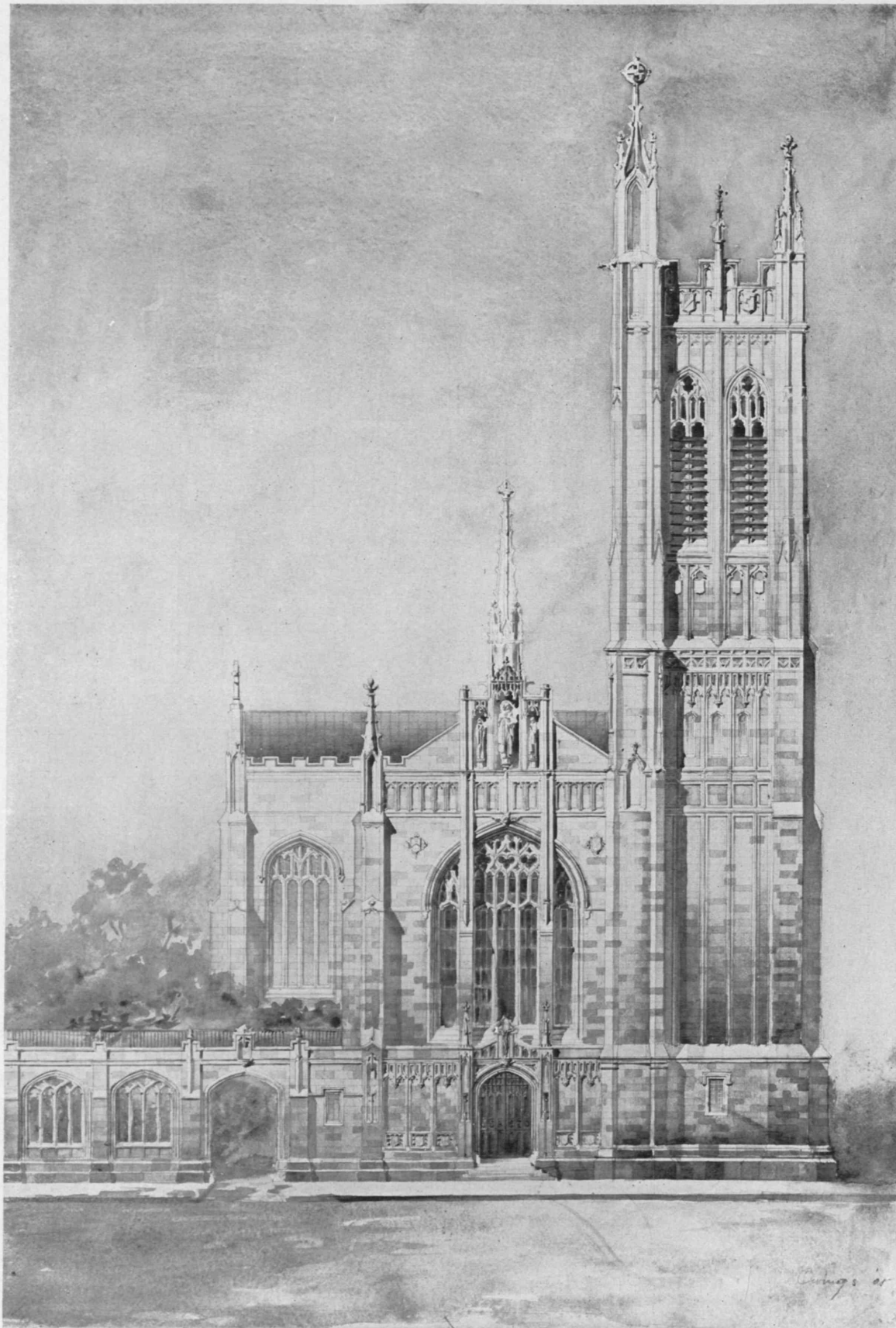
SECOND YEAR OF DESIGN, A MASTER BUILDERS EXCHANGE

FIRST MENTION BY H. D. BOUNETHEAU



SECOND YEAR OF DESIGN, A MASTER BUILDERS EXCHANGE

SECOND FIRST MENTION, BY MISS H. M. LONGYEAR



THIRD YEAR OF DESIGN, A GOTHIC CHURCH

BY T. OWINGS

Building - Materials

Limes, Cements, Mortars, and Concretes

[These notes were prepared for the students in the Department of Architecture, to serve as a text in a short course of instruction in the classroom. Many authors have been consulted and often copied literally; and as a list of the most important will be given at the end of this article, it has not seemed necessary always to make direct mention of them in the text. — ED.]

DIFFERENCE BETWEEN LIME AND CEMENT

LIME. The calcination (heating to redness in air) of any pure limestone (carbonate of lime) produces quick or caustic lime by driving off the carbonic acid and moisture the limestone contains. During the calcination the limestone loses nearly half its weight. If to this quicklime is added as much water as it will absorb, it slakes; in other words, there is a chemical combustion of the quicklime, due to its rapid hydration when in contact with water; the lumps burst into pieces with a hissing, crackling noise; there is a considerable evolution of steam and heat, the temperature being raised to the boiling-point. In a few minutes the quicklime is reduced to an impalpable dry powder, if water has not been used in excess (about one-third by weight), and has increased in volume from two to three and one-half times, proportional to the purity of the limestone. This is slaked lime (hydrate of lime, or calcium hydrate). On adding more water the bulk of dry powder is much reduced, and it may be tempered into a stiff paste to be used as mortar.

SET, OR CHEMICAL HARDENING. If a small pat made of paste from the slaked lime is placed under water it will slowly dissolve, and if there is enough water will entirely disappear; but in the air a pat will absorb carbonic acid, which reconverts it to its original state. This action is slow, perhaps one-eighth inch the first year, and constantly decreases until an air-tight crust is formed averaging less than one-half inch thick, protecting the interior and keeping it indefinitely in its soft condition. This hydrate of lime either as a dry powder or made up with water, if protected from atmospheric action, undergoes no alteration whatever. Thus lime needs for its "set" direct contact with the air, and this chemical "set" begins on the outside.

CEMENT. The calcination of certain impure limestones produces a compound which will not slake when water is added to it; but if this same calcined compound is ground to a fine powder and mixed to a paste with water it has the property of hardening to a stonelike mass. This paste sets under water in from two minutes to twelve hours, and acquires within a year a strength varying from a soft brick to that of the stronger kinds of stone, according to the composition of the limestone. Under still water cement becomes about one-third stronger than in air.

Thus cement, as opposed to lime, gets its proper "set" under water or when protected from the air; and this setting does not begin at the edges, but almost simultaneously throughout the mass.

LIMESTONES. The basis of all limes and cements is carbonate of lime. Pure limestone, such as statuary marble and chalk, is entirely carbonate of lime, but the usual limestones are seldom if ever pure, and contain in addition to the carbonate of lime 10% to 30% of impurities,—silica, alumina, magnesia, oxide of iron, etc.—and among these impurities of the limestone are the constituents which give the characteristic of hydraulicity to it. When the limestone is calcined the products are classified as below, according as the proportion of these impurities affects the slaking and setting of the calcined limestone:

Rich, fat, or pure limes.

Poor or meagre limes.

Hydraulic limes. { (a) Feebly hydraulic.
(b) Ordinarily hydraulic.
(c) Eminently hydraulic.

SIMPSON BROS. CORPORATION

Engineers and Contractors

CONCRETE CONSTRUCTION
ASPHALT FLOORS
CONCRETE BLOCKS
ARTIFICIAL STONE WORK
HASSAM STREET PAVEMENT
GRANOLITHIC WALKS
WATERPROOF CELLARS
ASBESTOLITH FLOORS
TAR CONCRETE
ORNAMENTAL CONCRETE

166 DEVONSHIRE STREET
BOSTON

JOHN M. EWEN COMPANY

Engineers and Builders

THE ROOKERY
CHICAGO

BRANCH OFFICES

98 King Street, West Rockefeller Building
Toronto, Can. Cleveland, Ohio

THE ELECTRON MANUFACTURING C O M P A N Y

Electric Elevators

Motors, Etc.

WORKS

SPRINGFIELD, MASS.

ARCHITECTURAL BRONZE

MEMORIAL TABLETS

FIREPLACE GOODS
IN BRASS AND IRON

TERRAZZO
MOSAIC

Murdock-Shaw Company
125 FEDERAL ST., BOSTON

ELECTRIC House Pumping

"WATER ALL OVER
THE HOUSE"

22

Write Us for Complete Information
and Prices.

**THE HOLZER-CABOT
ELECTRIC CO.**

BOSTON (BROOKLINE), MASS.

Hydraulic cements. $\left. \begin{array}{l} (d) \text{ Natural.} \\ (e) \text{ Artificial.} \end{array} \right\}$
Pozzuolanas.

RICH LIMES. Rich limes are calcined from pure or nearly pure carbonate of lime, containing less than 10% of foreign constituents, not enough to affect the slaking or setting action. They are generally used for masonry.

POOR OR MEAGRE LIMES. Poor limes contain from 10% to 40% of inert impurities, such as sand, etc., which have no chemical action upon the lime, and so do not impart any degree of hydraulicity. Such limes slake slowly and imperfectly, less water is required for the process, and it is attended with less heat and increase of volume than in the case of rich limes. If used they should be ground to a powder to remove all danger of subsequent slaking. They are seldom used in this country.

HYDRAULIC LIMES. For a lime to possess hydraulic properties it must have in chemical combination with it one or more of the several forms of silica and alumina with water; or, in other words, the lime must have mixed with it substances containing soluble silicates. Clay (hydrated silicate of alumina) is the most important constituent conferring hydraulicity upon natural or artificial hydraulic limes and cements.

Hydraulic limes contain from 15% to 40% of impurities, but with enough quicklime to develop more or less of the slaking action, together with enough of such foreign constituents as combine chemically with the lime to confer a certain amount of hydraulicity upon it. Hydraulic lime is slaked by sprinkling with just sufficient water to slake the free lime produced so as to form a powder without grinding. They are little known in the United States, and are manufactured chiefly in France, notably at Tiel and Scilly, from whence were formerly brought large quantities to this country. These limes all slake more slowly than the poor limes, with but slight vapor and with but slight increase of volume.

Vicat divided these into the following classes:

- (a) Feebly hydraulic limes contain 5% to 12% of clay, etc.
- (b) Ordinarily hydraulic limes contain 15% to 20% of clay, etc.
- (c) Eminently hydraulic limes contain 20% to 30% of clay, etc.
- (a) Harden under water in fifteen to twenty days.
- (b) Harden under water in six to eight days.
- (c) Harden under water in two to four days.

These limes undergo in slaking an increase in volume inversely proportional to the hydraulic energy. The best of the class set and attain their full strength when kept immersed in water.

HYDRAULIC CEMENTS. Hydraulic cements are similar in many respects to the best hydraulic limes, but they possess hydraulic properties to a far greater degree. They do not slake at all after calcination. If pulverized they can be formed into a paste with water without any sensible increase of volume, and with little if any disengagement of heat. They may be classified as follows: Portland cements, natural cements, Pozzuolanas or Puzzolan cements or slag cements.

PORTLAND CEMENT. Portland cement is made by calcining a mixture which when burnt to clinker contains from 58% to 63% of lime combined with about 22% of soluble silica, 7% to 12% of alumina, and small percentages of oxide of iron, magnesia, etc. The raw materials in the dry process are first reduced to a powder and intimately mixed so as to secure a complete chemical combination of the clay and the lime; and the calcination takes place at a temperature near the melting-point, to ensure the complete union of the lime and silica. Finally, the cement clinker is reduced to a powder, because the uncombined lime is not of sufficient quantity to cause the mass to slake by the addition of water.

The manufacture of Portland cement is either by the wet or the dry process,—the wet process when the raw materials are in a moist state and are capable of being reduced by water, after which they have a preliminary grinding and are introduced to the kiln; the dry process when the raw materials cannot be reduced by water but must be ground to powder. In the wet process marls and clays are used; in the dry process, natural cement rock. The wet-process plants are mostly in the marl

BARRETT SPECIFICATION ROOFS

THE BARRETT SPECIFICATION is recommended to architects and engineers as a standard method of laying what is commonly called a slag or gravel roof, or more specifically a roof of coal tar pitch, tarred felt and slag or gravel. It is chosen as the result of many years' experience in laying roofs of these materials, and provides for the quality of roofing which will yield the best results with due consideration of first cost. It makes a roof which will give service for twenty years or more without any attention. There are many instances where such roofs have lasted and given perfect protection without care for periods exceeding thirty years.

A BARRETT SPECIFICATION ROOF is accepted by fire underwriters as a standard fire retardant, and it will take fire from neighboring conflagrations less rapidly than a tin roof. In such high-class fireproof buildings as New York skyscrapers and great hotels, these roofs are invariably employed.

THE BARRETT SPECIFICATION

ROOFING (over Boards):

Over the foregoing shall be laid a Coal Tar Pitch, Felt, and Gravel or Slag Roof.

There shall be used one (1) thickness of sheathing-paper or unsaturated felt, five (5) thicknesses of Barrett Specification Felt weighing not less than fourteen (14) pounds per hundred (100) square feet, single thickness, not less than one hundred and twenty (120) pounds of Barrett Specification Pitch, and not less than four hundred (400) pounds of gravel or three hundred (300) pounds of slag from $\frac{1}{4}$ to $\frac{5}{8}$ in. in size, and free from dirt, per one hundred (100) square feet of completed roof.

The material shall be applied as follows: First, lay the sheathing or unsaturated felt (A), lapping each sheet one (1) inch over the preceding one. Second, lay two full thicknesses of tarred felt (B), lapping each sheet seventeen (17) inches over the preceding one, and nailing as often as may be necessary to hold the sheets in place until remaining felt is applied. Third, coat the entire surface of this two-ply with hot pitch (C) mopped on uniformly. Fourth, lay three (3) full thicknesses of felt (D), lapping each sheet twenty-two (22) inches over the preceding one, mopping with hot pitch (E) the full width of the twenty-two (22) inch lap between the plies, so that in no case in the last three plies shall felt touch felt. Such nailing as is necessary shall be done so that all nails will be covered by not less than two (2) plies of felt. Fifth, spread over the entire surface of the roof a uniform coating of pitch into which, while hot, imbed the gravel or slag (F). In cold weather the gravel or slag shall be heated immediately before using.

The above Specification is designed for roofs having a pitch not exceeding three (3) inches to the foot. For steeper surfaces we will submit special Specifications upon request.

Booklets on Request

Barrett Manufacturing Company

New York
Kansas City

Chicago
Minneapolis

Philadelphia
New Orleans



Boston
Cincinnati

Cleveland
St. Louis

Pittsburgh
London, Eng.

**“The continuous bond of
Clinton Electrically Welded
Wire is the ONE best rein-
forcing for concrete.”**

NO LAPS NO WEAK POINTS NO WASTE

CLINTON WIRE CLOTH CO.
CLINTON, MASS.



The use of

Universal Portland Cement

for the last eight years in many of the most important concrete engineering projects has established for it an enviable reputation as a standard Portland of the highest quality.

**UNIVERSAL PORTLAND
CEMENT COMPANY**

Chicago—Pittsburg

EDWARD M. HAGAR, M. I. T. '93
President

CONCRETE MADE WATERPROOF

(Whole structure, not merely the surface)

The simple, safe, and sure method used by the Boston Elevated Railway Co. and the city of Boston is to add

Pine Cone Hydrated Lime

Proper Proportions are

1 part Portland cement
2½ parts sand
4½ " broken stone
Add 12 per cent Pine Cone hydrated lime

1 part Portland cement
3 parts sand
5 " broken stone
Add 16 per cent Pine Cone hydrated lime

Percentages are based on weight of lime to cement.

For particulars please communicate with our nearest office.

ROCKLAND - ROCKPORT LIME CO.
New York Rockland, Me. Boston

sections of Western New York, Ohio, Indiana, and Michigan; the dry plants, in the limestone and shale regions of Indiana, Missouri, Virginia, Eastern Pennsylvania, and Western New Jersey. It is in the Lehigh section of Pennsylvania that the best features of American practice have developed. In the wet process the methods differ only up to the burning of the clinker, and the differences are due to the nature of the materials, the clay and marl being ground together wet.

Great care is required in the manufacture of Portland cement. The exact percentage of clay to be added to the carbonate of lime to produce a high-grade cement varies in not very clearly defined limits. Good approximate proportions of the three only essential components of a cement, given by Carey, are six of lime, to two of silica, to one of alumina. Heath says 68% to 78% of calcium carbonate, twenty-one to fifteen of silica, and from ten to seven of alumina.

Too much clay causes the compound to fuse or run in the kiln at a temperature below that required to produce a sound clinker, and when ground the surplus will remain in the cement as so much inert material. An "over-clayed" cement is light in weight, and is apt to set quickly, and never thoroughly hardens. It also has a tendency to crumble on exposure to the weather. It is cheap to make and grinds easily.

An excess of lime enables the compound to stand the highest temperature in the kiln without risk of fusion. An "over-limed" cement burnt at a high temperature is dense, sets very slowly, and is very difficult to grind. The danger from such a cement is that it is liable to "blow" or expand in setting because of the presence of free lime, due to imperfect chemical combination or defective calcination. This is liable to be injurious to masonry or concrete. The aeration or air slaking of such a cement before packing is imperative. The gain in weight during a "month or more" of aeration by absorption of water and carbonic acid has been found to amount to upwards of 5%.

The demands for high tensile strength and great density have caused the manufacturers to raise to the utmost limit of safety the percentage of lime. A very slight difference in the manufacture may make a great difference in the character of the materials, and rigid testing is necessary to secure the best cement.

Portland cement is by far the most valuable of all the cements, and has never been surpassed in strength and hardness by any of the natural cements of this country or Europe. It differs also in a general way by being heavier and slower setting. Baker says, "The best American Portland is better than the best imported, and is sold equally cheap." This is due not only to our excellent material in great abundance, but to the great skill applied to its manufacture.

Portland cement was invented in England by Joseph Aspdin, of Leeds, who discovered in 1824 that an artificial mixture of slaked lime and clay, if highly calcined, formed an hydraulic product. He is supposed to have given it its name from a fancied resemblance to Portland stone, which was greatly used at that time as a building-material. Not until 1843, however, was the cement industry developed to any great extent. France established its first manufactory about the same time at Boulogne-sur-Mer. From England the industry extended to Germany, and the well-known Stettin Portland cement was the result. Portland cement was first made in the United States in 1878, at Coplay, in the Lehigh Valley of Pennsylvania.

NATURAL PORTLAND CEMENT. This name was given to a cement the manufacture of which was due to the discovery at Boulogne-sur-Mer in 1846 of a soft deposit that could be excavated with pick and shovel, and possessed in suitable proportions all the ingredients of good cements.

NATURAL CEMENTS. In 1796 Mr. James Parker, of London, took out a patent for the manufacture of what he called Roman cement. It was made from the nodules found in the London clays dredged up off the Isle of Sheppy and along the Hampshire and Yorkshire coasts. These nodules contain from 60% to 70% of carbonate of lime, 18% to 20% of silica, 0% to 2% of magnesia, and a little iron oxide. The stones were simply calcined and ground without admixture of any other material. It was a natural cement. Its success created a large industry in Europe,

BEST OF ALL LEAD-PENCILS FOR ARCHITECTS

The New
"CASTELL"

Drawing-
Pencil

6 B to 8 H

For sale by all Dealers in Artists' Materials

A. W. FABER
NEWARK, N. J.

ARCHITECTS

specify for their
high-grade work

Winchester Heaters

20,000 New England
HOUSES

are yearly rendered
comfortable by a
WINCHESTER

Smith & Thayer Co.
236 CONGRESS STREET, BOSTON

Genuine Rosendale Cement

is easily distinguishable from all so-called Rosendale Cements which have only the merit of a name created and made valuable by over 80 years of successful manufacturing.

GENUINE ROSENDALE CEMENT is a Dark, Rich Brown, and possesses many advantages obtainable only in the STANDARD Brands manufactured by this company, and for sale by the leading dealers in Masons' Materials.

Write us for further particulars.

CONSOLIDATED ROSENDALE CEMENT CO.

50 Church Street, New York

EASTERN EXPANDED METAL CO.

MANUFACTURERS OF EXPANDED METAL

AND CONTRACTORS FOR
REINFORCED CONCRETE

GEORGE P. BULLARD
President and Treasurer
GEORGE TAYLOR
General Manager

W. M. BAILEY, A. M. Am. Soc. C. E.
Chief Engineer
C. J. HOGUE, A. M. Am. Soc. C. E.
Constructing Engineer

PADDOCK BUILDING, 101 TREMONT ST., BOSTON

Established 1836 Connected by Telephone Incorporated 1894

JOHN FARQUHAR'S SONS

Roofers and Metal Workers

Slate, Copper, Tin, Tile, and Composition, Roofing Skylights,
Cornices, Gutters, Conductors, etc.

OFFICE, 20 and 22 EAST STREET

Special attention given to Repairs of all kinds of Roofing

DEALERS IN ALL ROOFING MATERIALS

WHARF, 60 to 72 Mt. Washington Avenue, BOSTON

Members of the Master Builders' Association, 166 Devonshire Street

For the best of **CUTLERY**
and SPECIALTIES IN HARDWARE
GO TO

J. B. HUNTER & CO.

60 Summer Street, Boston

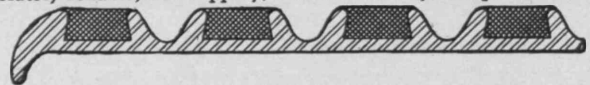
Builders' and General Hardware

AN UP-TO-DATE STORE

All Mechanics' Tools of the Best Makers
and Warranted

MASON SAFETY TREAD

Steel or hard brass base, grooves lead or carborundum-filled, absolutely reliable, non-slippery, durable, sanitary, fire-proof.



Cross-Section Mason Safety Tread, with Nosing $3\frac{1}{2}$ inches wide

Also made four and six inches wide flat. For Stairways, Thresholds, Sidewalks, and all slippery places. Use on Wood, Iron, Slate, Marble, Granite, or Concrete. Mason Safety Vault or Sidewalk Lights.

AMERICAN MASON SAFETY TREAD CO.
702 OLD SOUTH BUILDING BOSTON, MASS.

Send for Sample, Blueprints, and Catalogue.

where in making these natural cements argillaceous limestone is generally used and the product is almost invariably called "Roman cement."

In the United States this class of cement is usually made from magnesian limestone or cement rock, containing a high proportion of magnesia replacing a portion of the lime of the Portland and an excess of clay. When hard burned the magnesia becomes sluggish and hydrates with extreme slowness, so that it must be calcined at a temperature much below that required for Portland cement. The Rosendale cements are a class of natural cements so called because the magnesian limestone from which it was made was first discovered in the township of Rosendale, Ulster County, N. Y., in opening the line of the Delaware and Hudson canal in 1823. The aggregate thickness of the several layers of this deposit averages about forty-six feet. No one manufacturer makes use of all these beds, and no two of them of the same beds, in the same proportions, on account of the marked variation in the hydraulic character of the stone within comparatively short distances.

The term "Rosendale" is sometimes applied to all American natural cements, because it was first made in that place, but it is more properly restricted to those of the Rosendale districts and of the magnesian variety.

About half the natural cement made in this country comes from Ulster County, N. Y., where it is manufactured from magnesian limestone. Nearly half the remainder comes from near Louisville, Ky., and these cements are of the aluminous variety and may be placed in the class of the European Roman cements.

Roman cement should set very quickly, within about fifteen minutes of being gauged into paste, but is of no great ultimate strength. It is principally valuable for work to be done and set between tides, and for any purposes where quick setting is desirable and no great strength is required. It is claimed of the genuine Rosendale cements that they allow of a moderately slow set after mixing, allowing the mortar to be used freely without fear of undue setting, thus making it possible to do much quicker work in laying masonry than can be done with the short, quick-setting cements of the Roman variety, as the quick setting necessitates constant retempering.

POZZUOLANAS. There are several substances which somewhat resemble each other, which are of volcanic origin, and have, therefore, been subjected to the action of fire. These are called "pozzuolanas," because originally discovered near Pozzuoli, at the foot of Mt. Vesuvius. They are, however, common to all localities that have been exposed to igneous agencies. These are clayey earths containing 80% to 90% of clay with a little lime, and small quantities of magnesia, potash, soda, oxide of iron, or manganese. When finely pulverized in their raw state, without being calcined, and combined with the paste of rich limes in the proper portion they confer hydraulic properties upon the lime, often to the extent of bringing them under the head of "eminently hydraulic limes." There are none known to be native of the United States. The Romans attained in the greatest measure the distinction for the durability and magnitude of their architectural works in understanding so well the properties of this earth, pozzuolana. Its value in connection with rich lime has been known for many centuries, and Vitruvius and Pliny both speak of its valuable qualities as seen in the marine constructions of the Romans extant in their day. It is still in use in Italy.

When John Smeaton was engaged in the construction of the Eddystone Lighthouse in 1756 he made a series of experiments to find a cement which would harden at once under water, and his experiments led him to use for the important part of this work a cement made of blue lias hydraulic lime from Aberthaw, and of pozzuolana brought from Civita Vecchia, near Rome. Burnell says, "Even at the present day it would be difficult to employ a better material than this, excepting that the price would insure a preference for Roman cement, then unknown." To this same class of pozzuolanas belongs trass, a naturally burnt argillaceous earth of volcanic origin, found on the sites of extinct volcanoes, chiefly in the valley of the Rhine between Coblenz and Cologne; also arènes,

(Continued on page 40)

RUSSELL AND ERWIN MFG. COMPANY

MANUFACTURERS OF

Art Hardware

SOLE AMERICAN AGENTS FOR

MAISON FONTAINE PARIS

DESIGNERS AND FOUNDERS OF

HARDWARE ANCIENT AND MODERN

CHANDLER & BARBER

DISTRIBUTORS

122 SUMMER STREET

Genuine Rosendale Cement

is easily distinguishable from all so-called Rosendale Cements which have only the merit of a name created and made valuable by over 80 years of successful manufacturing.

GENUINE ROSENDALE CEMENT is a Dark, Rich Brown, and possesses many advantages obtainable only in the STANDARD Brands manufactured by this company, and for sale by the leading dealers in Masons' Materials.

Write us for further particulars.

CONSOLIDATED ROSENDALE CEMENT CO.
50 Church Street, New York

EASTERN EXPANDED METAL CO. MANUFACTURERS OF EXPANDED METAL

AND CONTRACTORS FOR
REINFORCED CONCRETE

GEORGE P. BULLARD
President and Treasurer
GEORGE TAYLOR
General Manager

W. M. BAILEY, A. M. Am. Soc. C. E.
Chief Engineer
C. J. HOGUE, A. M. Am. Soc. C. E.
Constructing Engineer

PADDOCK BUILDING, 101 TREMONT ST., BOSTON

Established 1836 Connected by Telephone Incorporated 1894

JOHN FARQUHAR'S SONS Roofers and Metal Workers

Slate, Copper, Tin, Tile, and Composition, Roofing Skylights,
Cornices, Gutters, Conductors, etc.

OFFICE, 20 and 22 EAST STREET

Special attention given to Repairs of all kinds of Roofing
DEALERS IN ALL ROOFING MATERIALS

WHARF, 60 to 72 Mt. Washington Avenue, BOSTON
Members of the Master Builders' Association, 166 Devonshire Street

For the best of CUTLERY
and SPECIALTIES IN HARDWARE
GO TO

J. B. HUNTER & CO.
60 Summer Street, Boston

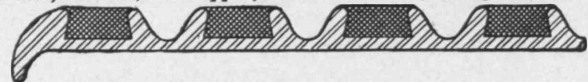
Builders' and General Hardware

AN UP-TO-DATE STORE

All Mechanics' Tools of the Best Makers
and Warranted

MASON SAFETY TREAD

Steel or hard brass base, grooves lead or carborundum-filled, absolutely reliable, non-slippery, durable, sanitary, fire-proof.



Cross-Section Mason Safety Tread, with Nosing 3½ inches wide

Also made four and six inches wide flat. For Stairways, Thresholds, Sidewalks, and all slippery places. Use on Wood, Iron, Slate, Marble, Granite, or Concrete. Mason Safety Vault or Sidewalk Lights.

AMERICAN MASON SAFETY TREAD CO.
702 OLD SOUTH BUILDING BOSTON, MASS.

Send for Sample, Blueprints, and Catalogue.

where in making these natural cements argillaceous limestone is generally used and the product is almost invariably called "Roman cement."

In the United States this class of cement is usually made from magnesian limestone or cement rock, containing a high proportion of magnesia replacing a portion of the lime of the Portland and an excess of clay. When hard burned the magnesia becomes sluggish and hydrates with extreme slowness, so that it must be calcined at a temperature much below that required for Portland cement. The Rosendale cements are a class of natural cements so called because the magnesian limestone from which it was made was first discovered in the township of Rosendale, Ulster County, N. Y., in opening the line of the Delaware and Hudson canal in 1823. The aggregate thickness of the several layers of this deposit averages about forty-six feet. No one manufacturer makes use of all these beds, and no two of them of the same beds, in the same proportions, on account of the marked variation in the hydraulic character of the stone within comparatively short distances.

The term "Rosendale" is sometimes applied to all American natural cements, because it was first made in that place, but it is more properly restricted to those of the Rosendale districts and of the magnesian variety.

About half the natural cement made in this country comes from Ulster County, N. Y., where it is manufactured from magnesian limestone. Nearly half the remainder comes from near Louisville, Ky., and these cements are of the aluminous variety and may be placed in the class of the European Roman cements.

Roman cement should set very quickly, within about fifteen minutes of being gauged into paste, but is of no great ultimate strength. It is principally valuable for work to be done and set between tides, and for any purposes where quick setting is desirable and no great strength is required. It is claimed of the genuine Rosendale cements that they allow of a moderately slow set after mixing, allowing the mortar to be used freely without fear of undue setting, thus making it possible to do much quicker work in laying masonry than can be done with the short, quick-setting cements of the Roman variety, as the quick setting necessitates constant retempering.

POZZUOLANAS. There are several substances which somewhat resemble each other, which are of volcanic origin, and have, therefore, been subjected to the action of fire. These are called "pozzuolanas," because originally discovered near Pozzuoli, at the foot of Mt. Vesuvius. They are, however, common to all localities that have been exposed to igneous agencies. These are clayey earths containing 80% to 90% of clay with a little lime, and small quantities of magnesia, potash, soda, oxide of iron, or manganese. When finely pulverized in their raw state, without being calcined, and combined with the paste of rich limes in the proper portion they confer hydraulic properties upon the lime, often to the extent of bringing them under the head of "eminently hydraulic limes." There are none known to be native of the United States. The Romans attained in the greatest measure the distinction for the durability and magnitude of their architectural works in understanding so well the properties of this earth, pozzuolana. Its value in connection with rich lime has been known for many centuries, and Vitruvius and Pliny both speak of its valuable qualities as seen in the marine constructions of the Romans extant in their day. It is still in use in Italy.

When John Smeaton was engaged in the construction of the Eddystone Lighthouse in 1756 he made a series of experiments to find a cement which would harden at once under water, and his experiments led him to use for the important part of this work a cement made of blue lias hydraulic lime from Aberthaw, and of pozzuolana brought from Civita Vecchia, near Rome. Burnell says, "Even at the present day it would be difficult to employ a better material than this, excepting that the price would insure a preference for Roman cement, then unknown." To this same class of pozzuolanas belongs trass, a naturally burnt argillaceous earth of volcanic origin, found on the sites of extinct volcanoes, chiefly in the valley of the Rhine between Coblenz and Cologne; also arènes,

(Continued on page 40)

RUSSELL AND ERWIN MFG. COMPANY

MANUFACTURERS OF

Art Hardware

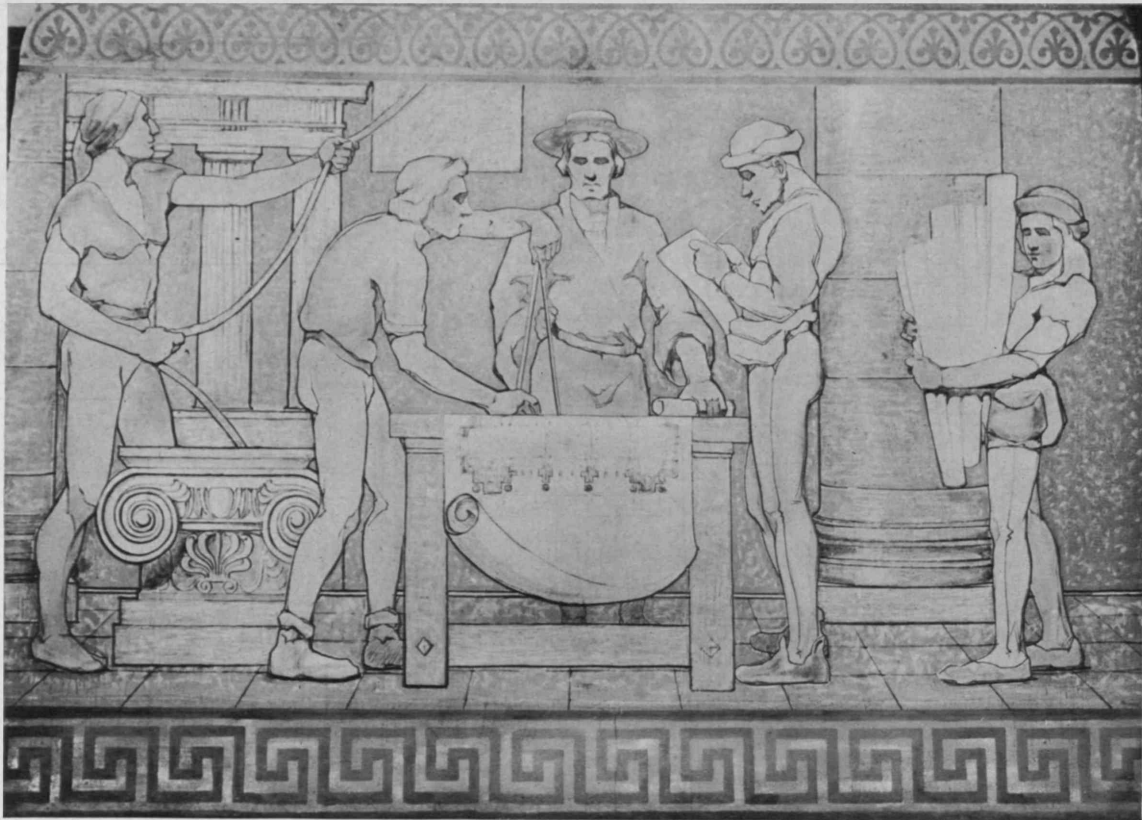
SOLE AMERICAN AGENTS FOR

MAISON FONTAINE PARIS

DESIGNERS AND FOUNDERS OF

HARDWARE ANCIENT AND MODERN

CHANDLER & BARBER DISTRIBUTORS 122 SUMMER STREET



ADVANCED FREEHAND DRAWING BY A. N. REBORI
 PORTION OF FRIEZE IN HUNTINGTON HALL, ROGERS BUILDING
 Actual Height of Frieze, Five Feet

CABOT'S BUILDING SPECIALTIES



RESIDENCE OF THE LATE A. J. CASSATT, BAR HARBOR
 Chapman & Frazer, Architects, Boston

Cabot's Shingle Stains

The original and standard shingle stains, and the only creosote, wood-preserving stains. Made with pure colors, pure linseed-oil and creosote, the best wood preservative known.

Cabot's Sheathing and Deadening Quilt

Makes houses warm in winter, cool in summer, and deadens sound in floors and partitions. Six times as warm as common papers, and better and cheaper than back plastering.

Conservo Wood Preservative

A thorough preservative for all woodwork that is partly or wholly underground. Coat—3 cents per fence-post, and will make the post last years longer.

SAMUEL CABOT, Inc.

Sole Manufacturers

Agents at all central points

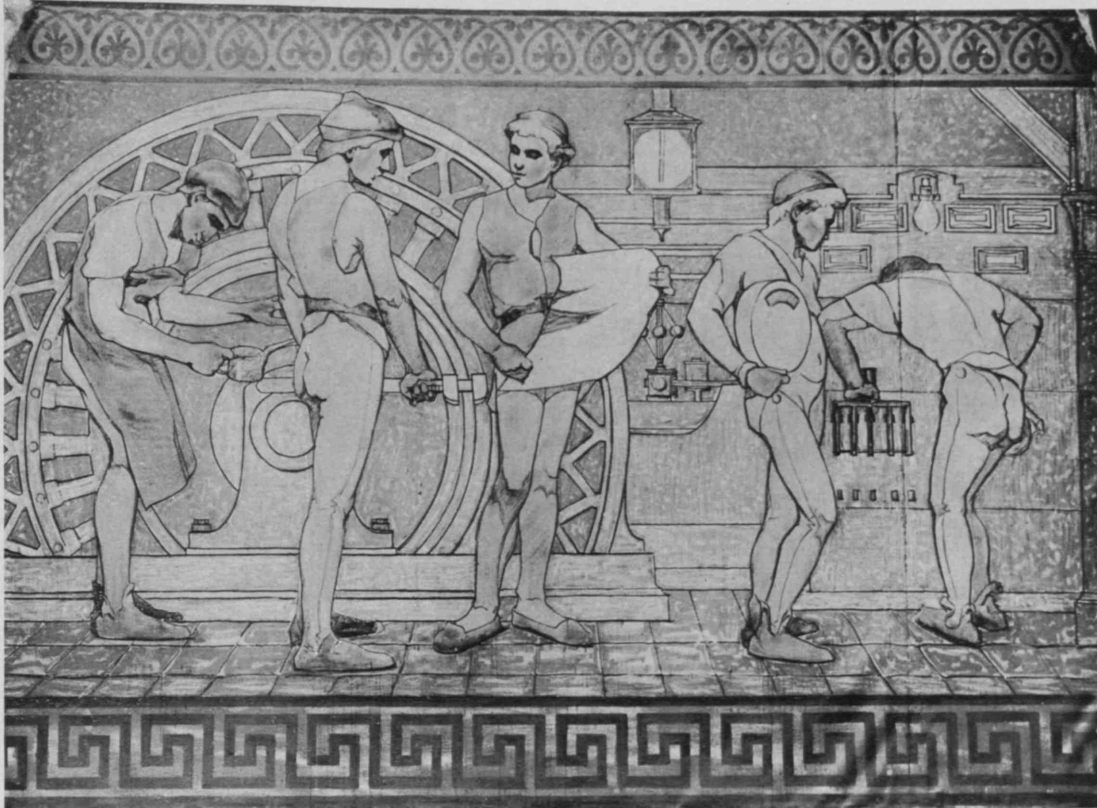
BOSTON, MASS.



STAIR-STOCK CABINET WORK OF ALL KINDS

All architects recognize Stearns' famous Cypress Doors
 as the *standard*

The A. T. Stearns Lumber Company
 Boston, Massachusetts



ADVANCED FREEHAND DRAWING BY C. L. PITKIN AND R. B. BARNES

PORTION OF FRIEZE IN HUNTINGTON HALL, ROGERS BUILDING

Actual Height of Frieze, Five Feet



Williamson & Crow, Architects, Grand Rapids

**DEXTER BROTHERS'
ENGLISH SHINGLE STAINS**

ARE used from Maine to California. These stains are made of the very finest English ground colors. Scrupulous care and special attention to small details mark every process incident to their making. They retain their brightness and full, strong color long after other stains have faded and turned black. They do not wash off. They are a splendid preservative. They do not mildew. They have no offensive odor and are non-poisonous.

PETRI FAX

**A COATING FOR CEMENT AND BRICKS
A CURE FOR DAMP WALLS**

WHEREVER large surfaces of cement or bricks or stone are to be covered, this preparation can be used more successfully than any other coating, as it forms an impenetrable surface to external moisture and condensation.

PETRI FAX is the only preparation which will effectually cure the effect of damp in walls or prevent walls becoming damp. The liquid has great penetrating power, by which it becomes part of the surface and forms practically a rock.

SAMPLES SENT ON REQUEST

DEXTER BROTHERS COMPANY, 103, 105, 107 Broad St., Boston

Agents at all Central Points

ROBERT SPURR WESTON

Assoc. M. Am. Soc. C. E., M. I. T. '94

Sanitary Expert

14 BEACON STREET BOSTON

WHIDDEN & CO., Inc.**Building Construction**JOHN V. BEEKMAN, JR., '00
General Manager

155 Milk Street Boston, Mass.

B. S. HARRISON, '94**Consulting Engineer**HEATING LIGHTING
VENTILATION

11 East 24th Street New York City

STEPHEN CHILD, '88**Landscape Architect and
Consulting Engineer**

511 Ford Building Boston, Mass.

HOLLIS FRENCH, '89Of Hollis French &
Allen Hubbard**CONSULTING ENGINEERS**

ALBANY BUILDING BOSTON, MASS.

GEORGE C. WHIPPLE, '89OF
HAZEN & WHIPPLE**Consulting Engineers and
Sanitary Experts**

220 BROADWAY NEW YORK CITY

G. T. VOORHEES, '90**Refrigerating
Engineer**

Engineers Club New York City

LEONARD C. WASON, '91**Contracting
Engineer**

8 BEACON ST. BOSTON, MASS.

Alumni Notes

The department is in receipt of many applications from architects and others for assistants. We have no information as to whether our alumni are satisfied with their present positions and prospects, consequently many opportunities for Institute men are doubtless lost.

The Secretary of the Institute will send application blanks to any of our former students who wish to register their names with the view of making a change whenever a suitable opportunity occurs.

William A. Stocking, '09, is with Messrs. Hubbell & Benes, Cleveland, O.

Cecil F. Baker, '07, returns to the Institute this fall for advanced work as a candidate for the degree of M.S.

W. A. Gates, '07, is with the General Fireproofing Company, Youngstown, O.

Edward W. Hamill, '07, is an instructor in the Manual Training Department of the Yeatman High School in St. Louis, Mo.

A. S. Kendall, '07, has lately returned from a short trip in Europe. He mentions seeing while there Everett, '07, Marx, '07, Remick, '07, Cady, '06, Lebenbaum, '06, Faelton, '04, Cobb, '03, Hirons, '03.

James G. Moore, '07, passed the examination for a structural steelwork draughtsman in the naval service, and in February was appointed to a position with the Department of Yards and Docks at the Naval Station in Key West, Fla.

At the last annual meeting of the Chicago Architectural Club F. A. Naramore, '07, was elected first vice-president, and E. C. Lowe, '05, secretary.

The marriage is announced of William G. Perry, '07, and Miss Eleanor Gray Bodine, on Aug. 6, 1908, at Villanova, Penn. Perry distinguished himself at the recent examinations of the Ecole des Beaux-Arts by being admitted the first of five hundred and forty-eight competitors. With Mrs. Perry he returns to Paris in October.

William C. Furer, '06, H. Lord, '06, and F. H. Kales, '07, are in the employ of the Government at Honolulu, T. H.

The marriage is announced of S. E. Gideon, '06, and Miss Sadie G. Cavitt, on June 16, 1908, at Bryan, Tex.

The marriage is announced of George H. Barrows, '05, and Miss Laura Foster, on June 25, 1908, at Woonsocket, R. I.

W. H. Crowell, '05, has gone to Portland, Ore., to be associated with Messrs. Whitehouse, '05, & Honeyman, '06.

E. C. Lowe, '05, and H. C. Ingram have lately formed a partnership with offices in the Corn Exchange Bank Building, Chicago, Ill.

Louis C. Clarke, Jr., '04, is with Messrs. Holabird & Roche in Chicago, Ill.

H. M. Hathaway, '04, is with J. Russell Pope, Architect, New York City.

I. P. Lord, '04, winner of the Rotch Traveling Scholarship this year, leaves for Europe in September. He will spend at least one of his two years abroad studying in Paris.

Thompson, Asmus & Norton, '04, are preparing plans for a cathedral at Nashville, Tenn.

The marriage is announced of Harry W. Rowe, '04, and Miss Madeleine A. Kingman, on April 8, 1908, at Yonkers-on-the-Hudson, N. Y.

L. H. Asbury, '03, has opened an office in Charlotte, N. C. He has recently finished two buildings for the Stonewall Jackson Manual Training and Industrial School, Concord, N. C., which were awarded him in competition.

Z. N. Matteossian, '03, O. M. Wiard, '04, and J. T. Fallon, '07, are abroad this summer.

F. L. W. Richardson, '03, has loaned to the Department three interesting water-colors made during his stay in France.

The marriage is announced of Rayne Adams, '02, and Miss Janet Kinna, May 1, 1908, at New York City.

Garber, '02, & Woodward, '02, are preparing plans for a schoolhouse at Westwood, Cincinnati, O., a Carnegie library on Price Hill, Cincinnati, and a country club at Wyoming, O.

W. P. R. Pember, '02, announces that he has opened offices for the practice of architecture and engineering in the Y. M. C. A. Building, Bristol, Tenn.-Va., and in the New Burrow Building, Johnson City, Tenn.

I. C. Isaacs, '01, is secretary and manager of the Phoenix Brush & Manufacturing Company, of Chicago, Ill., having been in the employ of that company since leaving Tech.

A. P. Merrill, '01, is with Lockwood, Greene & Company, Engineers, Boston, Mass.

George B. Ford, '00, is with Messrs. George B. Post & Sons in New York City. He has articles in the following architectural magazines: "The Paris Elevatèd," in *The Architectural Review*, of February; "A Modern Paris Apartment-house," in *The Brickbuilder*, of May; "The Eighth International Housing Congress, London," in *The American Architect*, of May 27.

Charles H. Stratton, '00, is in the employ of the Navy Department, and is engaged in the work of rebuilding the Naval Academy at Annapolis.

G. E. Bergstrom, '99, is of the firm of Parkinson & Bergstrom, Los Angeles, Cal. This office has been very successful both in the amount and quality of its work.

Brooks Frothingham, '99, has formed a partnership with Samuel F. Page under the firm name of Page & Frothingham, succeeding the firm of Fehmer & Page, Boston, Mass.

G. C. Glover, '99, is with Messrs. Rubush & Hunter, Indianapolis, Ind.

F. L. Lacaff, '99, has been superintending the construction of Federal buildings in the Supervising Architects branch of the Treasury Department, for the past five years, having been located successively at Beaumont, Tex.; Leadville, Col.; Honolulu, Hawaii; Fresno, Cal. His present assignment is in Nevada, Mo., where he will remain for a year.

Julian F. Everett, '98, has been located in Seattle, Wash., for the past three years, with offices in the Walker Building. He is a member of the Exhibition Committee of the Washington State Chapter of the A. I. A.

Gorham P. Stevens, '98, recently returned from a month's trip through Spain.

The marriage is announced of W. E. Putnam, Jr., '98, and Miss Helen P. Haughwout, on June 10, 1908, at Fall River, Mass.

John Ashton, '96, of Lawrence, Mass., has just completed for the Smith & Dove Manufacturing Company, of Andover, Mass., thirteen double houses for employees; also a forty-room boarding-house.

Moritz Sax, '96, announces that he has opened an office in the Fourth National Bank Building, Cincinnati, O.

C. D. Waterbury, '95, has become a junior member of the firm of Pond & Pond, Architects, Chicago, Ill.

ROSS F. TUCKER, '92

OF
TUCKER & VINTON CORP.
Engineers and Contractors

4 WEST 22d STREET NEW YORK CITY

A. A. SHURTLEFF, '94

Landscape
Architect

22 CONGRESS ST., BOSTON, MASS.

EDWARD A. TUCKER, '95

Architectural Engineer

683 ATLANTIC AVE. BOSTON, MASS.

GEORGE D. HALL, '01

OF
BRETT & HALL
Landscape Architects

31 BEACON ST., BOSTON, MASS.

BUTCHER'S BOSTON POLISH

*For Floors
Interior Woodwork
and Furniture*



Send for Our Free Booklet

THE BUTCHER POLISH CO.
356 Atlantic Avenue Boston

Established 1817

F. W. BIRD & SON

Makers of
Reponset Waterproof Papers
Florian Sound-Deadening Felt
Proslate and Paroid Roofings



Main Mill and Office,
 EAST WALPOLE, MASS.

New York Washington Chicago

Canadian Factory and Office, HAMILTON, ONT.

WE DESIGN AND BUILD COMPLETE
 READY TO USE

Sewage Disposal Plants

For \$50 to \$5,000

ANDREW D. FULLER COMPANY

Contractors and Engineers

3 HAMILTON PLACE, BOSTON, MASS.

A. D. Fuller, M. I. T. '95, Treasurer.

**BOSTON
 COPPER
 RANGE
 BOILERS**



Best Made, and Guaranteed.
 Special Sizes to Order.

DAHLQUIST MFG. CO.

Established 1899

40 W. Third St., South Boston, Mass.
 Telephone, 546 So. Boston

The November issue of "Proceedings of the Engineers' Society of Western Pennsylvania" contains an article and the discussion on "Water-Proof Cellar Construction" by C. A. MacClure, '94.

Dale Bumstead, '93, is local manager of the E. I. du Pont de Nemours Powder Company, with headquarters in Chicago, Ill.

Frank E. Perkins, '92, has been awarded the first prize of \$5,000 in the competition for the Capitol Building in Porto Rico. Lewis B. Abbott, '99, associated with another architect, received the second prize of \$2,000. There were one hundred and thirty-five competitors.

Julien Millard, '91, is practising architecture in Western Pennsylvania, with offices at Altoona, Penn.

Kilham, '89, & Hopkins, '96, during the last year have completed numerous residences, concrete garages, schoolhouses, and business buildings in the vicinity of Boston, Mass. Kilham gave the lectures in Architectural History at the Institute during Professor Homer's absence in Porto Rico.

J. R. Mauran, '89, of the firm Mauran, Russell & Garden, St. Louis, Mo., is president of the St. Louis Chapter of the American Institute of Architects, and has been appointed by the Mayor to serve on the Public Library Board. He has also entered politics to the extent of being elected a Republican Presidential Elector.

The firm of Brainerd & Leeds, Ford Building, Boston, Mass., is composed of W. H. Brainerd, '87, and E. J. Leeds, '93. They are completing the Daniels Grammar School for the city of Malden, Mass., and recently finished the "People's Palace" for the Salvation Army in Boston.

The February number of THE ARCHITECTURAL RECORD contains an article entitled "An American Architecture," illustrated by a number of buildings designed by Richard E. Schmidt, '87. Schmidt has recently completed a reinforced concrete construction warehouse for Montgomery Ward & Company, at Chicago, Ill. About fifty Tech men accepted his invitation to inspect this building, afterwards adjourning to the Engineers Club for supper and a discussion on concrete work.

Alden, '79, & Harlow, '79, of Pittsburg, Penn., announce that Richard Hooker, '89, and Howard K. Jones, '96, have become members of the firm.

Francis H. Bacon, '76, who has resigned the vice-presidency of the well-known firm of A. H. Davenport Company, with which he has been connected for twenty-four years, has established himself at 2A Park St., Boston, Mass.

G. Wilton Lewis, '75, is just completing the Administration Building of the Mt. Hermon Boys' School, at Mt. Hermon, Mass. He has also under way the First Baptist Church building at Rumford Falls, Me.

Current Work of the Alumni Illustrated in the Magazines**AMERICAN ARCHITECT.**

- February 5, Oswald C. Hering, '97, House at Pelham Manor, N. Y.
 " 5, Shepley, Rutan & Coolidge, '83, House at Lake Geneva, Wis.
 " 12, Carpenter, '88, & Blair, Library, Vanderbilt University.
 " 12, Richard H. Hunt, '82, & Hunt, Police Station, New York City.
 " 12, Lord, '88, & Hewlett, Brooklyn Municipal Building.
 " 12, Lord, '88, & Hewlett, Fire-house and Amusement-hall, Portchester, N. Y.
 " 19, Green & Wicks, '76, New York State Fair Grounds.
 " 19, Stratton & Baldwin, '92, House, Detroit, Mich.
 " 26, Frank A. Bourne, '95, St. Luke's Church, Chelsea, Mass.

- April 1, Wilson Eyre, '79, House, Jenkintown, Penn.
 " 8, Wilson Eyre, '79, House, Quogue, L. I., N. Y.
 " 8, Wilson Eyre, '79, House, Rosemount, Penn.
 " 15, Wood, Donn, '91, & Deeming, Union Trust Co.
 Building, Washington, D. C.
 " 15, Wood, Donn, '91, & Deeming, Masonic Temple,
 Washington, D. C.
 " 22, Newman, '92, & Harris, House, Philadelphia, Penn.
 " 22, Newman, '92, & Harris, House, Stamford, Conn.
 " 29, A. W. Longfellow, '78, House, Dedham, Mass.

ARCHITECTURAL RECORD.

- March, Wilson Eyre, '79, Borie Building, Philadelphia,
 Penn.
 April, John G. Howard, '86, New Buildings for University
 of California, Berkeley, Cal.
 " J. H. Freedlander, '91, House, New York City.
 May, Elzner, '87, & Anderson, Buildings in Cincinnati, O.
 " Gustav W. Drach, '83, Buildings in Cincinnati, O.
 " Hill & Woltersdorf, '94, Buildings in Cincinnati, O.
 " H. E. Hannaford, '82, & Sons, Buildings in Cincin-
 nati, O.
 " Tietig, '98, & Lee, '98, Buildings in Cincinnati, O.
 " Hill & Woltersdorf, '94, Parke, Davis & Co.'s Ware-
 house, Chicago, Ill.
 " Argyle E. Robinson, '97, Washington Park Ware-
 house, Chicago, Ill.
 June, Robert C. Coit, '86, House, Winchester, Mass.
 " Ewing, '97, & Chappell, House, Tarrytown, N. Y.
 " Ewing, '97, & Chappell, House, Ardsley-on-Hudson,
 N. Y.
 " Wilson Eyre, '79, House, Chestnut Hill, Penn.
 " Oswald C. Hering, '97, House, Pelham Manor,
 N. Y.
 " James Purdon, '98, House, Dedham, Mass.
 " Edgar Seeler, '92, House, Chestnut Hill, Penn.

ARCHITECTURAL REVIEW.

- November, Coolidge, '92, & Carlson, '92, Public Livery Stable,
 Boston, Mass.
 December, Parker, '94, Thomas, '96, & Rice, '91, House, Na-
 hant, Mass.
 " E. Q. Sylvester, '93, House, Newton Centre, Mass.

ARCHITECTURE.

- February, W. M. Aiken, '79, & A. W. Brunner, '79, Public
 Baths, New York City.
 " Oswald C. Hering, '97, House, Pelham Manor,
 N. Y.
 March, A. W. Brunner, '79, Temple Israel, New York.
 April, Oswald C. Hering, '97, House, Columbus, O.
 " Lois L. Hose, '92, House, Brookline, Mass.
 " Wood, Donn, '91, & Deeming, Union Trust Co.'s
 Building, Washington, D. C.
 May, Babb, Cook & Willard, '70, New York Kinder-
 garten Association Building.
 " Cass Gilbert, '80, Competitive Design, U. S. Post-
 office, New York City.
 " Heins, '82, & LaFarge, '83, Competitive Design,
 U. S. Post-office, New York City.

BRICKBUILDER.

- February, Frost, '79, & Granger, House, Washington, D. C.
 " MacClure, '94, & Spahr, '96, University Club, Pitts-
 burg, Penn.
 " G. Wood Taylor, '91, Design for Nayasset Club,
 Springfield, Mass.

GURNEY HEATERS

Steam or Hot Water

GURNEY HEATER
MANUFACTURING CO.

188-200 FRANKLIN ST., BOSTON
12 E. 42d ST., NEW YORK

Ask us about the
kind of roofs we build

The Genasco
Roofing
Company



PHILADELPHIA
NEW YORK CHICAGO
BRANCHES IN OTHER LARGE CITIES

William B. Libby

The Garden Press

Established 1882 Telephone 528-3 Back Bay

☐ Every variety of Mercantile, Book, and Job Printing
☐ Monotype Book Composition

16 ARLINGTON STREET
BOSTON

THE BOWKER-TORREY COMPANY

Importers, Wholesale and Retail Dealers in

MARBLE

Also Manufacturers of All Kinds of

SOAPSTONE WORK

118 Portland, Cor. Chardon & Bowker Sts.
BOSTON

JOHN EVANS AND COMPANY

Modelling and Carving in Wood and Stone

ALTARS, REREDOSSES, FONTS
TABLETS and MONUMENTS

77 HUNTINGTON AVENUE
BOSTON, Massachusetts

- March, Brainerd, '87, & Leeds, '94, Daniels School, Malden, Mass.
“ Coolidge, '92, & Carlson, '92, Associate Architects, Normal and Latin School Group, Boston, Mass.
April, W. M. Aiken, '79, & A. W. Brunner, '79, Public Baths, New York City.
“ Parker, '94, Thomas, '96, & Rice, '91, Tarratine Club, Bangor, Me.
“ Shepley, Rutan & Coolidge, '83, House, Lake Geneva, Wis.
“ Wood, Donn, '91, & Deeming, Car Barns, Washington, D. C.
May, Kilham, '89, & Hopkins, '96, Grammar School, Marblehead, Mass.

INLAND ARCHITECT.

- February, Patton, '75, & Miller, North Shore Congregational Church, Chicago, Ill.
“ D. H. Perkins, '89, Englewood High School, Chicago, Ill.
“ J. Knox Taylor, '79, Supervising Architect of U. S. Post-office, Oak Park, Ill.
April, H. V. Shaw, '94, House, Chicago, Ill.
“ Herman Von Holst, '96, Associate Architect, Church, Springfield, Ill.
“ Whidden, '77, & Lewis, Arlington Club, Portland, Ore.

(Continued from page 33)

which are natural mixtures of sand and clay. They appear not to have been subjected to heat, but they confer hydraulic properties upon fat limes. They are found abundantly in France in the department of Dordogne, and on the Loire and Somme.

Before the use of natural cement was introduced by Mr. Parker, hydraulic mortar, for dock walls, harbor work, etc., was usually made by mixing common lime with trass. Trass and pozzuolana have, however, been rarely used in the United States. These expedients are still adopted to a limited extent on the continent of Europe; but in England, as well as in the United States, the comparative cheapness as well as the excellent results obtained from Portland cement is steadily increasing its use at the expense of the poorer grades.

The modern puzzolans or slag cements are so called because manufactured from blast furnace slag which is essentially an artificial pozzuolana. When pig iron is made the blast-furnace is charged with a mixture of iron ores, fluxes consisting of limestone, and fuel in the proper chemical proportions. After reduction by heat the resulting products are pig iron and slag. As the slag runs in a molten state from the furnace it is brought in contact with a stream of cold water which reduces it to a spongy form, which is then dried and ground to a fine powder.

According to the specifications for slag used in the manufacture of Steel Portland cement, it must contain not over 49% of silica plus alumina, thirteen to sixteen of alumina, and under four of magnesia. It is thus approximately the composition of a hydraulic cement, mainly silica and alumina, and lacking the proper portion of lime to make it an active cement. There is next added to this product dried slaked lime in a proper proportion, to which has been added a small amount of caustic soda or other similar material to make the resulting cement quicker setting. Another grinding takes place to mix all this thoroughly, and the material is ready for use.

(To be continued in Vol. II, No. 2)



OUR ILLUMINATING
ENGINEERS ARE
AT YOUR SERVICE

ENGINEERING DEPARTMENT
HOLOPHANE COMPANY
227-229 Fulton Street New York City

The KELSEY Fresh Air System of Home Heating

Comfort is the keynote of success in heating.

Comfort does not mean the stuffy heat of a steam-railway car in August, nor the torrid heat of the city pavement.

It means the soft, warm air of June all through the house on winter days—the kind of heat the Kelsey system furnishes.

The KELSEY WARM AIR GENERATOR

brings comfort physically, because the air is fresh and every room is warm.

It brings comfort to the mind, because there are no steam or hot-water pipes to burst or leak.

It brings comfort to the eye, because there are no inertistic radiators to collect dust.

It brings comfort to the pocket-book, because there are no excessive fuel or repair bills to pay.

If you need a heating-plant for a \$2,000 or for a \$200,000 house, send for booklet about the Kelsey, and for 112-page book, "OPINIONS." *No experiment*—30,000 in use.

KELSEY HEATING CO.
319 FAYETTE ST. SYRACUSE, N. Y.
New York Office, 156 Fifth Avenue

FROM the simplest hoist by hand to the most comprehensive elevator equipment, embracing in one instance over *forty* elevators in a single building, we are prepared to successfully cope with any elevator problem.

Besides ordinary passenger and freight elevators, we manufacture and install dumb waiters, escalators (moving stairways), hoists for mines, docks, warehouses, building operations, blast furnaces, etc. We also build incline railways, gravity conveyors, etc.

CORRESPONDENCE INVITED

**Otis
Elevator Company**

New York Office, 17 Battery Place

Offices in Principal Cities of the World

RIPOLIN ENAMEL PAINT

In the Hospital

for reception-room,
operating-room, amphi-
theaters, diet kitchen,
and in the wards

**WILL WITHSTAND CONSTANT WEAR
AND FREQUENT WASHINGS**

Does not "set" quickly
Dries without brush-marks or laps

J. A. & W. BIRD & CO.

Sole Agents for U. S. A.

31 Union Square W. NEW YORK

NORWALL VACUUM HEATING

Does cost less than hot water
Does do more than hot water
Does keep radiators hot all night
Does start quickest in the morning
Does permit of easiest control
Does create vacuum automatically
Does away with pumps and air lines
Does work on big plants and little
plants

NORWALL MFG. CO.

104 West 42d St., NEW YORK CITY
154 East Lake St., CHICAGO, ILL.

STAINS on limestone, gran-
ite, or marble are avoided
by careful architects and build-
ers. They specify and use
Lafarge Portland Cement,
following a plan set forth in a
little booklet.

ASK FOR IT

**Non-Staining
Cement Co.**

156 Fifth Avenue, New York City

Bayer-Gardner-Himes Company

HARDWARE DEPARTMENT
Builders' Fine Hardware
Special Hardware

BRONZE DEPARTMENT
Architectural and Decorative
Work in Bronze, Brass,
Wrought Iron

OFFICE
159 West 29th Street NEW YORK

WORKS
157 to 161 West 29th Street, New York

Telephone, 3140 Madison Square