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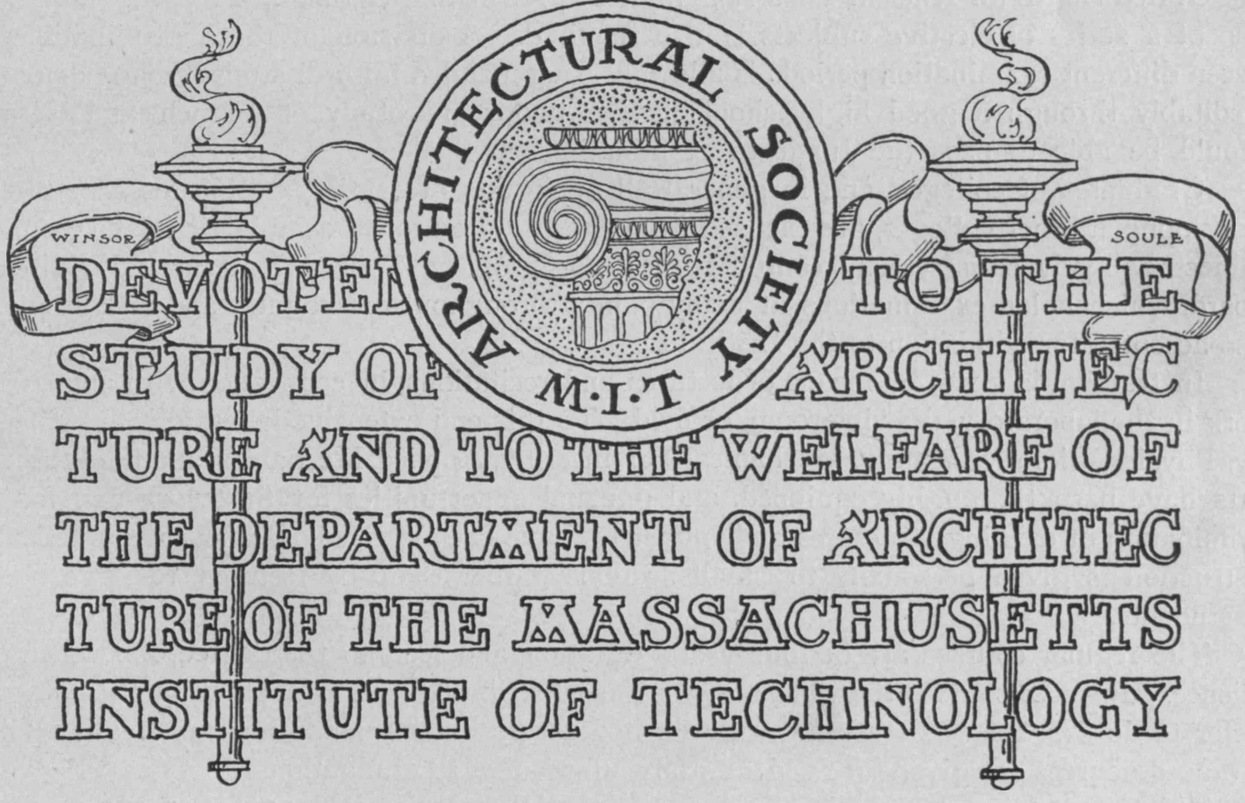
THE TECHNOLOGY ARCHITECTURAL RECORD



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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.

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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 department offers opportunities for graduate years of advanced study, to be spent in professional work, and leading to the Master's degree. The first Master's degree was given in 1895, and since that time the graduate course has increasingly proved its value. It comes at the time when the student is ripe for advanced work, to which he can give his undivided attention. It is the course from which practising architects first seek their assistants.

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

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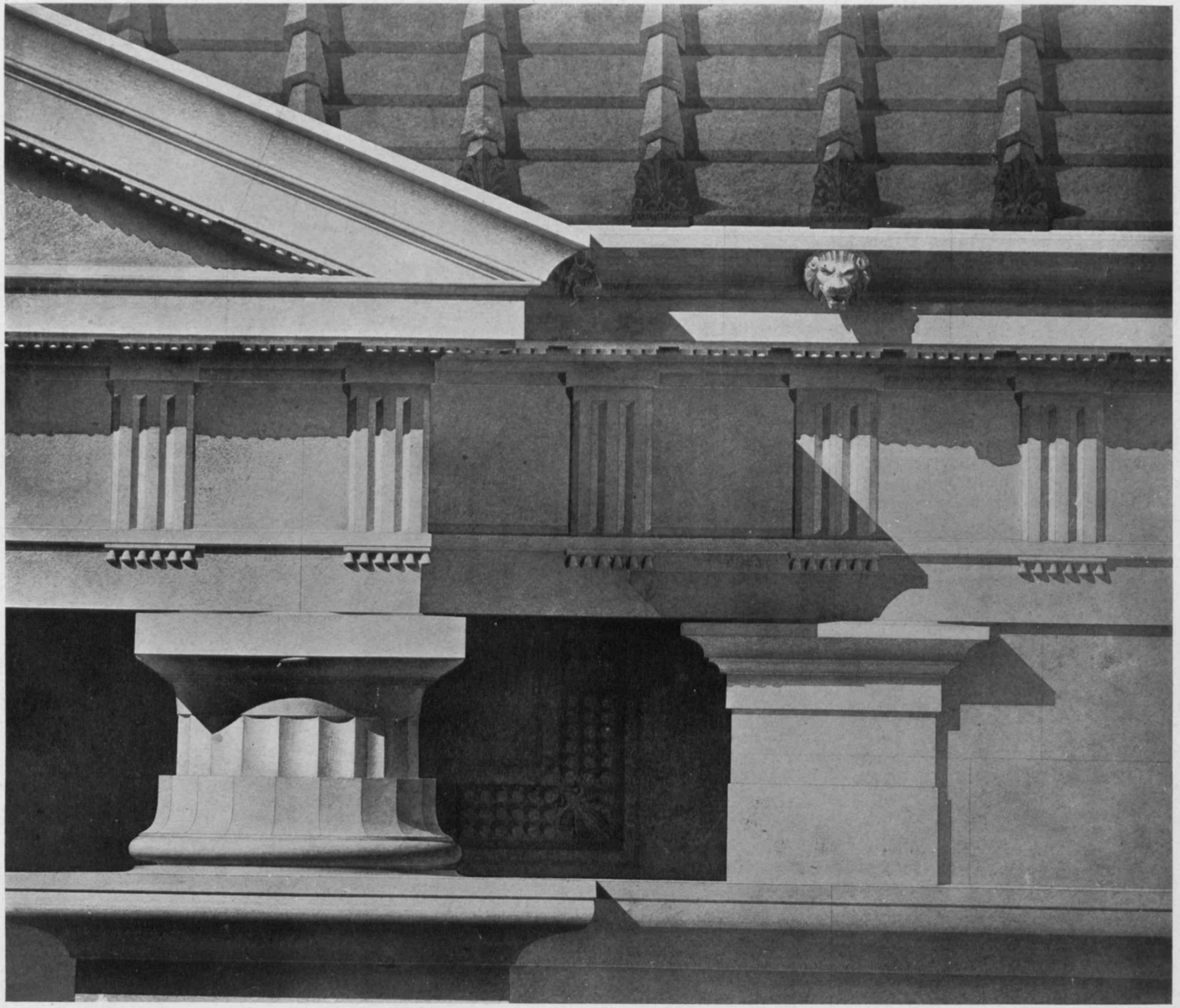

DORIC ORDER, TEMPLE AT CORI, BY EMMANUEL BRUNE

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

The Technology
Architectural Record
Vol. 4, No. 1

The Technology Architectural Record

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Published by the Architectural Society of the Massachusetts Institute of Technology.
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.

THE new school year has opened well, not only in quantity but in quality. The registration is the largest in the history of the Department. It is interesting to observe among those who come to us for either option, how steadily the number increases from year to year of students holding college degrees, and of those who have arranged their preparatory work at other institutions to fit them to enter our classes with advanced standing. Of the former we have this year twenty-six; of the latter, twenty-five.

The exacting results demanded in the profession of architecture, and the necessity of a well-rounded education to accomplish them, are getting more and more to be appreciated by the student himself. He sees that clever draughtsmanship is not all, and the scientific side of this subject is more willingly approached or even continued beyond that required in the regular curriculum. This year, in particular, the number entering Architectural Engineering promises to be unusually large.

The special students make a very acceptable and important adjunct to our strength. Our strict requirements that they must have the college degree, or have reached their majority and have accomplished a definite term of professional practice, bring to us a class of students of valuable and varied experience. They have perhaps a greater appreciation of the practical value of a school training, and the influence of their presence is an additional stimulus on their less mature classmates.

The graduate class is of good strength; and the invariably fine work of these classes is impressive of the fact that if the American student would study in the American schools during such time that he is willing to devote to the Paris Beaux-Arts he would be no loser in his knowledge of architecture.

We are very fortunate in being allowed the partial services of Mr. L. Earle Rowe, Assistant in the Department of Egyptian Art at the Museum of Fine Arts, to help Professor Sumner in his course in European Civilization and Art. This opportunity has enabled Professor Sumner to require personal conferences from his students, and occasional visits by classes to the Museum for docent instruction,— the consummation of a long cherished desire.

The opportunities offered by the Museum in its collection of classic models of figure and architectural sculpture are again for the first time since the removal of the Museum made use of by our advanced students in Life Class and Decorative Design. The Museum cannot be so freely used as when it was next door to us, but we believe that some alternation between work at our school and at the Museum will more than compensate in the broadening influences of the Museum for the time lost in going back and forth.

It is of interest to those concerned in the welfare of Technology to note the influence which our Institute has had in the instruction of architecture in this country. Because her school was the first one established, it is of course natural that to Technology other colleges should look for help to organize their schools of architecture, or for assistance in the instruction in those already established. Among the most recent instances is that of Harvard University, which has invited Professor Despradelle to become a lecturer on Architectural Design during the school year 1910-1911. This will not interfere with his regular work at Technology. On the contrary, it is to be hoped that the results may tend to bring the two schools into closer relationship, with the greatest profit to both.

The University of Illinois has this year appointed to be head of its Architectural Department Frederick M. Mann, '94. Mr. Mann was graduated from the University of Minnesota as Bachelor of Civil Engineering in 1892. He then entered the Architectural Department of Technology, and received the Bachelor's degree in Architecture in 1894, and the Master's degree in 1895. Mr. Mann was Instructor in Architecture at the University of Pennsylvania from 1895 to 1900. The University of Washington made him Professor of Architecture in 1902, and he organized and developed a department there which shows his admirable fitness for such work. Professor Mann held this position during the past eight years, when the University of Illinois, attracted by his eminent qualifications as instructor and administrator, invited him to the chairmanship of its long established and successful Department of Architecture.

The Carnegie Technical Schools have H. K. McGoodwin, '94, as Dean of the School of Architecture. E. S. Campbell, '06, is Assistant Professor of Architecture in the same school.

The University of Texas has recently made H. F. Kuehne, '08, Adjunct Professor of Architecture, to establish and develop a new course in Architecture to be associated with courses in Mechanical, Civil, and Electrical Engineering.

Tulane University owes much of the successful development of its Architectural Department to the united efforts of M. H. Goldstein, '04, and A. Owen, '94.

The Armour Institute has just invited A. N. Rebori, '07, holder of the 1908 Traveling Fellowship, to take charge of its courses in Advanced Design. With this course H. von Holst, '96, and T. E. Tallmadge, '98, have been associated.

The Agricultural and Mechanical College of Texas has F. E. Giesecke, '04, as the head of its Department of Architecture, and J. S. Dean, '09, for his assistant.

The University of Pennsylvania has P. R. Whitney, '02, in its corps of instructors.

The Georgia School of Technology had P. A. Hopkins, '92, to establish its course in Architecture.

The University of Michigan has at the head of her Department E. Lorch, '94, assisted by J. W. Case, '89.

(*Continued on page 26*)

Architectural Engineering

Corrosion of Iron Imbedded in Concrete

By GUY F. SHAFFER, S. B.

Review of Thesis for S. B. Degree in Architectural Engineering, Conducted by Mr. Shaffer

(Reprinted from the Engineering Record)

THE increasing use of iron as a structural material has made it necessary to protect it adequately from disintegration due to rapid oxidation in the presence of moisture. The assumption is made by most engineers to-day that iron or steel, painted or unpainted, imbedded in concrete, is free from deterioration. Under conditions which have existed in the past this theory has held true in practice: iron which has been imbedded in concrete and immersed in sea-water has shown no deterioration in twenty years. But the increasing use of electricity has introduced a factor which may cause more rapid disintegration than occurs under atmospheric conditions.

The following series of tests, just completed at the Massachusetts Institute of Technology, were carried out with a view of obtaining some data on the effect of currents of low potential or imbedded steel.

The points investigated were divided into three heads: (*a*) a study of the action of stray currents on unstressed, imbedded steel; (*b*) a study of the rate of corrosion of steel under stress; (*c*) a study of the effect of setting cement on paint-films.

Corrosion of Unstressed Steel.— The tests on imbedded steel were an extension of the work done by Mr. Knudson. Blocks were prepared as shown in Fig. 1. The concrete used was of 1: 3: 5 proportions; the cement was Atlas Portland Cement. The steel was investigated for its mechanical and chemical properties.

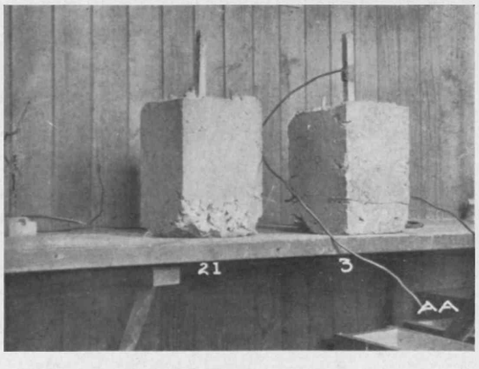


Fig. 1. View of Test-blocks.

In the imbedded tests two preliminary blocks, Nos. 3 and 21, were put in circuit and the voltage was kept practically constant. The iron was wired so that the current flowed from it through at least three and one-half inches of concrete to the return wire around the bottom of the block. The blocks were immersed in a salt solution, and both tests were to continue until disintegration took place or the current ceased. Splitting of the concrete finally took place in both cases. The interior of Block 3 is shown in Fig. 2, and the interior of Block 21 was about the same.

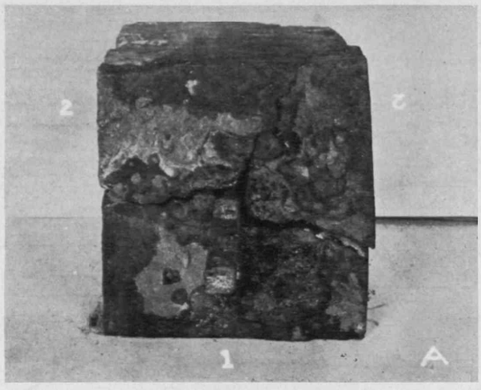


Fig. 2. View of Block 3 after Splitting.

The action which went on during the progress of the experiment was:

(*a*) An apparent washing-out of lime-water from the pores of the concrete.

(*b*) A gradual accumulation on the tops of the blocks of iron hydroxide, changing to iron-rust.

Finally, a splitting of the blocks along well-defined planes of cleavage from the top of the blocks down almost even with the bottom of the imbedded iron, but with no plane of cleavage at right angles to the cracks. Table 1 gives data on the time of the test, the current used, and the loss in weight of the iron.

TABLE 1.— RESULTS OF PRELIMINARY TESTS

Block number.	*Number of hours in circuit before splitting.*	*Average current during test, amps.*	*Average potential volts.*	*Loss of iron in gms. per amp. hour.*
3	2,144.25	.0769	25	0.559
21	3,196.75	.0159	3.4	0.333

The cause of the splitting has been attributed to the following phenomena by different investigators:

(*a*) The internal expansion of the iron, due to the formation of oxide.

(*b*) Gaseous pressure.

(*c*) An expansion of the cement, due to a change in its chemical nature.

The experiments on Blocks 3 and 21 seemed to show that (*c*) was the ruling factor; namely, that the strong oxidizing-agents chlorine and oxygen permeated the pores of the concrete and in the presence of water changed some of the cement compounds to higher states of oxidation. Such a change would make more space necessary, and so act as a bursting-force. The formation of these compounds was slow, much slower than the formation of rust, as some of the gases had a chance to escape out of the top of the block. This explanation is entirely compatible with results obtained by other experimenters.

These tests demonstrate that if any unstressed iron imbedded in concrete becomes the anode of a current as small as 0.015 amp., rapid decay is inevitable with any thickness of protective coating of concrete.

A further series of eight blocks, in which the voltage-drop is not allowed to exceed 2.5 volts, and consisting of tests on waterproofing compounds, was started in December, 1909, and will be carried through until June, 1911, unless cracks occur before that time. The current in these tests varies from 0.000096 to 0.000623 amp.

Fig. 3. Compression-bar in Machine.

Corrosion of Stressed Steel.— In the tests on iron under stress, bars were put under tension or compression in the testing-machine and corroded while stressed.

Fig. 3 shows a compression-bar in the machine surrounded by a can containing an electrolyte or salt solution. The current flows into the iron, from the iron through the solution, and out by the binding-posts in the sides of the can.

The result of the tests on some of the compression-bars is shown in Fig. 4.

Bar 7C had no load. Bar 4C was loaded to 12,000 pounds per square inch. It is seen that there is a decided difference in the amount of corrosion.

Fig. 5 shows some of the tension-bars. Here 3T and 9T are comparable. No. 3T had a load of 19,000 pounds per square inch, and No. 9T had no load. In both cases there seemed to be a decided difference in the rate of corrosion under stress. With no load, corrosion apparently was more rapid than when the bar was stressed. The full series of compression tests are given in Table 2, and the tension tests in Table 3.

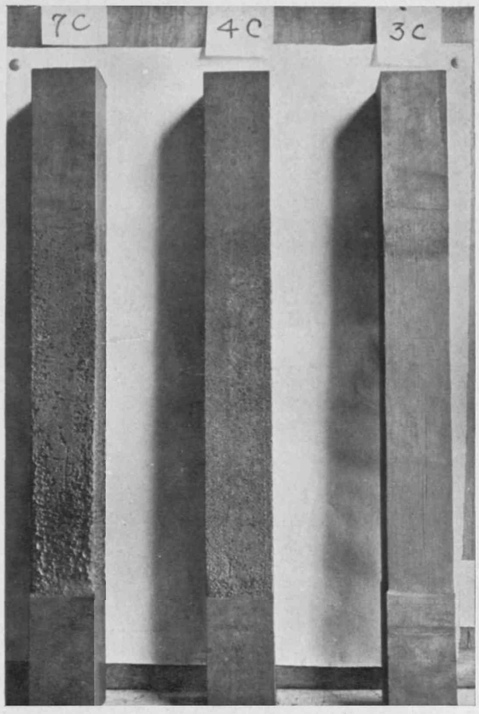


Fig. 4. Compression-bars after Test.

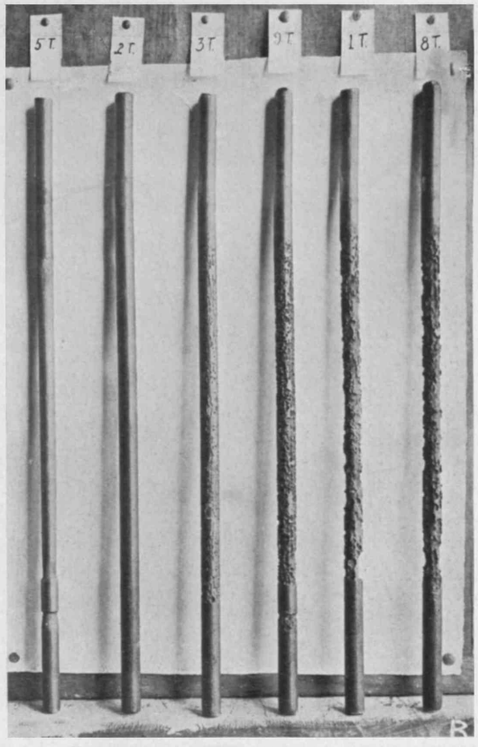


Fig. 5. Tension-bars after Test.

The corrosive values obtained are plotted in Figs. 6 and 7. A study of the preliminary bars showed that the iron

oxide on the surface had quite a marked effect on the rate of corrosion, and in order to make results comparable most of the bars were planed, as shown in Bar 3C and Bar 5T. The condition of the surface of the bars is given in the respective tables, and they are marked P and U on the diagrams. Bar 2T was a cathode test,— that is, with the current flowing from the electrolyte to the iron,— and no corrosion took place.

This series of tests will be extended by further research during the next year.

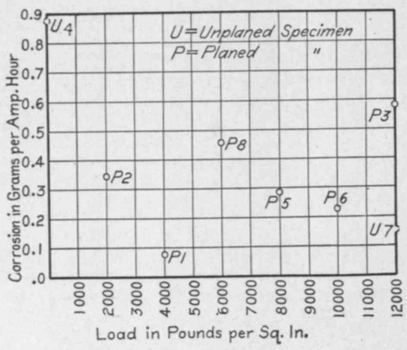


Fig. 6. Corrosion Values for Compression-bars.

was determined before and after being immersed in lime-water. Ten determinations were made before immersion and eight after immersion, and averages obtained from these values.

A study of the results on the seventy-five bars shows that 78% of the bars were painted with films containing linseed-oil, and 62% of these showed a loss after immer-

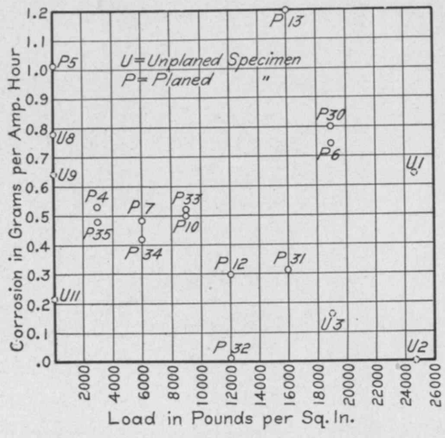


Fig. 7. Corrosion Values for Tension-bars.

TABLE 2.— RESULTS OF CORROSION TESTS OF BARS UNDER COMPRESSION

(1) Bar.	(2) Size, inches.	(3) Area, sq. inches.	(4) Character of surface.	(5) Length, inches.	(6) Load per sq. inch, lbs.	(7) l/r.	(8) Weight before corrosion, gms.	(9) Weight after corrosion, gms.	(10) Loss, gms.	(11) Current, amps.	(12) Hours.	(13) Loss per amp. hour, gms.
1 C	2.48 x 2.44	6.05	Planed	23.61	4,000	33.55	18,230.35	18,202.02	28.33	7.75	48	0.0761
2 C	2.48 x 2.46	6.1	Planed	23.61	2,000	33.25	18,287.01	18,159.53	127.48	7.75	48	0.342
3 C	2.45 x 2.46	6.027	Planed	23.6	12,000	33.33	18,414.5	18,201.02	213.48	7.75	48	0.574
4 C	2.50 x 2.50	6.25	Unplaned	23.6	12,000	33.68	19,285.65	19,228.99	56.66	7.8	48	0.1513
5 C	2.48 x 2.41	5.98	Planed	23.63	8,000	34.0	18,053.29	17,949.89	104.40	7.73	48	0.281
6 C	2.44 x 2.45	6.08	Planed	23.63	10,000	33.58	18,032.04	17,947.05	84.99	7.84	48	0.2268
7 C	2.50 x 2.50	6.25	Unplaned	23.8	.....	32.96	19,391.88	19,066.09	325.79	7.75	48	0.8755
8 C	2.46 x 2.46	6.12	Planed	23.71	6,000	33.4	18,584.48	18,414.50	169.98	7.8	48	0.454

TABLE 3.—RESULTS OF ELECTROLYSIS TESTS OF BARS IN TENSION

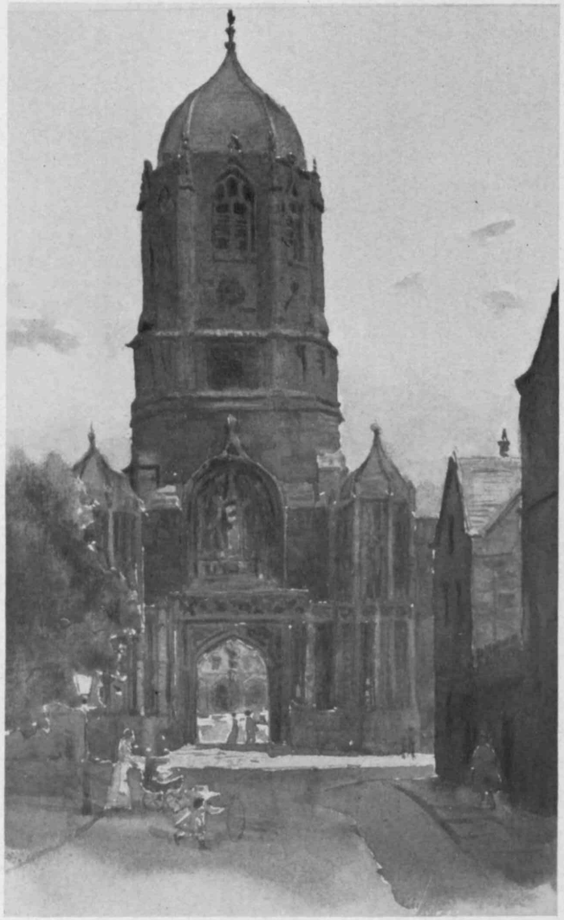
(1) Bar.	(2) Diameter, inches.	(3) Area, sq. inches.	(4) Character of surface.	(5) Load per sq. inch, lbs.	(6) Weight before corrosion, gms.	(7) Weight after corrosion, gms.	(8) Loss, gms.	(9) Current, amps.	(10) Hours.	(11) Loss per amp. hour gms.	(12) Load at completion of experiment, lbs.
1 T	.754	.466	Unplaned	24,700	1,367.4	1,164.7	202.7	1.583	202.75	.631	.....
2 T	.752	.465	Unplaned	24,700	No corrosion cathode	No corrosion cathode	.....	1.43	249.75	.....	.....
3 T	.754	.466	Unplaned	19,000	1,368	1,338.8	29.2	7.8	24	.1559	.....
4 T	.739	.430	Planed	3,000	1,324	1,146	78	3.09	48	.526	4,250
5 T	.721	.408	Planed	.....	1,252.9	1,090.5	162.4	3.16	48	1.07	....
6 T	.738	.428	Planed	19,000	1,309	1,200	109	3.09	48	.735	27,300
7 T	.738	.428	Planed	6,000	1,320.5	1,149.5	71	3.09	48	.478	10,800
8 T	.756	.467	Unplaned	.....	1,381.4	1,149.2	232.2	1.50	202.75	.772	.....
9 T	.754	.466	Unplaned	.....	1,372.5	1,263.8	108.7	7.15	24	.633	.....
10 T	.734	.424	Planed	9,000	1,314	1,141	73	3.09	48	.492	16,400
11 T	.752	.464	Unplaned	.....	1,372	1,339.3	32.7	3.25	48	.2095	.....
12 T	.739	.429	Planed	12,000	1,320.5	1,177.5	43	3.09	48	.29	21,000
13 T	.735	.424	Planed	16,000	1,296	1,117.5	178.5	3.09	48	1.20	30,400
30 T	.7299	.419	Planed	19,000	1,265.1	1,146.5	118.6	3.09	48	.795	30,000
31 T	.7335	.423	Planed	16,000	1,270	1,225	45	3.09	48	.303	19,170
32 T	.7262	.414	Planed	12,000	1,256	1,250.9	5.1	3.09	48	.0344	12,000
33 T	.7245	.412	Planed	9,000	1,255.4	1,179	76.4	3.09	48	.512	12,000
34 T	.7307	.419	Planed	6,000	1,282	1,221.5	61.5	3.09	48	.415	7,600
35 T	.7041	.387	Planed	3,000	1,196	1,126	70	3.09	48	.471	3,980

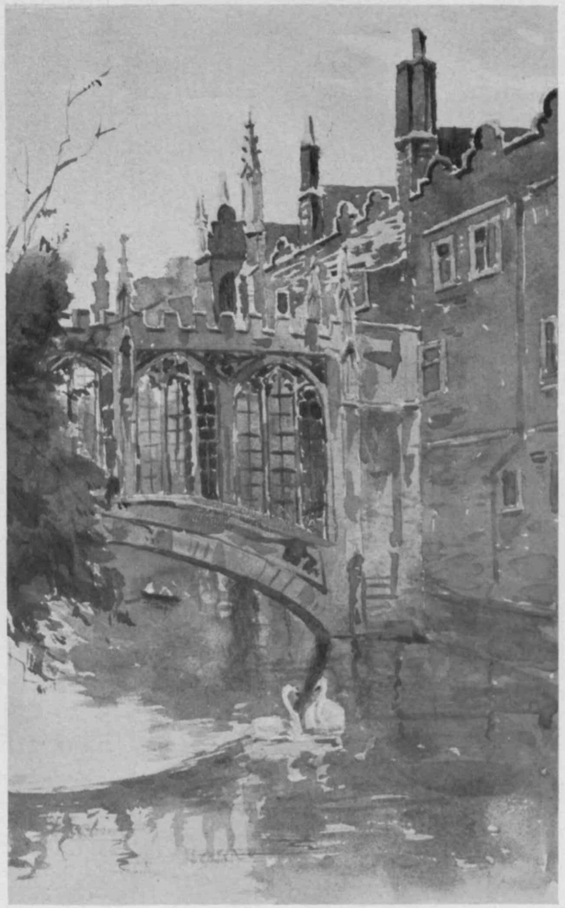
Effect of Setting Cement on Paint-films.— In studying the effect of setting cement on paint-films, about fifty of the best known iron-preservative paints were painted either as separate films or as combined films on bars of iron, and the voltage at which the film would break down sion. The films containing only linseed-oil showed an average loss of 23%. The films containing linseed-oil and hydrocarbons showed an average loss of 16%. The films containing linseed-oil and turpentine showed an average

(*Continued on page 28*)

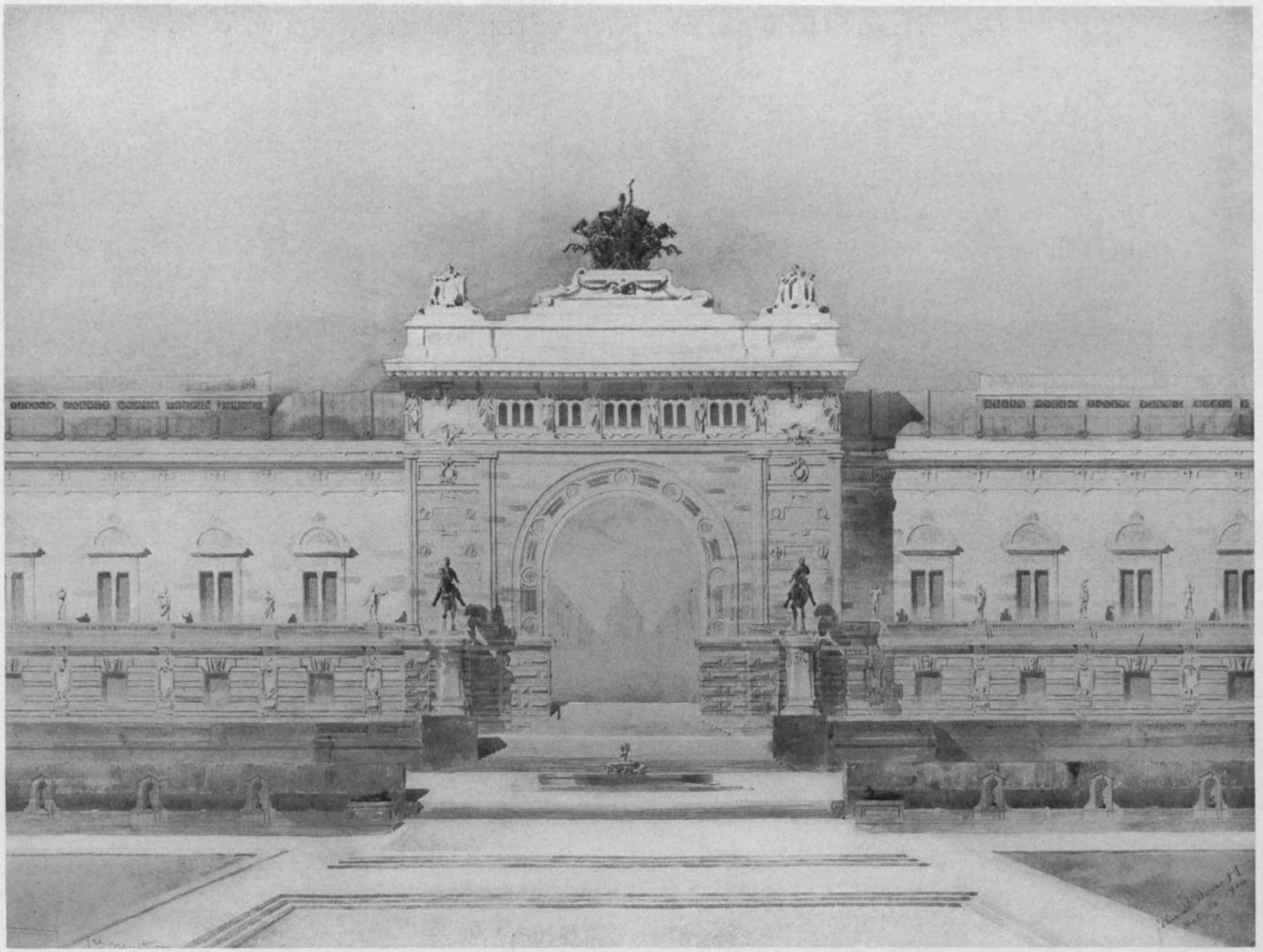
MEASURED DRAWING BY R. J. BATCHELDER, HOLDER OF 1909 TRAVELING FELLOWSHIP

SKETCHES BY R. J. BATCHELDER, HOLDER OF 1909 TRAVELING FELLOWSHIP





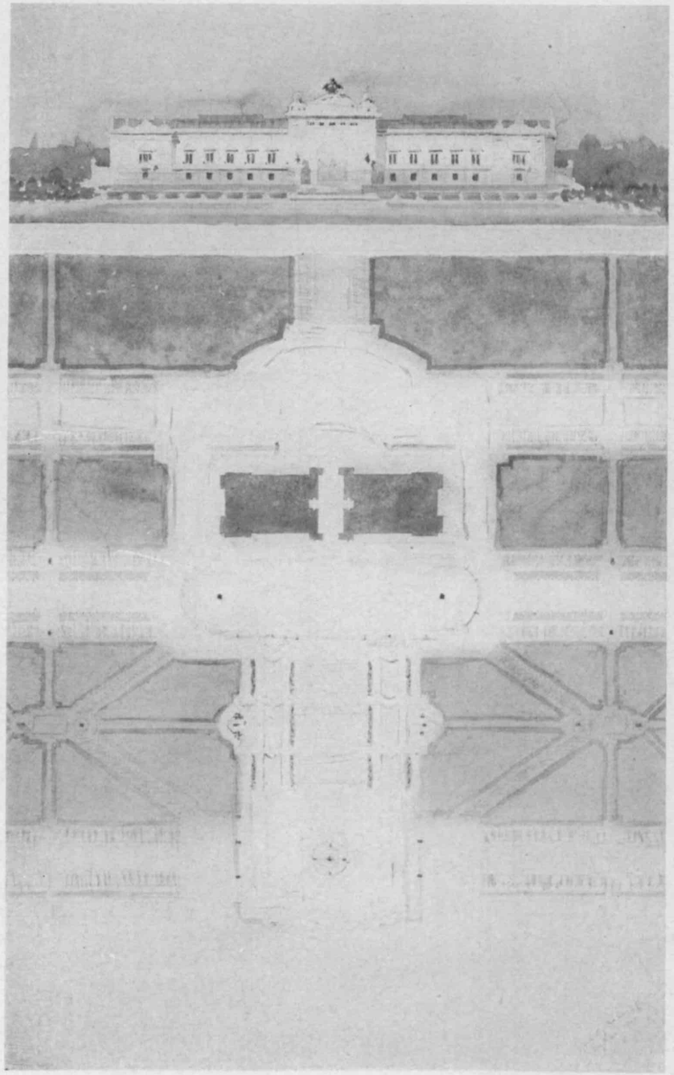
SKETCHES BY R. J. BATCHELDER, HOLDER OF 1909 TRAVELING FELLOWSHIP



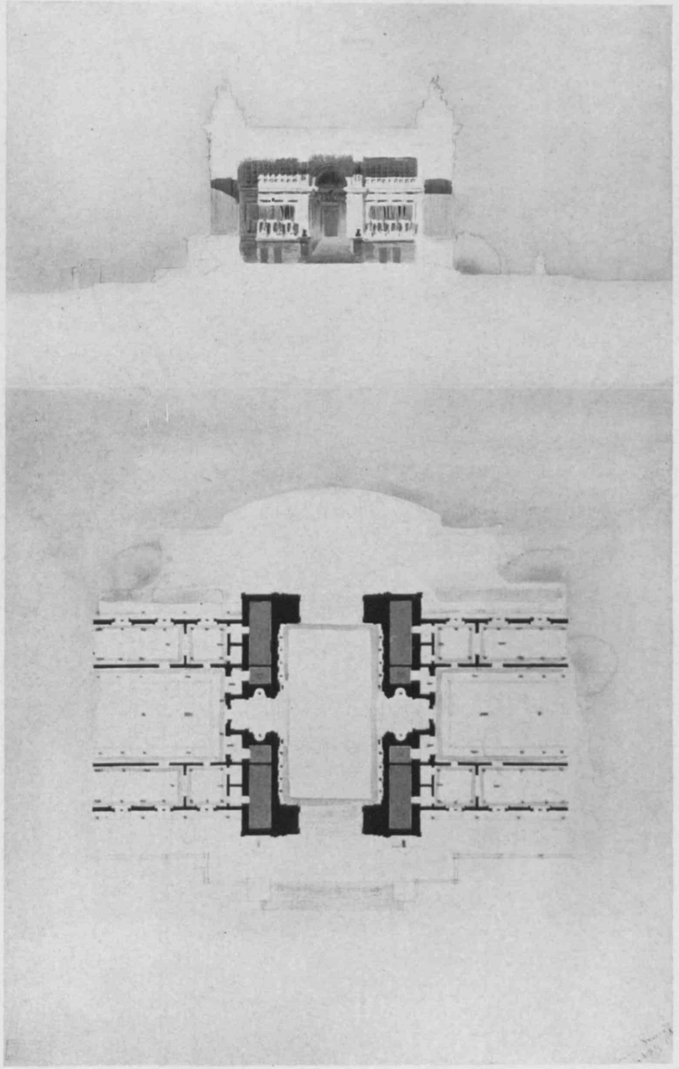
FOURTH YEAR OF DESIGN

FIRST MENTION, J. H. SCARFF

A GALLERY OF COMPARATIVE SCULPTURE



FOURTH YEAR OF DESIGN

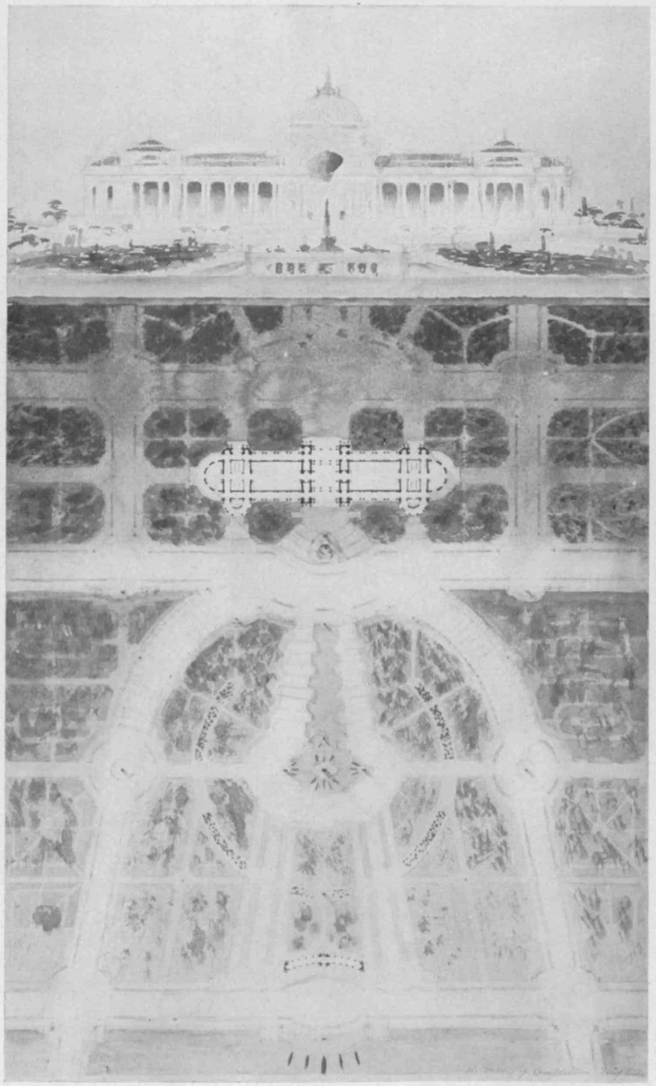


A GALLERY OF COMPARATIVE SCULPTURE

FIRST MENTION, J. H. SCARFF

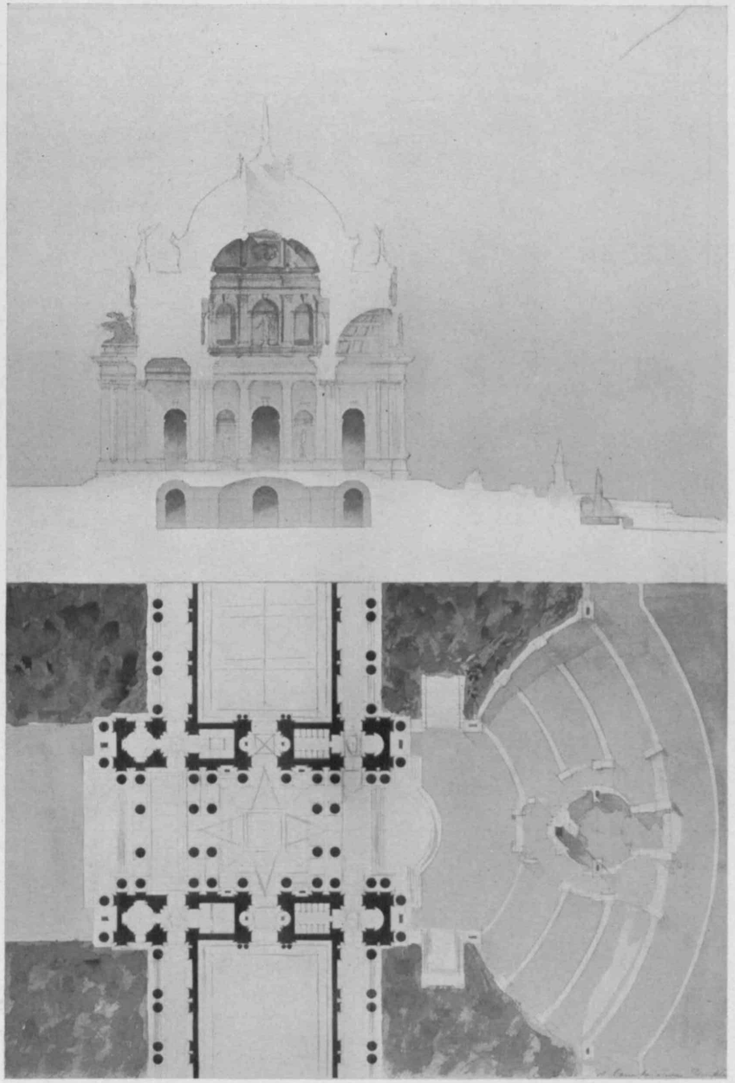
FOURTH YEAR OF DESIGN — A GALLERY OF COMPARATIVE SCULPTURE

FIRST SECOND MENTION, J. S. DEAN



FOURTH YEAR OF DESIGN

FIRST SECOND MENTION, J. S. DEAN



A GALLERY OF COMPARATIVE SCULPTURE

VOL. IV., NO. 1

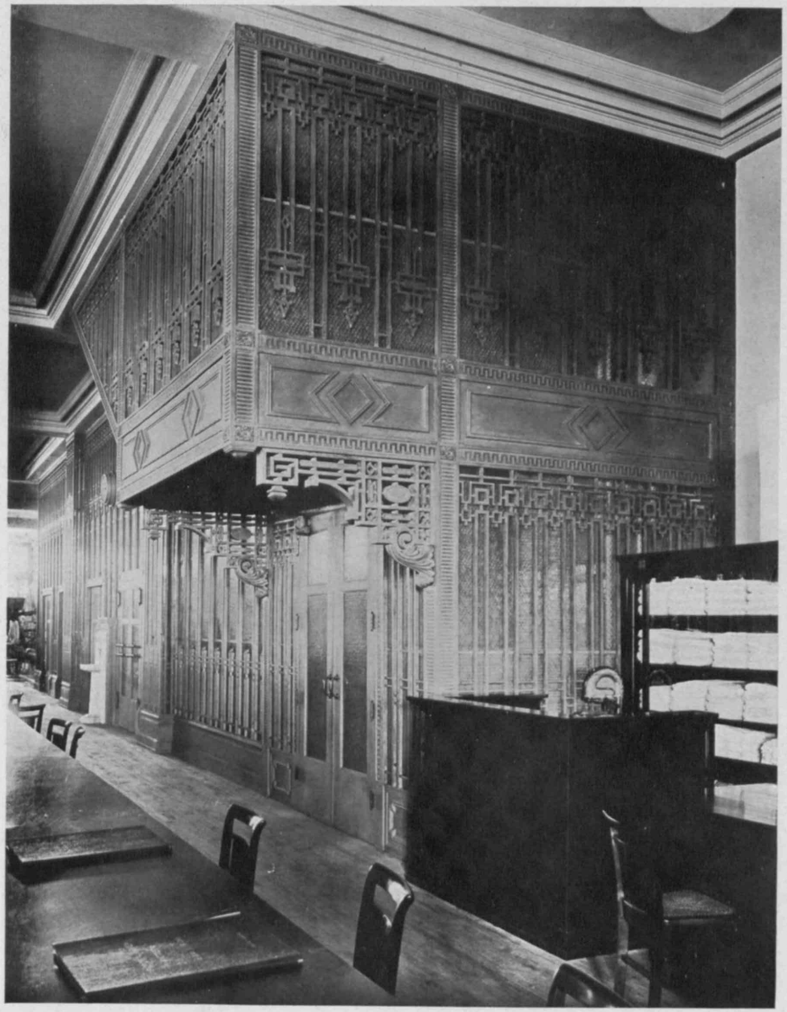
FIRE STATION, WYOMING, O.

GARBER ('02) & WOODWARD ('02), ARCHITECTS

BAILEY REALTY COMPANY BUILDING, CLEVELAND, O.

ABRAM GARFIELD ('96), ARCHITECT

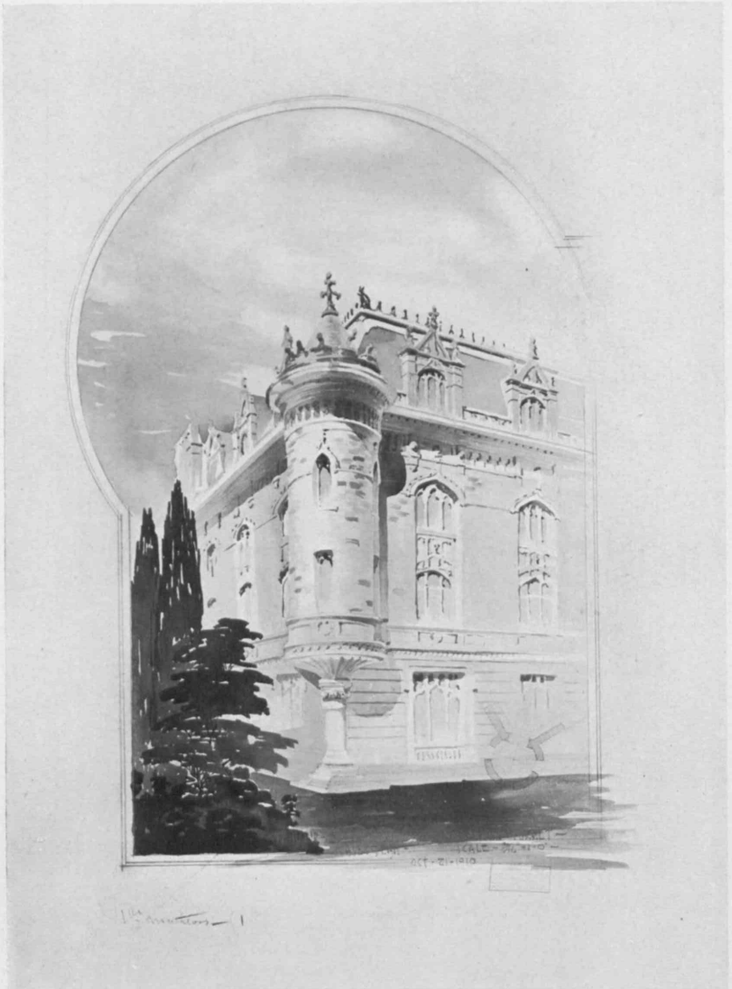
BAILEY REALTY COMPANY BUILDING, CLEVELAND, O.



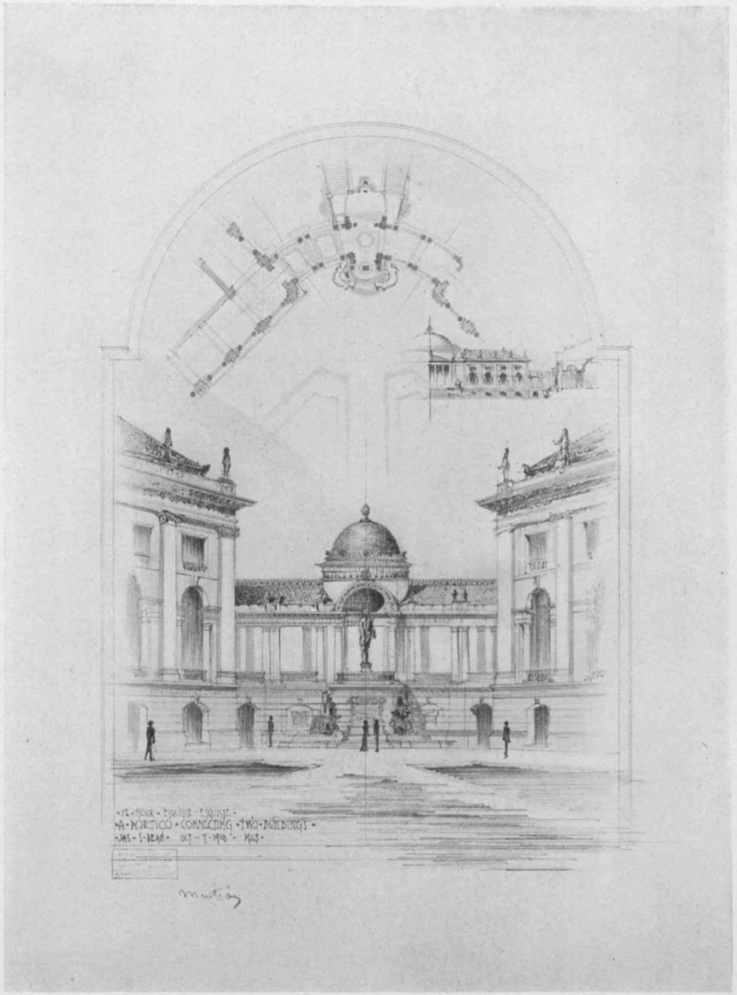
ABRAM GARFIELD ('96), ARCHITECT

HOUSE, MILWAUKEE, WIS.

FERNEKES & CRAMER ('96), ARCHITECTS



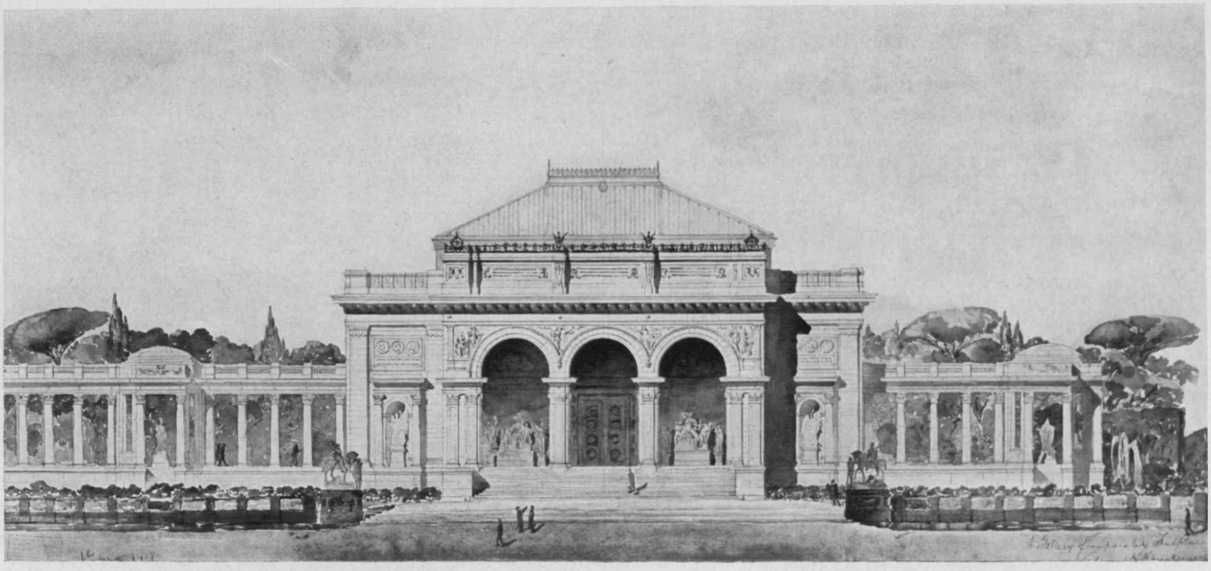
AN ANGLE TURRET "EN CORBELLEMENT"

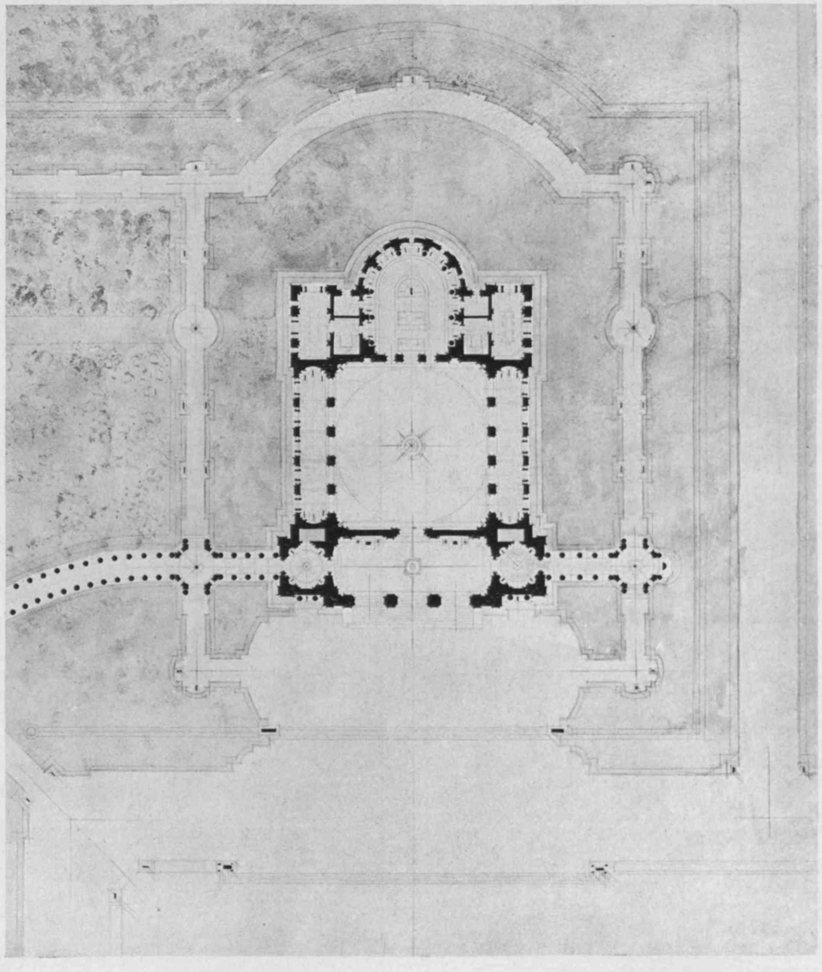


A PORTICO CONNECTING TWO BUILDINGS

FOURTH YEAR OF DESIGN, TWELVE-HOUR SKETCH PROBLEMS, "EN LOGE"

FIRST MENTIONS, J. S. DEAN

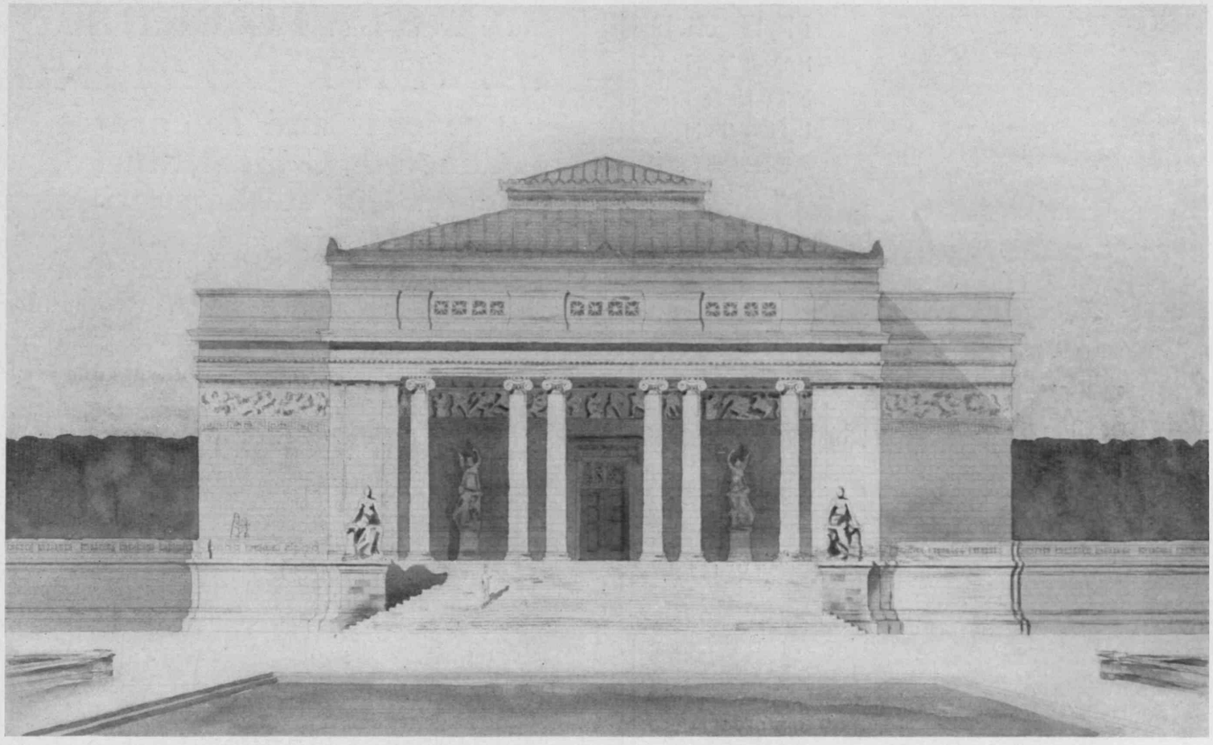


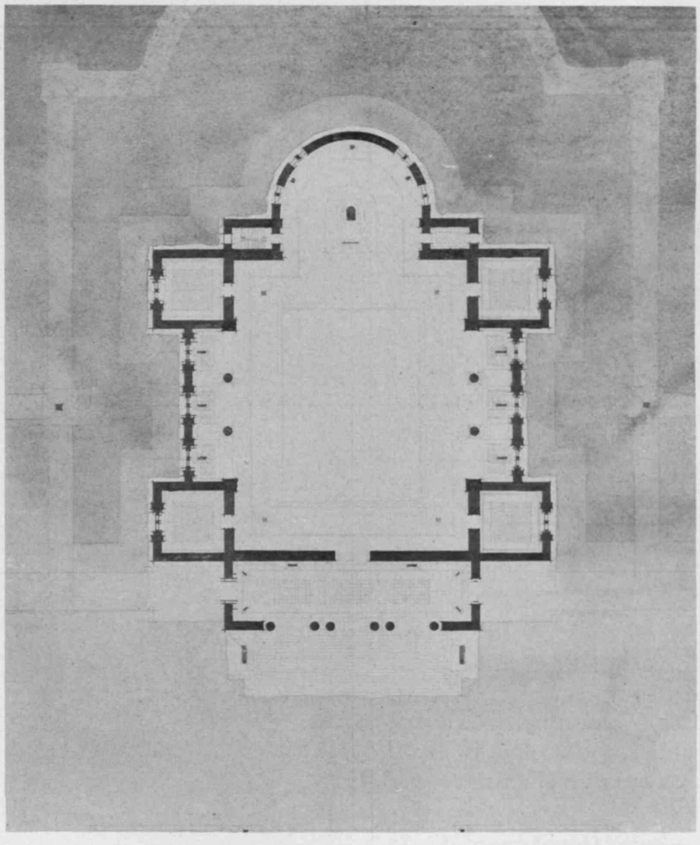


THIRD YEAR OF DESIGN

A GALLERY OF COMPARATIVE SCULPTURE

FIRST FIRST MENTION, E. H. KRUCKEMEYER

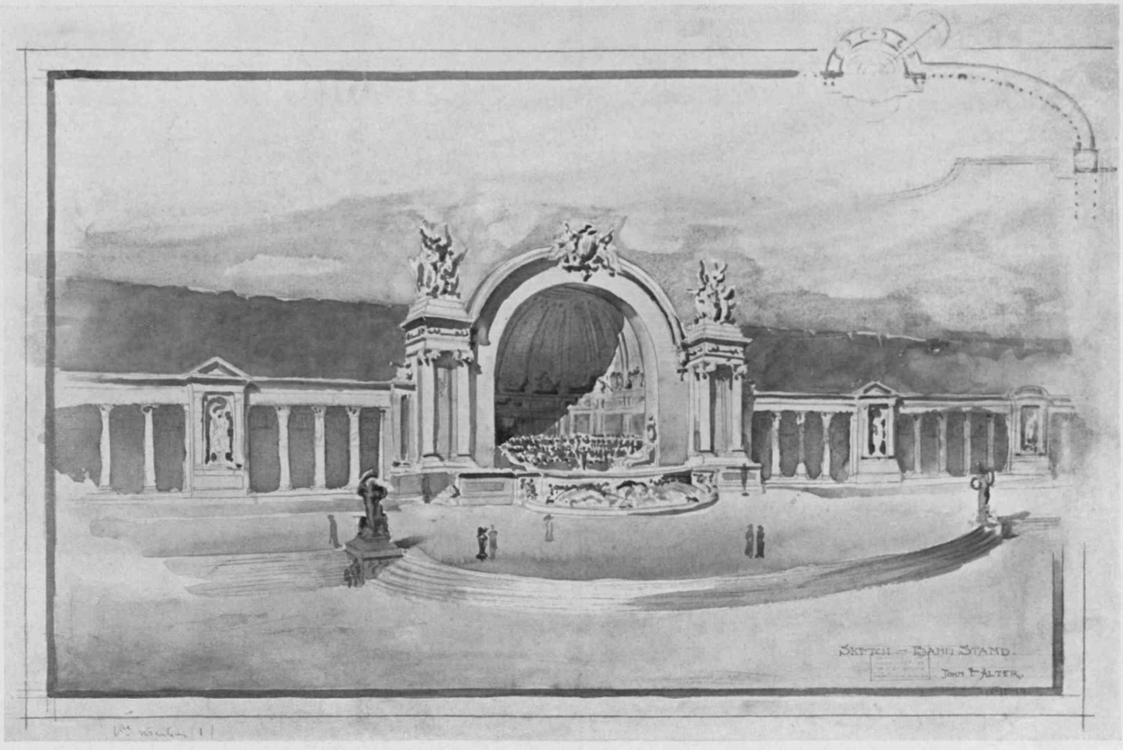




THIRD YEAR OF DESIGN

A GALLERY OF COMPARATIVE SCULPTURE

FIFTH FIRST MENTION, H. A. ANGELL



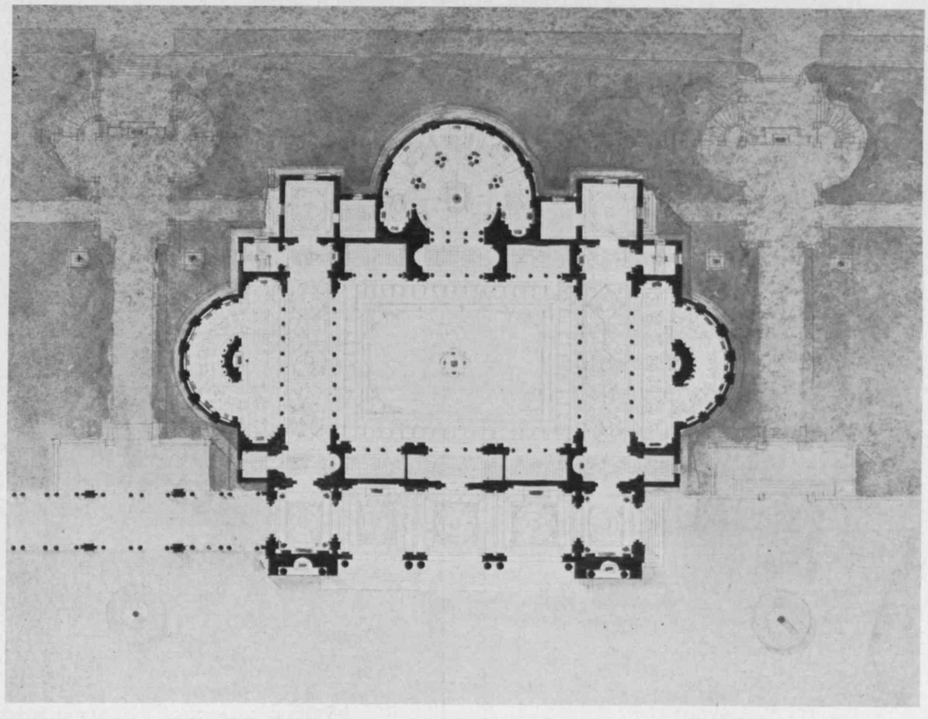
FIRST FIRST MENTION, J. F. ALTER

THIRD YEAR OF DESIGN, SKETCH PROBLEM A STAND FOR AN ORCHESTRA IN THE OPEN AIR

SECOND FIRST MENTION, A. McNAUGHTON

SECOND YEAR OF DESIGN, SKETCH PROBLEM — ENTRANCE GATE

FIRST FIRST MENTION, H. E. KEBBON

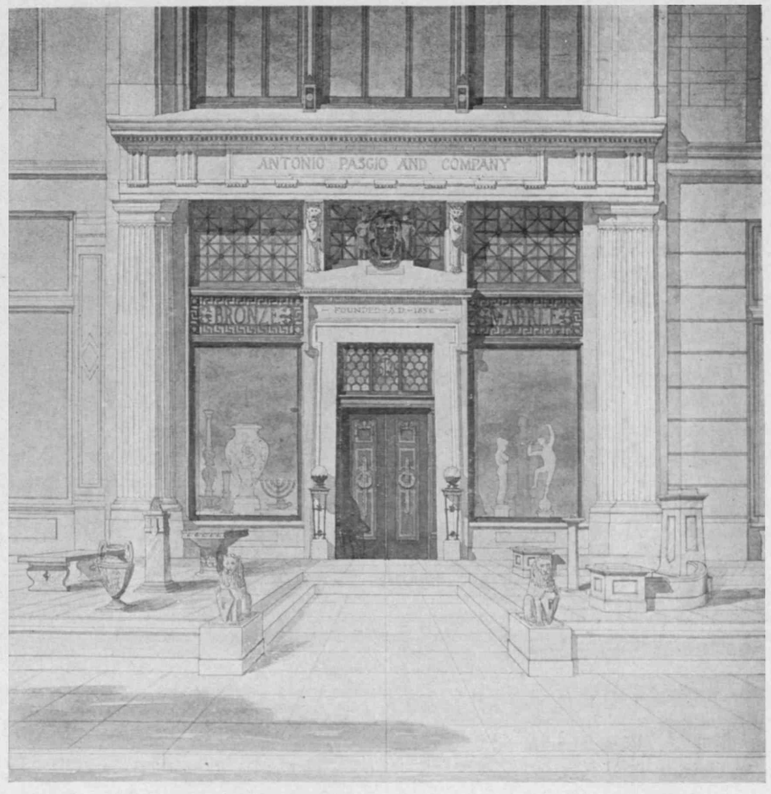


THIRD YEAR OF DESIGN — A GALLERY OF COMPARATIVE SCULPTURE

THIRD SECOND MENTION, MISS M. A. FULTON

THIRD YEAR OF DESIGN, SKETCH PROBLEM — ENTRANCE GATE TO A COUNTRY ESTATE

FIRST MENTION, P. L. FOLEY



FIRST YEAR OF DESIGN — A STORE FRONT

FIRST MENTION, S. L. DAY

The Architectural Society

1910–1911

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THE Architectural Society in its plans for the present season contemplates no essential changes from those made last year. The scheme of having some literary entertainment associated with the monthly business meetings is to be given a thorough trial. Already an auspicious beginning has been made to this end by Mr. F. A. Burton, of the fifth year. At the November meeting he gave an informal talk of his very interesting experiences of last summer during a trip in Europe, mainly in Italy and France. By means of lantern-slides the members of the Society followed Mr. Burton from Naples, where he landed, to Antwerp, where he embarked for home. They wandered with him through Pompeii, and thence on his way to Rome, where they climbed together into the dome of St. Peter's. They journeyed with him, always in third-class railway-carriages, to bring up finally in Boston, to greet with pride our own Bunker Hill Monument and our State-house. In the next issue of the Record will appear the itinerary of this trip, prepared by Mr. Burton and his companion, Mr. Scarff, and will show a very carefully prepared program of travel economically accomplished.

The Entertainment Committee, in reducing the cost of smokers to a minimum, has found this change to be very welcome. It resulted in the largest attendance on record at the first smoker of the year, which was addressed by Mr. Ernest Flagg, of New York. What he said is published in another column.

The Society is very fortunate in its list of speakers for this year. It fully appreciates the generosity of these busy men who are willing to give them such service. The first speaker was Mr. Flagg, and a partial list to follow him includes Messrs. J. R. Coolidge, Jr., R. A. Cram, and F. L. Olmsted, Jr., of Boston; J. R. Freeman, of Providence; and I. K. Pond, of Chicago.

That others should be benefited by these opportunities, all former members of the Society are invited to these addresses, as well as those of the Boston Architectural Club.

The scholarship fund of the Society now amounts to $930.

With an attendance of nearly seventy-five men, the first smoker and social meeting of the Architectural Society was a great success. The Society was very fortunate in having for speaker Mr. Ernest Flagg. Mr. Flagg is one of the best known architects in the country, being a graduate of L'École des Beaux-Arts, and the designer of the Singer Building in New York, Brooklyn Bridge, the Corcoran Art Gallery in Washington, and many other notable public buildings. Mr. Flagg deplores the lack of sense of proportion of architecture of to-day, and his talk was in the nature of a warning to young men who were studying architecture, to avoid the ridiculous and affected styles which are now much in evidence. Mr. Flagg's talk may be summed up as follows:

"The greatest fault of the present-day architect is his absolute lack of sense of proportion. When a man of artistic sense sees a railroad-station built on the plan of a Gothic temple he is shocked. In the same way the presence on a building of huge stone pillars with terra-cotta capitals is also absurd and out of place. They are just as ridiculous as a locomotive in a mediæval church. Works of art must be true to the use made of them. No copy or adaptation can stand as a work of art. What was artistic in earlier times may have no place whatever in modern construction. Many rich men turn to the arts as a hobby, and commit such unpardonable errors as ornamenting their grounds with ancient tombs. One rich man purchased some very costly Italian statues, which he set out in his courtyard, and then used them for target practice, shooting at them with a rifle.

"Another way in which modern architects offend the sense of proportion is by not making the exterior and the interior of a building agree. In this country, also, city streets are not in proportion to heights of buildings lining them. The French have the most highly developed sense of proportion, and employ it in their buildings, and the construction of buildings adjoining each other. The French are rightfully the successors of the Greeks.

"When there is a change in constructive methods there should be a change in the style of architecture. One would naturally suppose, therefore, that when steel began to be used, there would be a change, and the massive walls

hitherto necessary to strength would be done away with. But this has not been the case in this country, though several French architects have recognized the fact, and are using terra-cotta and glass artistically wrought and colored in their steel building construction.

"The horizon of the designer widened when books of travel began to be published, and architects began to copy. Even France did not escape this evil. The French school is just beginning to have its effect in this country, through men who have gone to Paris and studied. Light is beginning to break in this country, and when it does we will make progress. Design and construction must go hand in hand. Our guide should be 'plain common sense.'"

A short business meeting was held before the talk, and the men of Course IV., second year, were voted into the Society in a body. After the talk the men ate, drank, and made merry until 9.45, when the gathering broke up.

(*Continued from page 3*)

Cornell University has for Instructor in Landscape Architecture, G. E. Burnap, '06.

If we go back to the earlier days of Technology we find Professor A. D. F. Hamlin, '78, head of the Department at Columbia, and among his able colleagues is Professor G. T. Snelling, '82.

The University of California owes the effective development of its Department to its present head, Professor J. G. Howard, '86.

Wellesley College has made Miss M. K. Babcock, '08, Instructor in Landscape Gardening and Horticulture.

The Pennsylvania State College recently invited H. M. Glazier, '09, to organize there a Department of Architecture, and to become its instructor.

This is a good showing, and is proof that the Institute of Technology has always afforded as good training for the instructor in architecture as for the practitioner.

Mr. R. J. Batchelder, '08, holder of the 1909 Traveling Fellowship, has recently returned, after spending a little over his year in Europe. He brought home many drawings accomplished during these twelve months, and a public exhibition of them has been held in our rooms. These drawings gave good evidence of the value of foreign study to one capable of profiting by it.

The beneficiary of the Rotch Traveling Scholarship two years ago, Mr. I. P. Lord, '03, has recently returned, and the walls of our exhibition-room are at present completely covered with drawings of unusual interest made by Mr. Lord while abroad.

We wish to call to the special attention of students of architecture a French architectural monthly, now in the fourth year of its publication. This monthly, called *L'Architecte*, is by far the best and the most complete of the French architectural periodicals. Published under the direction of a group of the ablest architects of Paris, among whom are M. Pascal and M. Vaudremer, it has the spirit of the best French traditions. The plates are beautifully executed, and cover a wide range of subjects. This, combined with a wise electicism in their choice, gives to them a great value. Every architect who wishes to keep abreast of the world movement in architecture through the medium of selections made by the masters of the art will be interested in this publication, which is, moreover, moderate in price. As Technology is, and must continue to be, preëminent in the preservation of the best architectural traditions, we are particularly interested in calling the attention of our readers to this publication.

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.

Of the class of 1910, Clark, Davis, and Scarff have returned to the Institute for graduate work; Barnard, Godley, Haugaard, Johnson, March, and Walker have gone abroad; Akerly is with Westinghouse, Church, Kerr & Co., New York City; Burnham is superintending work for D. H. Burnham & Co., New York City; Shaffer is with Mr. Cass Gilbert, New York City; Spalding is with the Delaware & Lackawanna Railroad, New York City; Harris is with Mr. R. F. Putnam, Northampton, Mass.; Hirschfeld is with Bakewell & Brown, San Francisco, Cal.; Gerity is with Fisher & Fisher, Denver, Col.; Cleverdon and Foley are with Shepley, Rutan & Coolidge, Boston, Mass.; Hannaford is with Cram, Goodhue & Ferguson, Boston, Mass.; Kelley is with Mr. C. B. Perkins, Boston, Mass.; Whitney is with Whidden & Co., Boston, Mass.; Fowler is an instructor in the Department; Northrop is with Little & Browne, Boston, Mass.; French is with Mr. J. C. Schæffler, Boston, Mass.

H. D. Bounetheau, '09, after three months' travel abroad this summer has entered the office of McKim, Mead & White, New York City.

R. J. Batchelder, '08, is in the office of Codman & Despradelle, Boston, Mass.

K. Vonnegut, '08, after spending the summer in England, has returned to Indianapolis, Ind., where he will succeed his father in the firm of Vonnegut & Bohn.

R. Buckler, '07, who since leaving the Institute has been with McKim, Mead & White, New York City, has opened an office in Baltimore, Md.

J. H. Cady, '06, and B. C. Baker, '07, have become associated in business, with offices in the Bannigan Building, Providence, R. I.

Lebenbaum, '06, & Marx, '07, of Chicago, Ill., were the successful competitors in a New Orleans competition for a building for the Delgado Museum of Art.

It is our sad duty to record the death of Harold Lord, '06, which occurred at Honolulu on Sept. 18, 1910.

Mr. Lord was born in Bury, England, Dec. 20, 1881. At an early age he came to America with his parents, who made their home at Malden, Mass. After graduating from the Malden High School, Mr. Lord entered the Department of Architecture, taking his degree in Architectural Engineering with the class of 1906. The following year he went to Honolulu to enter the lighthouse service, where he remained, with the exception of one year, until his death. Mr. Lord was a man of high personal and professional ideals, of unusual refinement in his tastes and nature, and of great professional promise. His associates will miss him as a true and sympathetic friend.

E. C. Lowe, '05, and J. C. Bollenbacher, '09, announce the formation of a partnership for the practice of architecture, with offices at 1612 Corn Exchange Bank Building, Chicago, Ill.

G. R. Ainsworth, '04, since leaving the Institute has been with E. F. Caldwell & Co., Ornamental Brass and Wrought Iron Workers, New York City.

The plans of A. H. Jacobs, '04, for an aquarium at Golden Gate Park, San Francisco, Cal., have been accepted by the city. Jacobs has also completed plans for the erection of a school for Temple Emanu-El congregation.

L. H. Smith, '04, of San Francisco, visited Technology in October.

F. C. Hiron, '03, is in business at 475 Fifth Ave., New York City, being a member of the firm of Dennison & Hirons.

R. M. Hood, '03, at the October judgment of the École des Beaux-Arts, won the first medal.

G. T. de Colmesnil, '02, formerly a member of the firm of Miller & de Colmesnil, San Francisco, Cal., has been appointed City Architect. For the past year and a half Mr. de Colmesnil has been connected with the city's Department of Architecture, having had charge of the School Department.

H. H. Saylor, '02, has recently compiled an attractive book entitled "Distinctive Homes of Moderate Cost," being a collection of country and suburban homes in good taste, with some value in suggestions for the home-builder.

R. J. Clausen, '00, visited the Department on November 15. Since leaving the Institute he has been associated in business with his father, with offices in the Central Building, Davenport, Ia.

G. B. Ford, '00, has given so much time to and such careful study of the question how to relieve congestion in the large cities that he is now acknowledged to be a very important authority on the subject. He was recently called upon to address the Mayor's Commission on Congestion of Population in New York, and, more recently, to address the conference in Boston of mayors and other officials of cities and towns in New England.

D. J. Myers, '98, formerly of the firm Graham & Myers, Architects, begs to announce that he will continue the practice of architecture at 721-723 Central Building, Seattle, Wash.

O. C. Hering, '97, and Douglass Fitch have formed a partnership for the practice of architecture, with offices at 1 West 34th St., New York City.

Mr. Evans S. Pillsbury announces the marriage of his daughter, Edith King, to Walter D. Bliss, '95, on September 12, in San Francisco, Cal.

Myron Hunt, '94, and Elmer Grey, Architects, announce the dissolution of their partnership. Mr. Hunt will continue his practice at 1017 Union Trust Building, Los Angeles, Cal.

F. W. Crosby, '92, is practising architecture at 501 Denegre Building, New Orleans, La.

L. A. Ford, '91, L. S. Butler, '01, and L. A. Oliver, '00, beg to announce that they have formed a partnership for the practice of architecture under the firm name of Ford, Butler & Oliver, with offices at 103 Park Ave., New York City.

(*Continued from page 6*)

gain of 4%. The straight bitumen and hydrocarbon films showed an average loss of 6½%.

As a result of the tests on paint-films, the following conclusions were brought out:

(1) A paint-film to be of value must be sufficiently elastic to stand considerable abrasion.

(2) Any linseed-oil film in contact with the concrete is slowly saponified by the calcium hydroxide of the cement, aided by the pressure which the setting cement exerts on the iron, and is thus of less value as a protective coating.

(3) The red-lead and linseed-oil films, particularly where a small amount of litharge was added, seemed to form the most compact films and bind most closely to the iron.

(4) The best paint protection to minimize electrolysis, to prevent saponification of the oil, and to give a film which will set closely against the iron would appear to be a ground coat of red lead and linseed-oil, followed by at least two coats of a non-saponifiable film.

Conclusions.— A general summary of each of the separate series of tests is as follows:

(*a*) Concrete cannot be considered an insulator of the steel against electrolytic corrosion. If the mass of concrete were dry it might protect the steel from electrolytic action; but concrete in the soil will probably retain more moisture than the soil surrounding it and conduct a current whenever the ground currents are active.

(*b*) Iron under stress does not seem to go into solution as rapidly as unstressed iron; but there seems to be no absolutely neutral point, and with the decrease in area due to corrosion, the stress increases, the rate of corrosion seems to increase, and thus the danger of failure is increased.

(*c*) The paints used to-day for structural work imbedded in concrete do not fulfil the conditions of proper protection from electrolytic action, and it is doubtful whether they are of use for protection in any sense after a lapse of some months. These tests are not conclusive evidence of that fact, but give a method for determining the loss of the film when imbedded.

A compilation of results to one case embracing all the points included in the tests would show:

(*a*) That imbedding the iron will decrease the rate of corrosion.

(*b*) That the presence of the iron oxide will decrease and localize the corrosion.

(*c*) That the stress to which the member is submitted will decrease the rate of corrosion within certain limits.

(*d*) That most of the paint-films, if intact, may have sufficient dielectric strength to resist any but the highest voltage stray currents. The test herein reported was a twenty-four hour test, and even the film which showed the highest average loss of 65% had a minimum puncturing voltage-point after immersion of 820 volts; but this is not a measure of the value of a paint-film after years of service, and some tests to determine this value are needed.

A full report of the method of testing the materials used is given in the treatise submitted to the Massachusetts Institute of Technology.

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