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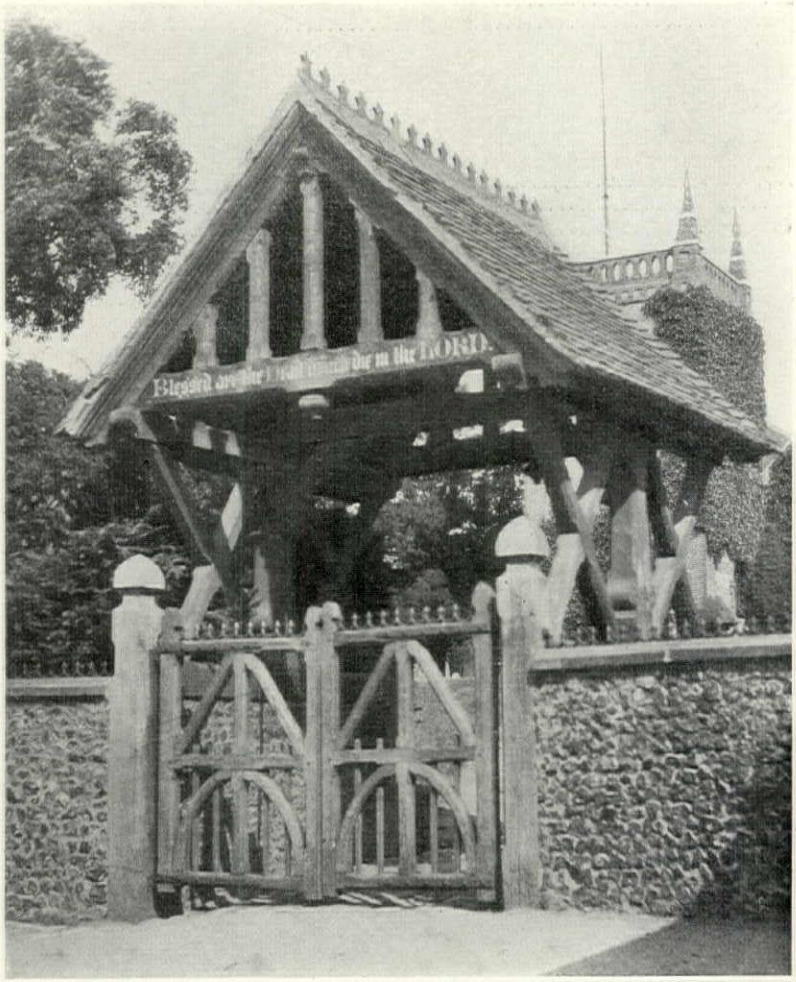

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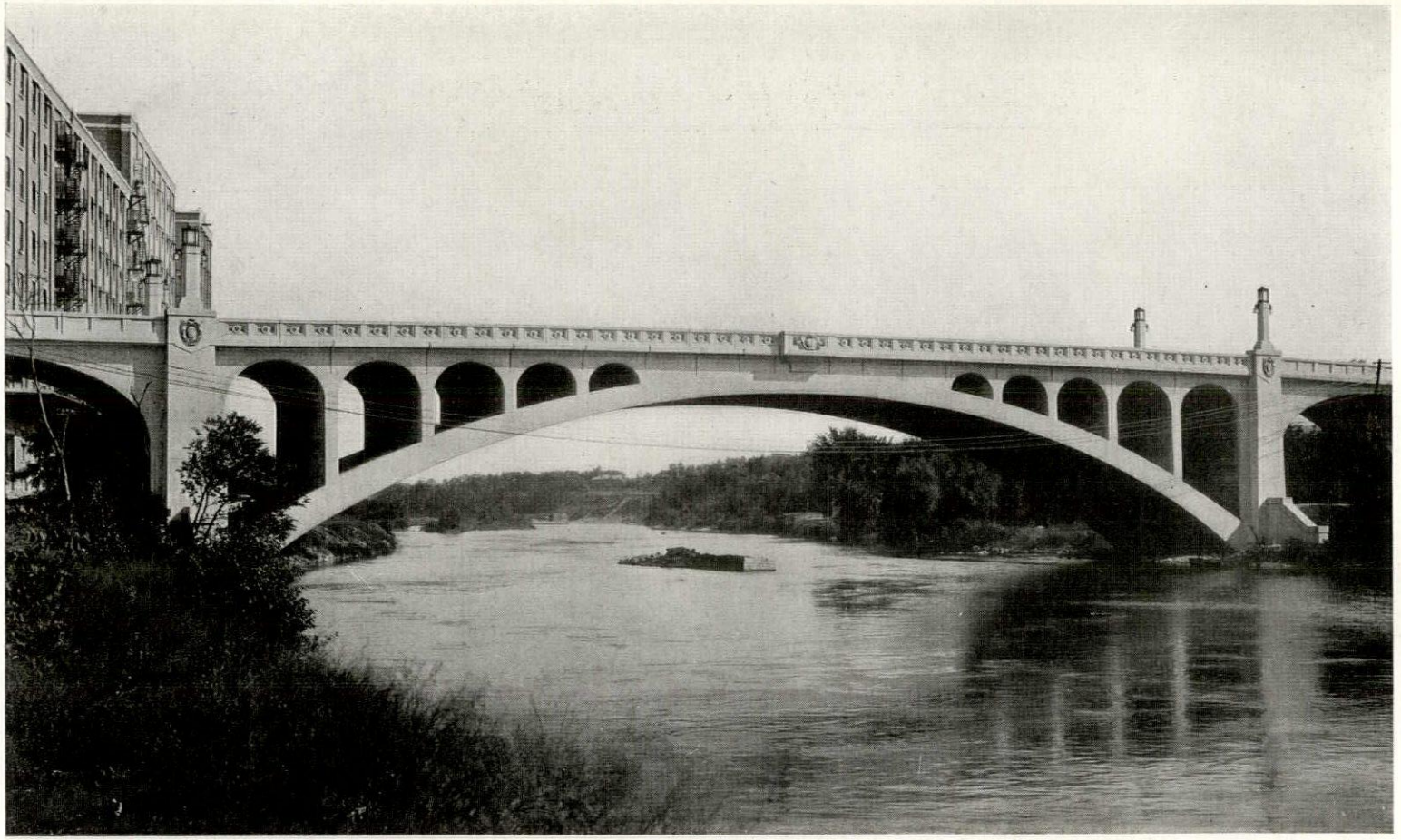

FIG. 1.

RIVER SPAN OF THE HUNTER STREET BRIDGE, PETERBOROUGH, ONTARIO, CANADA.
FRANK BARBER, ENGINEER. CLAUDE BRAGDON, ARCHITECT.

THE ARCHITECTVRAL RECORD

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JANVARY, 1923

ABSTRACT THOVGHTS ON CONCRETE BRIDGES

BY CLAVDE BRAGDON, F.A.I.A.

IN any collaboration between an architect and an engineer, however well agreed upon their division of labor may be, the *function* of each usually remains undefined—taken for granted, but not clearly understood.

Now if architect and engineer are not in ideal metaphysical agreement, this fact is bound to publish itself in the work itself, which will be the projection upon the plane of materiality, not of a unified, but of a divided consciousness.

An eminent Canadian engineer, Mr. Frank Barber, and the writer, in the course of their collaboration on some reënforced concrete bridges, often discussed their relation to one another and to the work in hand, seeking to discover and define it. This led to an inquiry into the nature of concrete construction: wherein it was different from steel and stone—its uniqueness, in point of fact—and to a search for appropriate forms through which this uniqueness might be expressed.

At the request of the editor of THE ARCHITECTURAL RECORD some of their findings with regard to these and other matters are here set forth.

It was agreed between the two at the outset that the function of the engineer was to discover and develop, under the imposed conditions, and within the given limitations, that particular form of bridge which would meet most fully the requirements from the standpoint of economy, efficiency and endurance; but the function of the architect, in his associated capacity, aside from the recognition that he was a purveyor of beauty, was not so easy to describe or define. The two got nowhere until a single word, struck out in the heat of discussion, illuminated the subject with new light. That word was "dramatize,"

and for them both, from that moment, the architect became the dramatic artist, his function being to express, as clearly and eloquently as possible, everything that needed to be and could be expressed —tell what the bridge was "for"; tell what was happening in its structure; show forth the beautiful necessity of its being just as it was and not otherwise.

In compassing this there must be nothing done by the architect detrimental to strength, efficiency, utility; that is, he must never sacrifice practical and structural for merely aesthetic values—analogous to putting a woman in high-heeled shoes which are supposed to add piquancy to her appearance, but which interfere with her gait. The two adopted Emerson's dictum: "Any increase in fitness is also an increase in beauty," as the slogan of their every campaign; but they sought also for that higher power of beauty which comes from color, proportion, rhythm, and for the enhancement of interest and the enchantment of vision by any means the architect could command.

How can beauty be achieved, they asked themselves, in bridges of this type? Concrete as it comes from the forms is an uninteresting, if not a positively ugly material, both in color and texture. It lends itself with an ill grace to the canonical architectural motifs: associated as these are with stone construction, when translated into concrete they appear, and appear truly, an imitation and a sham.

But these difficulties, which daunt and discourage the architect, should rather inspire him—inspire him, that is, to discover for this material pleasing surface textures and appropriate and expressive forms peculiar to it alone. His business is to accept this material, imposed by economic necessity, and deal with it as best he may; failing to at least attempt this, he acknowledges his impotence.

Concrete is easily and cheaply made; it permits the use of unskilled labor; it is of amazing strength, suffers little deterioration, and the cost of upkeep of a concrete bridge as compared with steel is small. So, until something better and cheaper takes its place, bridges will continue to be built of reënforced concrete, and they will continue to be unbeautiful —save in the sense that so necessitous a thing has a beauty all its own—until some one who is able to do so charms away the "curse." That this is the architect's particular job is clear.

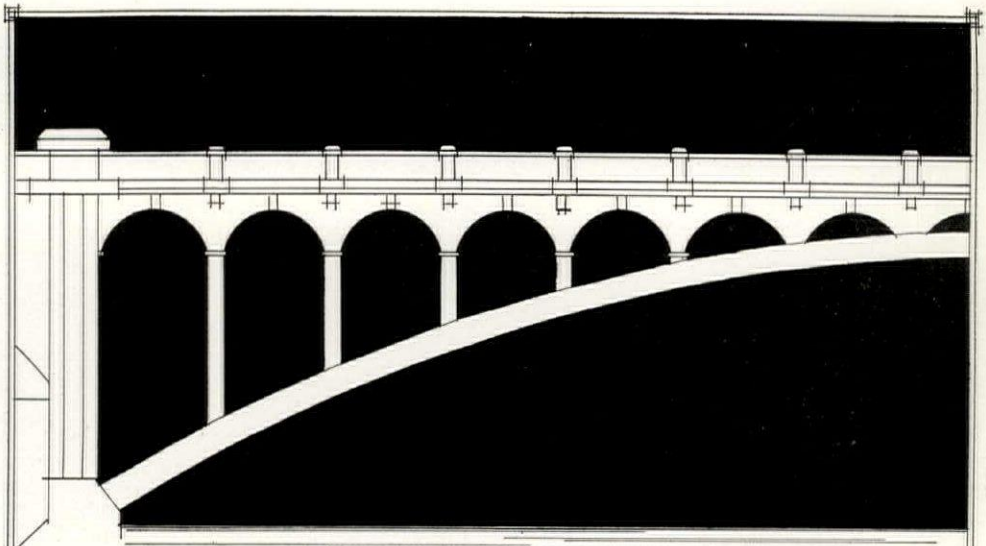
So far as the texture and color of concrete are concerned, these are problems which have been successfully dealt with already. By the use of colored sand, pebbles, granite chips, by brushing, crandalling and chiseling, the slaty, cheese-like surface may be done away with, the only deterrent being the increased expense. But the more basic and important problem of finding fresh forms and appropriate motifs for this new method of construction has never been seriously and intelligently attacked.

This illustrates anew the fact that the human mind works in a worn groove if it can. With the advent of the first steam locomotive the best that could be thought of in the way of a carrier was to put flanges on the wheels of stage coaches to keep them on the track, and let it go at that. Similarly, today, notwithstanding a fundamental and far-reaching change in the material and method of construction of masonry bridges, we continue to reproduce, with slight modifications, the same forms which our predecessors produced in stone.

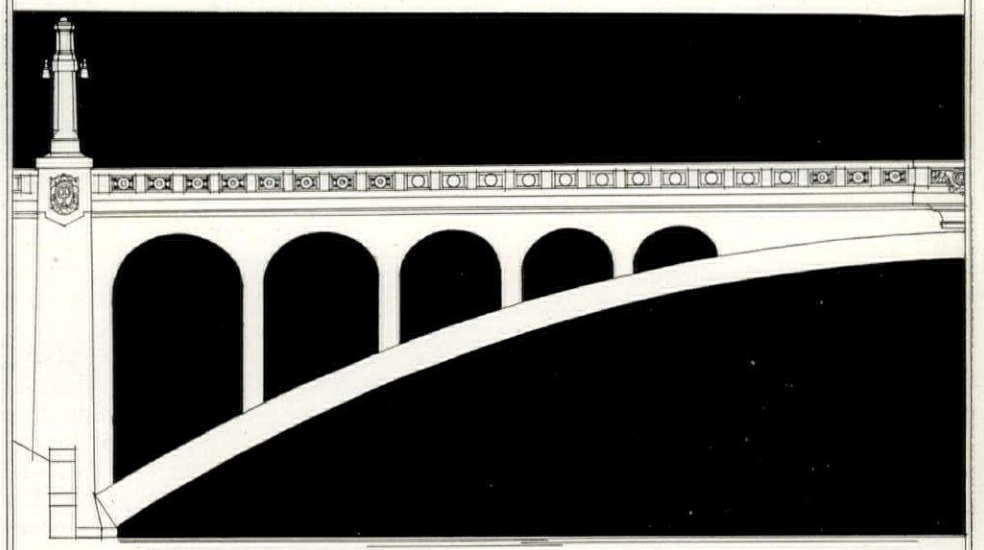
What is the really distinguishing difference between these two types of masonry structure—stone, and concrete reënforced with steel? It is that the first is *built*, stone by stone, and the second is *poured*, layer by layer. This is a most important difference, and might be expected to publish itself to the eye at a glance.

It was along such lines as these that the two collaborators reasoned, and they resolved to submit their theory to every possible practical test.

The first bridge built by them—and the only one completed up to the present time —spans the Otonabee at Peterborough, Ontario, Canada, and is known locally as the Hunter Street Bridge (Fig. 1). It is a



THE STRUCTURAL ELEMENTS OF THE PETERBORO BRIDGE AS DEFINED BY THE ENGINEER IN HIS PRELIMINARY DRAWING FOR THE ARCHITECT.

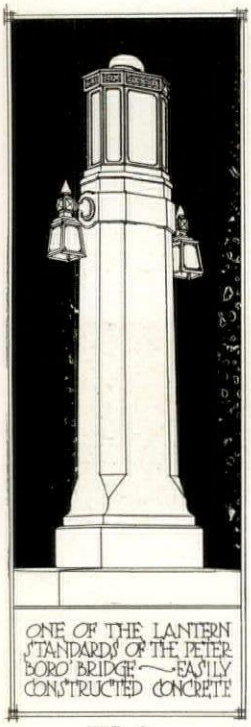


THESE ELEMENTS DEALT WITH AND ARRANGED BY THE ARCHITECT. AS SHOWN IN THE COMPLETED STRUCTURE — THE ROADWAY HAS BEEN CROWNED TOWARD THE CENTER OF ITS LENGTH TO "LIFT" THE LONG HORIZONTAL, A LOOKOUT BALCONY HAS BEEN INTRODUCED TO "BREAK" IT. THE ARCHES HAVE BEEN MADE ELLIPTICAL AND RHYTHMICALLY SPACED.

FIG. 2.

THE PROPOSED TODMORDEN-LEASIDE BRIDGE OVER THE DON VALLEY, TORONTO, ONTARIO, CANADA.
FRANK BARBER, ENGINEER.
CLAUDE BRAGDON, ARCHITECT.

sufficiently conventional looking structure, in general design following a familiar pattern, but exhibiting also some interesting departures from precedent. A comparison of the form it first assumed at the hands of the engineer, and the modifications that this form underwent when dealt with by the architect, should make evident, in a definite and detailed way, the results attained by such a collaboration as has been described — one in which the architect had a hand in the proceedings from the start. It usually happens in work of this kind that he is called in only at the last moment to spread a frosting of architectural embellishment over the already well-baked cake of the engineer.



ONE OF THE LANTERN STANDARDS OF THE PETERBORO' BRIDGE — EASILY CONSTRUCTED CONCRETE

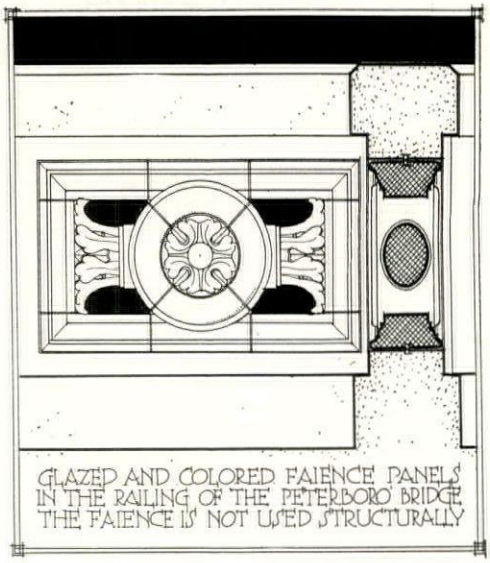
FIG. 3.

In the case of the Peterborough bridge the engineer first determined its main lines in accordance with practical and structural necessity — the width of the roadway, the length and height of the main span, the character of the approaches, etc. These findings he embodied in diagrammatic drawings, which were then submitted to the architect, whose business it was to deal with the design in such a way that it should speak to the eye with a convincing eloquence, satisfying alike to the rational mind and to the aesthetic sense.

The upper drawing in Figure 2 shows the bridge as designed by the engineer, intent solely on the practical aspect of the problem. The lower drawing shows the modifications introduced by the architect. These are not many, nor marked, but they are important—"the little more and how much it is," in the words of Robert Browning.

The arches of the arcade supporting the roadway, instead of being all the same width, are proportionally diminished toward the center, and the semi-circular curves have been translated into ellipses. The eye is more completely satisfied because the method of nature has been followed: "rhythmic diminution" we everywhere discover; circles are rarely met with, while ellipsoids abound.

The next important modification was introduced to overcome an optical illusion. The Greeks, as is well known, "crowned" the long horizontal lines of their temples, which lines, if mathematically straight, would appear to sag. In obedience to the same beautiful necessity the long parallel lines of the roadway and parapet have been sprung upward toward the center of the span, and to still further diminish the severity and monotony of the long line of the top of the bridge against the sky, a little projecting balcony has been introduced, which serves a useful, as well as an aesthetic purpose, in that one may there pause to view the panorama of the river without impeding, or being impeded by less idly-disposed pedestrians.



GLAZED AND COLORED FAIENCE PANELS IN THE RAILING OF THE PETERBORO BRIDGE. THE FAIENCE IS NOT USED STRUCTURALLY

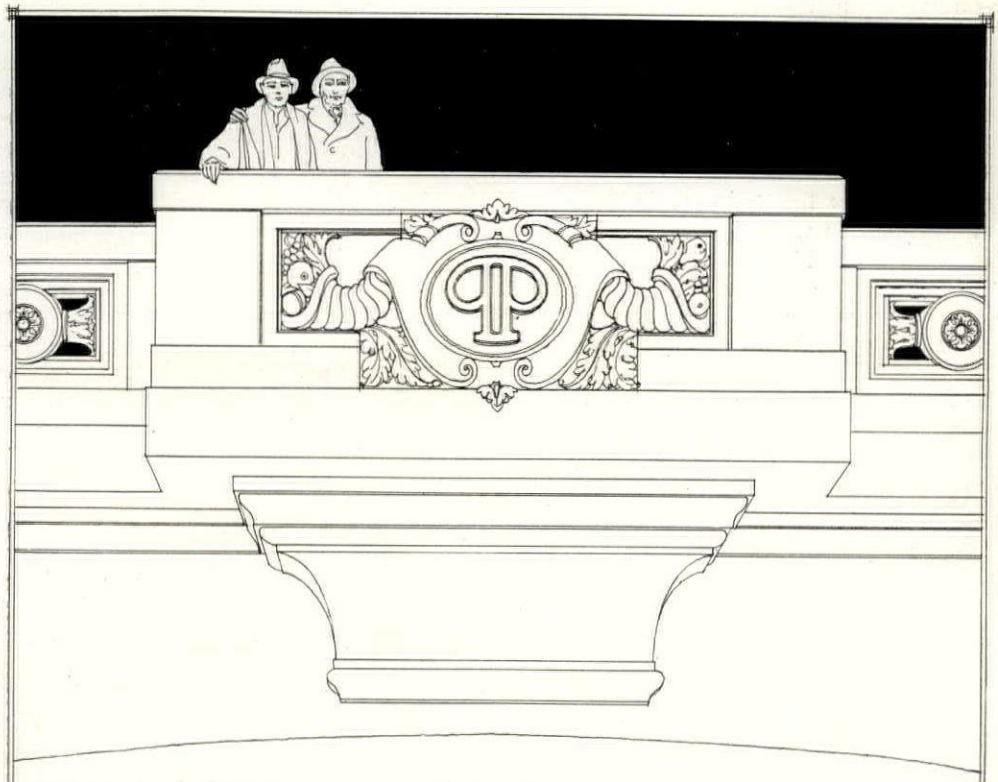
FIG. 4.

The tremendous abutments of the main arch ring, buried, so to speak, out of sight, have been made to declare themselves to the eye by the carrying upward tapered antæ which terminate, at the balustrade level, in four electric light standards, defining to the eye at a glance the limits of the principal span.

These standards (Figure 3) are of a form unassociated with any of the historic architectural styles, being directly derived from, and determined by, the necessities of the case—that of providing an elevated lantern-support, not cut and built by a mason, but moulded in a wooden form made by a carpenter. The shape of this support—a slightly tapered parallelepipedon with broadly chamfered edges—declares its genesis: it suggests the plane and hammer more than the trowel and plumb-line. It is "honest," in other words, and at the same time not unbeautiful.

But its beauty, and the beauty of the rest of the bridge thus far considered, is of a more or less negative kind. The need of a somewhat more positive appeal to the aesthetic sense was deeply felt—shapes more subtle, colors more luminous than cast cement could yield. Accordingly, the architect conceived the idea of introducing colored faïence, used purely for ornament, protected as much as possible, and subjected to no structural strain, combining the two materials in such a way that they could be set independently of one another.

Figure 4 shows a section of the parapet and its inset of colored faïence in the shape of a perforated panel. Figure 5



LOOKOUT IN CENTRE OF RIVER SPAN OF PETERBORO' BRIDGE, SHOWING HOW GLAZED FAIENCE HAS BEEN INTRODUCED TO ENRICH AND ENLIVEN THE CONCRETE SURFACES, AND ADD A WELCOME NOTE OF COLOR

FIG. 5.

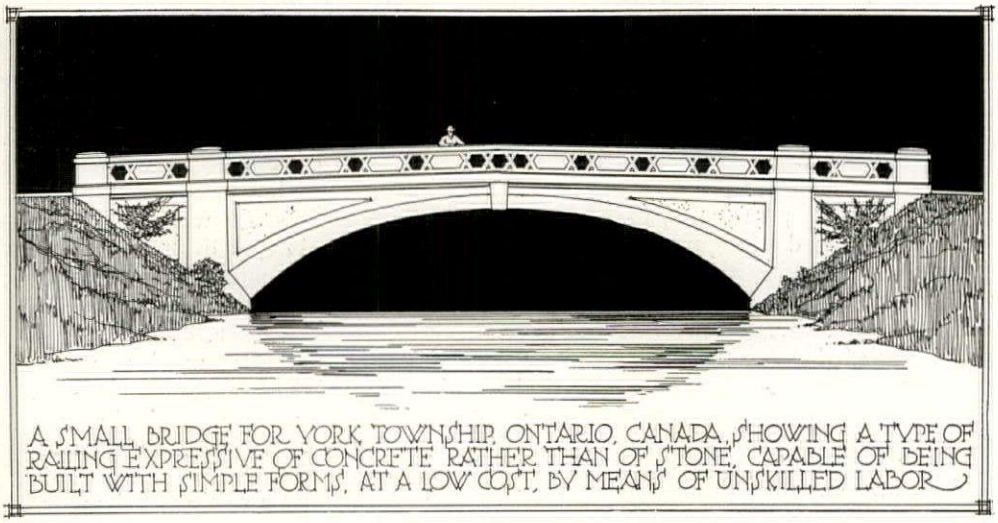


FIG. 6.

shows the outside face of the balcony before referred to: a cartouche bearing a double "P" flanked by cornucopias of fruits and grains. The colors are cream white, deep blue, an earthy yellow and a mineral green. These, in their field of warm-toned cement, mingle pleasingly, and yield that final note of individuality and distinction whereby a work of utility is "chemicalized" into a work of art.

Figure 6 represents a little bridge near Toronto for which the architect was appealed to mainly to provide an inexpensive but effective balustrade which could be fabricated on the spot—something less pretentious than the classic die and baluster, but more so than its deadly alternative of plain paneled cement. The achieved result was arrived at by a single-minded search for a form that could be made with boards by anyone capable of handling a saw and hammer. This paneled parapet, punctuated by its hexagonal perforations, yields a pleasing pattern, and looks as though it were *cast*. Figure 7 shows the wooden form itself, and indicates how directly the design was derived from the material and method of construction.

The next large engineering project—and as yet only a project—with which the two collaborators occupied themselves, was the Todmorden-Leaside bridge over the valley of the Don, in the environs of Toronto (Figure 9). Encouraged by the success of their first venture they carried their radicalism further. The sequence followed was the same: the upper drawing of Figure 8 is a section of that furnished the architect by the engineer, after he had surveyed the site, tested the foundations, and made himself familiar with conditions generally. It is easy to identify the design as an attenuated variant on the Roman aqueduct model—one so fundamentally sound that it has persisted to the present day. Why, then, the architect asked himself, should it appear

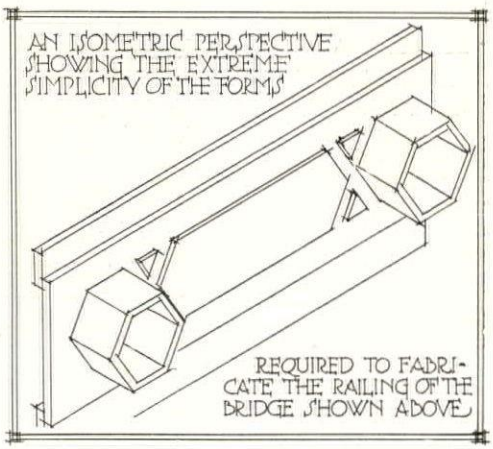
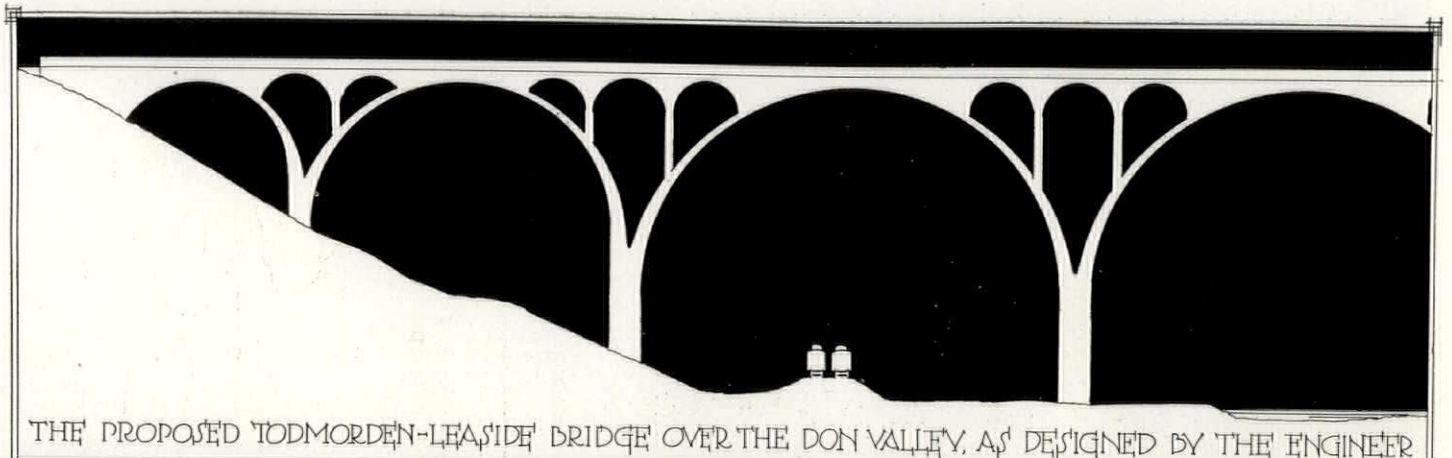
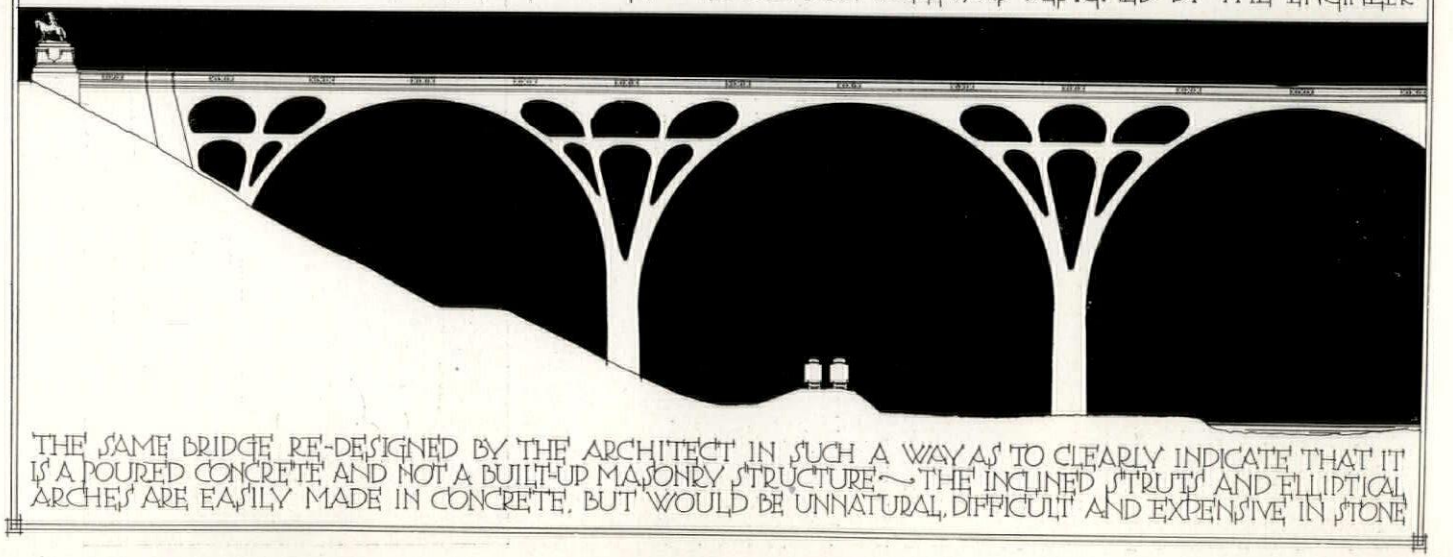


FIG. 7.



THE PROPOSED 'TODMORDEN-LEASIDE' BRIDGE OVER THE DON VALLEY, AS DESIGNED BY THE ENGINEER



THE SAME BRIDGE RE-DESIGNED BY THE ARCHITECT IN SUCH A WAY AS TO CLEARLY INDICATE THAT IT IS A POURED CONCRETE AND NOT A BUILT-UP MASONRY STRUCTURE — THE INCLINED STRUTS AND ELLIPTICAL ARCHES ARE EASILY MADE IN CONCRETE, BUT WOULD BE UNNATURAL, DIFFICULT AND EXPENSIVE IN STONE

FIG. 8.

to him in this connection, not only aesthetically false, but structurally feeble?

He concluded that it was because, without the engineer himself realizing it, the adherence to a form derived from stone masonry construction had interfered with the direct and logical solution of the problem in the given material: reënforced concrete. Even to the most ignorant layman it should be plain that the weight of the roadway must be transferred to the ground through the piers from which spring the great arches, and it should be equally plain that this transfer ought to be effected as *directly* as possible. But in the engineer's diagram the line which defines the discharge of this weight takes a crooked course—vertically to the arch ring, angularly, following the arch ring, then vertically again to the ground. Now what would be the "harm," the architect asked himself, in straightening this line by substituting inclined struts for the vertical piers? In a stone masonry bridge such a substitution would be unthinkable because a "leaning" pier, built up of separate units horizontally, each overhanging the one below, would be the acme of bad construction, but in a poured monolith, stiffened with steel rods, any departure from the perpendicular presents no difficulties.

Sure of the soundness of his reasoning, he dealt with the engineer's design, with the result shown in the lower part of Figure 8. The engineer fairly gasped when he saw this drawing—it was so contrary to precedent. He ended by liking it. "Yes, it's better, stronger, handsomer," and added a little ruefully, "but why has it never been done before?"

Here was another illustration of the virtue which dwells in escaping from the dead hand of the past: "Like you I will not build," exclaimed Michelangelo, turning his back on Brunelleschi's dome as he rode toward Rome to build St. Peter's at the command of the Pope. We of today must take, with regard to all outworn architectural styles, the selfsame oath. From known new structural beginnings let us proceed to unknown new aesthetic ends.

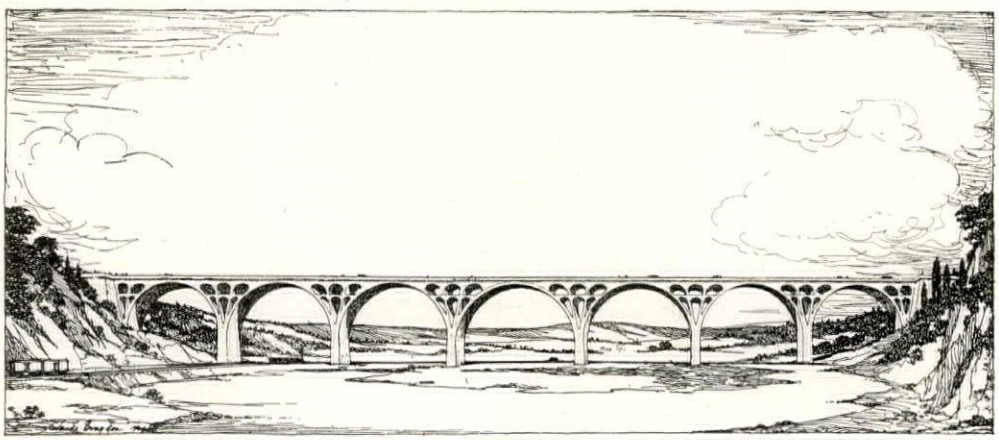
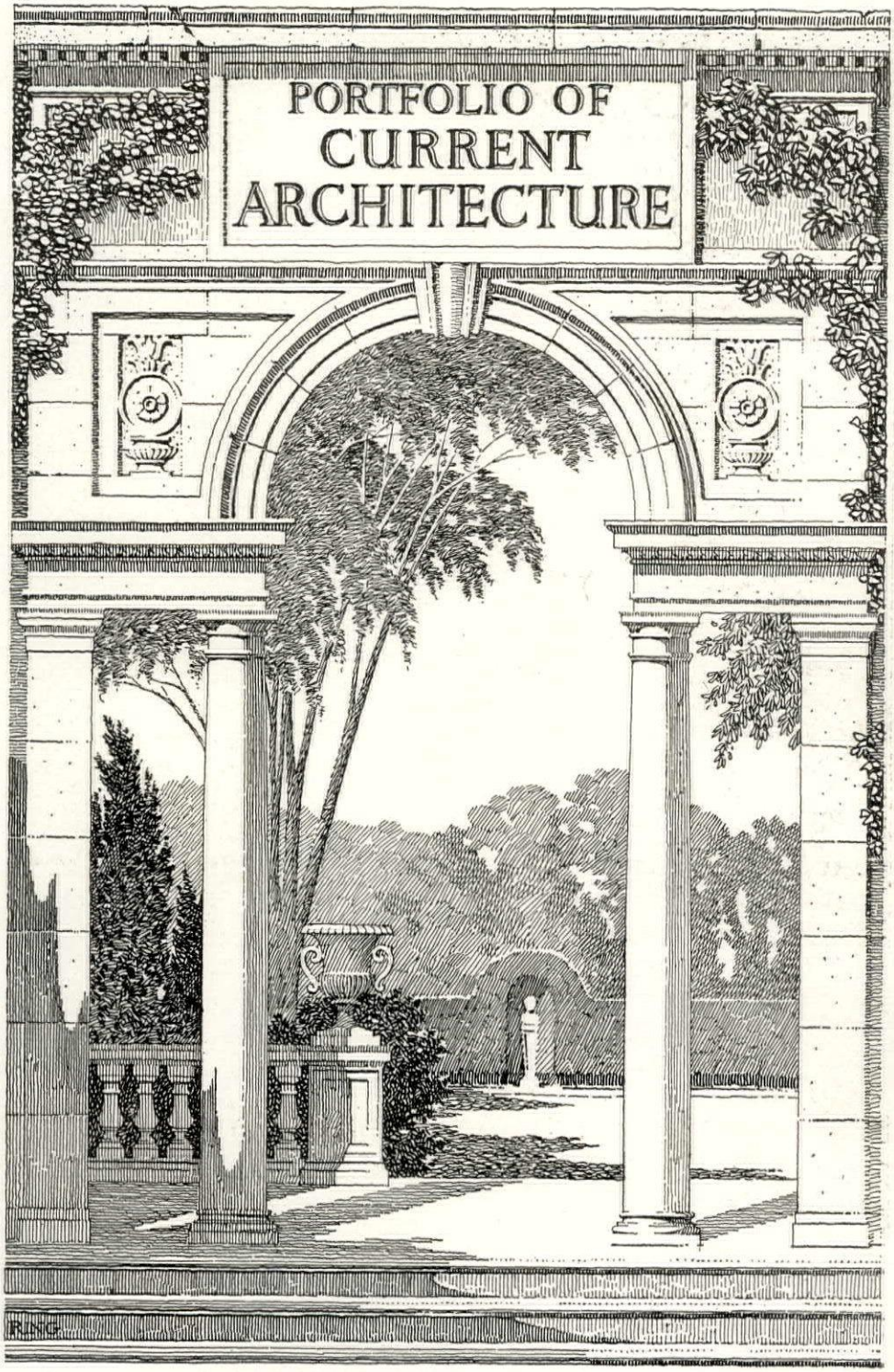
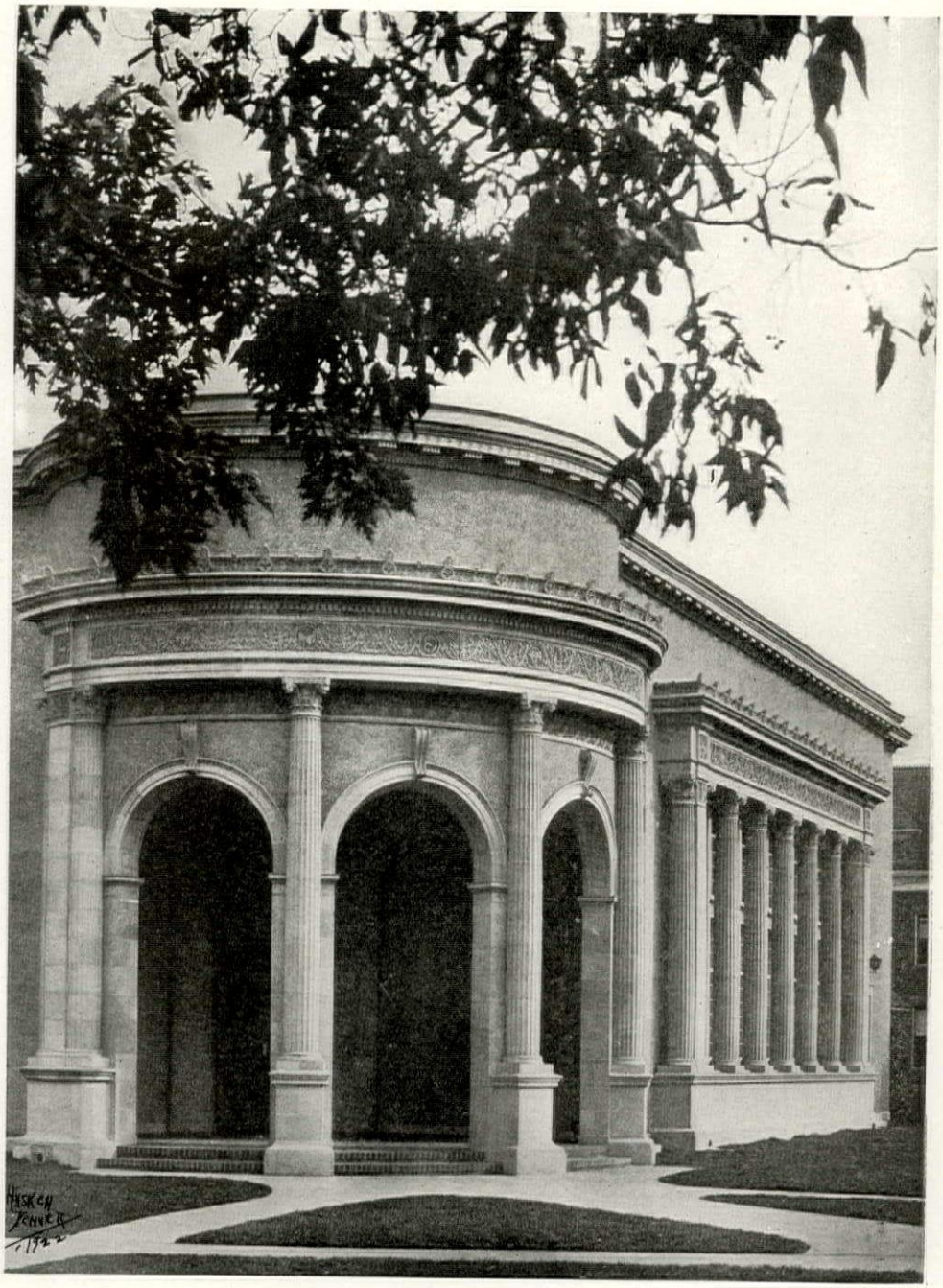


FIG. 9.


PORTFOLIO OF
CURRENT
ARCHITECTURE

WAR MEMORIAL, NEW ROCHELLE, NEW YORK.
LOUIS R. METCALFE, ARCHITECT.
EDMUND T. QUINN, SCULPTOR.



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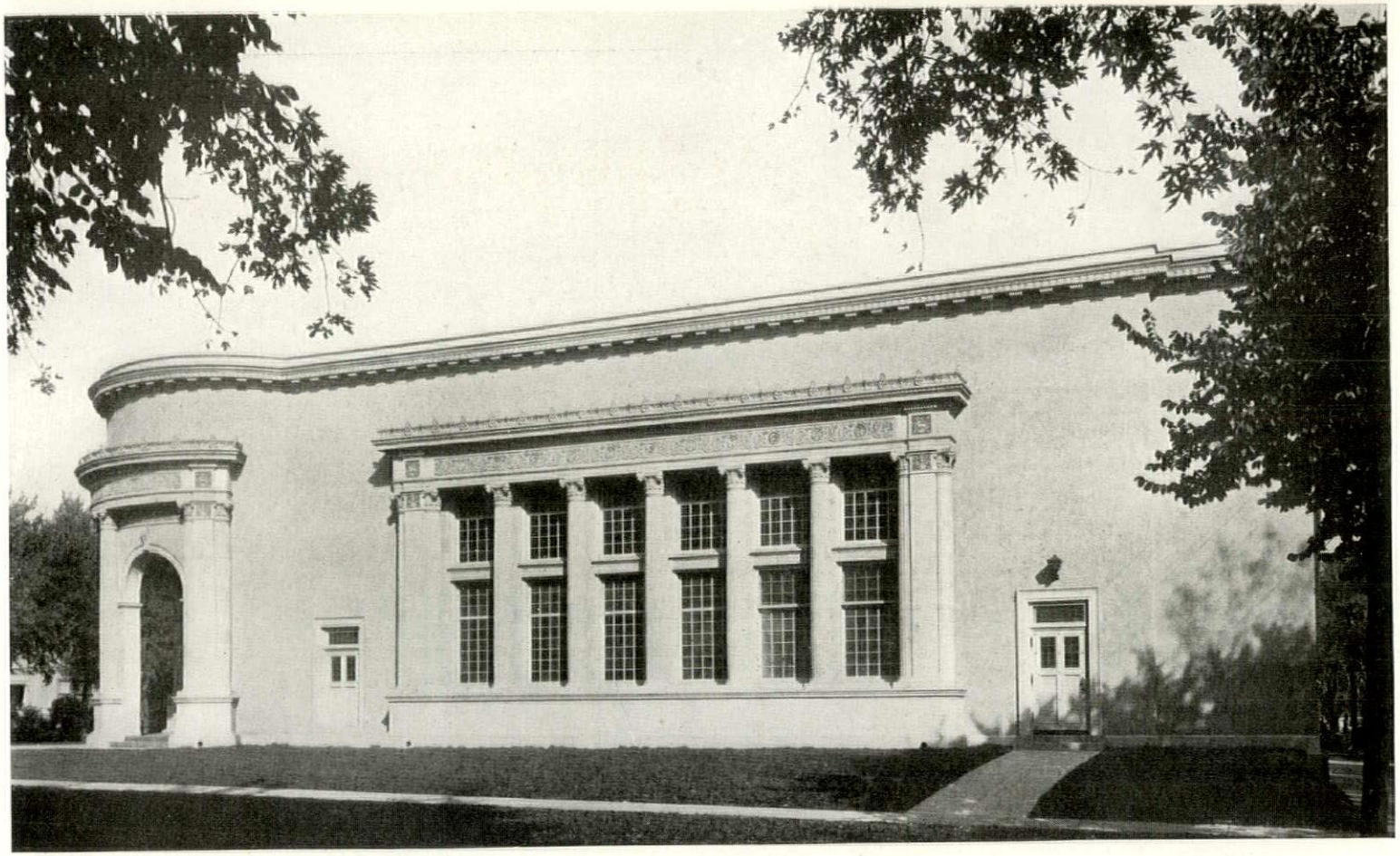
J. B. BENEDICT, ARCHITECT.



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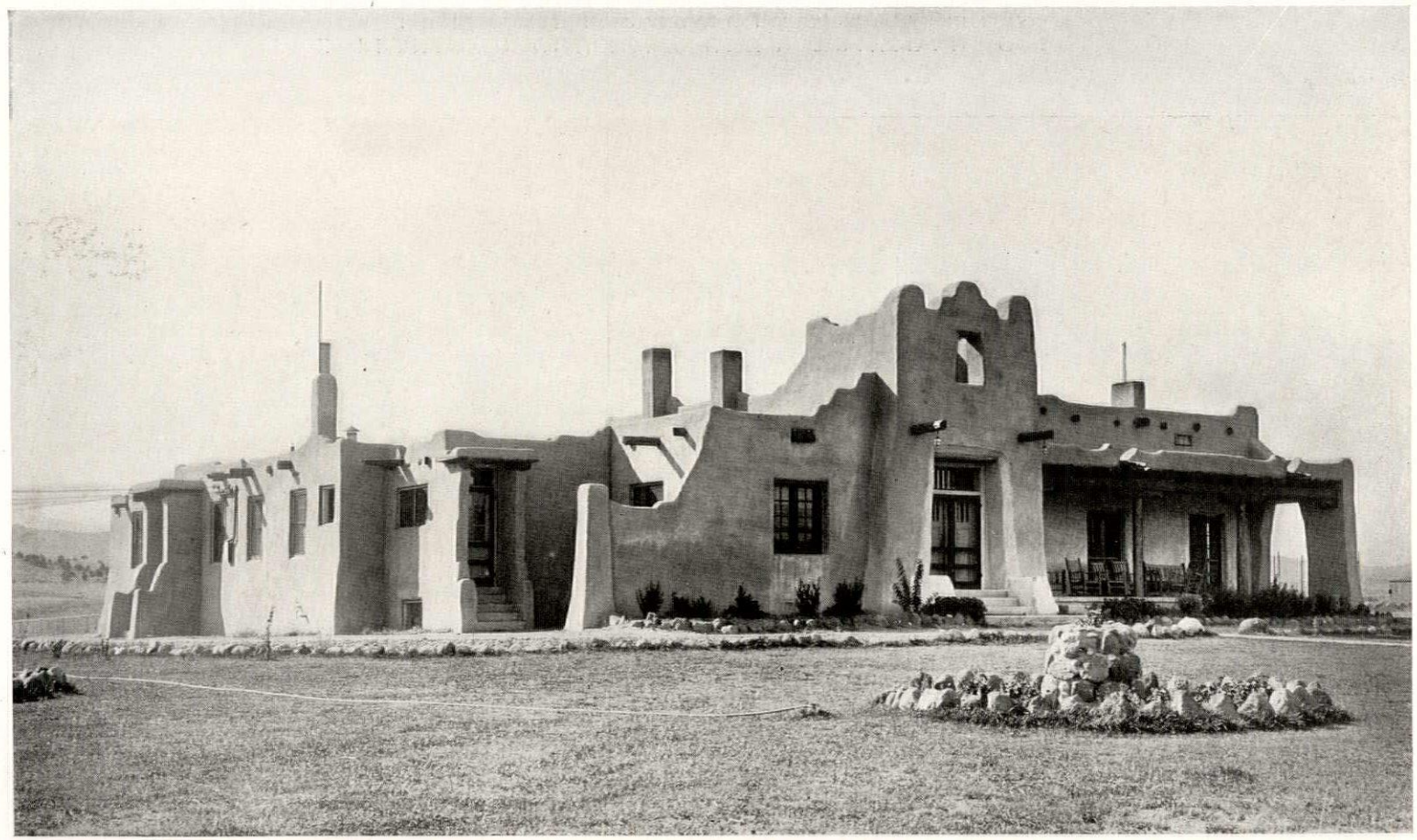
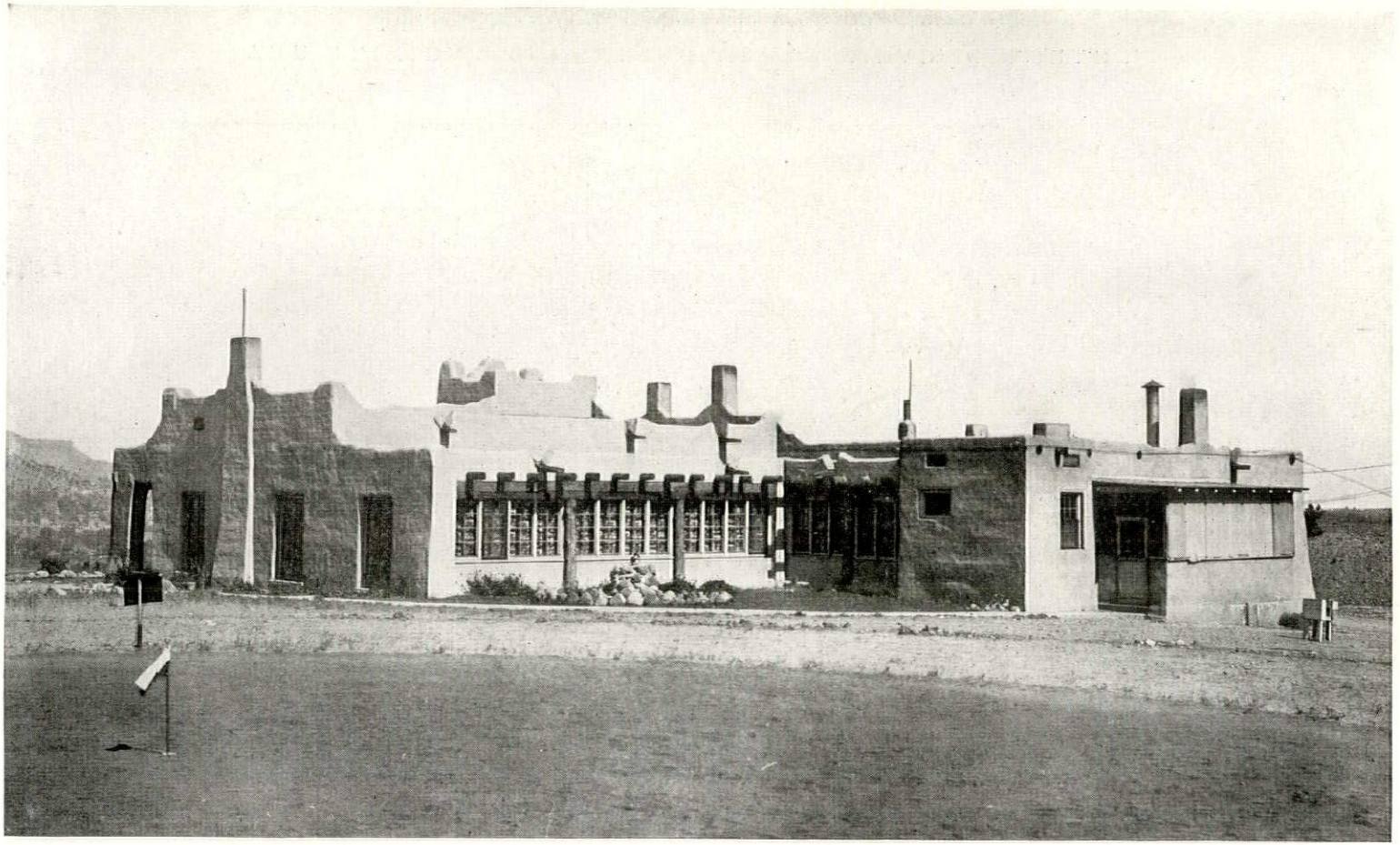


THE TRINIDAD COUNTRY CLUB, TRINIDAD, COLORADO.

I. H. RAPP, W. M. RAPP AND A. C. HENDRICKSON, ARCHITECTS.



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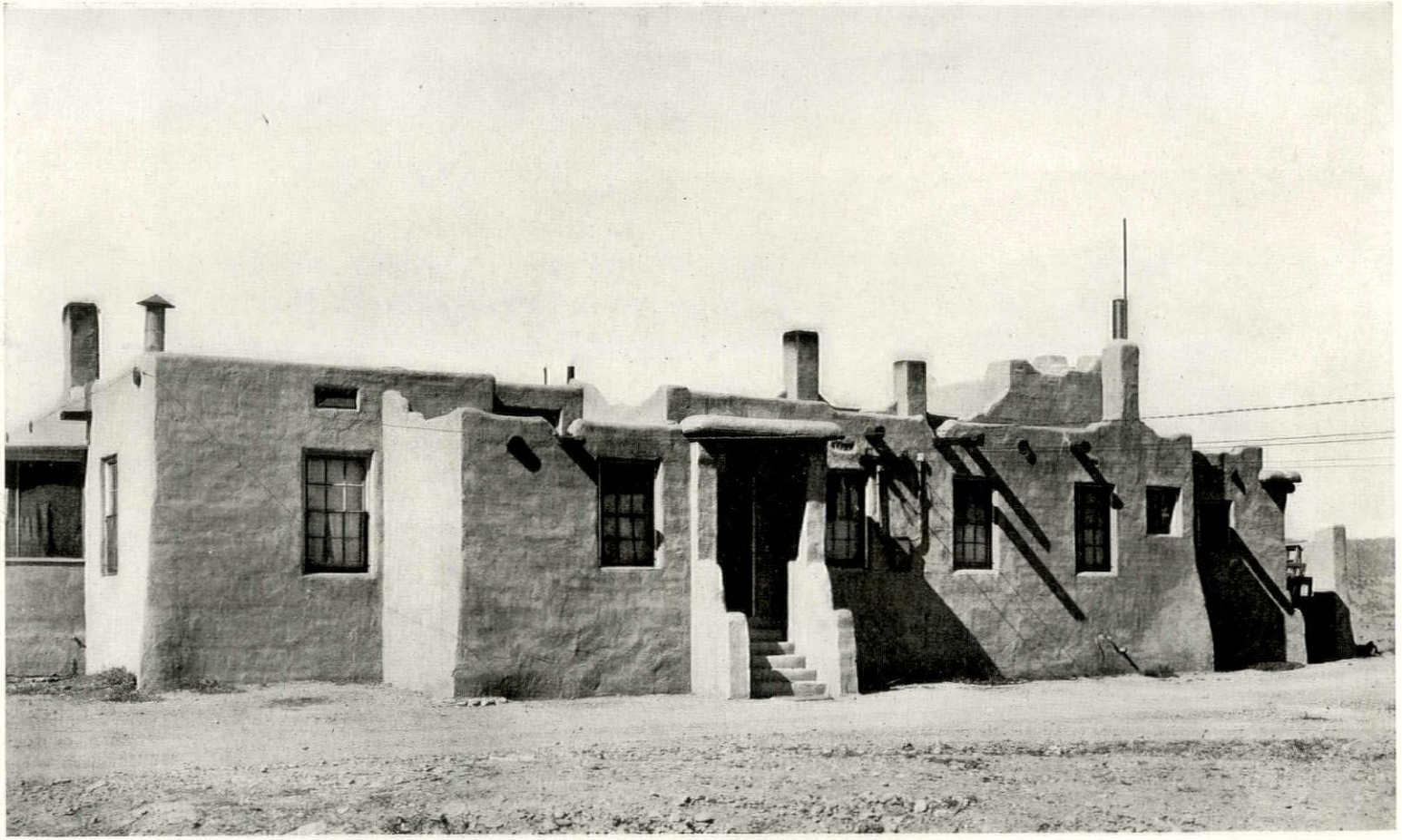

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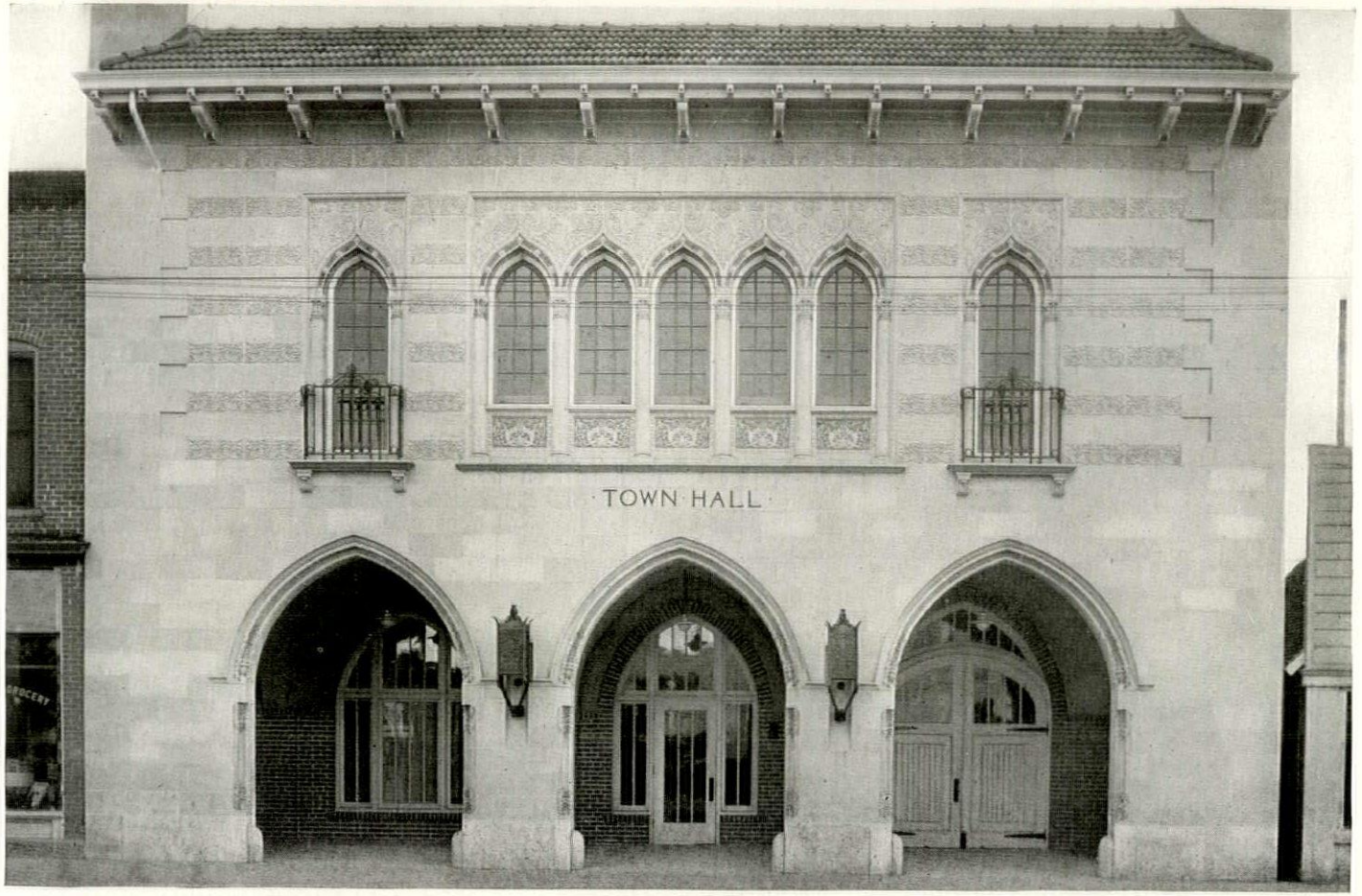
TOWN HALL, LITTLETON, COLORADO.
J. B. BENEDICT, ARCHITECT.



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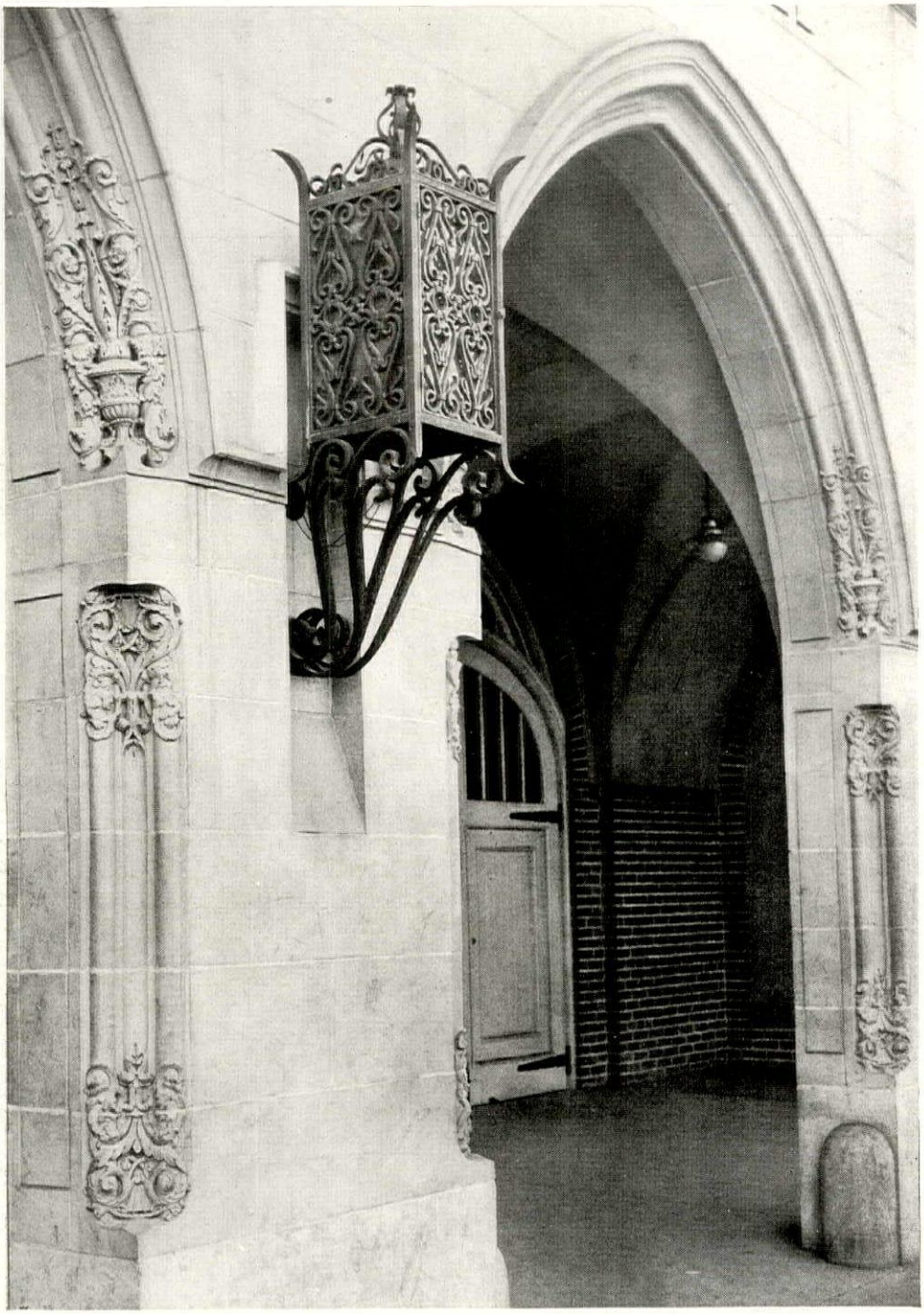

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THE STATE ARCHITECT *and* HIS WORKS

1—*The State Armories*

By Prof. A. D. F. Hamlin

THE office of State Architect for the State of New York was first created by the Legislature in 1909 as a part of the "Act Relating to Public Buildings" of that year. This act fixed no duration for the tenure of the office, and the official designated was commissioned "to hold office during the pleasure of the Governor." The first appointee was Mr. Franklin B. Ware, of New York City. He held the office for three years, discharging its duties with integrity amid increasing difficulties, due to the pressure and interference of the politicians and the loose way in which the act was drawn. Upon his retirement, in 1912, Mr. H. W. Hoefer was appointed by Governor Sulzer to succeed him, but the scandals attending his administration resulted in his resignation in February, 1913, after which the office was left vacant for three months. In May of that year Governor Sulzer appointed Mr. Lewis F. Pilcher, of the firm of Pilcher and Tachau, of New York City, to the vacant office, which he has continued to hold ever since.

When Mr. Pilcher entered upon his duties the State Architect's office was in a condition of complete demoralization. The scandals which had marked Mr. Hoefer's brief term, as well as the political interference which had compelled Mr. Ware's retirement, had meanwhile attracted the attention not only of the architects throughout the state, but of the general public also. In view of this deplorable situation the New York State Association of the American Institute of Architects appointed a committee, consisting of Messrs. D. E. Waid of New York City, H. Osgood of Buffalo, and A. L. Brockway of Syracuse, to conduct an exhaustive investigation of the office, the method of selection of its incumbents and of its draftsmen, and the conduct of its operations. As might have been expected, this excellent committee found no easy task confronting them. Every kind of obstacle was placed in the path of the investigation. The political manipulators and grafters had no intention of losing control of what they regarded as a rich barrel of patronage, influence and boodle. In the long struggle that ensued, first to get at the facts and then to evolve a business-like system out of the chaos, Mr. Brockway proved himself a valiant and fearless leader. He could unfold a most interesting tale of the "inflooncees" at Albany with which he, ably supported by his colleagues on the Committee, had to do battle.

Meanwhile the Governor's new appointee had entered the field as a powerful ally of the Committee. In dealing with the demoralization he found in his office he uncovered many difficulties of detail and many abuses. He was fighting the very evils the Committee was investigating, and here, he declares, Mr. Brockway's courage and persistence were of the greatest value in the struggle to defeat the forces of political corruption. As a result of this co-operation, the Committee reached conclusions which they embodied in a report calling for a series of drastic reforms; and their recommendations, reviewed by a larger committee having among its members representatives of the State Government, of the State Association and of the New York Society of Architects, and endorsed alike by the profession and by public opinion, were embodied in a new act amending the Public Buildings Act of 1909. This new act was passed by the Legislature of 1914 and became a law

(Chapter III, Laws of 1914) by Governor Glynn's signature on April 3d of that year.

This new law has never since been amended, for the very good reason that in Mr. Pilcher's competent hands its operation has given entire satisfaction to the profession and to the public—to everyone, in short, except the grafters, who in the face of this overwhelming public approval have not ventured to lay their devastating hands on it. But even a good law may be wrecked by a weak-kneed and incompetent administrator, and it is to the everlasting credit of the present incumbent, that, being both a valiant fighter and a singularly competent administrator, as well as an excellent architect he has developed all the excellent features of this model law to the fullest extent. Its great strength lies in the fact that in the first place it specifies a definite term of office—three years; in the second place it specifies clearly the wide range of the State Architect's duties; in the third place it subordinates him to no other department or officer in the State except the Governor responsible for his appointment; and in the fourth place it gives him absolute freedom in the appointment of his assistants and subordinates. It places on his shoulders a tremendous responsibility and a huge volume of work, that demand a strong man to carry them. Fortunately Mr. Pilcher is a strong man with broad shoulders.

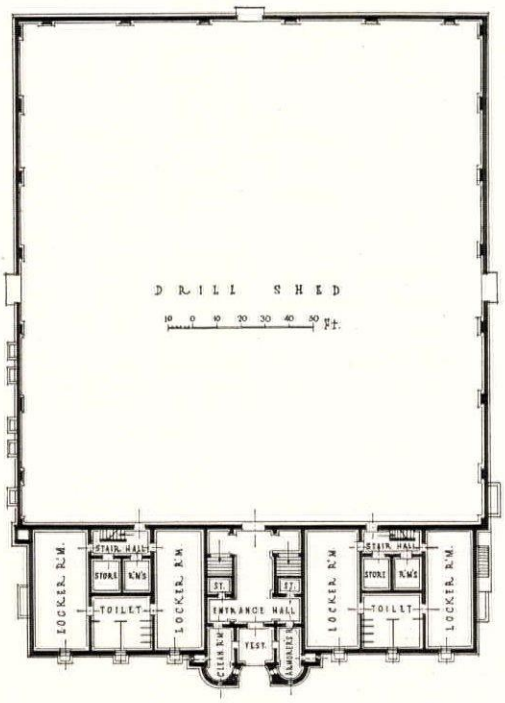
Without going into tedious details, the functions of the Department of Architecture (as the office of the State Architect is technically designated) may be stated briefly to be the preparation of plans, specifications and contracts for all buildings erected, altered or enlarged at State expense, and the superintendence of their erection. An exception is made for buildings assigned by special laws to other architects and for alterations or additions to State Institutions when made by the institutions themselves or executed by inmate labor; but the Department exercises general supervision over such work. The State Architect is given the largest powers and widest discretion in the conduct of the office and the appointment of his assistants and subordinates, and is by the law fully protected against interference by officials of other departments or by municipal or other corporate bodies. In short, the Department is taken out of politics and organized upon a rational business basis.

The work thus assigned to the State Architect's office is of the most varied character. All the State hospitals for the insane, the tubercular, the feeble-minded; all the State prisons, reformatories, workhouses and farms; the vast institution of the State Agricultural College at Ithaca with its related and affiliated laboratories scattered through the State, all the State armories, State Normal schools and special schools, come under the care of the Department of Architecture, either in their original design and construction, or in the matter of alterations, enlargement or repair. The Court of Appeals building and the State office-building at Albany, were designed by the present incumbent, who also brought to successful completion the restoration of the State Capitol after the disastrous fire of 1913.

The State Architect furthermore, by virtue of his general care and supervision of the buildings of the State, is called upon to design power-plants and water-supply systems, laundries, dairies and barns, heating-plants and systems of drainage and sewage-disposal for State farms, asylums, prisons and hospitals. An "Executive State Architect," an "Assistant State Architect" and a Chief Engineer are therefore provided by the law to be on the permanent staff of the Department. They are appointed by the State Architect, who also has authority to appoint in addition such architectural and engineering experts, assistants, stenographers and clerks as may be required from time to time, and to fix their salaries. This is a wise provision designed to meet the varying conditions of over-load and under-load of work in the office without the delays caused by constant applications for authority and emergency appropriations, and above all, without subjecting the office to the constant interference of politicians active in State and county affairs.

The experience acquired in the designing of State institutions under these unusually favorable conditions has also led to frequent calls upon the office from Federal bureaus and from the governments of other States and city and county authorities in New York for advice and counsel in similar problems of their own,

the extraordinary discretionary powers and independent authority vested in the State Architect might lead to disastrous results. Underlying the law of 1914 is the fundamental idea of appointment by the Governor on the sole basis of merit. By granting to the State Architect such a large measure of independent authority

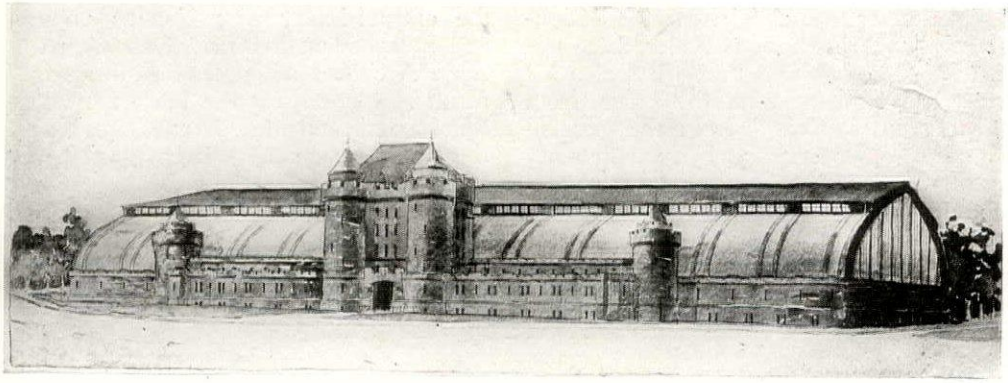


PLAN OF STATE ARMORY, TROY, N. Y.
Lewis F. Pilcher, State Architect.

and—since the law wisely omits any limitations upon the outside activities of the State Architect so long as he satisfactorily discharges the heavy duties of his office—for designs and specifications for prisons, hospitals and armories. In this way the New York Department of Architecture is enabled to serve a much greater public field than that of the State of New York alone, great as that is.

It is quite evident, as has been already remarked, that under incompetent hands

the law imposes on the Governor the final responsibility for the character of the work that comes from the Department of Architecture under his appointee. When the present law went into effect in 1914 Governor Glynn had the wisdom to ignore political considerations and to reappoint Mr. Pilcher, whose excellent work under adverse conditions previous to the passing of the new law had marked him as a man of unusual ability, combining technical competence with a

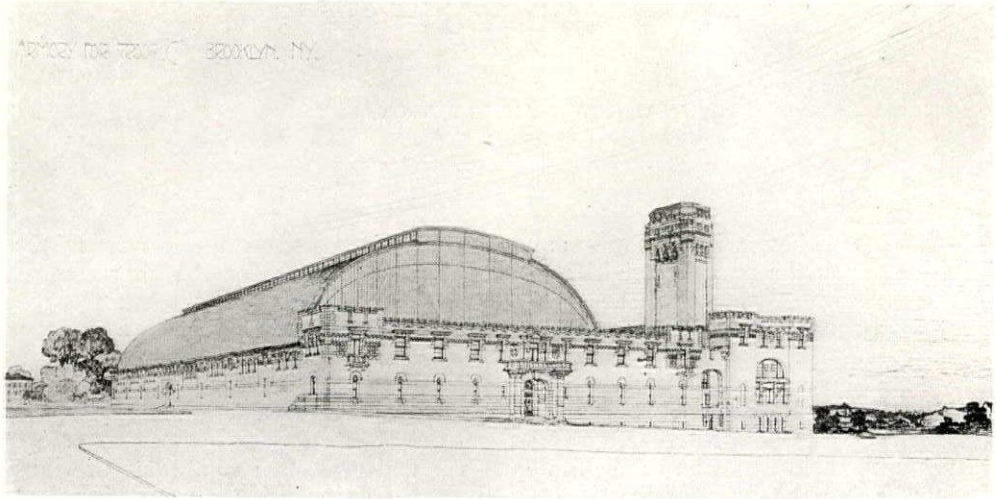


DRAWING OF ARMORY OF EIGHTH COAST ARTILLERY, NEW YORK CITY.
Pilcher & Tachau, Architects.

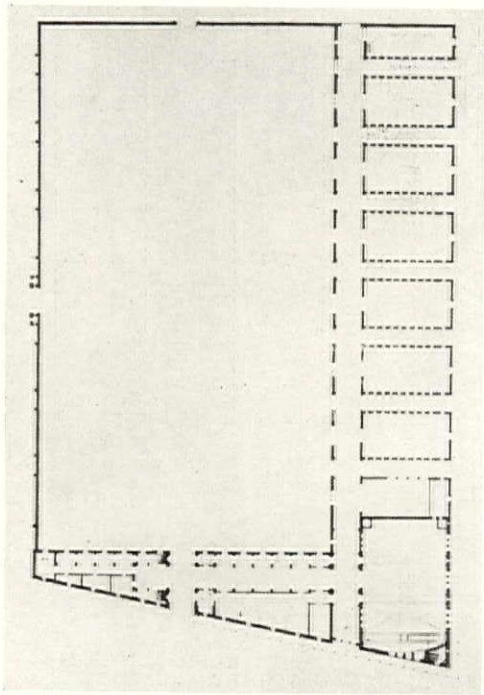
high degree of administrative skill and a remarkable energy and force of character.

II

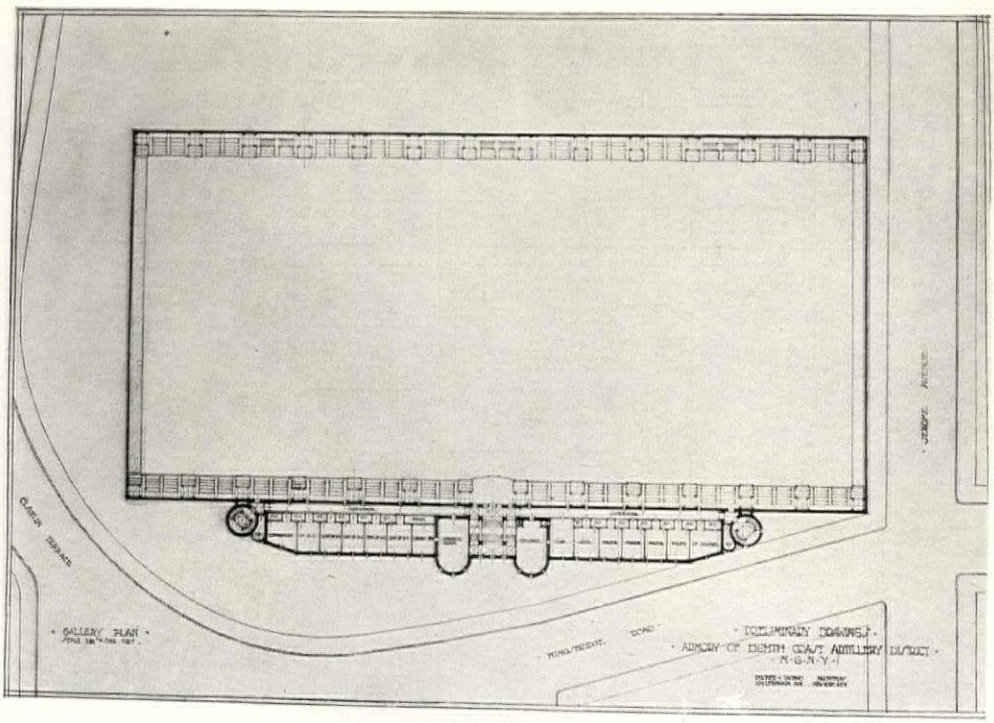
Dr. Pilcher, who after attending Wesleyan University 1889-1890 graduated from the School of Architecture of Columbia in 1895, acquired his practical experience in the profession first in the office of the late Mercein Thomas, Brooklyn, and then in independent practice. In this he early associated with himself his classmate, W. G. Tachau, and they, until 1921, maintained a joint practice in New York entirely distinct from that of the State Architect's office. During the eleven years previous to Dr. Pilcher's appointment to his present official post this practice, beginning with the winning in 1901 of the competition for the Troop C Armory in Brooklyn, expanded to considerable dimensions, giving him a breadth of experience of great value for his later career. Meanwhile he had been called to the professorship of Fine Arts at Vassar College, where his active mind and love of scholarship found a new field in which he attained remarkable success, raising the Department of Fine Arts there to a position of great dignity and importance. In 1910 he received from the University of Colo-



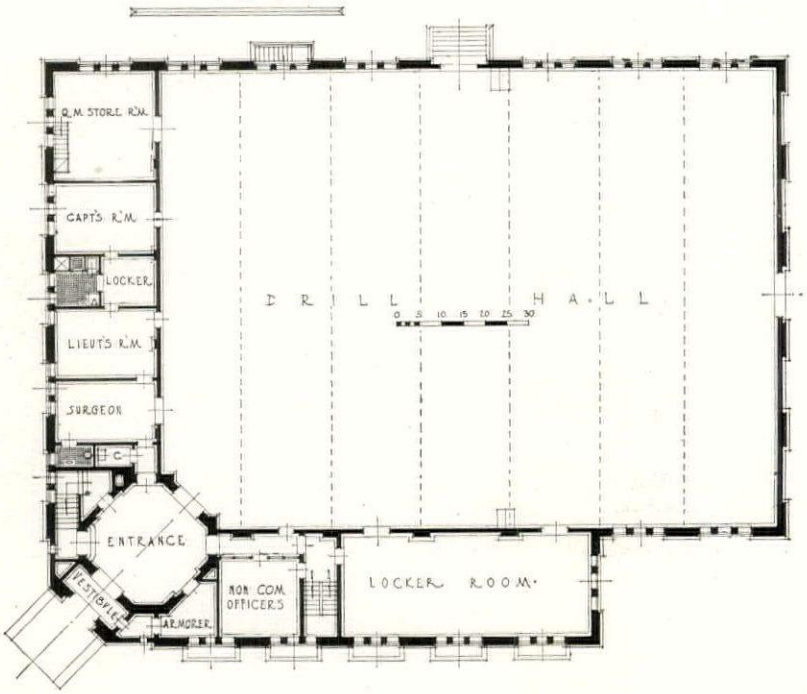
DRAWING OF ARMORY FOR TROOP C, BROOKLYN, N. Y.
Pilcher & Tachau, Architects.



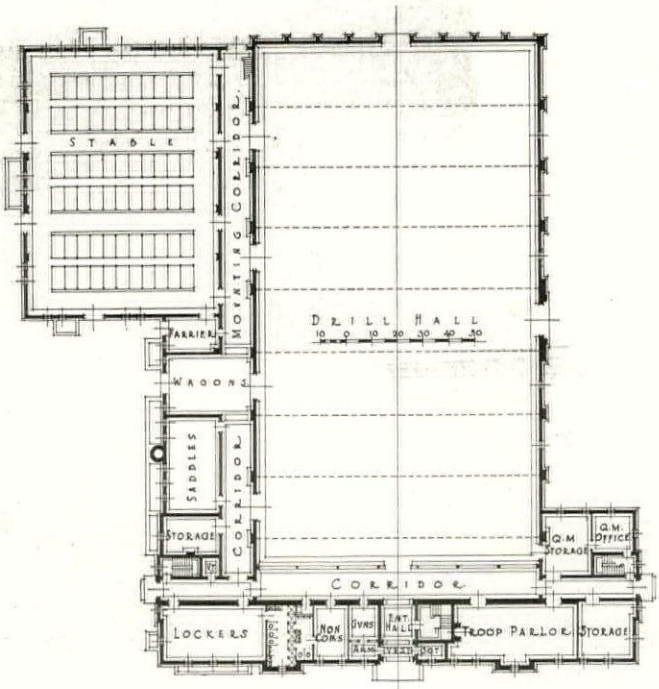
PLAN OF ARMORY—TROOP C, BROOKLYN, N. Y.
Pilcher & Tachau, Architects.



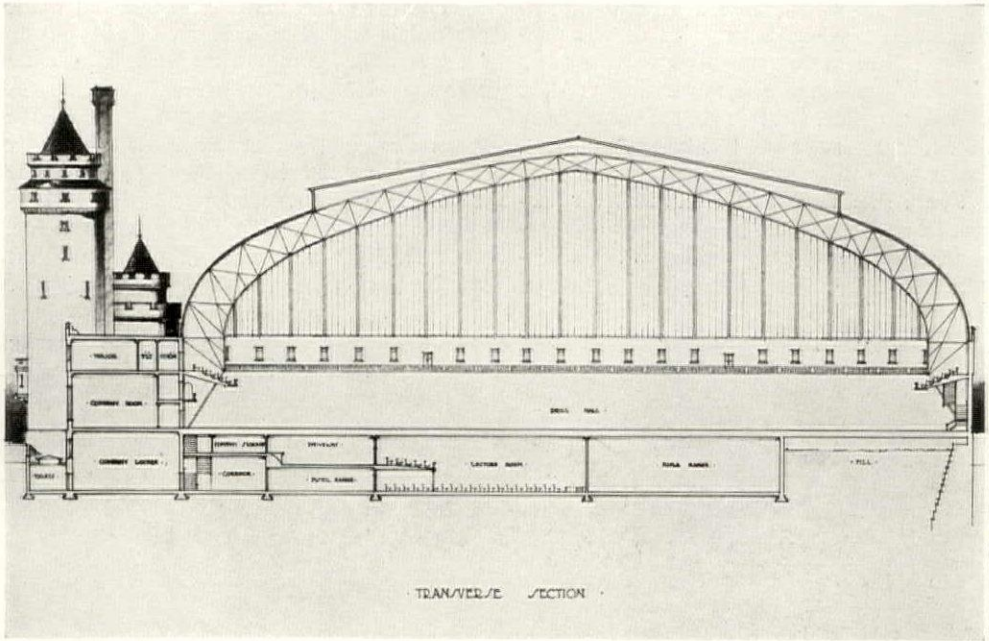
PLAN OF DRILL HALL—EIGHTH COAST ARTILLERY, NEW YORK CITY.
Pilcher & Tachau, Architects.

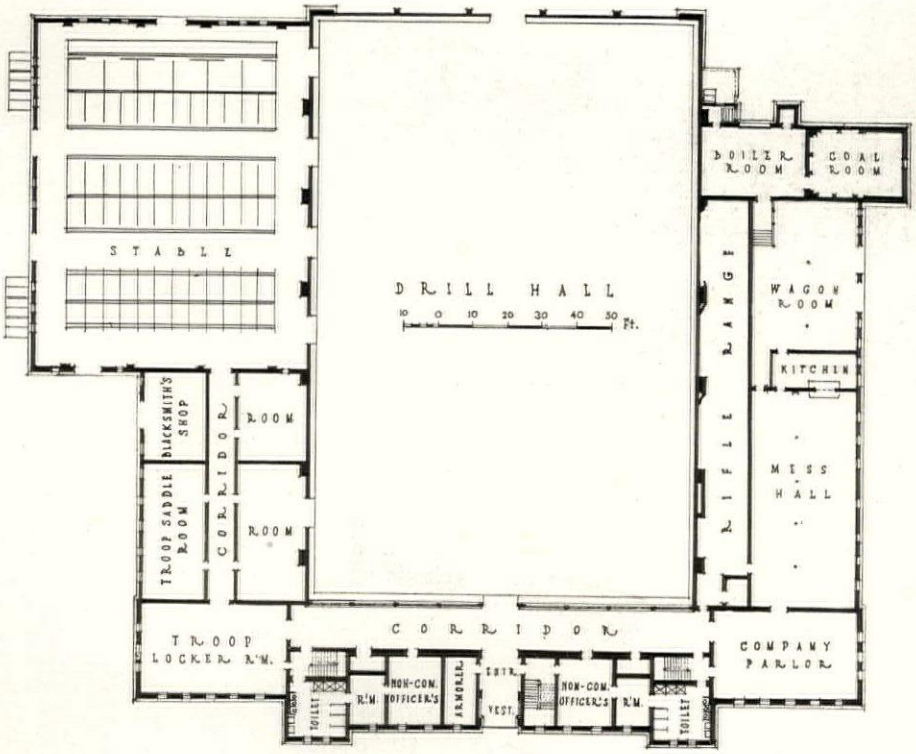


PLAN OF ARMORY OF COMPANY G, YONKERS, N. Y.
Lewis F. Pilcher, Architect.



PLAN OF ARMORY OF TROOP B, ALBANY, N. Y.
Lewis F. Pilcher, Architect.





PLAN OF ARMORY OF TROOP F BEFORE ENLARGEMENT OF STABLES, ROCHESTER, N. Y.
Lewis F. Pilcher, Architect.

rado the degree of LL.D. Meanwhile he continued his active practice of his profession. He resigned his professorship in 1911 because of the increasing volume of his practice, and in 1913, as already noted, was appointed State Architect, under the Public Buildings Act of 1909.

From this sketch of Dr. Pilcher's personal history, it will be seen that Governor Sulzer made no mistake in his selection. In accepting the responsibilities of the State position the new incumbent was well aware of the Statewide forces that would war against any efficient, businesslike, non-political administration of the office. But the man who in student days, crossing the Atlantic on a cattleship as a cattle tender, knocked down the bruiser and bully of the gang and put an end to his brutal tyranny, was not afraid of a fight if need be, and managed to clean up the office and maintain his own independence by quiet and firm insistence on right methods, which the Act of 1914 made permanent and obligatory.

The firm of Pilcher and Tachau made its début with the winning of the Troop "C" Armory competition in 1901 during the mayoralty of the late Seth Low. A long series of armories since then have been designed either by his firm or by Dr. Pilcher as State Architect. Some of these I propose to discuss and illustrate in the space that still remains to me, reserving for a future article an account of the work done for the State College of Agriculture at Ithaca and elsewhere. I shall hope, furthermore, to present in that article a condensed summary of the work done in the Department of Architecture during the nine years of Dr. Pilcher's service, in order to help the readers of THE ARCHITECTURAL RECORD and the profession generally to appreciate the magniture, variety and importance of the State Architect's duties and responsibilities.

ARMORY OF TROOP B, ALBANY, N. Y.
Lewis F. Pilcher, State Architect.

The State institutions whose design is committed to the Department of Architecture may be divided into five groups

or classes: a—correctional; b—custodial; c—sanitary; d—military; and e—educational. Taking examples of each class they comprise (a) Prisons and Reformatories; (b) State Hospitals for the Insane, Institutions for the Feeble-minded and Deaf Mutes; (c) Hospitals, tuberculosis villages, and systems of drainage, heating, water-supply, ventilation, etc.; (d) Armories, and (e) State Schools of various kinds. The program of work thus laid before the State Architect is sufficiently varied to satisfy the most ambitious taste, including, as it does, great centralized buildings, group plans, housing schemes and technical problems of a sort to tax the ability of a man of unusual resources, such as Mr. Pilcher has proved himself to be. In the course of his work on the State's prisons, prison-farms and reformatories he has been led to a thorough study of modern penal systems, and has become a warm advocate of advanced and humane methods of prison planning and construction. In recognition of his achievements in this field he was, in 1920, awarded one of the five Gold Medals of the National Committee on Prisons and Prison Labor. The State could render a great public service by publishing a detailed account of its recently built penal institutions, with plans and illustrations.

III

The earliest special field in which Dr. Pilcher distinguished himself and to which more than any other he probably owed his first appointment, was the military; and his first success in it was, as has already been noted, the Troop (now Squadron) "C" Armory in Brooklyn in 1901. This was the result of a competition in which the simplicity and convenience of the Pilcher and Tachau plan, and the admirable lighting and ventilation of the stables marked it as incontestably the best of the five plans submitted. The arrangement of the stables in pavilions, each open to the light and air on three sides and on the fourth communicating directly with the drill hall, was a wholly novel conception which won instant approval, alike from the judges, the Armory Board and the officers of the Squadron. Like qualities of simplicity, directness, convenience and adaptation to special requirements displayed in this design were also conspicuous in the huge Armory designed by Pilcher and Tachau a few years later for what is now the Eighth Coast Artillery in Manhattan, on the site bounded on three sides by Kingsbridge Road, Jerome Avenue and Claflin Terrace. Mr. Pilcher considers this as "perhaps the most interesting of all the armory designs in the country. The necessities of mobilization, the importance of the Division Train, etc., were successfully met in the development of the scheme." Its logical and reasoned-out planning and the practical expressiveness of its exterior design are apparent in the illustrations.

With the Squadron "C" Armory in Brooklyn may be compared the later cavalry armories at Albany ("Troop B"), Buffalo ("Troop I"), and Rochester ("Troop H"). In these, the pavilion system of stabling of the earlier Brooklyn armory was not adopted, because of limitations both of site and cost. In all three the stables are concentrated under one roof, the Rochester stable as finally enlarged being the largest, with open stalls for 100 horses and ten box stalls.

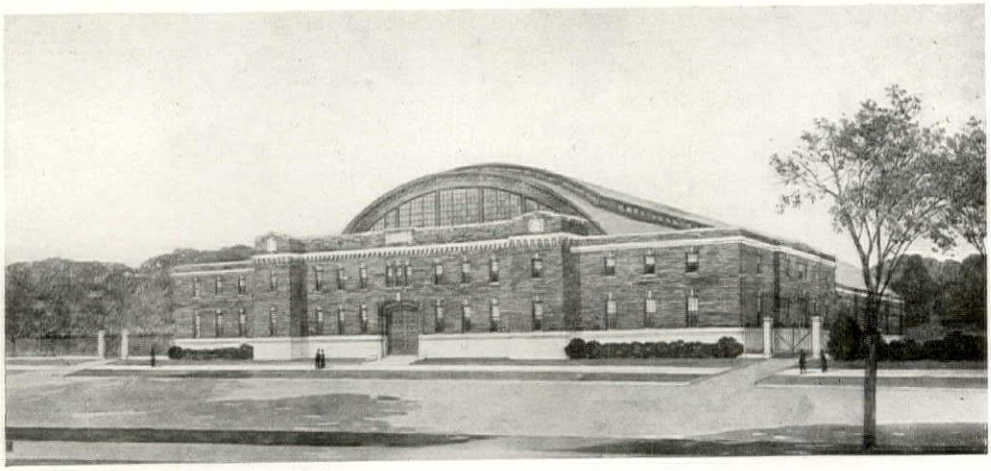
For the Infantry Armories (Yonkers, Troy, Olean, Ithaca) the plan is simplified by the absence of the problem of stabling. The problem thus becomes that of combining a drill-hall with a "head-house" containing the company rooms, officers' rooms, lockers, toilets, etc., a rifle-range and sometimes a gymnasium. The simplest of the plans shown is that of the Troy Armory, with a head-house across the front end of a drill shed measuring 206 x 191 feet. In the Yonkers Armory the dependencies occupy one end and two-thirds of one side of a much smaller drill-hall measuring 110 x 100 feet, the entrance being at the corner. Here it was impossible to mass these dependencies in a head-house only 100 feet long without doubling the rooms on either side of a corridor, permitting direct light and outside air only to those on the front. The solution adopted not only

GENERAL VIEW—TROOP B ARMORY, ALBANY, N. Y.
Lewis F. Pilcher, State Architect.

produced a more picturesque exterior, but also provided direct access from the company rooms and offices to the drill-hall. In the Troy Armory the rooms are in two stories and an attic or mezzanine, the locker-rooms and baths being directly accessible from the drill-hall with company and officers' quarters upstairs.

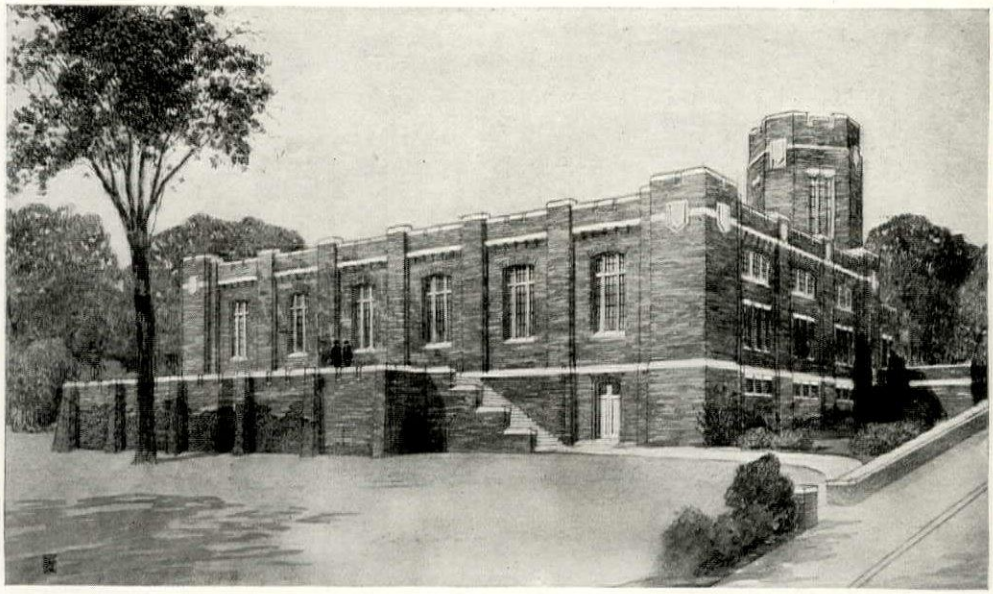
The huge Cornell Armory is in a class by itself, as it is really a vast drill-hall with few accessories and no company room. Its purpose is to provide for military instruction for the Cornell students,* with floor space adequate for 1,000 men in the drill-shed, which accordingly measures 362 x 228 feet—truly noble dimensions. The only other armory comparable with this is that of the Eighth Coast Artillery at New York, the drill shed of which covers an unobstructed area of 600 x 300 feet. The experience gained in this earlier design (1912) served the State Architect well in the later one. By exact measurements of the spaces occupied in various formations by the individual soldier, by the squad and by the company in rank, in column and in extended order, he arrived at certain unit areas which made the ground space required for a military or-

* Cornell University under the terms of its charter as a land-grant institution is obligated to provide military instruction and drill for its undergraduate students, under the supervision of a U. S. Army officer.



TROOP I ARMORY, BUFFALO, N. Y.
Lewis F. Pilcher, State Architect.

ganization of any given size a matter of exact calculation, not of guesswork. Thus, for instance, a company of eleven squads in line occupies 301 lin. feet, or 326 feet between right and left guides of the battalion; in column it measures a total depth of 320⅔ feet; in extended order, not including intervals between companies, the total linear extension is 814 feet. The accumulation and filing of standard data of this sort, not merely for armories but for all sorts of public buildings, make it possible for the Department of Architecture to serve not only the State of New York, but also the authorities of other States and the entire architectural profession as well. Thus (to digress a moment from our immediate topic) the plans and data worked out for various New York State custodial institutions at Sonyea, Letchworth Village, Newark and Rome, and the typical institutional housing-plan for the Epileptic Institute at Sonyea, have been used by the State authorities of Alabama, Georgia, Louisiana, Pennsylvania, South Carolina and Texas.



ARCHITECT'S PERSPECTIVE OF ARMORY, YONKERS, N. Y.
Lewis F. Pilcher, State Architect.

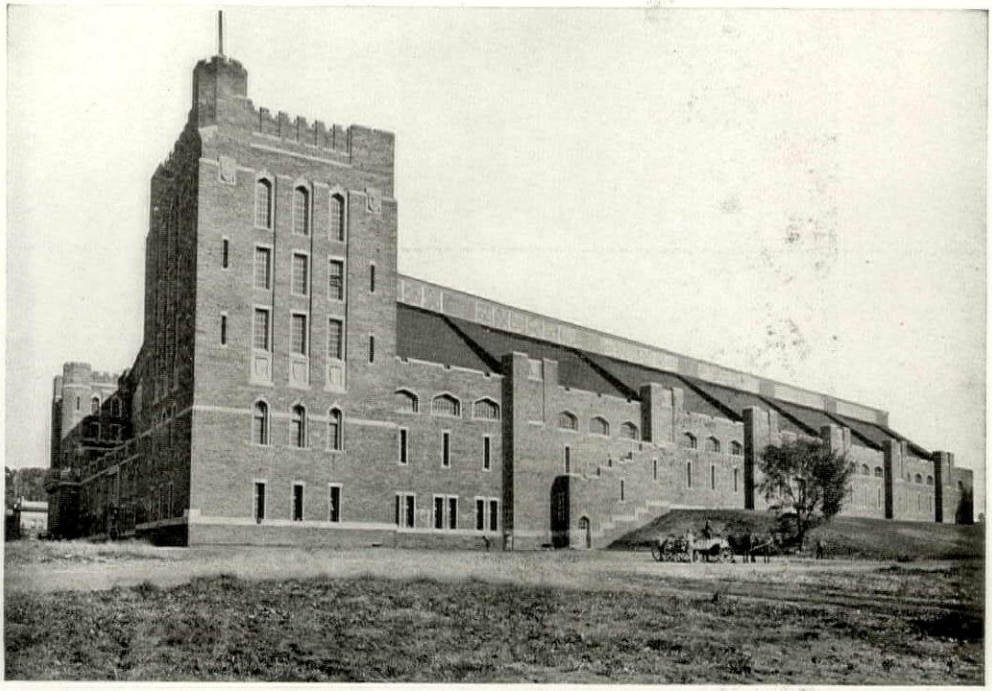
But let us return to our armories. With all the variety in their requirements, the problem in each is the combination of a number of rooms and offices and accessories of various sizes with a drill-hall, and it is necessarily the drill-hall that dominates the design, alike in importance, area and height. The relation to it of the other parts depends on their number and character and the shape and size and the topography of the site. In the Eighth Coast Artillery Armory, for example, the sharp fall of the ground made it possible to provide for all the larger accessories—the 400 foot rifle range, a bowling alley, a gymnasium, a lecture room, etc.—*under* the drill-hall, permitting a larger area for the drill-hall than would have been otherwise possible. On the other hand, the shape of the site at Rochester compelled the architect to surround the hall on three sides with its necessarily extensive accessories.

IV

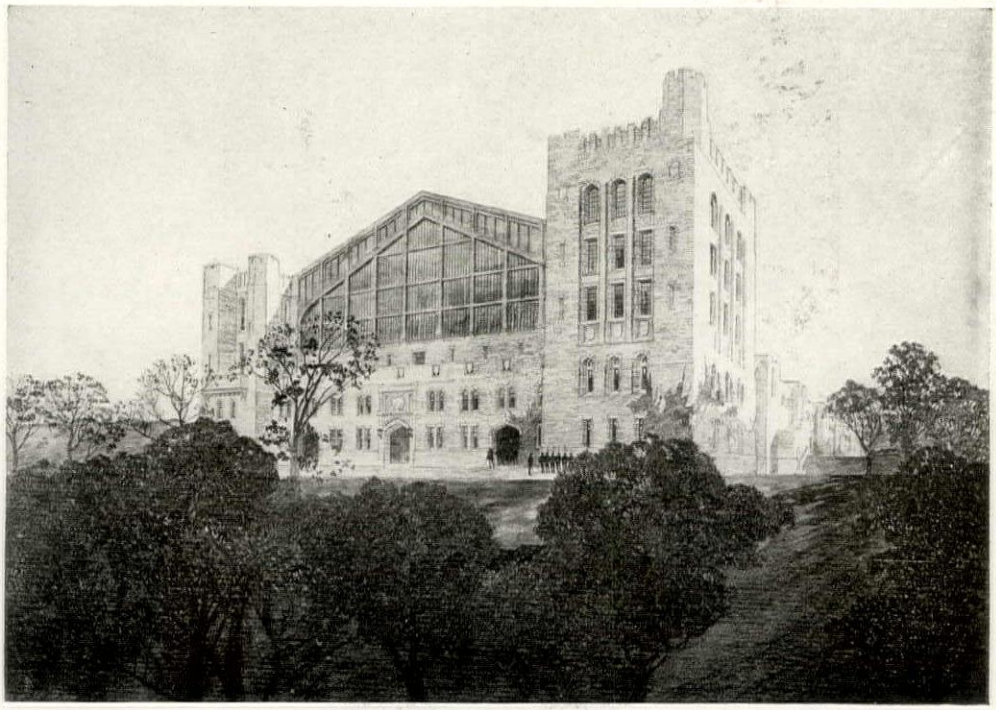
The design of the drill-hall, then, becomes the determining factor of the whole structure, but there is little essentially new in this problem. The old type of terminal railway-station with its headhouse and vast train-shed dates from the

Architect's Drawing.

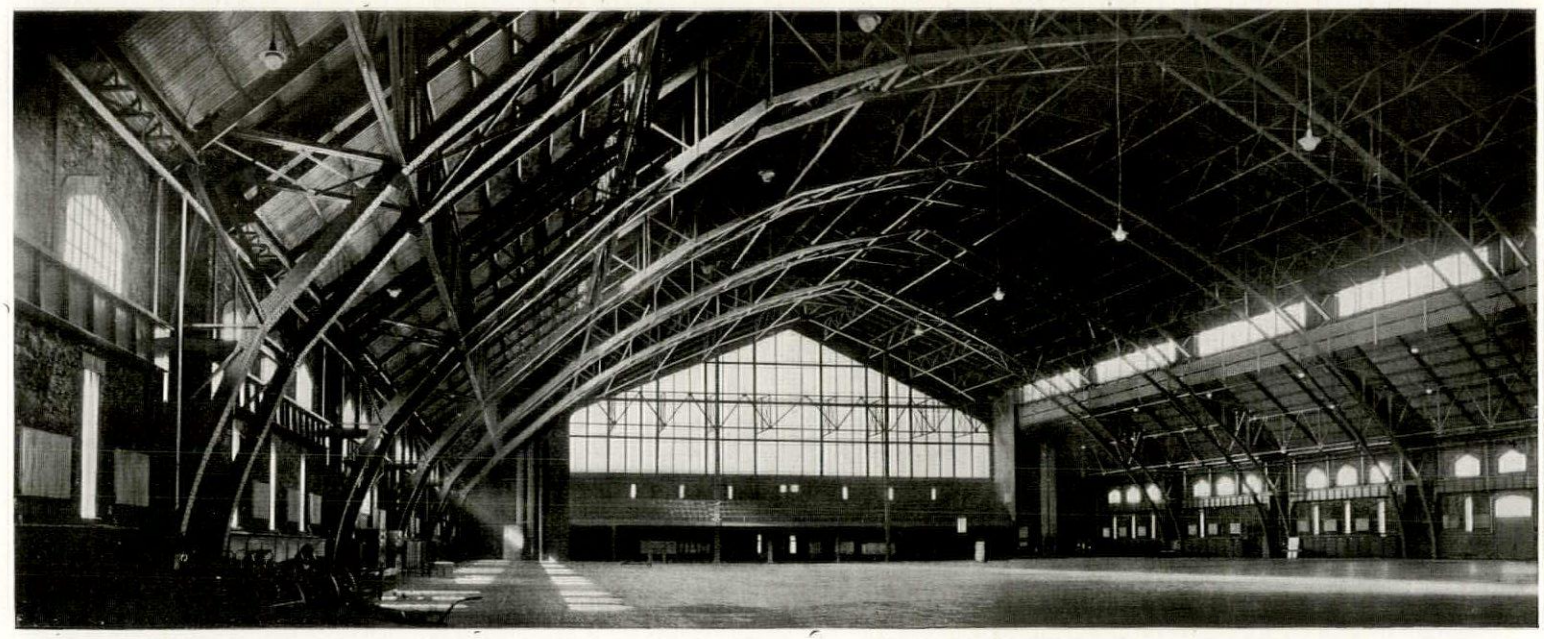
ENTRANCE AND TOWERS—ARMORY AT TROY, N. Y.
Lewis F. Pilcher, State Architect.



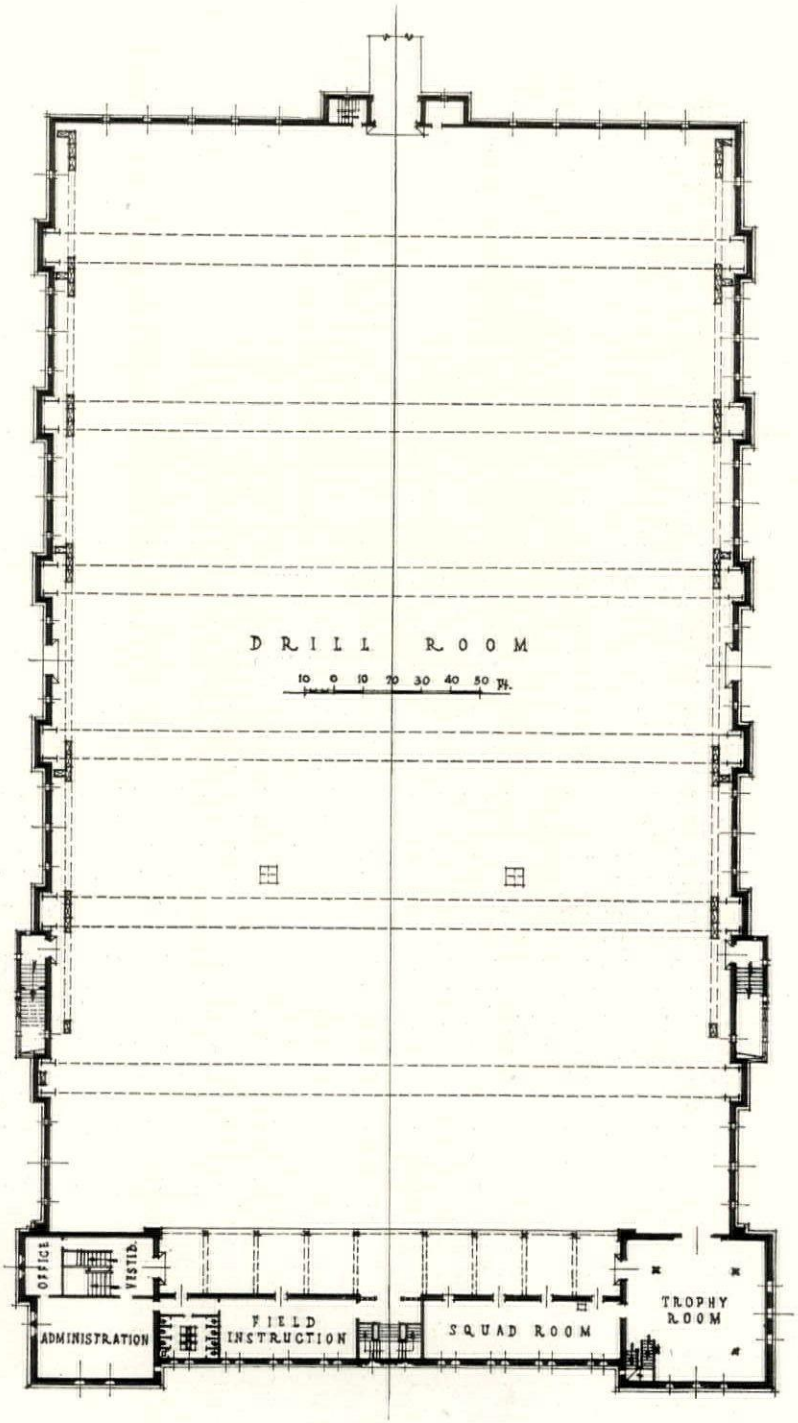
STATE DRILL HALL—CORNELL UNIVERSITY, ITHACA, N. Y.
Lewis F. Pilcher, State Architect.



DRAWING OF STATE DRILL HALL—CORNELL UNIVERSITY, ITHACA, N. Y.
Lewis F. Pilcher, State Architect.



STATE DRILL HALL—CORNELL UNIVERSITY, ITHACA, N. Y.
LEWIS F. PILCHER, STATE ARCHITECT.



PLAN OF DRILL ROOM—STATE DRILL HALL—CORNELL UNIVERSITY, ITHACA, N. Y. LEWIS F. PILCHER, STATE ARCHITECT.

sixties and was typical for thirty years. It embodies many of the elements of the Armory problem and furnished obvious precedents for drill-shed design. The train shed of the old Grand Central Depot at New York with its length of over 600 feet and its span of 200 will be remembered by our older architects as an unusually elegant sample of its type; it was completed in 1871 and its longitudinal dimension was exactly that of Pilcher's and Tachau's Eighth Coast Artillery Armory. The Pennsylvania Terminals at Jersey City and at Broad Street, Philadelphia, dating from the eighties, still survive as later examples of the same general type. A similar problem was solved in the great halls of several World's Fairs. The Machinery Hall of the Paris Exhibition of 1889, demolished about ten years ago, stood for over twenty years as the most impressive and elegant, and with one exception, the largest of all unencumbered spaces under one roof, surpassed in dimensions only by the central area of the Liberal Arts Building at Chicago in 1893, which measured 1,300 by 384 feet against the 1,200 by 367 feet of the Paris example.

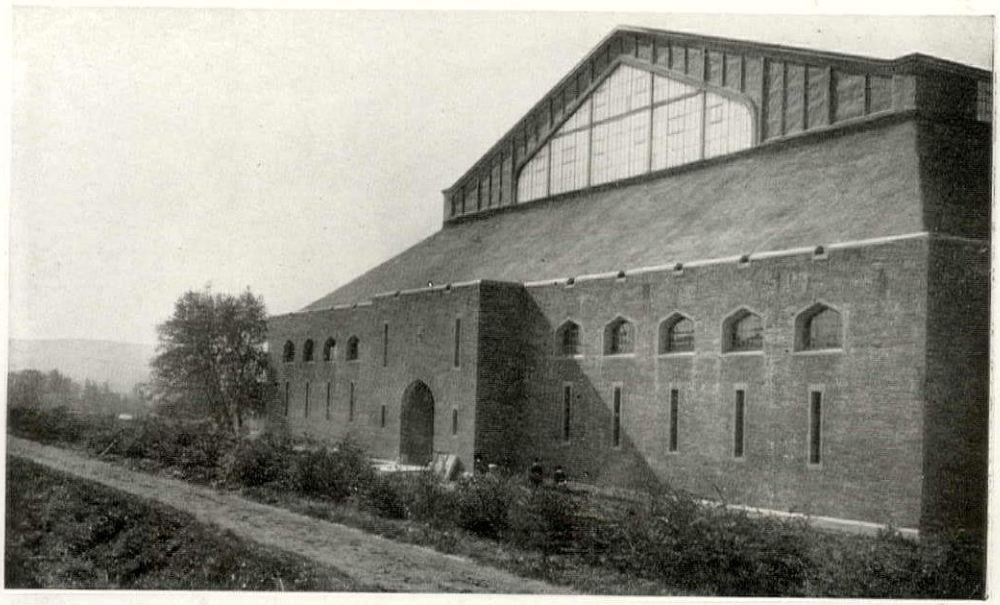
The earliest of our armories to be roofed with iron and glass after the general fashion of the above examples was Mr. Hunt's Seventh Regiment Armory at New York, 1880. For its time it was a striking and original work, a straightforward and practical design with an exterior free from the more or less affected mediaevalism that marked not a few armories of slightly later date.

The problem of the metal-framed roof of broad span has been treated variously by our architects in train-sheds, exhibition buildings and large gymnasiums as well as armories, in most cases with greater regard for engineering than esthetic considerations. The results do not on the whole compare favorably in elegance of aspect with the best French and European examples. The French prefer smaller units and lighter sections than our American practice favors, consequently with narrower "bents" or truss spacings, than ours. Whether this results in a less economical construction and greater total weight of metal than our heavier trusses and wider spacings, I do not know. Such is very possibly the fact. However, that may be, the French results are artistically beautiful, and there is a noticeable avoidance of the confusing multiplicity of tie-rods and braces that detracts so often from the dignity and beauty of so many American roofs.

Dr. Pilcher in his attack on this problem, has generally followed a middle course between the lightness and elegance of the French examples and the American heaviness of treatment. He has been an eclectic in his choice of roof systems, varying the type with each new problem. In general he has preferred some form of arched truss, either of the bow-string or sickle type carried by the side walls (or by columns incorporated in them) or the two- or three-hinged type springing from the floor level and tied under the floor. In his two largest armories—that of the Eighth Coast Artillery at New York and the Cornell Drill Hall at Ithaca—he has adopted the four-centered Tudor or Persian arch-form, after the example of the Paris Salle des Machines. On the other hand, at Albany, Buffalo and Brooklyn (Squadron "C") the trusses are of the sickle or crescent form carried by the walls or by columns. The Albany trusses are the heaviest and least pleasing of these. In the Eighth Coast Artillery and Cornell Armories where the span exceeds 200 feet, double trusses are used, spaced over 30 feet on centres in the first and over 40 in the second. The effect, though less elegant than the best French examples, is thoroughly satisfactory and distinctly more pleasing to the eye than the very low and heavy effect of the Albany roof.

V

Dr. Pilcher has been equally eclectic in his treatment of the exterior design of these various armories. The Albany and Buffalo Armories are severely simple and practical in exterior form and detail. Without any affectation of mediaevalism and without a single superfluous feature, they are both unmistakably military in aspect, and thoroughly expressive of their



END VIEW—STATE DRILL HALL, CORNELL UNIVERSITY, ITHACA, N. Y.
Lewis F. Pilcher, State Architect.

function. But why that incongruous round chimney leaning against the side wall at Albany, looking like a huge column bereft of base and capital and apparently unrelated to the building behind it? It strikes the writer as the one and only incongruous note in the whole series of admirable designs. In the Eighth Coast Artillery Armory and in the armories at Troy and Malone the introduction of round towers of the French fifteenth-century type to flank the very mediaeval entrance gates (or at the corners of the Malone addition) is evidently motivated rather by artistic than practical consideration. That it is artistically pleasing and emphasizes the expression of military character may be conceded, and to most minds this is ample warrant for the device. The hypercritical might object that it is an archaeological affectation, a bit of stage effect out of harmony with the wholly modern character of the building, and demonstrably unnecessary as a means of expression of function. Approval and disapproval are equally rational according to the critic's point of view. But the premise of their use once granted, one cannot deny that they are well handled and carefully detailed. The mediaeval note, if present, is certainly not paraded.

On the whole, I think the prize of hearty and unqualified approval should go to the splendid drill-hall at Cornell University. In this noble building, constructed of the local limestone, the huge scale of the drill-shed is made evident by the contrast of scale in the openings and in the design of the head-house. The two unequal square towers terminating the main façade, while evidently inspired by English mediaeval examples like Rochester Castle, for instance, are thoroughly practical and modern designs, every detail of which has its *raison d'être*. The flanks express as clearly as any French Gothic cathedral the structural scheme of the drill-shed with its huge double trusses, and this is also clearly expressed by its exposed ends with their vast areas of glass framed in the outline of the inner and lower member of the end trusses.

The interior fully carries out this expression of scale; its vastness is impressive when empty; it is still more impressive when one sees considerable bodies of men upon its two acres of floor space. It is a notably modern achievement in American architecture.

ARCADE IN CORTILE—PALAZZO
DI VENEZIA, ROME.

Restorations in The Palazzo di Venezia in Rome

By Harold Donaldson Eberlein

THE Palazzo di Venezia is one of those great architectural monuments of Rome that new visitors, and also those long familiar with the city, too often take as a matter of course—as they do likewise so many of the others—without giving much heed to its individual significance. They are bewildered by the wealth of historic antiquity on every side, and frequently it is the general *milieu* that impresses them rather than the qualities of any one particular structure.

In point of fact, the Palazzo di Venezia is one of modern civilization's epochal buildings, and on several distinct scores it challenges the attention of every person at all concerned with architecture, with the other diverse aspects of art, or with history. (1) It is the first significant Renaissance building* that arose in Rome and its erection presents a definite, tangible point of architectural demarcation between Rome of the Middle Ages and the new Rome of the budding Renaissance. (2) It affords a valuable ground for comparison between the character of early Renaissance tendencies manifested in Rome and contemporary developments in Florence. (3) It is the central figure about which cluster fascinating historic associations, and the story of its ownership forms a noteworthy incident in the history of the Great War. (4) It supplies, at the present time, an illuminating example of the manner in which extensive and deeply significant restorations are being carried out. (5) Finally, it is a storehouse replete with items of pertinent suggestion to architects, details suitable for reproduction or for adaptation in a hundred different ways.

It is with the two last mentioned aspects that we are here chiefly concerned. In order, however, to understand the situation as we find it today, it is necessary to take a brief survey of the history of the building, tracing the sundry vicissitudes through which it has passed as well as noting the appearance it has presented in successive epochs and giving its architects such credit as we may for the various parts they have performed in making it what it is.

Some time between 1447 and 1455 Pietro Barbo, Cardinal of Saint Mark, set about laying the foundations of this princely dwelling. The exact date of its inception we do not know. But we do know that in 1455 the Cardinal di San Marco caused a medal to be struck representing a palace, flanked by two towers, and bearing this inscription: PETRUS. BARBUS. VENETUS. CARDINALIS. SANCTI. MARCI. ANNO. CHRISTI. MCCCCLV. HAS. AEDES. CONDIDIT. As this medal was intended to be placed in the foundation of the edifice or within its walls — exactly such medals, deposited in earthenware

*The extensive enlargements undertaken at the Vatican by Nicholas V, and brought well on their way to completion at the time of his death in 1455, antedated by a few years the erection of the Palazzo di San Marco; but the Vatican has been so changed by alterations and additions that its present aspect is very different from its appearance at the middle of the fifteenth century. As a visible witness, therefore, to the architectural development of that particular epoch its value is secondary to that of the Palazzo di San Marco.

The writer here desires to make grateful acknowledgment of the many courtesies and kindness extended by his friends, the Marchese di Rosales and Doctor Arduino Colasanti, of the Department of Belle Arti, through whom it became possible to make measurements and photographs of the work in course of restoration. This work has now advanced far towards completion.

SOUTH AND EAST FRONTS—PALAZZO DI VENEZIA, ROME.

caskets or pots, have frequently been found during the course of restoration and repairs to the fabric—it is quite likely that the work of actual construction was not begun till 1455.

Soon after (about 1458), the ancient basilica of Saint Mark, round about which the palace was being built, was restored largely at the Cardinal's charges. About 1466 the enclosed garden, or what is known as the "palazzetto," was added. When Cardinal Barbo was elevated to the Papal throne in 1464 as Pope Paul II, the Palazzo di San Marco, as it was then and for long afterwards called, was sufficiently advanced for him to make his residence there from time to time when he so pleased. Indeed, before his elevation to the pontificate, he seems to have been living there, for upon the news of his election, the Roman rabble, according to the rude custom of the age by which they considered it their prerogative to plunder the dwelling of the newly-made Pontiff, were about to storm the palace, which was known to be full of treasures and works of art, when they were bought off by a largesse of 1,300 ducats.

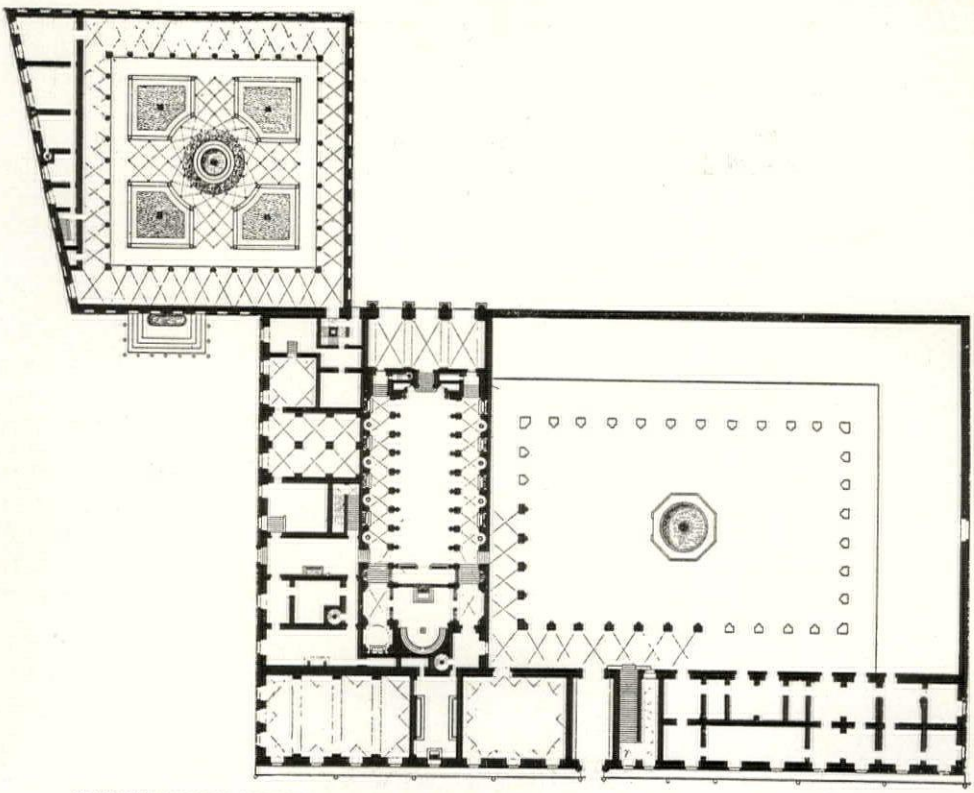
In 1471, when Paul II died, the Palazzo di San Marco was still unfinished, and, in fact, it never has been finished according to the plan intended. Nevertheless, Paul II was accustomed to live there during a great part of the year, and his successors used it as a papal abode upon various occasions until Pope Pius IV, in 1564, gave it to the Republic of Venice as a place of residence for the Venetian Embassy to the Holy See. It then remained in the possession of Venice until the fall of the Republic, when Austria seized it as a chattel appertaining to the now subject Venetian State.

When Austria, in 1866, was compelled to relinquish the Veneto, the Palazzo di Venezia in Rome ought to have been restored at the same time. This Austria did not do, but wrongfully retained it

and there established her Embassy. In consequence, a suit to recover possession of the palace was pending for years in the Italian courts until the time that Italy joined the Allies. For obvious reasons the case was never allowed to come to trial. When Italy declared war, however, the proceedings were expedited, judgment was passed, and the building returned to its rightful Italian ownership. Hence the possibility of undertaking the restorations now in progress. By a singularly appropriate coincidence, many of the chiefest art treasures, removed from Venice for safekeeping during the war, were stored in the base of the palace tower, while the bronze horses of Saint Mark's also found shelter in the courtyard.

Several architects were employed from time to time in building the Palazzo di Venezia, but exactly what part each of them played in moulding the building to its present form it is impossible to say. New bits of documentary evidence in this particular are continually coming to light —oftentimes in the most unexpected quarters—and a more thorough delving into various collections of archives than has as yet taken place, with a careful collation of all the evidence thence derived, may enable us at some future day to assign with greater certainty the authorship of the different portions of the structure. As it is, we already know what master-craftsmen performed certain specific labours and how much they were paid for their work, as well as the very day and year they received their recompense.

Be the disclosures of further documentary evidence what they may, there is one important factor in the genesis of the palace, too often overlooked or belittled, that we ought not to leave out of account—the personal influence, tastes and preferences of Pope Paul himself. He was a man of refined and educated judgment; a most intelligent connoisseur



GROUND FLOOR PLANS OF PALAZZO AND PALAZZETTO (FROM LETAROUILLY)—PALAZZO DI VENEZIA, ROME.

CORTILE OF PALAZZETTO—PALAZZETTO DI VENEZIA, ROME.

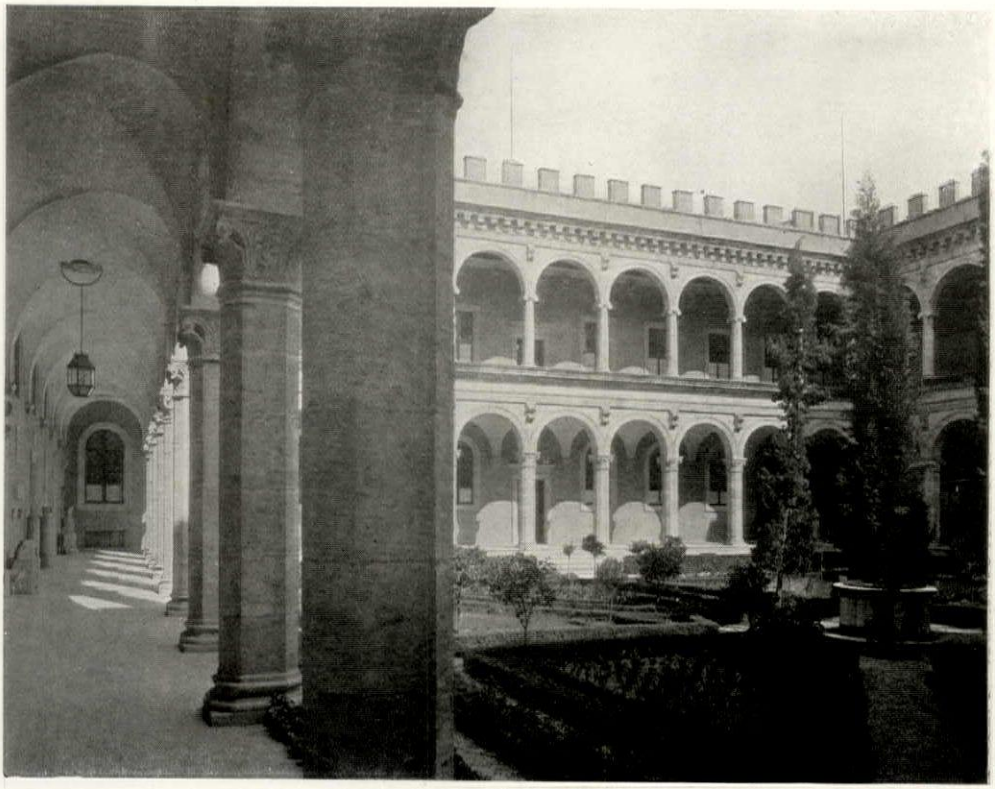
and zealous collector of works of art of all kinds, from his youth up to the day of his death; imbued with what was best in the humanistic trend of the times, as there is abundant evidence to prove beyond all peradventure, despite the venomous slanders of detractors both in his own day and since; unspoiled by the sundry affectations, wayward intellectual extravagances and absurdities that marred the record of not a few of his Renaissance contemporaries; and, finally, what is of special interest to us at this point, keenly appreciative and understandingly critical of architecture, gifted with constructive insight, able to conceive a broad and worthy scheme in its chief parts, and capable of imparting definite and coherent wishes to those who laboured for him.

We shall not be far wrong in ascribing the main idea to Paul, the elaboration and performance to his architects. If tradition be correct, somewhat of the general scheme and one matter of detail—the *fenêtres croisées* of the first floor—are ultimately traceable to a drawing the Pope possessed of a palace at Avignon. The palace prototype, or perhaps it might be better to call it the germ of inspiration, has long since disappeared, although the drawing, so the writer is informed, is still extant.

After making this reservation for Pope Paul's own part—a part more or less elastic in its interpretation, possibly, but by no means negligible when we bear in mind the Pontiff's disposition and tastes—it remains to speak of the attribution to certain architects and the light thrown upon the subject by the archives.

Letarouilly, taking his cue from Vasari, credits Giuliano da Maiano with the design of the palace. Recognizing, however, that "there is so marked a difference" between the styles of architecture exhibited respectively by the palazzo and the palazzetto, "and even in their general appearance," that one is immediately struck by it, he concludes that they were "evidently not done as parts of one plan" and, on the strength of analogy with other work attributed to Baccio Pontelli, ascribes the design of the contiguous little palace or palazzetto to that architect.

When Letarouilly published his book the documents were not accessible from which he might have extracted some measure of truth concerning the authorship of the building. Besides, Letarouilly was not an historian and did not feel the same obligations as an historian; his prime object was the presentation of architectural measurements, not the digested re-



CORTILE—PALAZZETTO DI VENEZIA, ROME.

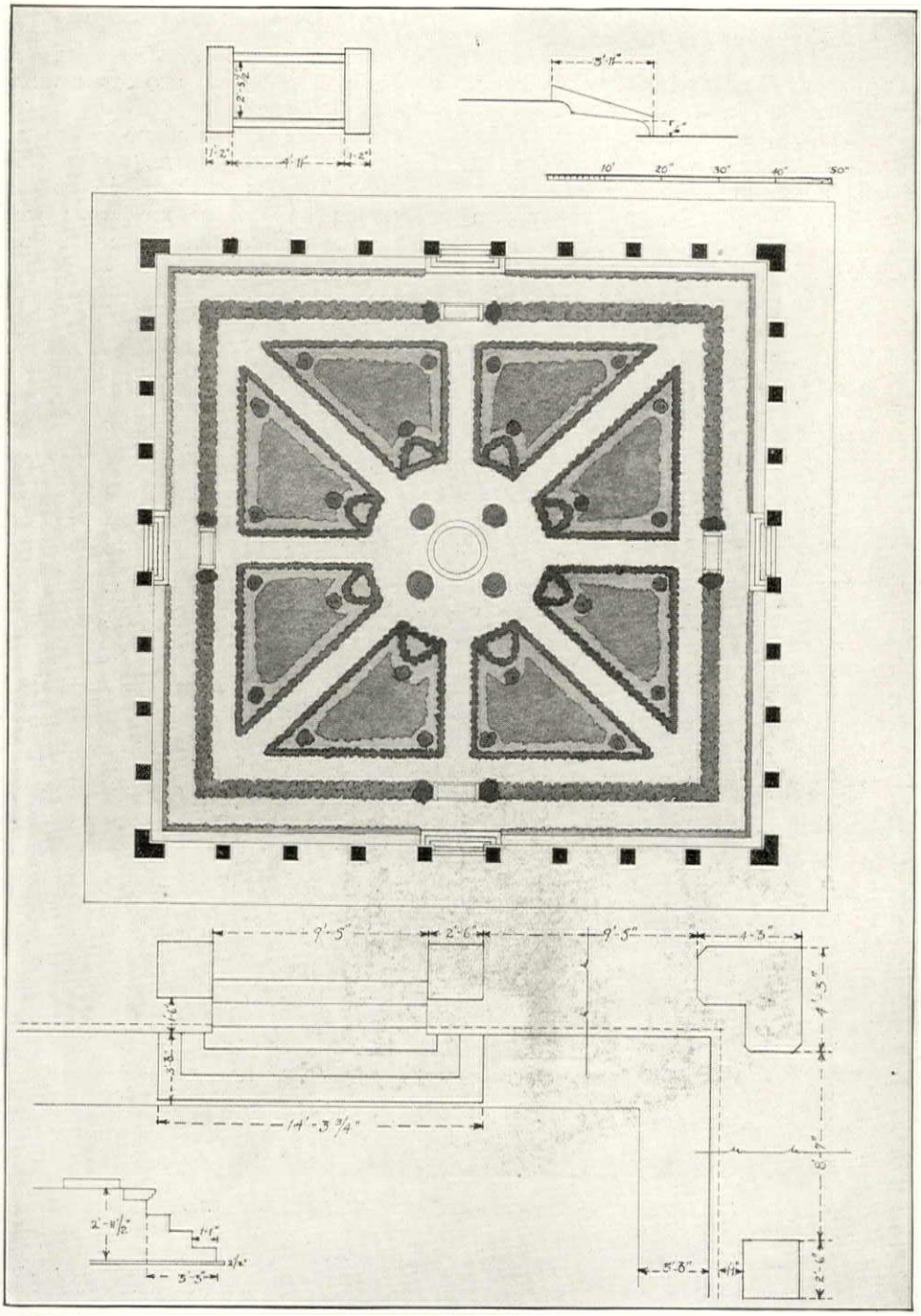
sults of historical research. And Letarouilly admirably accomplished the main end he had in view. The reader of this discussion is earnestly urged to consult Letarouilly's plates (Vol I) of the Palazzo di Venezia and of the Palazzetto as a valuable complement to the illustrations here presented.

While heartily commending Letarouilly's work, a word of caution should also be added anent Vasari. He is a dangerous guide and his statements are to be accepted only with large reservations. Even then, it is advisable to accord his data but conditional credence unless corroborated by the evidence of more trustworthy chroniclers. Vasari was not only accidentally inaccurate or careless in his biographies, but indulged in wilful misrepresentations when it happened to suit his purpose so to do, frequently allowing himself to be actuated by his bias either for or against the men whose lives and achievements he was setting forth, or else yielding to some petty animosity or jealousy aroused by a rival biographer.

Giuliano da Maiano had nothing to do with the Palazzo di Venezia so far as the expense registers show, nor is there any other consideration to warrant us in giving him credit for the design. Furthermore, when work on the palazzo was presumably begun, Giuliano da Maiano was but three-and-twenty years old, and it is extremely improbable that Cardinal Barbo would have summoned to Rome a youth, who had not yet fully proved his powers, to place him in charge of a most important commission. It is not impossible that in this instance Vasari may have confounded Giuliano da Maiano with another Florentine Giuliano, Giuliano da Sangallo, who really was employed on the work, as we shall see by and by, though not as the architect in charge.

The names of Bernardo di Lorenzo and of Francesco del Borgo have also been connected with the palace of Saint Mark

WELL IN CORTILE—PALAZZETTO
DI VENEZIA, ROME.

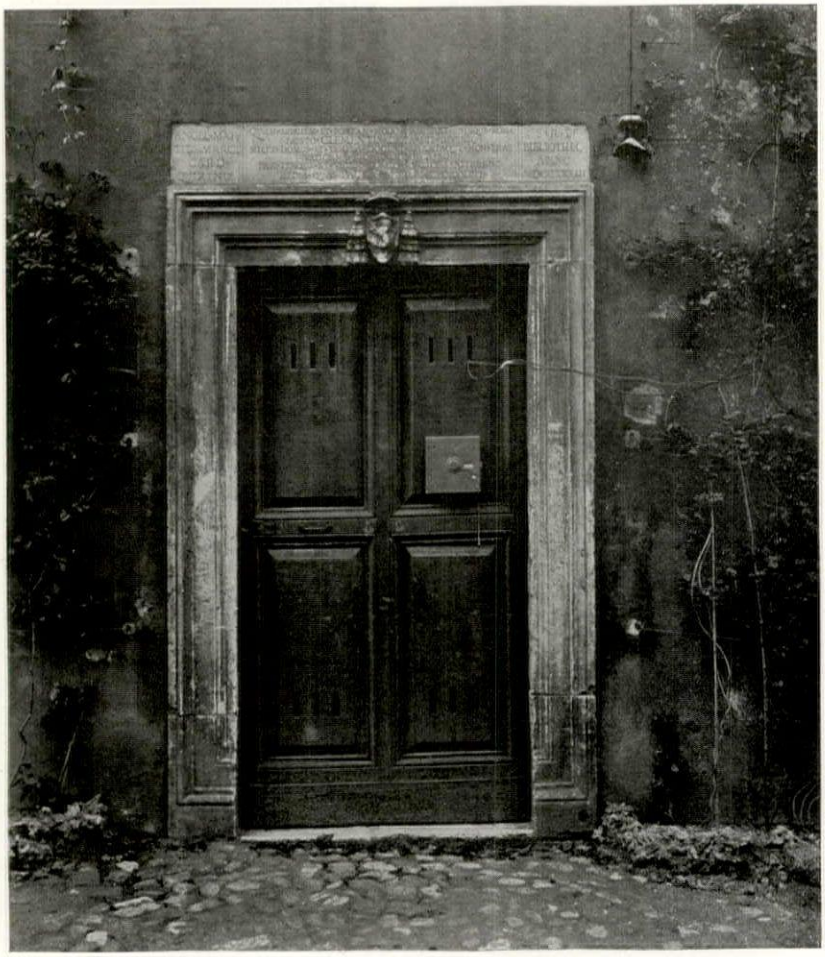


Drawn by Robert B. C. M. Carrère

CORTILE PLAN AND DETAILS—
PALAZZO DI VENEZIA, ROME.

as its possible architects. Francesco del Borgo was not an architect at all, but a papal secretary and accountant, whose name appears, from time to time, in the contracts. Lorenzo was an architect and was employed in the continuation of work upon the palace, but in the capacity of a contractor engaging, along with others, any general matters of design. It was obviously their business to carry out the designs of others.

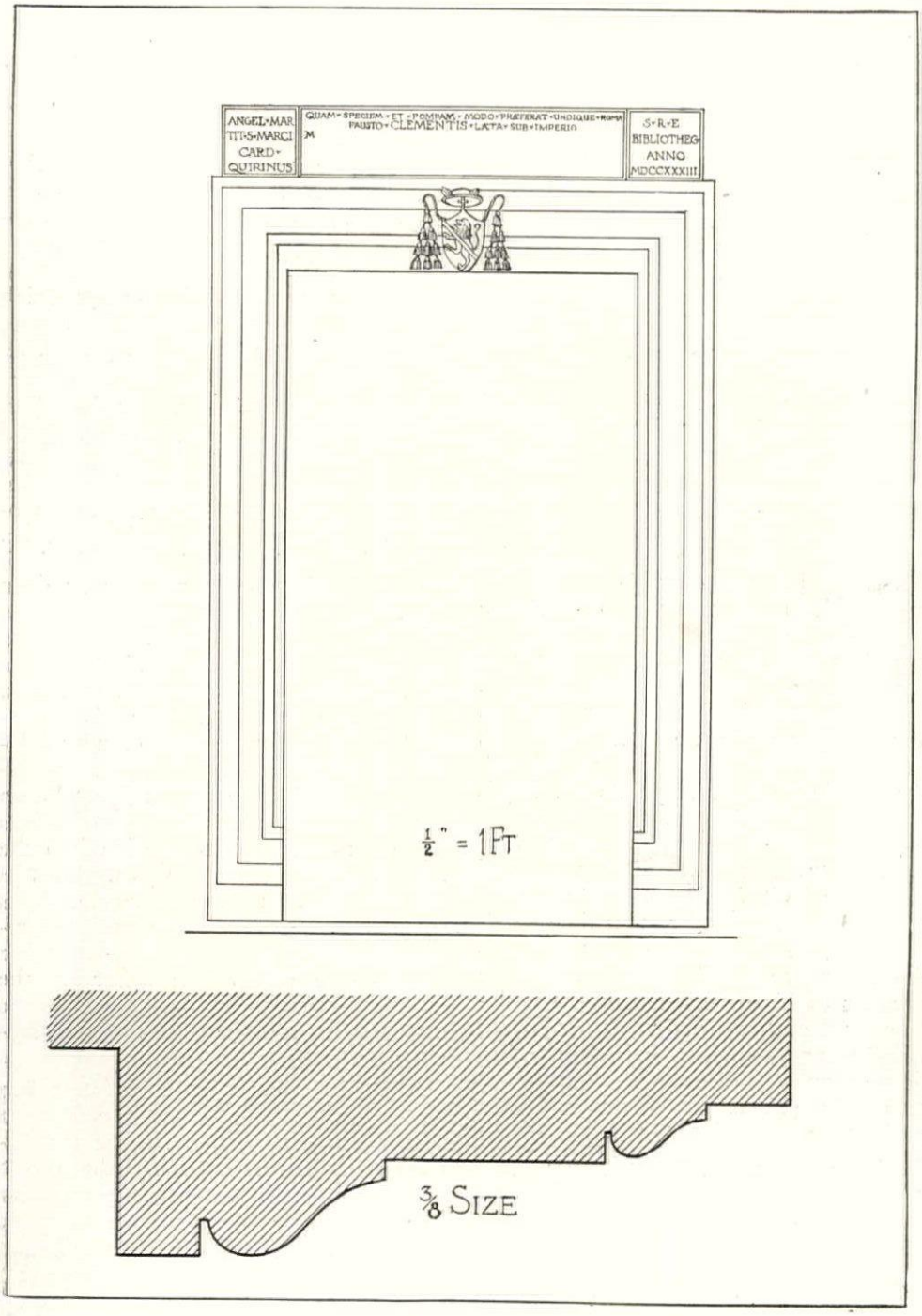
In the same way, Giuliano da Sangallo (born 1445), who was twenty years old at the time, appears in the rôle of a contractor busied with masonry work, while Meo del Caprino—that same Meo who



DOORWAY IN CORTILE—PALAZZO DI VENEZIA, ROME.

to lay foundations, build walls, and perform similar services, conformably to the terms stipulated in the contract and the *measurements and plans furnished them.* All the provisions of the agreement are clearly set forth. There is no misunderstanding them, and it is perfectly plain that neither Bernardo nor his contracting associates had any voice in determining

designed the Cathedral of Turin—was part of the time supervising those that hewed the blocks of travertine, part of the time performing the more delicate and interesting task of fashioning fireplaces and similar items of adornment. It was quite in accord with the usage of the times that highly experienced men should thus, as assistants to the master architect,



DETAIL OF DOORWAY IN CORTILE—
PALAZZO DI VENEZIA, ROME.

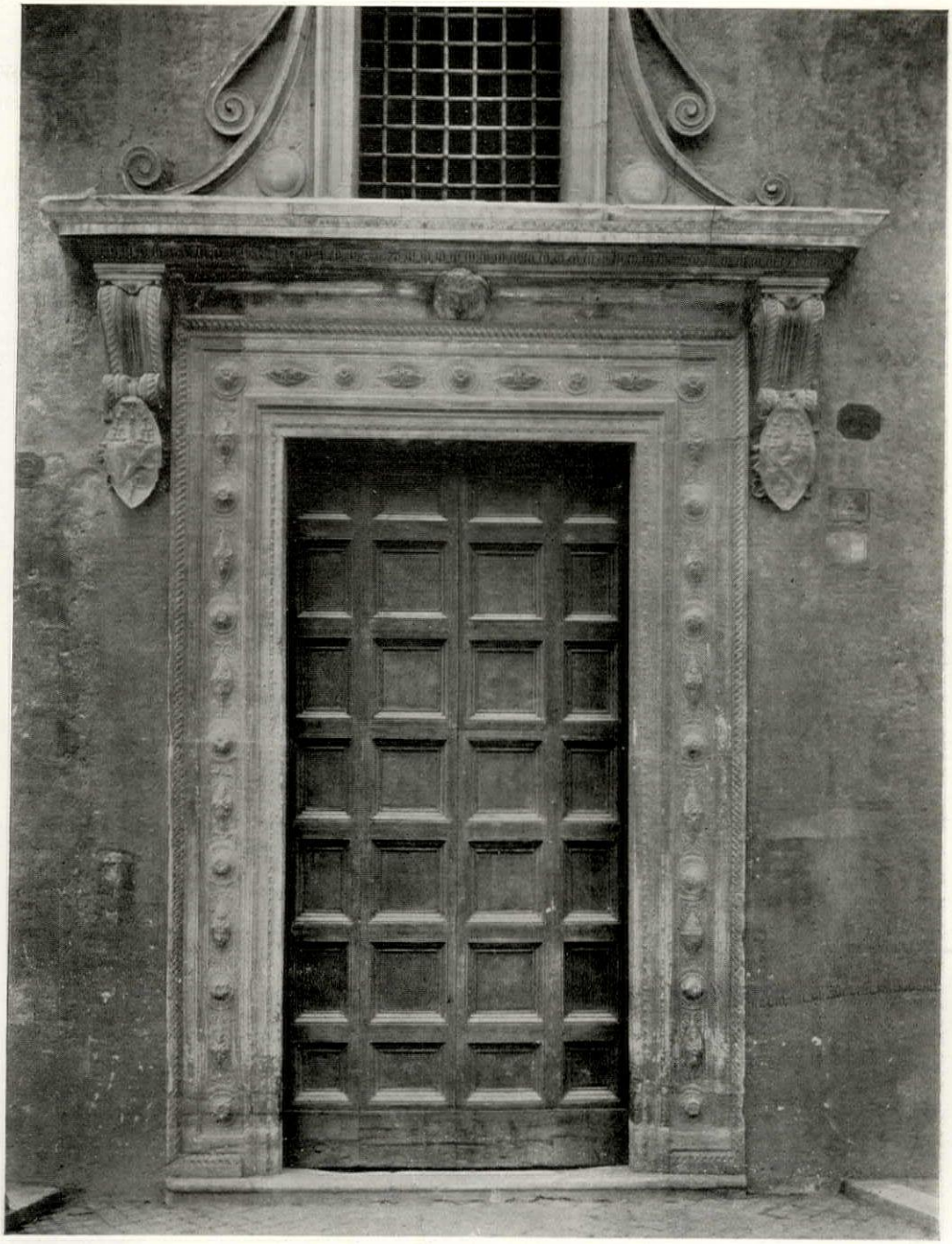
assume subsidiary responsibilities and become quasi-contractors. For the younger men it was a part of their training. It was also in accord with the usage of the times that these contractor-assistant-associates—the relationship is exceedingly difficult to define precisely in modern terms—should often have not a little latitude in the performance of their several tasks and in the execution of details, being thus enabled to impress, here and there, a touch of their own individuality upon the total composition.

As to the architect upon whom rested the direction of the whole work and to whom we must attribute the design, no categoric statement can be made with the full certainty one could wish. In March, 1466, Giacomo da Pietrasanta appears as one of the witnesses to the contract with Bernardo di Lorenzo for his share in the continuation of the work upon the Palace and Basilica of Saint Mark, a connection already alluded to. Giacomo da Pietrasanta, sculptor and architect, executed important work in Rome under Nicholas V and again under Pius II, so that his favorable reputation was established. As M. Eugène Müntz points out in his valuable work, Giacomo's presence as a witness to the aforesaid contract with Lorenzo "was probably not a matter of chance, and we shall not be far from the truth in believing that at that time he already had a previous connection with this double undertaking." In 1467, mention is made of his supervision of the sculptures in the Palace and in the adjoining Basilica, and in 1468 he is referred to in the records as director of works at the "apostolic palace." To quote Müntz again, "if artists of such ability" as Sangallo, Meo del Caprino and others, "consented to work as simple artisans, sometimes by the piece, sometimes by the day, was it not because they had over them an exceptional head, one of those masters of dominating genius? . . . . . Will anyone accuse us of rash assumption if we recognize him, not perhaps as the sole architect, but as one of the architects of the Palace of Saint Mark?"

A glance at Letarouilly's plan will show the general arrangement of the palazzo, the basilica and the palazzetto, and their relation each to the other. According to this plan, the palazzetto projects from the *southeast* angle of the palazzo. This was its position until it was removed to make room for the Victor Emmanuel Monument—one of those two sore thumbs of modern Roman architecture, of which the other is the Palazzo di Giustizia—after which it was carefully re-erected in its present place, *southwest* of the main portion of the palazzo.

The *cortile*, of which a plan, including the garden arrangement is given, is the really significant feature of the palazzetto because, designed as it was primarily for a garden enclosure—in the expense records and other documents it is always referred to merely as "the garden"—it consisted chiefly of a rectangular open space shut in on all four sides by ground floor and first floor loggias, "built up on the outside with a façade." "For the rest," as Letarouilly observes, barring a few small apartments, "there is no interior arrangement proper to render habitation possible; there is not even any direct entrance" from the outside. When the palazzetto was moved, provision was made for more rooms opening into the loggias and the exterior was modified in plan to form an exact rectangle. This slight change was deemed permissible inasmuch as the *cortile* with its surrounding loggias—the real *raison d'être* of the structure—was left untouched and as the new site, furthermore, was wholly rectangular.

The most important and interesting changes effected in the Palazzo di Venezia since Letarouilly's time are the restorations undertaken following the recent departure of the Austrians from their long usurping tenure. First and foremost comes the rehabilitation of the Sala Regia, now in progress, an apartment on the first floor or *piano nobile* of the north side of the palazzo. To put this great room in its original condition is a formidable undertaking whose difficulties might well dismay anyone less ardent than those engaged in the task. In the first place, it involved an enormous quantity of the



DOORWAY ON PIAZZA—PALAZZO
DI VENEZIA, ROME.

RESTORED INTERIOR DOORWAY—
PALAZZO DI VENEZIA, ROME.

most painstaking detective work and the penetration of successive alterations, made during more than four centuries, to determine exactly what was there when the room was first completed. Fortunately, the discoveries made have abundantly rewarded the faith of the investigators and the convincing proofs they have been able to establish have justified their labours.

In the second place, restoration necessitated the removal of two massively built stone partition walls, four feet or more in thickness, and the demolition of a floor, so that all the space for many years comprised within *six* large rooms, on *two* floors, by this process was thrown once again into *one* noble hall about a hundred and twenty feet long, forty feet high, and more than forty feet wide.

To embark on this project with the intent of accurate restoration meant, furthermore, the exercise of mature discrimination in determining to just what extent the work should be carried, what particular manifestation of past development should be esteemed worthiest of preservation, and how much ought to be obliterated in order to get back to the original condition.

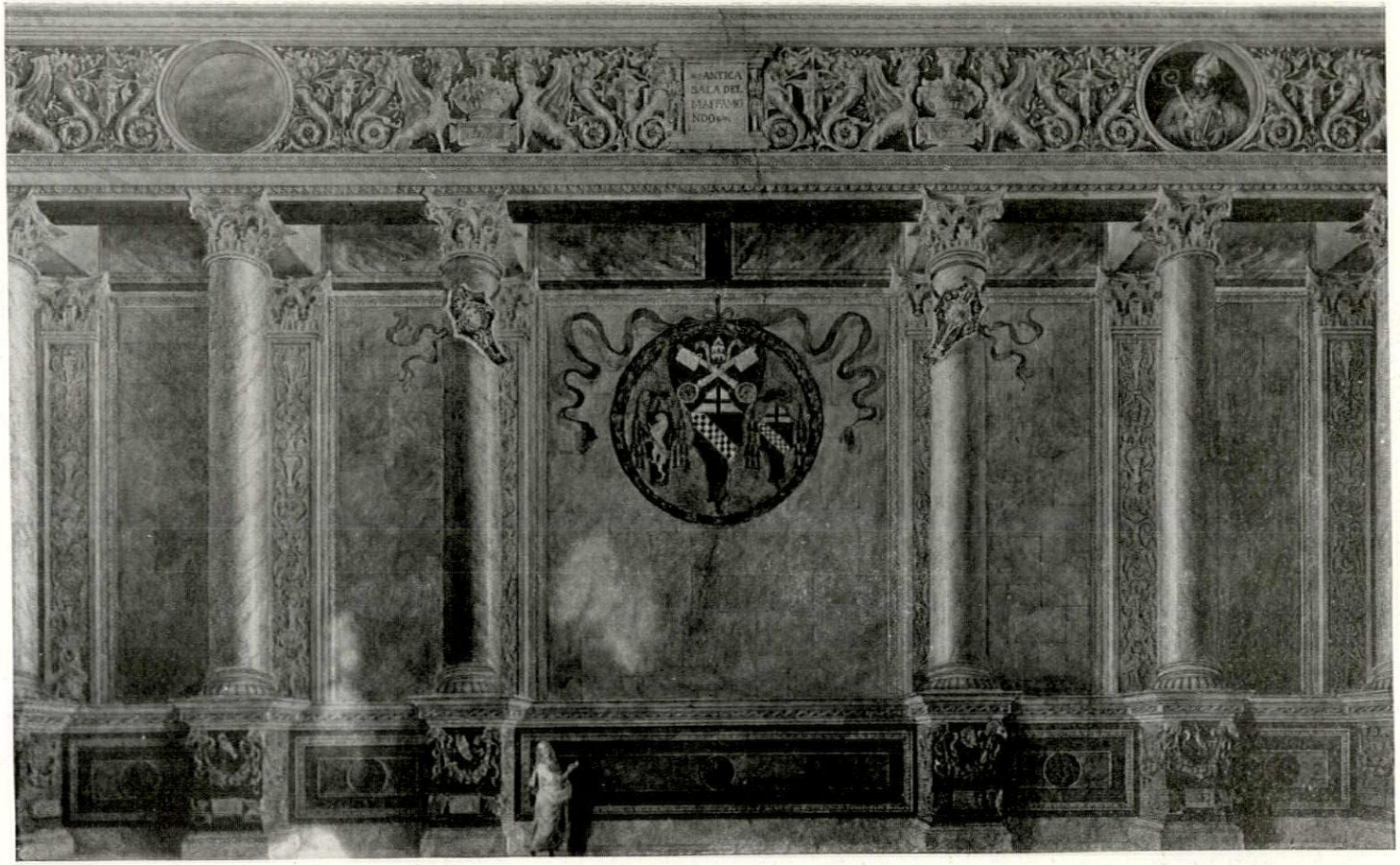
In any venture of restoration involving the destruction of old work, later, however, than the original creation, the restorer is almost always the target of hostile criticism on the part of those who consider that what is already possessed of venerable antiquity should not be sacrificed to lay bare an earlier work of problematical value or completeness. Fortunately, in the case of the Sala Regia and of the Sala del Mappamondo, which latter we shall have occasion to discuss by-and-by, the evidences of the fifteenth century decorations, attributed to Bramante, were so convincing, and the mural embellishments of later date were so obviously inferior in character, that the restorers were justified in their undertaking from the outset.

Although the fifteenth century plaster surface of the walls had been destroyed in places by the partitions and floors which subsequently cut the apartments up into smaller rooms, the fresco incisions for the original decorations were sufficiently discernible for the restorers to reconstruct the whole scheme of ornamentation. After the removal of the later mural paintings some of the pristine colour was found to be as fresh as when first applied, while elsewhere there was enough clear evidence to guide conscientious restoration. One of the illustrations shows the complete scheme of fresco restoration for one of the long walls of the Sala Regia. Pilasters, bearing arabesque and candelabra ornament on their panelled shafts, in a long series support an entablature whose highly enriched frieze displays a succession of roundels upon which are depicted the heads of the Roman Caesars whence, it would seem, comes the name of the apartment.

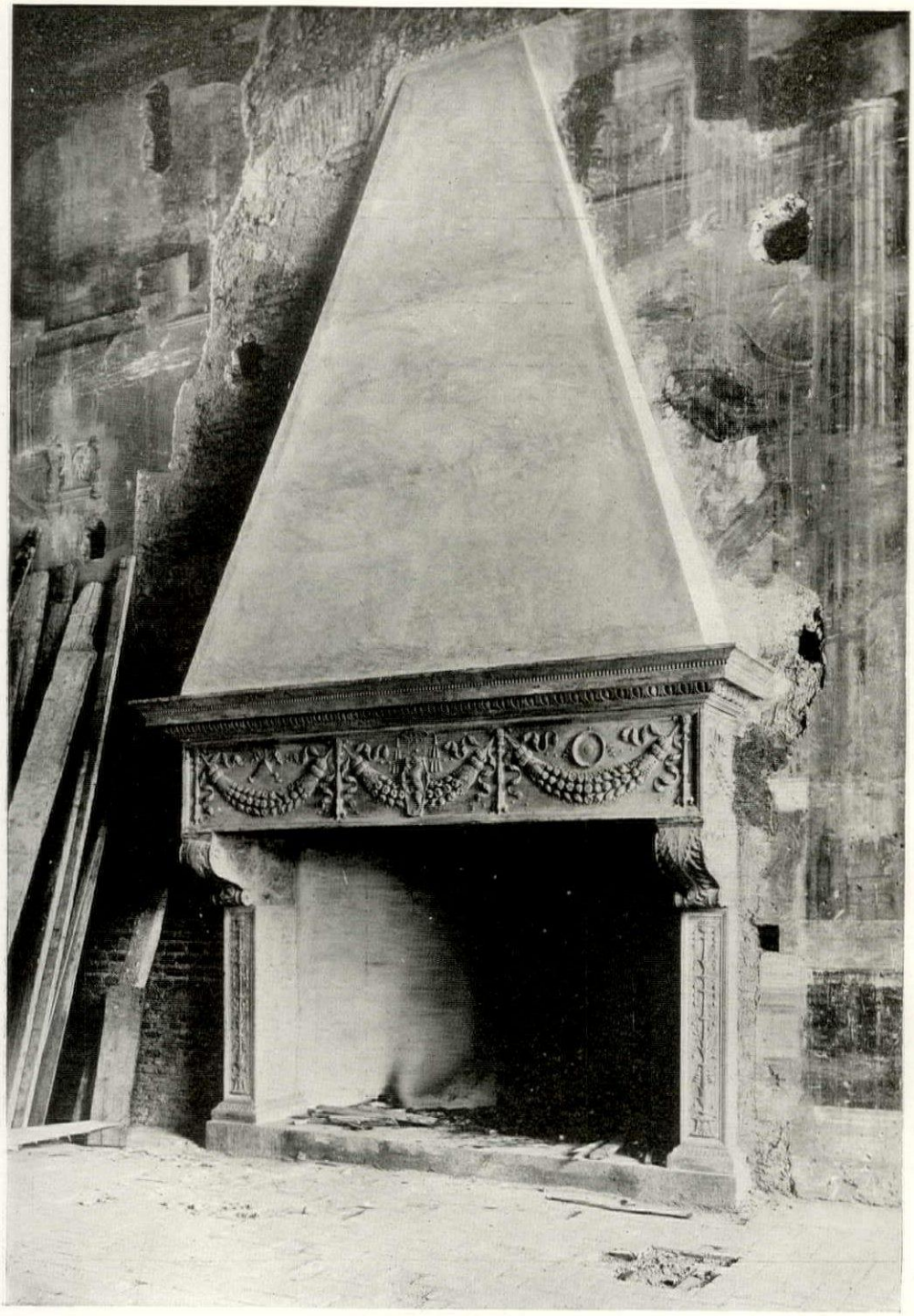
In the Sala del Mappamondo, a hall of equal height with the Sala Regia but of less length, occupying part of the eastern front of the *piano nobile*, the labour of rehabilitation was of scarcely less extent. How formidable was the task confronting the restorers may be gathered in some measure from the illustration which shows small portions of the original fifteenth century fresco appearing where the later coats of mural painting have been removed. With what care the work is conducted may also be judged from the same illustration which clearly reveals the superposition of several coats of mural painting, of different epochs, one over another. These coats it is customary to remove one at a time with scrupulous caution until the original fresco is laid bare, a process which has shown that nothing worthy of preservation has been sacrificed.

One item of great moment in rehabilitating the Sala del Mappamondo is the reinstatement of the exceedingly beautiful fifteenth century marble fireplace in its proper position at one end of the room. This fireplace, of which detailed illustrations and measured drawings are shown, had been taken down and cast into the vaults beneath the palazzo, where for years it had lain amidst an accumulation of rubbish, uncared for and, perhaps fortunately, forgotten.

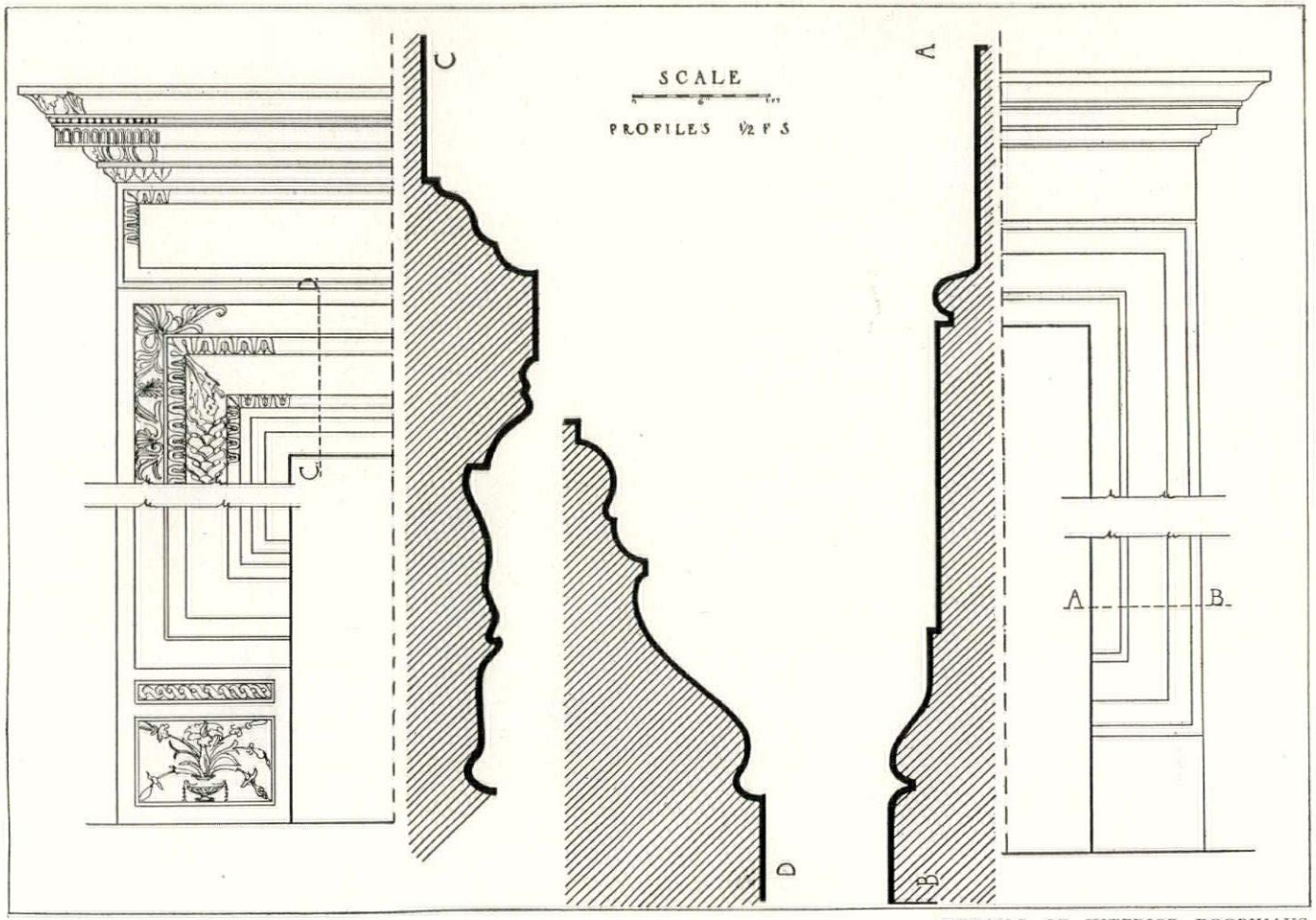
By great good hap it was not much damaged and the repairs necessary to its



RENDERING OF RESTORATION, SALA DEL MAPPAMONDO, PALAZZO DI VENEZIA, ROME.



FIREPLACE IN SALA DEL MAPPAMONDO,
PALAZZO DI VENEZIA, ROME.



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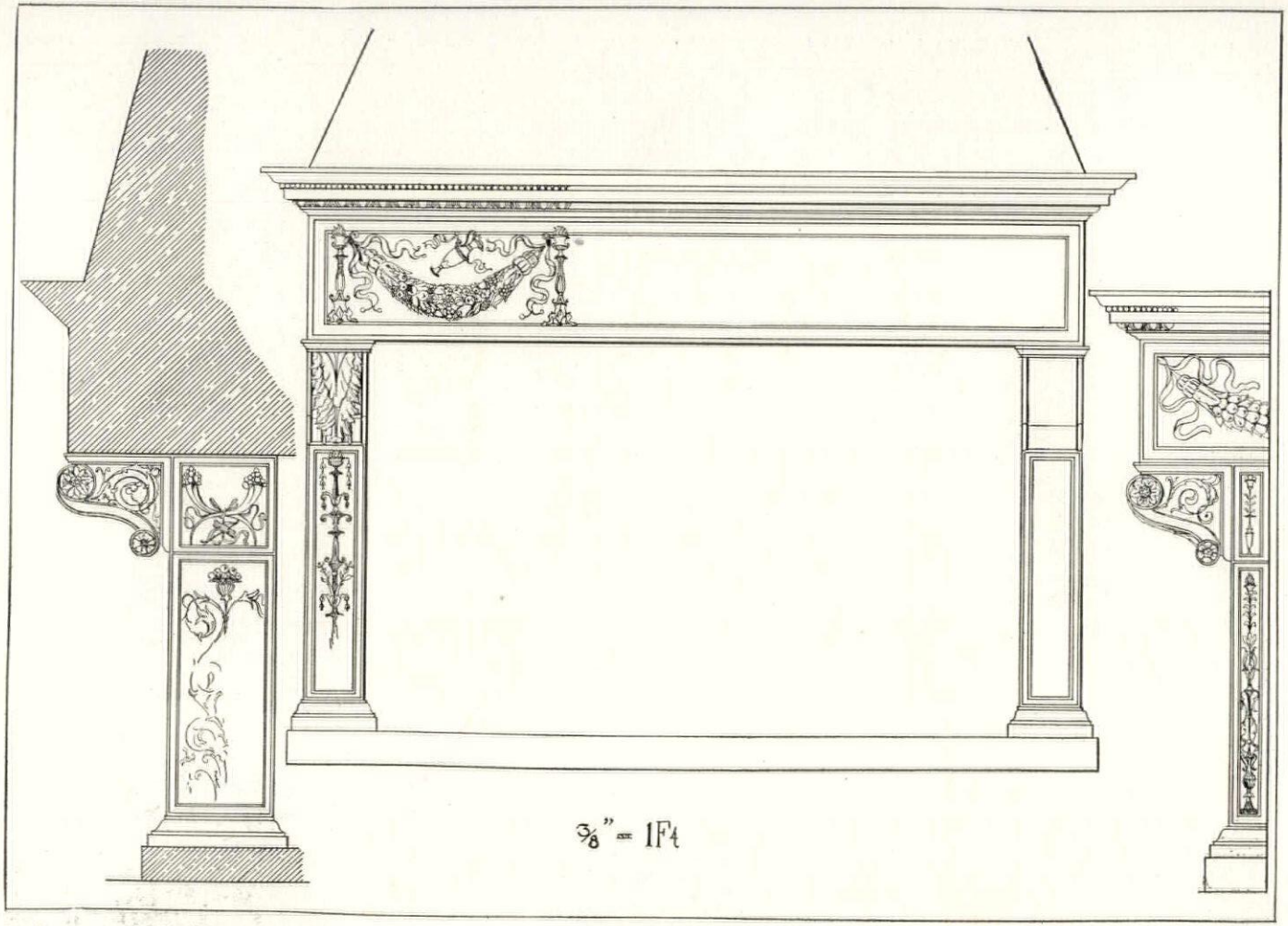
DETAILS OF INTERIOR DOORWAYS,
PALAZZO DI VENEZIA, ROME.



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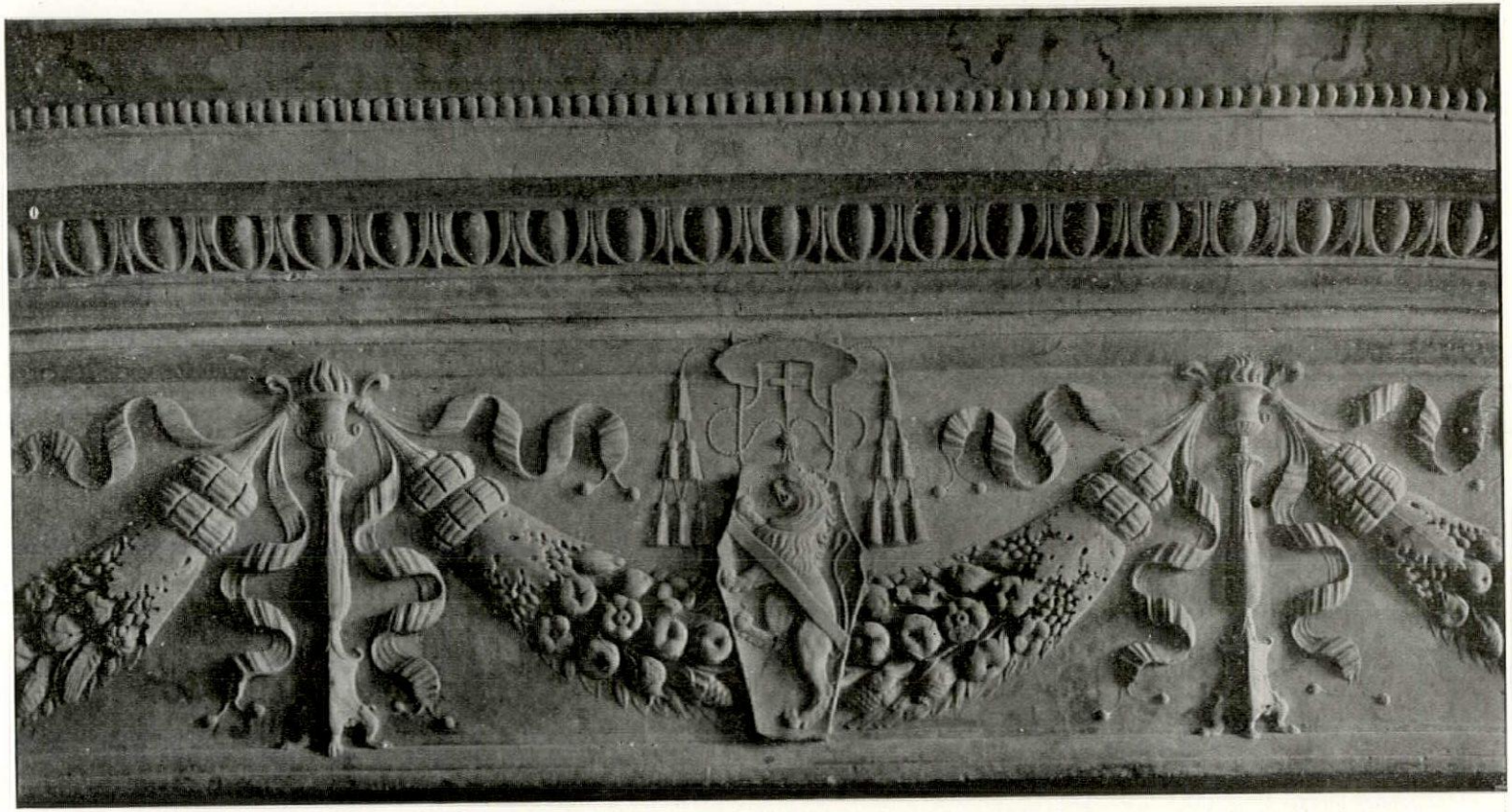
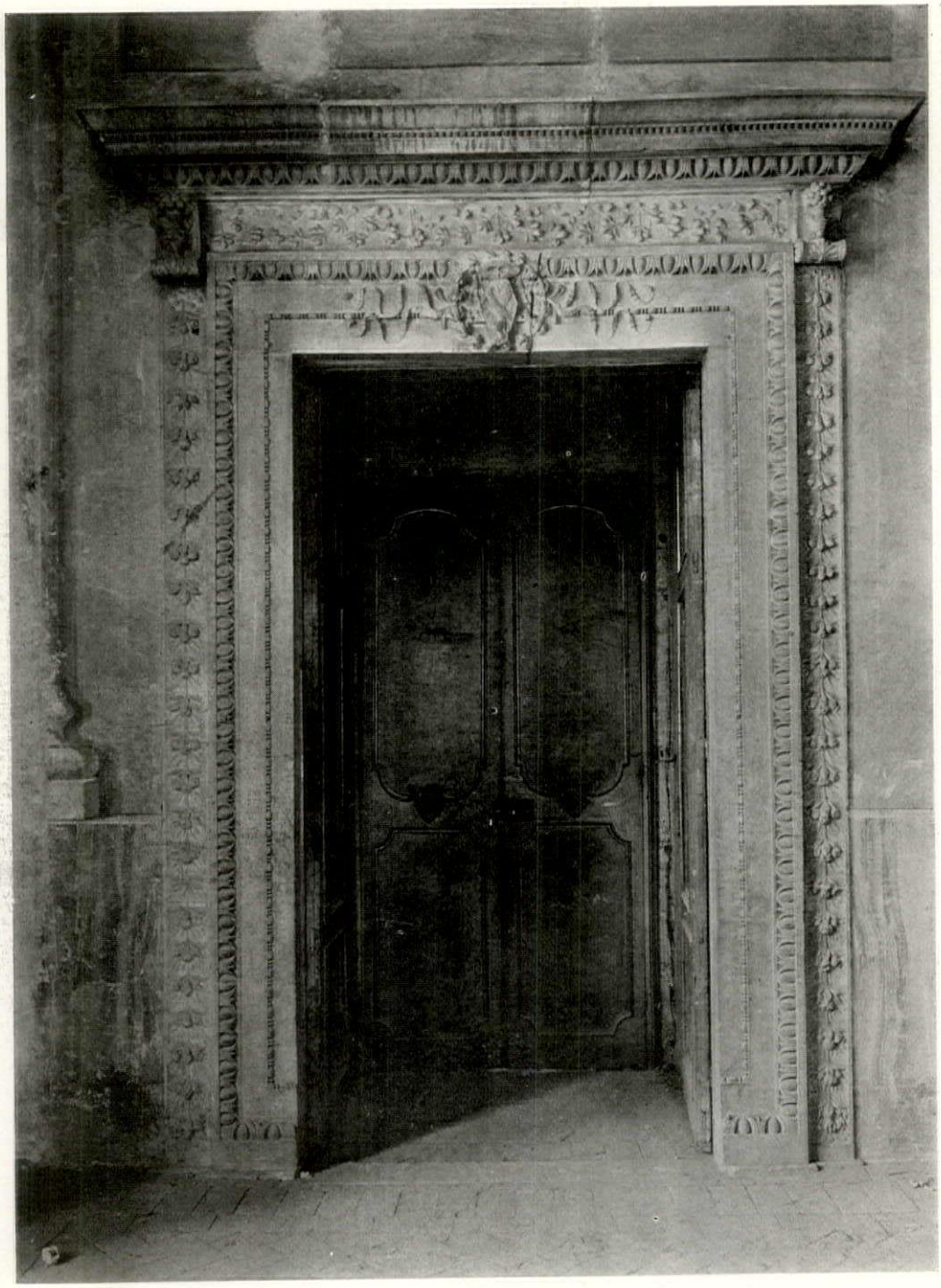
DETAILS OF FIREPLACE IN SALA DEL MAPPAMONDO—PALAZZO DI VENEZIA, ROME.



FIREPLACE DETAIL IN SALA DEL MAPPAMONDO,
PALAZZO DI VENEZIA, ROME.

FIREPLACE DETAIL IN SALA DEL MAPPAMONDO,
PALAZZO DI VENEZIA, ROME.



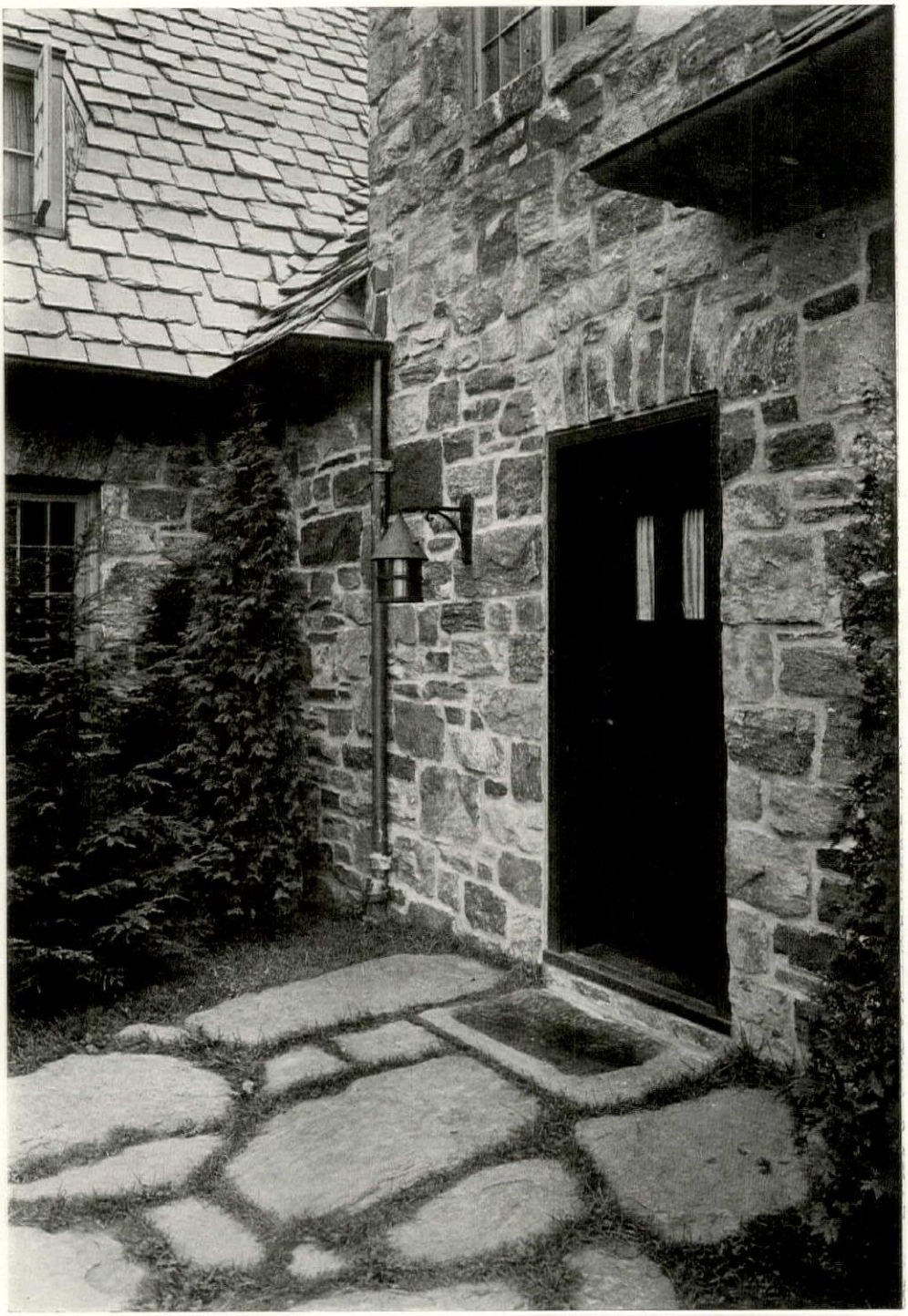
INTERIOR DOORWAY — PALAZZO
DI VENEZIA, ROME.

complete restoration were slight. Quite aside from its intrinsic grace and elegance, it is a significant and striking witness to the character of the best work of its kind wrought in Rome at this vigorous and engaging stage of the Renaissance. The conception, though fully coincident with the accepted ideals of the time, is bold and free and the execution, while forceful, is also full of delicate refinement. The technique, especially in the quality of the relief upon the frieze, is perceptibly different from what one ordinarily finds in contemporary Florentine work and attests the hand of exuberant genius giving rein to a full-flavored vivacity which elegant and intellectual Tuscan usage would have held under greater restraint. The craftsman had caught and was expressing the spirit of travertine Rome rather than the spirit of sandstone Florence. Who that craftsman was it is perhaps too much to hope to say with perfect certainty, but Meo del Caprino seems one of the likeliest persons to whom the honour should be given.

The carved marble architraves and cornices of the doors of the Sala del Mappamondo and of other rooms in this suite on the *piano nobile* are of scarcely less interest than the fireplace. In one respect their present condition is more interesting. They, too, had been cast into the vaults as useless rubbish and in not a few cases were badly shattered. But they have all been rescued and put back in place, and where sections had been wholly lost or were too badly broken to be saved, the missing parts have been supplied by admirable *stucco-duro* restorations which, without the closest scrutiny, it is difficult to distinguish from the original marble. From the illustrations it is possible to see what was the condition of some of the architraves prior to the recent restoration; it is also possible to see the way in which the restoration has been carried on.

The beamed and painted ceilings, where not actually destroyed or completely obliterated with deliberate intent, have not fared so ill as some of the other features. Both in colour and design they present an illuminating example of fifteenth century ceiling embellishment and a wealth of inspiration to those interested in this method of decoration. Indeed, when the work of restoration shall be fully accomplished, every detail of this great fabric will be deserving of close enquiry by architectural students, both as a matter of education and also for the items in a vast body of precedent for purposes of timely adaptation.

After the restorers have finished their task we may confidently expect that the Palazzo di Venezia will reflect the full measure of credit upon the unknown architect who planned it—whether that architect may have been Giacomo da Pietrasanta, whose name has already been mentioned; or Rosellino, who wrought so extensively for Pius II; or Manfredo di Como, whose connection with the building is beyond question; or, as Doctor Corrado Ricci supposes, Leon Battista Alberti, whose fame and influence were paramount when the Palazzo was begun, and who often gave advice and drawings without taking a further hand in the erection of a structure about which he had at first been consulted. The time is not yet to make a final attribution. Perhaps we shall never know to whom the greatest share of credit is due. In any event, whoever the master may have been, posterity owes him an incalculable debt of reverence and gratitude.



MAIN ENTRANCE—RESIDENCE OF JOHN H. TYSON, ESQ.,
RIVERSIDE, CONN. FRANK J. FORSTER, ARCHITECT.

The RESIDENCE of JOHN H. TYSON, ESQ. RIVERSIDE, CONNECTICUT

FRANK J. FORSTER, ARCHITECT

By Herman J. Butler

TO classify the Tyson house as a successful adaptation of Norman or early English domestic architecture would assist but little in the appreciation of its essential character. Classification as to style is seldom exact or significant, and all too frequently is based on purely superficial details. Furthermore, insistence on such classification would tend to create a false impression of the manner in which the architect approached his problem. The Tyson house has the charm which obtains where honesty of construction and simplicity of design are emphasized. There is no forcing of plan or construction into the characteristic forms and decorative details of a particular period. This does not imply, however, that the very subtle quality of style is lacking. On the contrary, the house does possess a distinctive style, one of great beauty, that is inherent in the structure itself. If, therefore, it recalls some of the fine architecture of Northern France or early work in England or in this country, it is because the house measures up to the standards by which we gauge the merits of this early work. It is not because the house has been carefully modeled on similar lines.

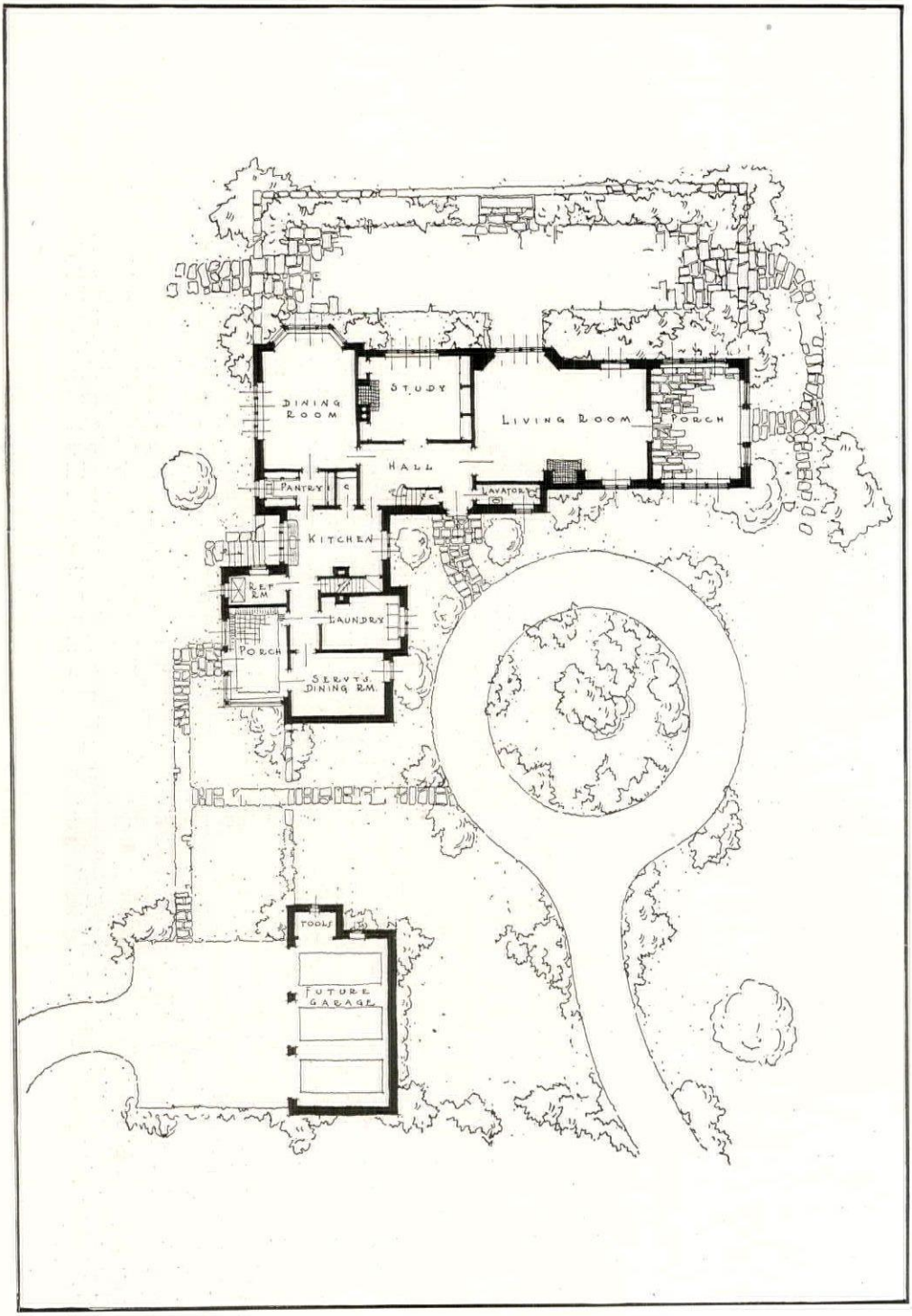
The first impression is of a building admirably suited to its location—of long, low, restful lines, of consistent design. Though presenting interesting variations of details and mass, these have been handled with due regard to the unity of the composition. No feature asserts itself too prominently or detracts from the studied simplicity of the general effect.

The architect was fortunate in having to plan for a site that is one of the most attractive spots along the Sound, an ideal location for a country house. The natural beauty of the setting, the diversified and picturesque views which unfold at every turn, all contributed to the interest of his problem. Occupying a commanding position on a low rolling hill, the house is visible for great distances, and can be seen readily from every angle. This implies a severe test of architectural merit. The design fulfills this exacting requirement, massing or composing well from every view point. Here is no distinction, a frequent and unfortunate one, of "front and back" architecture. In an isolated building, it is incumbent upon the architect to approach his problem much in the same spirit as would a sculptor designing a free standing figure. His efforts must be to create a thing of beauty from every point of view. In this respect, Mr. Forster has been particularly successful.

That the house fits into its environment is due in a measure to the material used in its construction. The walls of local stone range in color from buffs and tans to cool greys, harmonizing closely with the variegated shades, carefully graded, of the slates used in the roof. The wood throughout is oak, stained a natural brown. The whole is a color combination soft and pleasing in effect and one that blends admirably with the landscape. Due attention has been given to the equally important element of surface textures, both in the selection of the materials and in their manipulation. Excellent craftsmanship characterizes the results obtained.

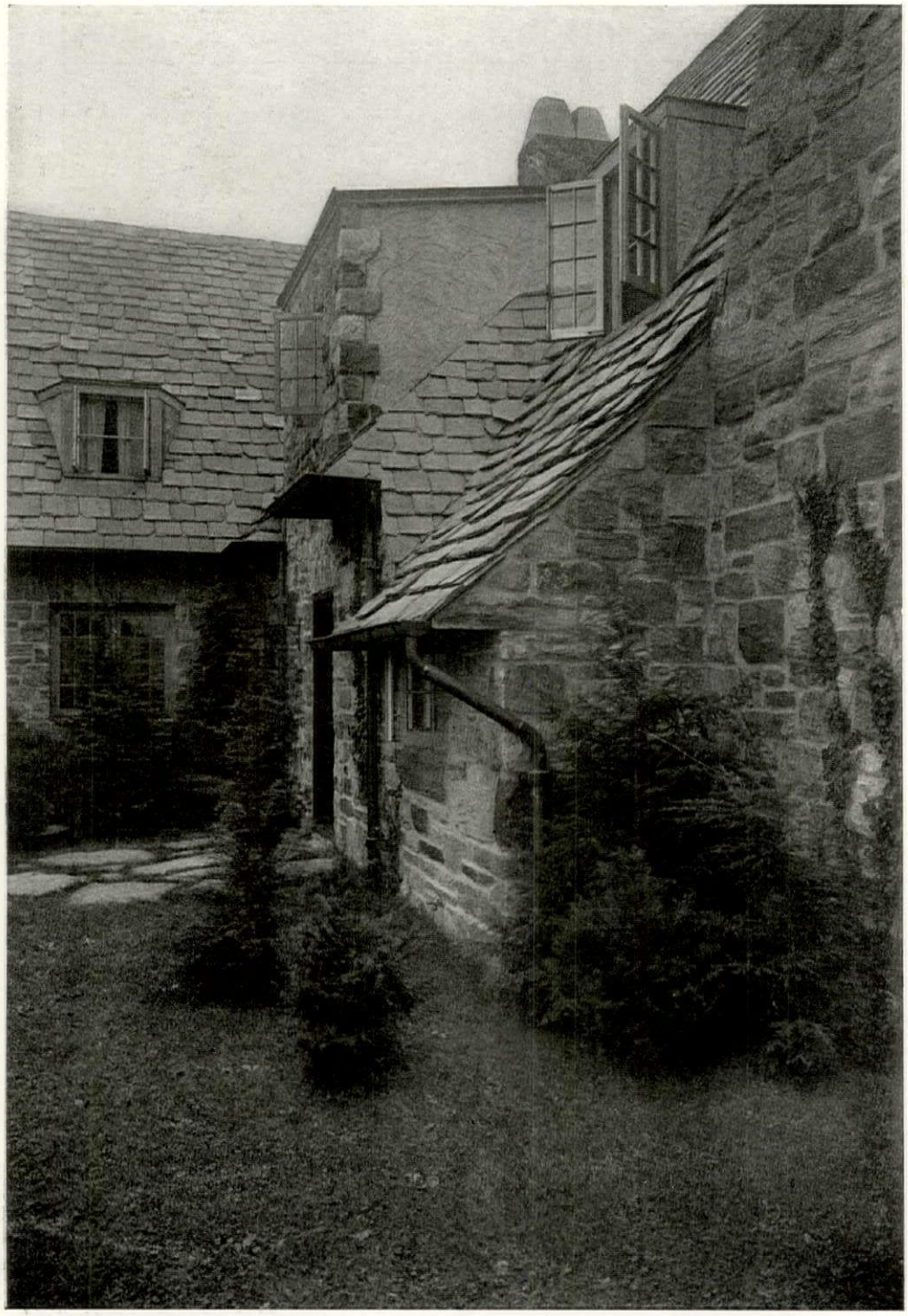
With good lines, well disposed masses, good materials, pleasing alike in tone and texture, there is no demand for further elaboration of architectural motives or decorative accessories. Rightly handled, there is here all that is requisite for the creation of architecture of merit. The Tyson house is an illustration of the gratifying results that can be achieved by insistence upon these fundamentals in building.

In plan, the house is L-shaped, the service part being developed at a right angle

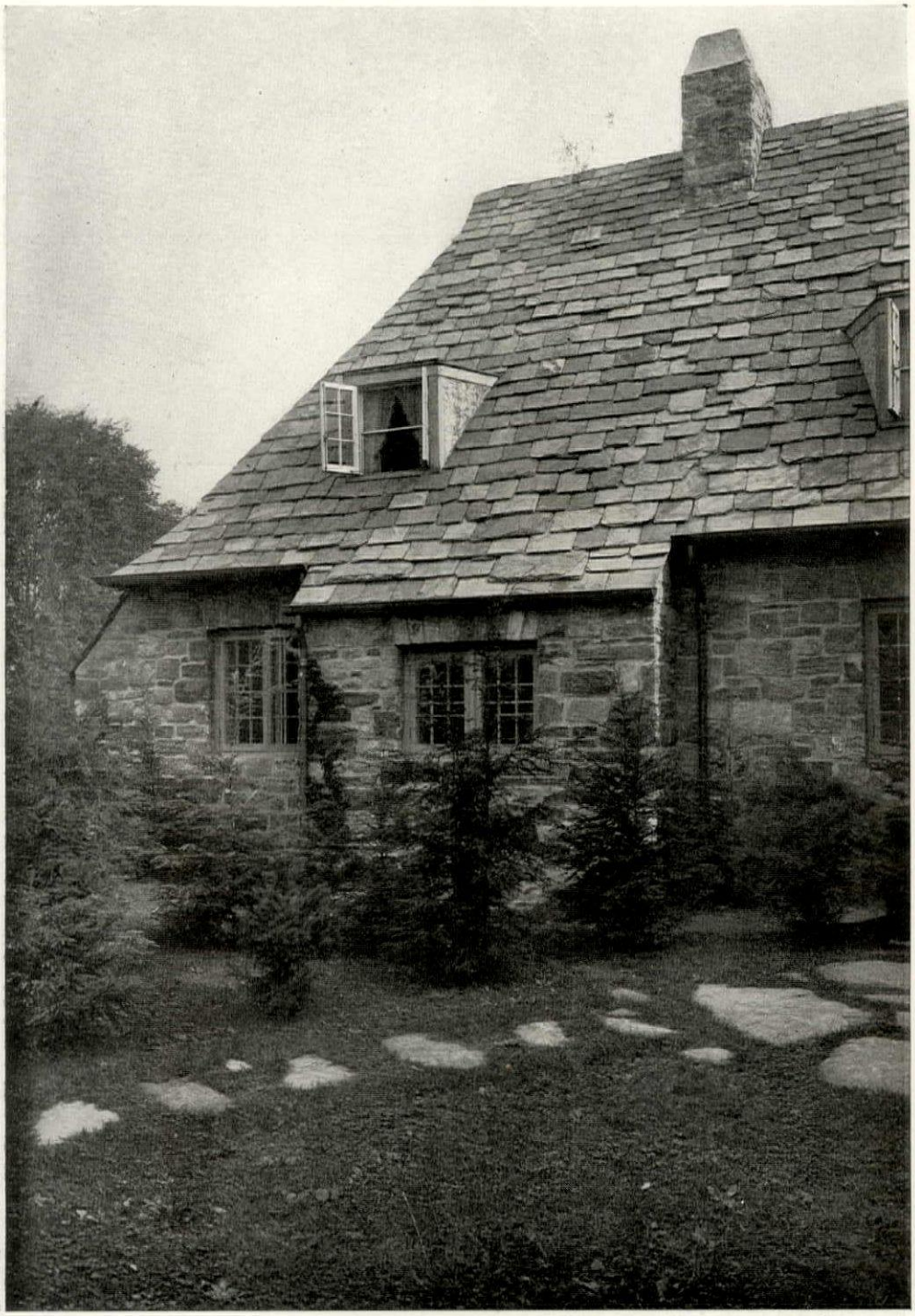


PLAN OF GROUNDS AND FIRST FLOOR—RESIDENCE OF JOHN H. TYSON, ESQ., RIVERSIDE, CONN. FRANK J. FORSTER, ARCHITECT.

FRONT ELEVATION—RESIDENCE OF JOHN H. TYSON, ESQ., RIVERSIDE, CONN. FRANK J. FORSTER, ARCHITECT.



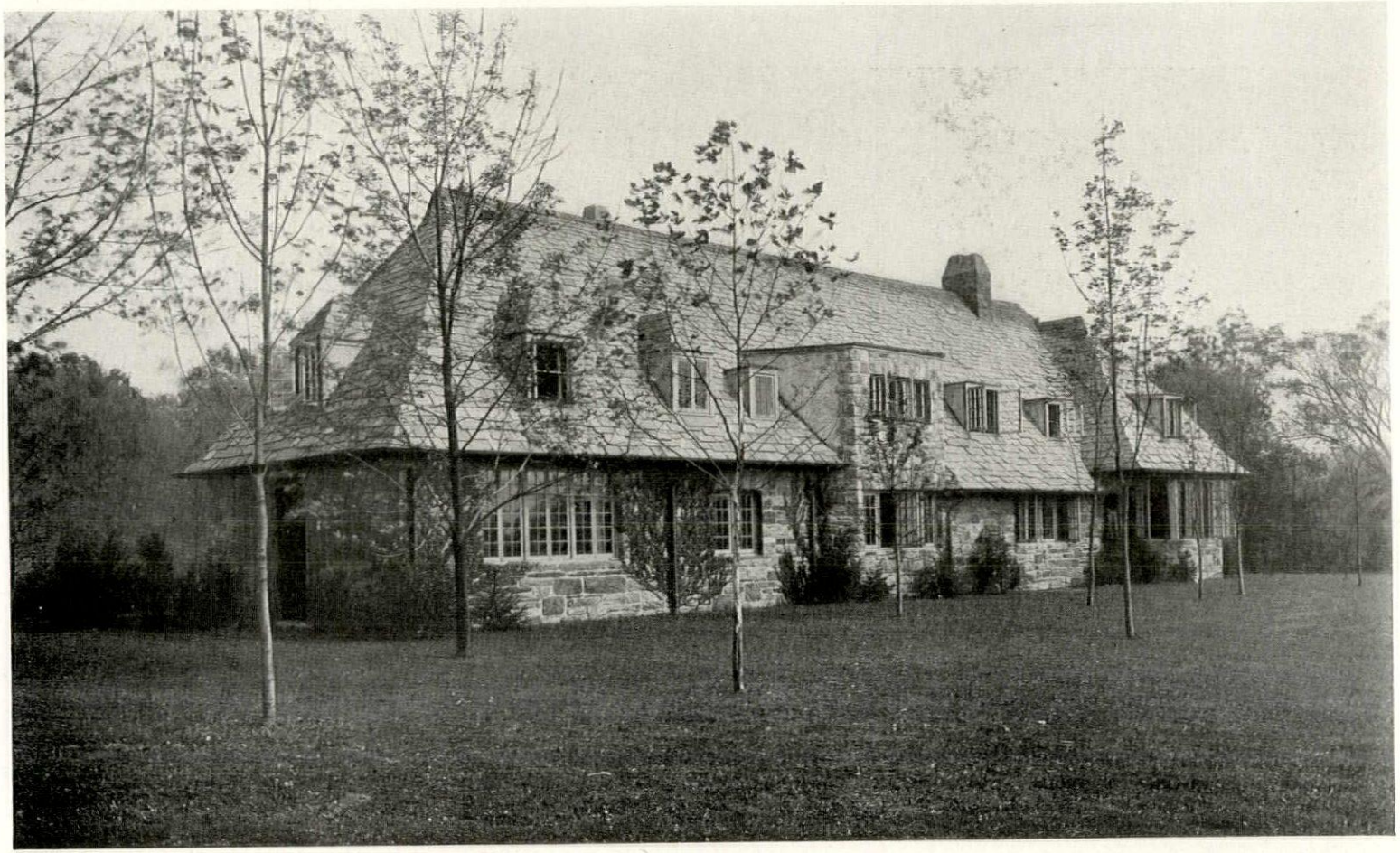
RESIDENCE OF JOHN H. TYSON, ESQ., RIVERSIDE, CONN.
FRANK J. FORSTER, ARCHITECT.



RESIDENCE OF JOHN H. TYSON, ESQ., RIVERSIDE, CONN.
FRANK J. FORSTER, ARCHITECT.

RESIDENCE OF JOHN H. TYSON, ESQ., RIVERSIDE, CONN.
FRANK J. FORSTER, ARCHITECT.

SIDE ELEVATION—RESIDENCE OF JOHN H. TYSON, ESQ., RIVERSIDE, CONN. FRANK J. FORSTER, ARCHITECT.



SIDE ELEVATION—RESIDENCE OF JOHN H. TYSON, ESQ., RIVERSIDE, CONN. FRANK J. FORSTER, ARCHITECT.

DINING ROOM—RESIDENCE OF JOHN H. TYSON, ESQ., RIVERSIDE, CONN. FRANK J. FORSTER, ARCHITECT.

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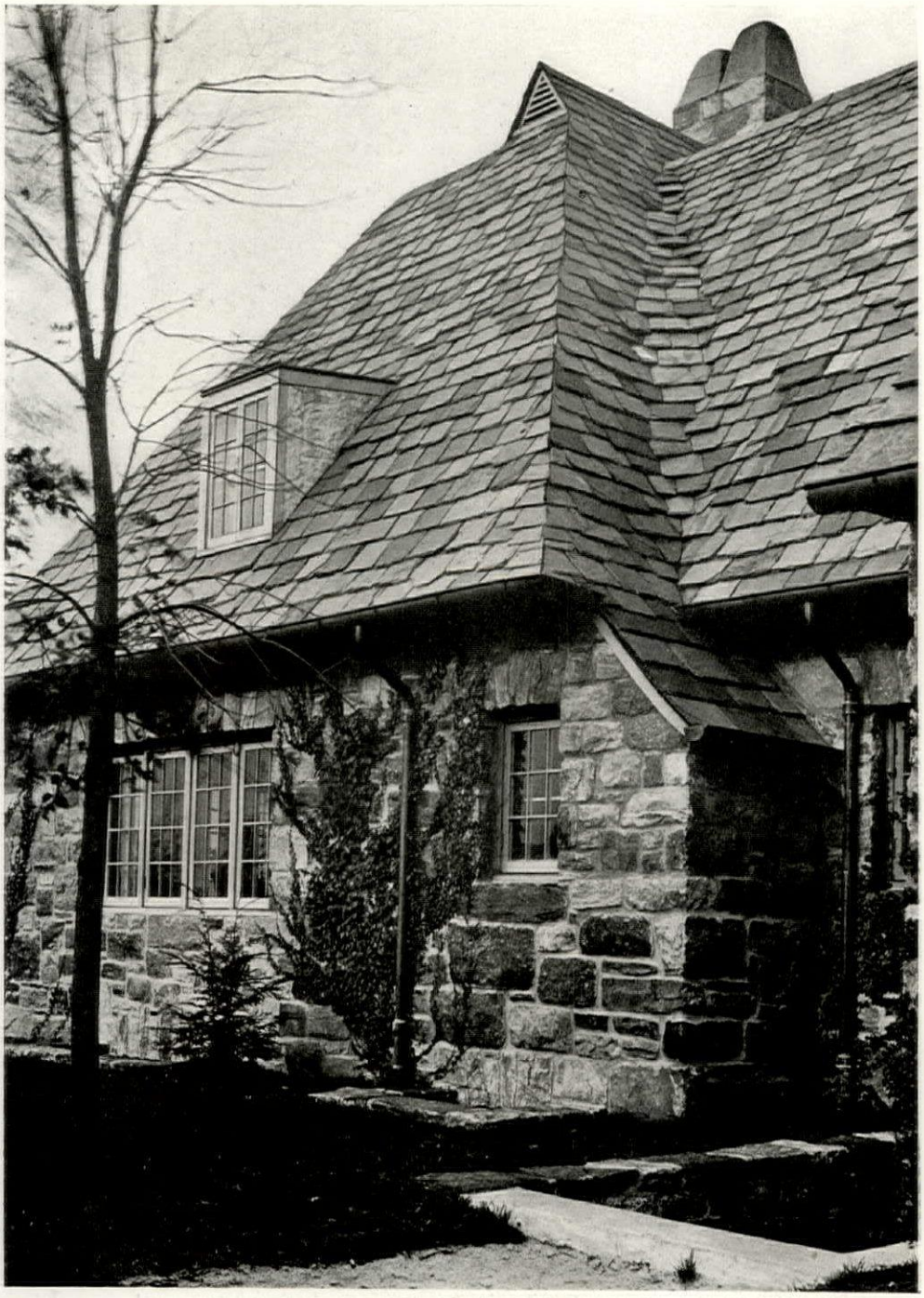
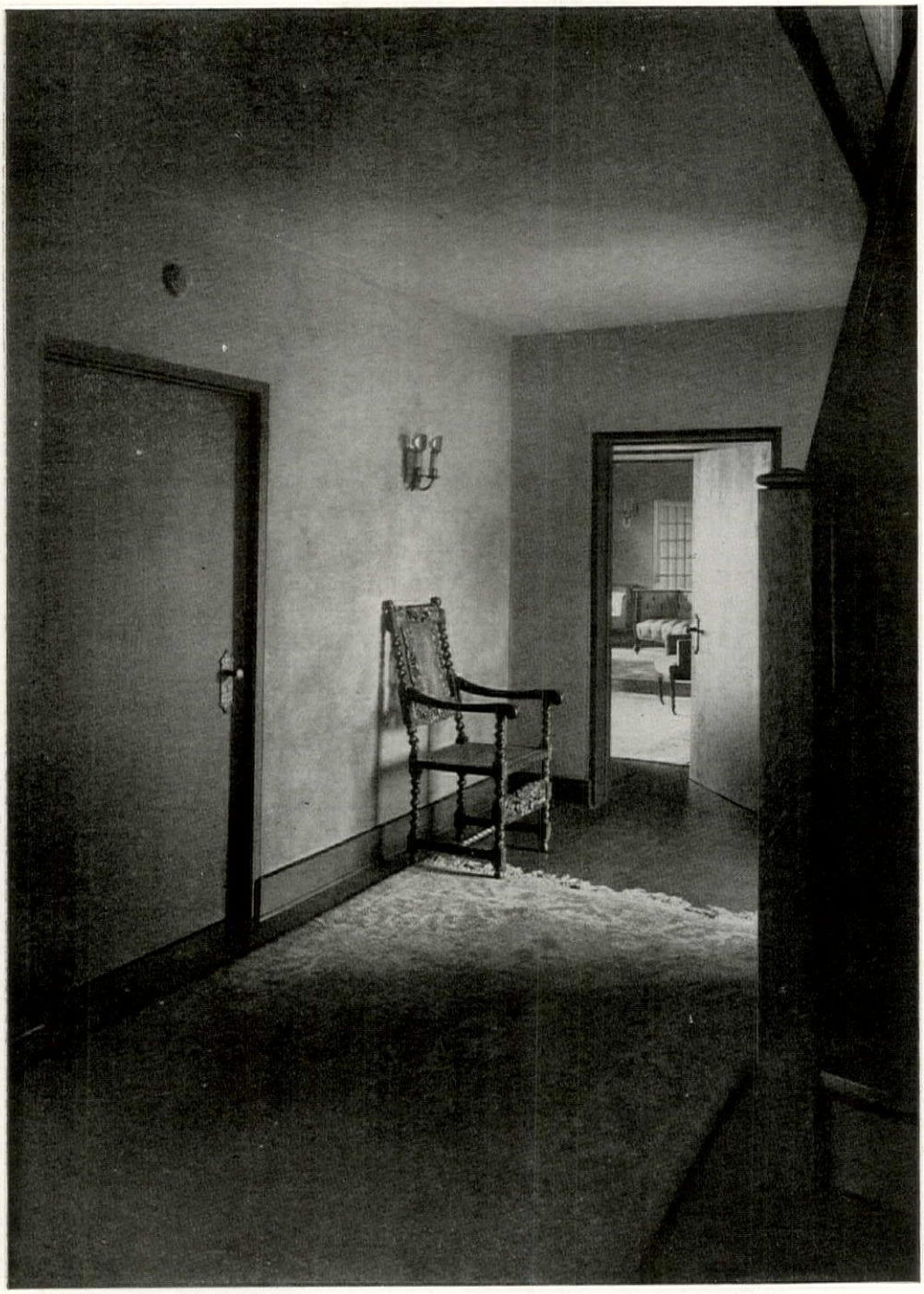


RESIDENCE OF JOHN H. TYSON, ESQ., RIVERSIDE, CONN.
FRANK J. FORSTER, ARCHITECT.



HALLWAY—RESIDENCE OF JOHN H. TYSON, ESQ.,
RIVERSIDE, CONN. FRANK J. FORSTER, ARCHITECT.

to the main building. The service portion is complete in itself. Access to the main wing is direct and convenient. At the same time, the plan has the advantage of permitting the closing off of this wing from the main part of the house. A more important consideration, one which directly influenced the design, is apparent upon examination of the living rooms. The finest views are those of the Long Island Sound visible from the windows along the south side of the house, a picturesque wooded glen seen from the windows on the east side of the dining room, and the uninterrupted view of the Sound Inlet and the distant country obtained from the living room porch. The arrangement serves to unify and to emphasize the living rooms and master's rooms as a whole.

The entrance is particularly inviting; a long winding road ends in a loop within the angle formed by the planning. The entrance door, very simple in design, opens directly into the heart of the house, into a large hall which connects with the living, library and dining rooms. These are all of generous proportions, their size accentuated by the low ceiling height.

The living room, thirty feet by nineteen feet six inches, is adapted to a fine decorative treatment. It is a room that will furnish well. The fenestration has been planned so that ample wall spaces are provided for the large pieces of furniture that are to be placed against them. The walls and ceiling are of sand finished plaster. The floor is of oak boards laid in random widths. The doors are heavy batten type with solid oak bucks. The trim is plain oak, stained.

A living room in a country house like this must fulfill a variety of functions, be appropriate for a wide range of social purposes. It would be easy to over-emphasize the formal architectural aspect of such a room or to err by wholly disregarding this essential. Here the architect has avoided these two extremes and has created a room, dignified and comfortable, possessing a most attractive atmosphere.

The sun room, large, comfortable and well lighted with casement windows on three sides, is an attractive extension of the living room, one which greatly assists that room's varied functioning. The fenestration is so arranged that the continuity of the wall veil is clearly defined and therefore no weakening of the exterior design results.

The dining room at the opposite end of this wing is one of the finest rooms in the house. The group of windows along the east side and the wide range of casements in the bay at the south end of the room insure a wealth of sunlight and open upon a varied and interesting prospect. The long west wall is adapted to the placing of the side board or dresser. A convenient location for the serving table is provided on the north wall, at the side of the service door. The bay is sufficiently broad and deep to be used as a breakfast alcove, without crowding the space occupied by the large dining table. In short, the room properly lends itself to a well balanced and formal disposition of its furnishings.

The library, entered through the hall, is a small room made inviting by rows of open book shelves lining the west wall from floor to ceiling and by the generous proportions of the fireplace opposite. It, too, has a row of casements commanding a view of the Sound to the south.

Although this is not a large house, there is an air of spaciousness about all of the rooms that gives the impression of a much greater floor area. This, no doubt, is due in part to the low ceilings, and is also attributable to the restraint, the simplicity of detail which characterizes the whole design. The exterior gives much the same impression. Here the low walls, the emphasis of the horizontal lines, increase the apparent size of the structure. The substantial nature of the building materials adds a note of durability and strength that is particularly pleasing.

The photographs show the house without the contemplated landscape development. The planting about the house will be extended on the southern side into a semi-formal placing of shrubbery, grass plots and flagged walks. The service yard is to be screened; the walks and roads throughout the grounds bordered with well disposed masses of trees and shrubs.

THE BUSINESS OUTLOOK *for* 1923

By Willford I. King, Ph.D.
of the National Bureau of
Economic Research, Inc.

WITH circumstances as they are, the position of the forecaster can scarcely be regarded as an enviable one, and the safest policy for the statistician to follow is to force some one else to assume the risk of error. A convenient way of accomplishing this end is to teach the business man the language spoken by those figures in which he is most interested and then to turn over to him the entire responsibility of interpreting their tales. This conservative course is the one to which I propose to adhere in the following pages.

One subject in which every individual is perforce interested is that of prices. We all desire to know whether the current year is likely to see a rising, or a falling, price level. If we wish to solve this problem we may well begin by turning to any standard index of wholesale prices, such as Dun's, Bradstreet's, or that published by the United States Bureau of Labor Statistics.[1] All of these indices tell essentially the same story—namely, that prices reached a dizzy height in the first half of 1920 and then fell precipitously until the middle of 1921. During all of 1922, however, they have been rising—at first slowly, but of late more rapidly.

How long is this upward swing likely to continue? Let us judge the future by the past. After the low point in 1904 the price level climbed steadily for about thirty-two months. Following the panic of 1908 it took about twenty-two months for a new crest to be reached. After the mild depression of 1911 the price rise continued for nineteen months. The sharp rise due to war inflation makes it difficult, if not impossible, to locate the crest of the wave immediately following the 1914 panic. Following the decline, which reached its lowest point in 1919, prices rose for only about fourteen months. The average length of these four upward wave movements is about twenty-two months. According to Bradstreet's index, prices have already (December 1, 1922) climbed during the present cycle wave for eighteen months. Dun's index number shows a continuous rise for seventeen months. The Bureau of Labor index, which includes relatively fewer raw materials and more finished products, indicates however, that prices have been on the up-grade for only eleven months. This evidence is manifestly not such as will justify rigid conclusions. The reader can, however, weigh the facts, and then form an opinion as to whether the price peak is most likely to occur in the spring, the summer, or the autumn of 1923.

The inferences drawn from the data just presented may be tested by means of other criteria. Most statisticians are familiar with the fact that, during a boom, stock prices usually reach their peak several months before commodities at wholesale attain their highest prices. Let us compare, then, for different cycles, the dates when the average price of a selected group of industrial stocks and Bradstreet's index of wholesale prices reached their respective crests. Stock prices were at their top in January, 1906, but commodity prices did not strike their high until March, 1907, or fifteen months later. The next peak for stocks occurred about October, 1909, and commodity prices attained their highest point in April, 1910, only six months later. Stocks rose to a crest again in September, 1912, while commodities continued to climb until December of the same year,

[1] The two first indices mentioned are found in the magazines of the same name and are quoted in the daily papers. The latter two are published currently in the Census Bureau's *Survey of Current Business*, and the record for the entire period from 1890 to 1920 is published in *Bulletin* 296 of the United States Bureau of Labor Statistics.

the interval in this case being only three months. The next high point for stock values occurred in November, 1916. This peak apparently corresponds to the hump found on the wholesale price curve in July, 1917—or eight months later. The next high point of the stock market was in November, 1919. It was followed by a peak in the commodity price index in May, 1920. In this case the difference in dates is six months. The average of the preceding intervals denotes a tendency for wholesale prices to lag some seven or eight months after stock prices. It may be advisable, then, for the reader to study the recent course of the stock market before he forms his final conclusions as to the length of time the present upward movement of wholesale prices is likely to continue.

In the past, wholesale prices and pig-iron production have apparently reached their highest points at about the same dates. The latter quantity began to increase in September, 1921, and has been on the up-grade most of the time since. However, the late summer of 1922 saw a sharp decline in the pig-iron output, but apparently this falling off was directly due to the coal strike, for, in September, the upward course was resumed, and the movement is still continuing. The probabilities are that the daily output of pig iron will pass well above 100,000 tons before this boom is over. Should price indices continue to parallel pig-iron output it appears likely that no price decline will occur until such a rate of production has been attained.

If events in this cycle follow the same sequence as heretofore, there are a number of other indicators which also point to a further price rise. The unfilled orders of the United States Steel Corporation are still scarcely up to normal. Interest rates are just beginning to rise, and the number of failures has not yet sunk to a low level. All of these signs have in the past indicated a continuance of the upward price movement.

Furthermore, the Federal Reserve vaults are literally overflowing with gold which is presumably fairly aching to be used as a basis for the expansion of bank loans; and expanding bank loans have usually been accompanied by higher price levels.

While the wary man will never place absolute confidence in any or all of the indicators just mentioned, the fact remains that he who ignores them will, in the long run, go astray far more often than will the one who heeds their warnings.

Having thus examined the evidence concerning the probable course of wholesale prices it is worth while now to devote attention to some other important factors which also undergo cyclical oscillations.

It is a well-known fact that retail prices usually follow rather closely the course of wholesale prices, though their movements normally lag from three to six months after the latter. The chances are, then, that the man who forecasts correctly the course of the wholesale markets will be able to guess the approximate path that an index of the prices of consumption goods will take.

House rents also move[1] in a general way in accord with the prices of goods at wholesale, but their movements come at least a year later. Since the distinct upturn in commodity prices did not come until the beginning of 1922, one need not be surprised if house rents fail to rise materially before the opening of 1923. Should they continue upward throughout 1923 this fact will, for the reasons stated in a previous article[2], tend to make residence values higher.

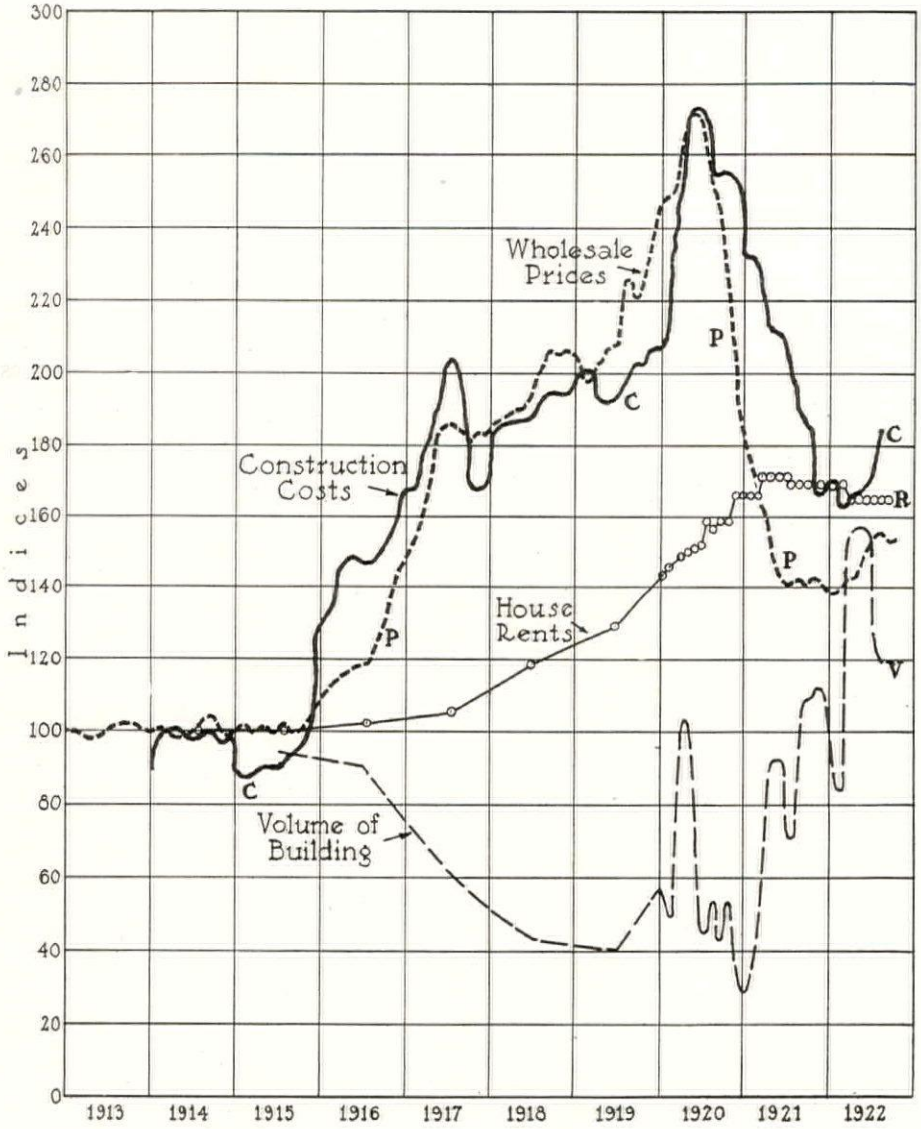
House rents, however, presumably because of the effects of custom, usually fluctuate less widely than do prices of commodities at wholesale, while the latter ordinarily tend to vary at about the same time and to about the same degree as do construction costs. Recently, construction costs have been rising rather sharply[3], while rents have scarcely begun to move upward. That this difference in rate of movement is one of prime significance to

[1]For records of changes in house rents see the bulletins of The National Industrial Conference Board and of the Federal Reserve Bank of New York; also *The Monthly Labor Review*, published by the United States Bureau of Labor Statistics.

[2]*The Architectural Record*, May, 1921, pp. 433-439.

[3]See the *Survey of Current Business*, published by the United States Department of Commerce.

HOW RENTS AND BUILDING COSTS AFFECT THE VOLUME OF RESIDENTIAL CONSTRUCTION



R = House Rents according to the National Industrial Conference Board.

P = Wholesale Prices according to the U.S. Bureau of Labor Statistics.

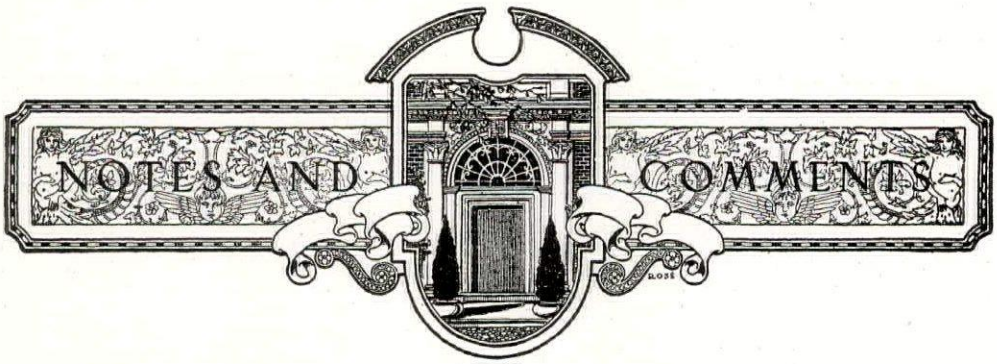
V = Index of Square Feet of Residential Construction as reported by the F. W. Dodge Co.

C = Construction Costs as reported by the Engineering News Record.

the builder is made very evident by a glance at the accompanying chart. One observes there that, at the close of 1915, the construction cost index departed sharply from that representing house rents, and did not return to it again until nearly the end of 1921.

During all this time, except for one brief period, the volume of residence construction remained far below normal. However, as soon as construction costs began the rapid decline of 1921, the volume of construction began to increase rapidly, and the trend continued sharply upward until the middle of 1922, when the cost index started up again. During the last few months there has been a marked falling off in the volume of residence construction. Is this merely a temporary recession, to be followed by a tremendous boom next spring? Since the statistician has resigned his position as prophet and has introduced the reader to the secret mysteries of statistical science, the latter will now be left to extricate himself from the maze as best he may. He must form his own opinion as to whether or not wholesale prices will continue on their upward course; whether or not construction costs will, as heretofore, parallel wholesale prices; whether or not rents will rise as rapidly as construction costs; and, if they do not, what the effect is likely to be upon the volume of residence building in 1923. Should his conclusion be that the building boom is headed for an early collapse he will do well before he sinks into the slough of despond to consider the fact that the peak period for the construction of public, educational, and religious edifices seems normally to occur several months after the crest of residence building has passed, and that, no matter what happens to residence construction, stagnation in the building industry may not be imminent. He may also be wise to keep the fact in mind that most students of the subject agree that, for several years past, the volume of building was distinctly below normal[1]. There always remains, then, the alluring possibility that the present boom will not collapse until this shortage has been wholly made good.

[1]For a discussion of this point see *The Architectural Record* for June, 1921, pp. 512-517.



The Architectural League, a Clearing-House for Professional Information and Discussion

So many societies founded in previous decades, appear to have been instituted with the aim to provide occasions upon which the eminent may disclose their achievement and receive the well-earned plaudits of their peers. The poor attendance registered at many such meetings, despite the fact of the comparatively large number of individuals who have the requisite capacity for interest and benefit, points to the need for a readjustment of contacts. The gravest error would be committed were any change made which might tend to depreciate the quality of scholarship displayed at these gatherings; any change of policy should be in the choice and treatment of subjects, and should cater to the professional deficiencies of the majority of the membership. This is rarely done. There is often a natural tendency in those who have surpassed the rank and file in intellectual and artistic fields, to recognize but two classes of individuals, viz, the young student and the confrère. The rank and file, on whose average of proficiency the status of the calling depends, need the leader most; to them the least consideration is given in the planning and development of subjects at the Society's meetings. The audience is usually composed of individuals who are situated intellectually partway between the student proper and the deliverer of the address. Frequently a little additional enlightenment is essential, which could readily be given when questions are invited, were not the spirit of the meeting often so stilted that the average member fears to display a lack of comprehension in a place devoted to the exhibition of attainment.

The meetings of the architectural societies were no exceptions to the types here described. There was no recognition of any other subjects than those which offered opportunity for discussion as to ethical conduct, regulation of fee, and topics of that character. Essential though these points be, in safeguarding the best interests of the profession and the individual, activities of that character are better suited for special committees and occasional debate than as the major concentration of societies whose members have a wide range of professional interests.

The Architectural League for many years modelled itself after the American Institute of Architects, in the conduct of its meetings and the choice of subjects discussed. Probably for the reason that its spirit was imitative, the meetings were deadly and miserably attended. An unspannable chasm appeared to separate the officers from the general membership. However, with the election of H. Van Buren Magonigle to the presidency, a complete revolution in the objectives of the society, and the spirit of the members was effected by him. He believed that men of a profession, or men of mutual interests, would welcome the opportunity of gathering together, if subjects were discussed which furthered their joint objectives, and that a spirit of fellowship would result, of a quality which could not be stimulated by other means. His personal charm of manner bridged over the presidential chasm, and the membership began to feel that they had an individual interest in the society. This was done without having recourse to that unpleasant imitation of the old-fashioned "atelier" atmosphere, moribund in Paris in the nineties, and buried without honor at the commencement of this century. He made the choice of subjects the special charge of Horace Moran, whose wide acquaintance and good judgment provided a most excellent programme for the first two years—a great factor in the early popularization of the Thursday evenings. The society has more than doubled its membership and the weekly attendance averages about seventy, rising at meetings of special importance to about two hundred. This season has started well; on two evenings in November, subjects of unusual interest were developed and extensively debated.

Harvey Corbert gave a most valuable lecture, of an analytical character, on the subject of the Zoning Law in Greater New York, which, having now been operative for several years, has produced sufficient examples to permit a forecast of its ultimate influence on design. The framers of the law, in their desire to obtain a degree of air and sunshine in the streets of the city, established certain restrictions as to the spaces a building may occupy when it extends beyond a fixed height of street front. These restrictions have resulted in such new and unusual building forms, silhouettes, set backs, and the like, that we must realize we are on the point of creating a world "style" in architecture. When one recalls that the mansard roof, which spread over the known world, originating only 200 years ago, was but a device to get another story or two within the restrictions of the Paris building law of that time, one may appreciate how much greater should be the effect on world architecture of the changes wrought in this great city of New York, which builds more rapidly and in greater quantity than any other city. Here practically every new building has some distinct element of interest, upon its summit, or in its silhouette, that would not have been there had it been designed under the old law.

Indeed, a new and revolutionary factor has entered the whole problem of architectural design. The square-topped, flat-roofed packing box building is a thing of the past (fortunately), and we now have the step-back sky line, the intriguing silhouette, the something above and beyond, the play of masses, shadows, forms and lines where formerly only the hard line of a projecting cornice served to stop the composition. Buildings in the future will not be designed merely as "fronts," but will be studied from all angles, even that of the aviator. Architectural design has moved from a two-dimension stage (where it never should have been) to a three-dimension stage (where real design always was). Forward looking designers are now anticipating the arrival of the "fourth" dimension stage. The question was asked whether architects were in any measure responsible for the formulation of the regulations. Mr. Corbert told the League that they were not consulted, as all details were drawn up by a committee composed of the leading realty operators, and that the measure was planned as a scientific adjustment of realty development and values—a point well worth recording for its future historical interest.

Harold V. Walsh, of the Columbia School of Architecture, lectured on another evening on "Building for the Eye vs. Construction Born of Reason." The following points of vital interest were developed by him and extensively illustrated by photographs of buildings. He developed the following views:

Architectural designers are agreed that a building must appear to be stable. Visible bases, heavy corners, columns and arches are used to express stability.

The kind of mechanics which satisfies the eye is a very elementary stability used by the ancient builder, whose works we study and train our eyes to appreciate.

Today we can, by the use of engineering principles, design and build structures with a steel frame that seem to defy all of the simple laws of the mechanics of equilibrium which our eyes have learned to appreciate from older monuments of architecture.

These modern ways of building permit high buildings to be erected on plate glass window foundations, allow twelve-inch thick walls from top to bottom, give us spans of enormous width and a hundred other phenomena which are too much for the eye's appreciation of stability.

We therefore cover our structural parts with forms inherited from the past, for the mechanics of building of those days have become so well understood by the eye that it feels satisfied by the appearance of equilibrium produced by the orders, by the pyramid, by the arch and the like.

Thus we have a dual architecture: a structure that stands by the powers of reason, covered by a skin of masonry to satisfy the eye's uneducated appreciation of the mechanics of building. The eye demands the old and simple ways of building, whereas we build by higher laws of mechanics.

Should this be the aim of our architecture? Ought we not to train our eyes to appreciate the new laws of proportion which reason has found to be true? Is it right to cover a building erected by a system of construction never equaled by any age with the outworn forms of an ancient civilization, simply because we can understand those older forms better than our newer forms?

LEON V. SOLON.

One of the greatest achievements of the nineteenth century was the recognition and the virtual creation of the science of archaeology and the source-method of historical study. However widely these two principles have been applied elsewhere, it is only within the past few years that they have appeared in the study of the architecture of the Colonial period of American history. The pioneers in this field were Messrs. Isham and Brown who, in their two volumes on "Early Houses in Connecticut and Rhode Island" first looked into

early records and examined structures critically. The "Georgian Period" brought out much undigested data, but we have now in the volume entitled "Domestic Architecture of the American Colonies and of the Early Republic"* a summary of all available information, structural and documentary, by Professor Fiske Kimball, the head of the McIntyre School of Fine Arts of the University of Virginia, who is already well known as the author of "Thomas Jefferson, Architect," where the same principles applied have enriched our knowledge of the man and the part he played in the classical revival.

This latest work is an elaboration of a series of lectures delivered at the Metropolitan Museum during February and March, 1920, in which was traced the evolution of the early American house. There are three great divisions of the subject matter, the Seventeenth century, the Eighteenth century, and the Houses of the Early Republic. To these are added a long chronological chart of the houses of which the date and authorship are established by documents, and twenty-eight pages follow of notes on individual houses. This is one of the most valuable parts of the book to the real student.

Primitive types of shelter are discussed and popular misconceptions of earlier dwellings are corrected. The first settlers dwelt in huts or wigwams of poles, twigs, and leaves. These, by the use of a ridgepole, were elongated into barn-like houses; such was the Jamestown church. Another earlier New England shelter was obtained by digging into the hillside and banking up the earth over logs set vertically. In 1682 at Philadelphia the dwellings were of this character. Wattle cottages with a daubing of clay were in use at Plymouth in 1621. In 1629 there was one "English" palisaded and thatched house at Charlestown, that is, built of vertical logs, an ancient type of Saxon construction.

Houses of horizontal logs, so common in Western and Southern districts some years ago, were introduced by the Swedes and Finns in Delaware. By 1654, we are told in regard to Massachusetts Bay Colony—"The Lord hath been pleased to turn all the wigwams, huts, and hovels the English dwelt in at their first coming into orderly, fair, and well-built houses." In short, the lot of the common man was better in the colonies than in England, for the free grant of wooded land enabled him to dwell in better houses than he had at home. "There was an equalizing tendency that levelled up as well as down."

The history of the framed house is traced from the first at Jamestown, 1611, where by the care and prudence of Sir Thomas Gates there were two fair rows of houses of framed timber, two stories high, with attics. In the North, framed houses were begun in 1624 at Plymouth, and Salem by 1629 had several. Plans of the early houses are discussed, projecting stories, forms of windows, framing, filling of walls, evidence for early half-timber work discussed, outer covering, chimneys, inside sheathing, stairs, and the dating of earliest examples are fully covered. The next section is concerned with houses of masonry, brick and stone. Flemish and English bond are shown to have been contemporaneous. Interesting English work in Virginia is illustrated and also that quaint survival of mediaeval art and architecture at Ephrata, a bit of the Rhineland in Pennsylvania as late as 1746.

The Eighteenth century showed the coming of the academic spirit and architectural forms, the disappearance of Gothic wooden construction, the development of symmetry, and the application of classic orders. The earlier books are reviewed and the origins of plans of noted houses suggested. Admirable specimens of true Georgian design are given, with some rare illustrations of early plans. Various floor plans of actual houses are given for comparison and the houses discussed; gables, chimneys, windows and doors, interior trim, panelling and hangings reviewed, and the whole subject illustrated with extracts from old records and rare pictures. The prototypes of certain noted chimney pieces are shown from the published books of designs. The development of the staircase is reviewed and early stucco ceilings shown. We are told that there was little in the later buildings of the colonies which did not find its origin or counterpart in provincial England or other parts of Europe of the same day. "The ideal of the Colonial style remained always in conformity to current English usage. It is not the Colonial which constitutes America's really characteristic achievement in architecture. A truly American contribution to architectural style appeared only after the Revolution, and then it assumed a historical importance which has been little recognized.

What this was is shown in the section on Houses of the Early Republic. Two ideals were working in the evolution of the house design—the ideal of classical form, involving

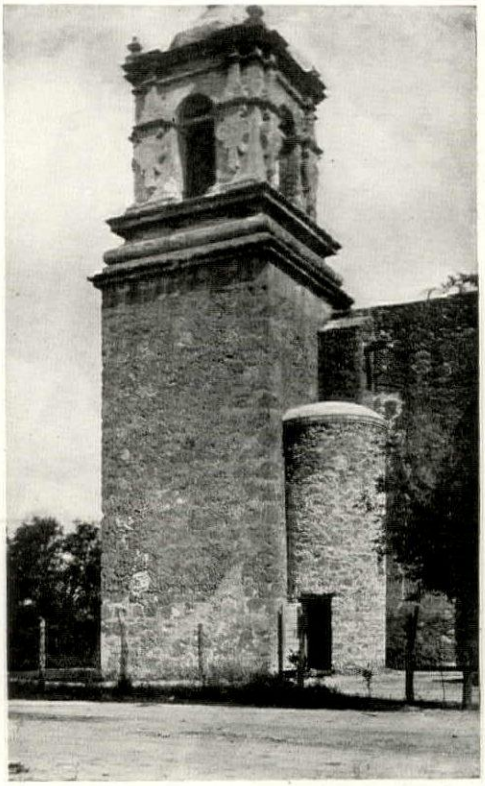
* Charles Scribner's Sons, New York.

much more than the adoption of the Pompeian detail of the Adams; "its ultimate goals were the unity and abstract quality of classical ensembles, the temple and the rotunda." With this came the ideal of modern convenience, the plan to fit the life instead of the life being cramped into the plan. "In the interplay of these two lies the key to the evolution of the American home during the first sixty years of the Republic. So far as they were in conflict, the issue in America was less a reconciliation between them than a triumph, in all its absolutism, of the formal, classic ideal."

The political and cultural movements of the time are reviewed. Priority in the realization of classical revival is claimed for America; the Virginia capital of 1785 preceded the Madeleine of Paris by twenty-two years; the Bank of the United States (1819-26) came ten years before the National Monument at Edinburgh and the Walhalla at Regensburg. Of this new gospel Jefferson's was the voice crying in the wilderness, Bulfinch, L'Enfant and Dr. William Thornton the minor prophets. Men of professional training in architecture now appeared in America—Hoban, the Irishman; Hallet, the Frenchman; and Latrobe, the Englishman, and, not to be forgotten, Mills. Both McIntyre and McComb were gifted craftsmen whose practice tended to assume a professional character.

After reviewing various publications, materials, plans, stairs, and other details are discussed and notable examples of the work of these masters illustrated. The introduction of the elliptical room is traced with its wide adoption and popularity. Jefferson's designs with Palladio's originals are shown. Excellent types of the "temple" house are given from Savannah to Michigan, Georgia to New York. Bulfinch's blocks of city houses are included. The change from classical orders applied as ornaments to the full Grecian temple scheme with houses surrounded by columns, treatments of the Palladian windows, types of window trim, the development of the fan-light and of the veranda and portico, the curved stair and general interior detail are fully treated.

With its two hundred and seventy-odd illustrations (including over eighty plans), the work is rich in a wealth of novel and beautiful examples full of inspiration for modern work. It is, in fact, just the résumé of the whole subject that has been long wanted, and as it is the fruit of much research and a labor of love by a master hand it deserves careful reading. DONALD MILLAR.



The Stairway of Mission, San José

Among the interesting features of old Mission San José, near San Antonio, Texas, are the spiral stairway which leads to the lower loft and the ladders which reach from that level up to the belfry. The little stair tower is tucked away back of the bell tower in the angle formed by the latter with the south wall of the church. Its construction is similar to that customarily found in stone stairways, but is unique in the fact that the steps are of wood instead of stone. They are cut from solid logs and are laid up with the outer ends embedded in the masonry of the walls, while the inner ends are so rounded as to form drums of a central shaft or newel.

The tower is six feet in diameter, the wall is twenty-four inches in thickness, the treads of the steps are fourteen inches wide at the wall and the central shaft is ten inches in diameter.

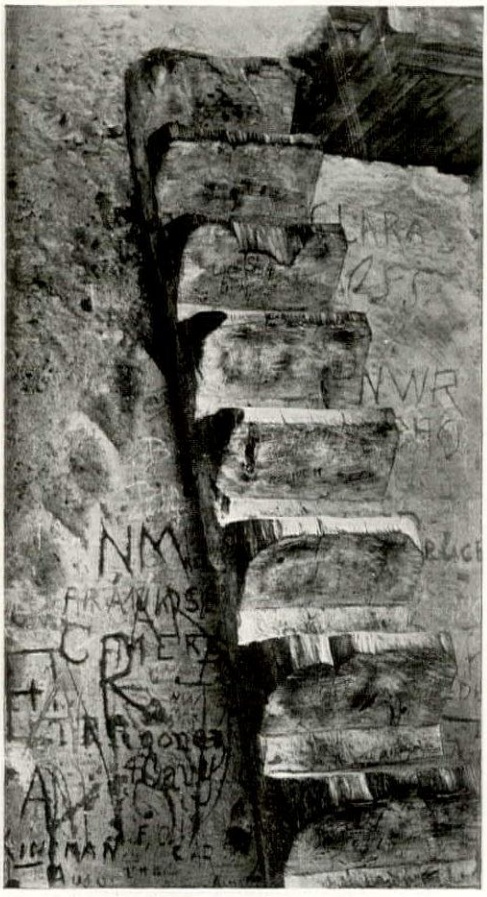
During the many years of neglect which so nearly destroyed the entire mission, this stairway fell to ruins but has been care-

fully restored within the past few years.

These steps lead to the tower loft where the ascent to the belfry is continued by means of ladders so primitive in form as to present a marked contrast to the skilled workmanship evident in the rest of the building. Each flight is a single hewn timber into which are chopped notches forming crude steps. The first ladder rests on the floor of the loft and leans against the wall beside a small platform which carries the second one. This reaches a floor on the roof level from which the third ladder leads to the belfry.

What could have prompted the priestly builders to substitute the wood blocks for stone in building the spiral stairway? Why should they choose the clumsy notched log instead of the lighter ladder? It certainly was not because of a scarcity of stone, and as one looks over the surrounding plain from the belfry he can scarcely imagine heavy timbers being so common as to be used in preference to lighter stuff or as a substitute for stone. Whatever may be the reason for these curious examples of stair building, they remain as interesting illustrations of the methods employed by the pioneer builders on the frontiers of eighteenth century civilization.

I. T. FRARY.



A Century of Missouri Art. By J. S. Ankeney

One is apt often to think of architecture and art development of the Middle West as a thing of sudden growth, born within the last forty years at most, but the beginning of art and architecture of the settlers of Missouri dates from a period prior to that of the Revolutionary War.

J. S. Ankeney, in his first article in a series for the Missouri Historical Review of July, 1922, "A Century of Missouri Art," tells a very interesting story of the architecture of the state in which he was reared, and where he is now teaching art and painting in the University of Missouri.

The natural decorative designs of the Indian were lost to the settler except in the art of weaving. But the architecture began with the log house, the primitive architecture of settlers, whose prototypes were in Quebec or New Orleans.

The idea that the log house of the period was not attractive is absurd. The planning was of a necessity simple. The treatment of the roof and wall areas had an agreeable texture which was that of hewn shingle and log, and combined with a massive chimney of the local stone, made a very interesting dwelling. This resulted in a type of domestic architecture that was not unworthy of particularly intelligent folk who with courage and energy were developing and settling a new land. The craftsmen were ingenious, but withal direct and simple. They brought into this architecture ideas of racial tradition and communication with French art, and some of the fashionable taste for English provincial forms.

Professor Ankeney goes on to say that there had been a feeling toward the latter half of the eighteenth century that classic architecture itself was the very soul of later colonial development. The Greek and Roman temple forms were the prototypes on which some of the larger scale buildings of early Missouri were based.

Jefferson during his stay in France (1785-

1789) had a small model made of the Maison Carrée at Nimes with certain changes, and sent it to the authorities of Virginia to help them in building the new state capitol at Richmond. For what he termed a good example of "spherical architecture," he selected the Pantheon in Rome for the rotunda for the library of the University of Virginia.

"On the completion of the United States Capitol in 1820, its plan of a great central dome with balanced wings became a national type, more universally followed than any other for state capitols."

By 1830 the Missourian had many precedents on which to draw for inspiration for his public buildings. The planning and arrangement and many construction details reflect the knowledge and acquaintanceship of the local builder with the architecture of the East. The builder met the demand from his fund of general experience, which consisted largely of planning a central room, whose exterior had a porch and whose roof was supported by columns in the manner of the classical prototypes. This "parti" was used in planning churches and in some of the early residences.

Many of the churches of the state of this period were built with porticos, but the front gable was treated with a pediment and a belfry was placed just above it. The Presbyterian Church at Columbia, built in 1846, was of this type.

As the communities grew, and the prosperity of the people increased, spacious chambers and wide corridors were planned, and stately porticos, classic in form, were developed. Across the whole state, following the rich valley of the Missouri River, large commodious houses were constructed, some of which still stand.

Toward the close of the pre-Civil War period, only the early Italian Renaissance was used in design, and the house of General D. M. Frost, Washington Street, St. Louis, built in 1859, is an example. The High School, formerly at Fifteenth and Oliver Streets, St. Louis, is an example of the influence of Gothic architecture. It was designed by Geo. I. Barnett, who came to America in 1839, and who early settled in St. Louis and designed some residences and the Chamber of Commerce, in the accepted classic form.

The imitation of style has a great influence on the later development of a community, and Missouri was very fortunate in taking for her own the grand styles adopted by her sister states on the Eastern seaboard.

E. M. URBAND.

The Architects' Small House Service Bureau

The great housing shortage resulting from the cessation of building during the years of 1916, 1917 and 1918, the subsequent high cost of material, the uncertainty of values and markets, and the increasing ugliness of small homes due to cheap construction resulting from these conditions, were factors in creating the Architects' Small House Service Bureau organization. For a number of years architects throughout the United States have been endeavoring to solve the problem of the small house, to provide for the small house builder plans of substantial, artistic homes designed to eliminate waste without sacrificing home comforts, convenience and architectural features which lend to it individuality, distinctiveness and charm. But the cost of preparing plans and rendering service for the small house is relatively as great as that for larger dwellings, and the small house builder often considers the elimination of the architect's fee the first point of economy in his home building project.

In almost every field of endeavor, except architecture, ways and means have been evolved to serve the masses, and this is accomplished through quantity production and distribution. The logical conclusion of the architects interested in a service for small home builders was that through co-operation in the production of designs, and large production and large distribution of plans, they would be able to render their professional services at a fee within the means of all small home builders.

This idea was successfully worked out by a group of Minnesota architects who organized The Architects' Small House Service Bureau of Minnesota (now the Northwestern Division) and, upon obtaining the indorsement of the American Institute of Architects and the United States Department of Commerce, The Architects' Small House Service Bureau of the United States was incorporated. This body is purely executive, and has control of the policies governing the Bureau's work and shapes the national programs. Upon the zoning of the United States into thirteen regional divisions, architects of the various regions were urged to incorporate Divisional Bureaus to carry on the work of the Bureau in their territories.

The Colorado architects were the first to act. They organized The Mountain Division in July, 1921, and began immediately the

work of designing plans to be included in a book, "How to Plan, Finance and Build Your Home," which was published in April, 1922, and contains fifty-two distinctive designs for small homes ranging in size from three to six primary rooms. The book is designed to be of every assistance to the inexperienced home builder and contains chapters on Financing, Planning, Interior Decorating, etc. The book sells at $2. Broadly speaking, the Bureau idea is not a money-making enterprise. The architects who support it receive less than 10 per cent. on their cash investment, and the surplus income of the Bureau is to be used to further this work to the best advantage of the small home builder.

DONALD O. WEESE.

Prix de Rome

The American Academy in Rome announces its competitions for Fellowships in architecture, painting, sculpture and landscape architecture. The stipend of each Fellowship is $1,000 a year for three years, and residence and studio are provided free of charge at the Academy, with board at cost. All Fellows will have opportunity for extensive travel.

The awards of the Fellowships will be made after competitions, which are open to unmarried men who are citizens of the United States. Special attention is called to the fact that in painting and sculpture there will be no formal competitions involving the execution of prescribed subjects, as heretofore, but these Fellowships will be awarded on the basis of a thorough investigation of the artistic ability and personal qualifications of the candidates. To this end, candidates are requested to submit examples of their work and such other evidence as will assist the jury in making the selection.

Entries will be received until March first. Any one interested should write for circular of information and application blank to Roscoe Guernsey, Executive Secretary, American Academy in Rome, 101 Park Avenue, New York City.

The judges of the contest in clock case design conducted by the Cloister Clock Corporation of Buffalo, N. Y., have announced the winning designs. The response to the announcement of the competition was so widespread that they had an opportunity of reviewing a great deal of work showing originality of conception and excellent technique in execution.

The prizes offered were for designs of an upright mantel clock case of wood, greater in height than breadth; designs of the same proportions in metal, and clock cases of wood greater in breadth at the base than in height.

The competition, it is hoped, will result in a renewed interest in a somewhat neglected form of decorative art.

The firm of Capelle & Troutman, architects, has dissolved partnership. Mr. Charles L. Troutman has taken over the interest of this firm and will continue business at the former address, 409-410 American Trust Building, Evansville, Indiana.

Leigh French, Jr., announces that he has moved his office from 597 Fifth Avenue, New York, to 17 East 49th Street.