

THE ARCHITECTURAL RECORD

CONTENTS

	PAGE
Designing a Great Mercantile Plant—Illustrated..	403
NIMMONS AND FELLOWS	
School and Practice Designing	413
RUSSELL STURGIS	
Gargoyles, Old and New—Illustrated	419
CHARLES DE KAY	
The Promised City of San Francisco—Illustrated	425
HERBERT CROLY	
Indianapolis Court House and Post Office—Illust..	437
H. W. FROHNE	
Roman Art—Part I—Illustrated	443
JEAN SCHOPFER	
Buffalo Houses—Illustrated	459
GEORGE CARY, Architect	
A Type of Original American Architecture—Illust ..	467
VERE O. WALLINGFORD	
Notes and Comments—Illustrated	471
The New Bank of California—Ventilation—A Jacobean Office Building—Landscape Gardening in California—The Majestic Building—Free Architectural Schools.	
Technical Department—	
A New Aid in the Specification Room	477

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San Francisco, Cal. Meyer & O'Brien, Architects.
Now in course of construction.

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Designing a Great Mercantile Plant

Commerce as symbolized by sculptors and painters has usually been represented by some beautiful figure intended to inspire the admiration of the people.

The modern philosophers and critics, however, are busy with their pens exploring the present tendency to an "all-absorbing commercialism," as if nothing were left either good or honorable in the pursuits of commerce. The strenuous business life, the graft and grind of our large cities, are subjects so well worn by recent writers that it seems as though the beautiful figure of the artist's commerce were no longer appropriate to the subject.

Yet in spite of the modern philosopher and critic, there is much to inspire the architect to his best efforts in the problem of a great commercial building. First of all, the architect knows that the successful merchant has for the very basic principle of his business, fair dealing with the customer. He also knows that the great masses of the people are indebted to the merchant for their abundant supply of the necessities of life, and also for all those agencies of education and culture which have been placed within their easy reach.

The merchant in his dealings with his own people, the employees, is now doing more for them than ever was done before. The short working hours, the high scale of wages, the perfect arrangement and equipment of the buildings for the health, comfort and happiness of the employees, and the means provided even for their moral and mental development, are sure evidences of good faith in the

aim of the merchant to improve the condition of his own working people.

The modern commercial building is no longer merely a warehouse with shelves to hold goods; it is a great deal more, and in some instances presents all the problems of a small city.

Of the large, successful commercial houses, there are few which have grown to such a great size in so short a time as Sears, Roebuck & Company.

The firm was established ten years ago, and now sells sixty million dollars' worth of goods a year.

Their new buildings occupy a good part of a site one-half mile long by seven hundred feet wide, with a total floor area of fifty acres, and cost, together with the mechanical equipment, five million six hundred thousand dollars.

The arrangement of their buildings and parts of their buildings, so as to secure the most economical handling of goods over these large areas, the provision for the best and most rapid shipping facilities, the care of employees, security from fire and injury in panics, were all questions given a great deal of consideration in designing the buildings.

In the consideration of this problem, it naturally divides itself into three groups of buildings, classified in accordance with the three divisions of the business:

First: All orders are received by reason of advertising matter sent out in the form of a catalogue; hence, the Advertising and Printing Departments.

Second: The life of the business is dependent on an elaborate system of files

and indexes, giving the name, address, and purchases of every customer, revised to date. As the loss of these files would result in a suspension of the business, this group occupies a building of the highest type of fireproof construction: The Administration Building. In this building are also housed all executive and administrative departments whose access to these records is desirable.

Third: The Merchandise Department, in which are stored all of the goods, implements and products imaginable, or to be desired. These are divided into some fifty-six different departments, each in charge of a manager and numerous assistants. In this Merchandise Building and its Annexes are received, stored and shipped goods in value amounting to more than sixty million dollars a year.

Independent of these divisions is the Power Plant and mechanical equipment. This mechanical installation was in charge of Martin C. Schwab, Consulting Engineer of Baltimore, and deserves a separate descriptive article. Power is developed here for heat, light, elevators, pneumatic tubes, refrigerators, ventilation, and for the numerous mechanical contrivances devised to facilitate the transaction of business.

The capacity of the boilers is six thousand horse-power.

E. C. & R. M. Shankland were the engineers engaged in the structural engineering.

Thompson, Starrett Co., of New York, were the builders.

The following table gives the areas, floor space, and cubic contents, showing the relative size and importance of the buildings composing this group, and the block plan shows the final arrangement of the buildings:

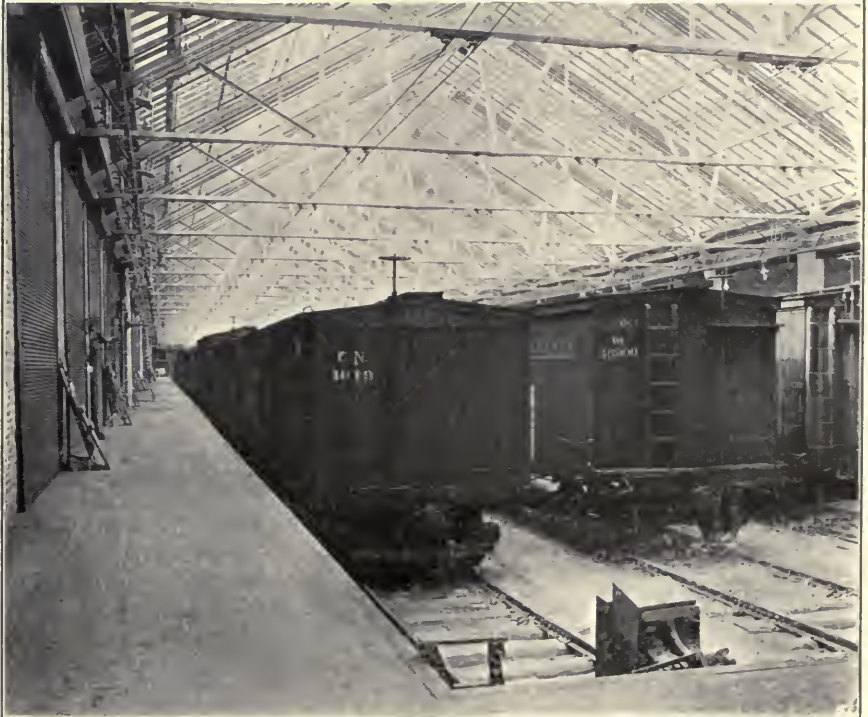
An idea of the uses and design of the buildings can possibly be given best with a description of how orders for goods are filled.

All goods are sold through the medium of a large catalogue, which is sent to the prospective customer on application. The orders for goods are sent to the firm by mail; hence the name "Mail Order House." The mail, amounting to about two carloads per day, is delivered to the building called "The Administration Building," which is a fireproof building 450 feet long and over 140 feet wide. In this building are located the executive offices and the clerical force of about 2,000 people in all.

After the mail is opened, the orders are carefully recorded, and tickets made out for the goods, a separate ticket being made out for each department from which goods are to be taken. A single order may call for from one to twenty different articles. These tickets are sent next to the routing department, which determines whether the goods are to be shipped by mail, express or freight, and the kind of shipment is indicated on the tickets as well as the roads over which it is to be shipped. The tickets are then sent to the distribution department, from whence they are dispatched by pneumatic tubes to the various departments in the large Merchandise Building across the street.

The Merchandise Building is 1,100 feet long by 340 feet wide, half of which has nine stories and a basement. The great problem about the planning of the Merchandise Building was to adapt a plan best suited for handling goods over this immense area, and at the same time one which would have the best light at the second story, as the second story is a continuous expanse of floor over the entire ground area. This is the great

Building.	Floors.	Ground area.	Single fl. area.	Total fl. area.	Total cu. con.
Merchandise	9	136,704	B to 2 134,240 3 to 9 115,840 tower 2,116	402,720 810,880 8,464	4,832,640 9,730,560 84,640
Annex "A"	4	79,458	76,230	304,920	3,354,120
Annex "B"	4	52,896	50,000	202,400	2,226,400
Administration	3	46,620	43,440	130,320	1,824,480
Power house	2	29,274	27,830	55,660	1,558,480
Printing	4	21,282	20,080	80,320	966,840
Total		366,234	352,420	1,995,684	24,578,160



1. COURT OF THE MERCHANDISE BUILDING, WHERE THE SHIPPING IS DONE.
2. FREIGHT RAILROAD DEPOT, BETWEEN THE ANNEXES OF THE MERCHANDISE BUILDING.

Sears, Roebuck & Co.'s Buildings.

Chicago, Ill.

Nimmons & Fellows, Architects.

shipping room floor where all goods are collected, packed and shipped; the railroad tracks being elevated, enter the building at this level.

The plan adopted for the main part of the building was a hollow square with a court in the center, 230 feet by 80 feet. To the rear of the main part of this building are arranged two wings, called "Annexes," which are 60 feet apart, and between which is located the large railroad depot, where it is expected to handle as high as two hundred freight cars per day by means of electric engines. With the tickets or orders then delivered to the departments of this building from the Administration Building, by way of pneumatic tubes, the process of collecting the goods to fill each order goes on. The smaller goods are all located above the second floor, and the heavy goods on the second floor, or below that. Each department receives the orders or tickets, and all those above the second floor collect them in baskets, which are immediately taken by light trucks to spiral chutes located conveniently to all departments. These chutes are of steel about eight feet in diameter, with three spiral planes in each one, and three openings to each chute in each story. The baskets containing the goods are put in one of these three openings, according to whether they go by freight, express or mail. This process is very rapid, and goods are disposed of about as fast as if they were thrown out of the window. The centrifugal force in the chute causes friction against the sides, so as to regulate the speed of the heavy and light baskets in descending to the second story; even glass ware will go down without breakage.

When the baskets arrive at the bottom of the chutes, they slide out on horizontal traveling conveyors, which run all around four sides of the large court in the center of the building, and convey goods to the mail, express or freight shipping departments, there being a separate spiral plane for mail, express or freight in each chute, which is connected at the bottom with the corresponding traveling conveyor. The

goods are thereby delivered automatically to the proper shipping room, as designated by the routing department on the tickets. The mail shipping room is comparatively small in area, being about twelve thousand square feet, the express about twenty-five thousand, and the freight about two hundred thousand square feet.

As the baskets containing the goods are received on a large receiving table in each shipping room from the conveyors, they are taken to rows of shelves divided into sections, where a separate basket is reserved for each order. As soon as a basket has received the last article to complete the order, the goods are checked, boxed and marked ready for shipment. In the large freight department the shelves for temporarily holding goods, while orders are being completed, are arranged around the court, so that the packing, checking and marking of packages all take place in the court under excellent overhead light; empty boxes are brought in overhead at the center of the court by a traveling conveyor. In the operation of packing the freight goods, they are worked backwards through the court during the operation, so that when completed they are near the head of the large freight depot.

The heavy goods, too large to be boxed, are assembled in freight pits, according to their destination, and moved from these directly into cars.

The goods stored below the second story of the Annex Buildings are carried upward by means of inclined traveling conveyors. In addition to the spiral chutes and conveyors, large freight elevators are provided so that every department has access to at least one freight elevator.

There are two sets of railway switches installed, one for incoming freight on the south side of the building and one at the first floor level for the outgoing freight, which is handled in the large freight depot on the second floor, referred to above. By this process there is no conflict of travel in receiving and shipping, and all goods are shipped within twenty-four hours after the



1. THE PRINTERY.

2. THE INDEX DEPARTMENT, IN THE ADMINISTRATION BUILDING.

Sears, Roebuck & Co.'s Buildings.

Chicago, Ill.

Nimmons & Fellows, Architects.

orders are received. Some days the orders number as high as forty thousand, calling for one to twenty articles in each order.

The Merchandise Building, excepting the tower, is of mill construction, with floors six inches thick of solid wood. The amount of lumber usually put in floor joist is added to the thickness of the ordinary mill flooring, making the floors strong enough to span from one girder to the other without the need of joists. This gives additional head room and a smooth ceiling in each story, also a better opportunity for sprinkler heads to put out a fire. Fire walls are built so as to divide the entire building into sections of twelve thousand feet. In the walls surrounding the court on the second floor, large openings provided with double steel shutters were accepted by the Insurance Underwriters, so that it is possible to have an almost uninterrupted space for the shipping room floor. Stairways, elevators, heating and ventilating ducts, dust chutes and wire shafts are all surrounded by brick walls with steel doors.

The tower, fifty feet square and two hundred and forty feet high, is built entirely of fireproof construction, and contains the sprinkler tanks and house tanks for water supply for the entire plant. The total capacity of the tanks is 200,000 gallons. At first the Insurance Underwriters advised placing separate tanks on the roofs of the various sections and buildings throughout the plant, but were finally prevailed upon to allow the placing of all water supply together in the tower, provided it was made strictly fireproof. The water mains from the tanks are laid in the tunnels under the buildings.

The insurance rate finally fixed for the buildings and stock is the lowest ever given to a risk of this character.

The Printing Building located east of the Administration Building is devoted entirely to the printing of the catalogues. There are 2,000,000 catalogues printed and sent to the customers annually.

Nineteen large cylinder presses are employed to do the work. The binding

and mailing of the catalogues is also done in this building.

After nearly a year spent in preliminary study and in the consideration of various sites with regard to the shipping facilities, space for additional buildings, extension of business and accessibility for employees, the present site was adopted. To make this site available for use, it was necessary to close a street to get space sufficient for the Merchandise Department. This gave a solid space 340 feet wide by 1,250 feet long.

The nature of the business is such that everything must be handled through one shipping room or endless complication results. Consequently, from numerous schemes the present scheme developed, giving two general divisions, the Merchandise Building and Annexes.

In the Merchandise Building is placed all of the small merchandise which goes through the shipping room. In the Annexes are housed the large or bulky articles which are shipped separately, or goods such as groceries, which are shipped in original packages.

The future elevation of all railroad tracks to do away with grade crossings was considered. This made it necessary to provide for present usage at grade level and for an elevation of thirteen feet in the near future. To solve this the receiving room was placed on present grade and the shipping room on second floor on future elevated grade. This scheme provides for the receiving of all goods on the first floor, whence they are trucked to the elevators located in the outside walls of the building, and thence to the different stock departments. The shelves of these departments are so arranged that the goods are received at the outside and are delivered toward the court in shipping where they go to the shipping room in the second floor by means of spiral conveyors. Thus the incoming merchandise never crosses or interrupts the progress of that going out.

After the general arrangement of the buildings was determined and the type of construction was fixed, it was discovered that the most important feature—the foundations—presented a large and



THE MAIN ENTRANCE TO THE MERCHANDISE BUILDING.

Sears, Roebuck & Co.'s Buildings.

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ENTRANCE TO THE ADMINISTRATION BUILDING.

Sears, Roebuck & Co.'s Buildings.

Chicago, Ill.

Nimmons & Fellows, Architects.

puzzling problem. Numerous borings were made, and it was found that the nature of the soil was such that spread foundations were impractical. Again, the datum line was so far below the basement level that wood piles could not be considered. Concrete piles proved impractical on account of the difficulty of driving them in the clay. Finally it was decided to use concrete caissons, deep enough to reach a hard strata of clay and belled out at the bottom to sufficiently spread the load.

In the structure of these buildings the architects strove to obtain the highest type of efficiency consistent with absolute economy of space and money. The composition was made subservient to structural requirements and such structural features developed to provide a pleasing composition. Space well lighted, ventilated and with the most approved arrangements for the storage of goods and the comfort of employees was the requirement. This with perfect communication between departments and the best systems for handling merchandise of all kinds, and with ample protection against risk by fire.

The floors are constructed of five by eight yellow pine flooring, laid with splines and spanning fourteen feet between girders, without joists. The top of each floor is protected by saturated roofing felt and with a maple floor; these floors being so arranged that water in case of fire will be drained to scuppers in the outside wall or pass down the stairs and elevator shafts. Wire glass and metal frames are used in all exposed windows, including the entire court and skylight.

All openings in fire walls are protected by double fire doors, including vent ducts, dust and wire shafts and heating ducts; in fact everything possible has been done to ensure the safety of the building and comfort of the employees.

The site of the building is in the midst of a residence district; therefore, the appearance of the buildings would have a great effect upon the neighboring property.

Sears, Roebuck & Company are as much interested as is anyone in main-

taining the character of the neighborhood. It will ultimately become the place of residence of their employees, and they are keenly alive to the effect of pleasant surroundings upon the moral and physical well-being of the people who work for them. They decided that within reasonable limits they would be willing to spend money to make the buildings appear attractive. A rich, brown paving brick was selected for all exterior brickwork, and terra cotta was decided to be the most suitable and durable material for trimmings.

Given the material at hand for construction and the structural features for decoration, the brick and terra cotta architecture of Tuscany naturally suggested itself as appropriate with such restrained use of brick patterns and terra cotta decoration as would be consistent. Furthermore, the use of terra cotta decoration suggested the addition of color for backgrounds to accent such decoration. Consequently, the lunettes and frieze of the Merchandise Tower are of glazed blue terra cotta; also the backgrounds of the book marks which decorate the Printing Building and the discs of the Power House are of white and blue glazed terra cotta.

The frieze of the Administration Building is developed but not copied from the scheme of marble inlay of San Miniato at Florence, and blue is introduced in the backgrounds to bring out the geometric *motif* of the design. Decorated mouldings were avoided on account of expense and the ornamentation was so concentrated as to obtain the greatest value possible. The sills and lintels were necessarily of terra cotta, used as a fireproof covering for the steel, and these are made the chief features in the decoration; consequently, the horizontal lines are emphasized. The only place where an elaborate treatment in composition was permitted were the top of the tower and its entrance and the main entrance and vestibule of the Administration Building. When one considers that some seventy-five hundred employees pass through these entrances many times each day, the money spent to make them attractive is well invested.

Nimmons and Fellows.



One of the few opportunities for architectural embellishment.

TOWER OF THE MERCHANDISE BUILDING,
Sears, Roebuck & Co.'s Buildings.
Chicago, Ill.

Nimmons & Fellows, Architects.

School and Practice Designing

Let us, in the first place, decide upon the terms which we should use as expressing what seem to be two quite opposed methods of designing. There is, first, the method now commonly in use throughout the United States, namely, the following very closely of certain types which are embodied in Italian buildings of the sixteenth and seventeenth centuries, and are laid down in Italian, French and English books of different periods. This method has for its primal and originating force a close study of Roman colonnades, Roman proportions, Roman ornamentation: the word Roman being used here for that period of the Mediterranean world which corresponds with the widest rule of the Roman Emperors, say, from 30 B. C. to 250 A. D. Still, though based upon the architecture of that great period, the architecture affected by the designers whose work we are describing here is not at all strictly antique in character. The artists of the Italian Risorgimento, 1420-1500, while they declared it to be their duty and their glory to follow the classical Roman example, found it advisable to follow that example much less closely in practice. This breaking away from their accepted model was largely caused by the lingering feeling for Mediaeval freedom in design; by their own individual power as designers; and by the different character, the smaller scale, the thinner walls of the fifteenth century monuments. The builders of Italian palazzi and churches chose for their models the colossal thermae, basilicas, theatres, and palace halls of the second century and the years following, then in much more nearly perfect condition than we see them now, and their types were therefore found in buildings inconceivably more grandiose and more costly than they could hope to achieve. So that they were compelled to work in a lighter and more familiar way; but indeed the Italian artist of the time had a quite unlimited power of graceful deco-

orative design, and it would have been in vain to have sought to check this free artistic expression of that by a closer copying.

Our contemporaries, however, the men of the last twenty years of the nineteenth century and of our own lustrum, are not even clear as to these differences. Many of us heard a member of one of our great architectural societies state in a speech, and dealing with a building of his own, that "he knew the details were good Renaissance because they were taken right from the theatre of Marcellus"—which is an ancient Roman building of the prime. The English, and American writers following them, spoke of any modern building as being "Renaissance," using the word as an adjective. The English Renaissance was supposed to include St. Paul's and Somerset House; the Renaissance in France covered the *Ecole Militaire*, built in 1751, and even the Panthéon, 20 years later, at the very door of the Revolution.

At all events, the above is an attempted description of a certain method of designing, a method based upon authority, although the "authority" is of doubtful origin in many cases. A man who builds Roman colonnades may very well be uncertain whether he is following the temple of Mars Ultor, restated for him by photographs from the ruin, or whether he is following plates in some folio on his office shelves, and purporting to represent that great work of Augustus. The man who is designing, in a sense, Greek anthemions and Ionic capitals, may well be uncertain whether they are the plates of Stuart & Revett which he is following, or a memory helped by a photograph of some part of the Erechtheum. The English are inclined to follow Palladio, who died in 1580. The French are more inclined to study the works of Vignola, who died in 1573. To a certain extent the architects of our own time are influenced by

much more trustworthy representations of Greco-Roman buildings. To a very great extent they are swayed by their own memories of the years spent in the school of art in which they were taught, and by the *projets*—the school-competition designs which they made in those sunny days of youth. The Frenchmen who came to Chicago in 1893 exclaimed with one voice, when they saw the plaster façades surrounding the Court of Honor, that those were the same old *projets d'Ecole*—and so they were.

The school designs were not limited to mere fronts, mere scene painting of a grandiose kind; the whole of a public building was planned as if done under the influence of a study in competition for a medal. It was indeed a matter of recognized and accepted critical comparison that the premiated designs in the school competition were models of planning and of combined study worthy of the regard of hardworked practitioners. Those designs were published in folio volumes, and appear in catalogues of architectural books.

That, then, is one method of designing, and we are in need of a name for it: but let us consider first the other method of design. This consists in summoning up from the resources of the memory such architectural forms as seem best fitted to the larger task, about to be imposed upon the designer. "Such architectural forms"—that is not merely the stone laid across the top of a window, but the architectural thing which we call a lintel; not merely the ring of wedge-shaped stones which makes a curved top to that window, but an arch of a certain recognized form; not merely a beam laid across from wall to wall, but a joist or girder with a definite architectural treatment expressive of its leading part in the construction of a floor; not merely a projecting mass like a wing-wall intended to stiffen the main enclosing wall where it needs stiffening, but a buttress of Gothic type, or else a salient pier—a pilaster-buttruss, as the modern architectural term is. The constructor has only the safety of his work to consider: the architectural artist has to think in terms of

architecture as well, and to use them in a new composition. This is the free method of designing, of course; and yet the freedom is not so great that the artist is not tied to the necessity of choosing certain recognized elements. It is no part of this free designing that he should make columns with shafts of oval section, that he should employ flat arches alternating with pointed arches over openings of the same width, that he should imitate stone buildings in iron or wooden buildings in stone, that he should affect Oriental forms while building in a Western way. Still, on the whole, the designer, according to this second method, is free. If he has a great public library to build, it will not enter very seriously into his scheme that a great and very costly colonnade should form the whole principal front of it, using up a space of 6,000 square feet of the precious city plot, and giving nothing in return except an out-of-door shelter which ten people a month may use in the hot weather; or might use if police regulations would allow. It is not so that he will go at his task. He will think, rather, of how he may provide a spacious interior, first, for the stack-rooms, where the books are ranged systematically, in order; second, for the reading rooms, where tables are set in good clear daylight, the windows carefully spaced and distributed to afford the daylight in question; thirdly, the distributing rooms, corridors, vestibules, stairways and the rest, all in their right places and in such communication with the divisions of the library as may be found best. He will enjoy the interior effects resulting naturally from these features of his plan, considering them as the primal needs of the building and as the most important opportunities for his artistic design; and the "treatment" they are found to need—the slight forcing of the plan for artistic reasons, will be a fresh delight. It is true, also, that he will be thinking all the while of what his exterior will be like; but he will recognize that exterior as a dependent part of the work—a result of the interior. And the result he obtains will be, then, less grandiose but more intelligible; far

less costly in proportion to the result, much more expressive of the purpose of the building, and incomparably more original. There will be, for the reading rooms and delivery rooms, large window openings, letting in abundant daylight, and those may be spanned by arches, because it is in that way that large openings had better be spanned; but whether those arches have the form of segments of a circle with the center dropped far below the abutment; or basket handle curves with three centers; or semicircular arches with perhaps the curve filled in with thin walling of a decorative description, with tympanums, in short, so that the arch itself may rise above the ceiling of the room which the window is to light; or pointed arches of two or four centers treated in the same way with filling in or not, as the case may be; all that will be decided in connection with the general design. Or, finally, he may decide upon lintels, supported by a shaft in the middle, or at two points in their length by two shafts—"midwall shafts," as the phrase is: and of that thought a grave and tranquil composition, with level cornices and low roofs, may be developed.

Then for the stack-room he will provide a series of long, narrow windows—mere vertical slits in the wall. They will appear in contrast with the height and solidity of the block and in contrast also with the great windows of the reading-rooms. And indeed, the appearance in a modern design of one of these modern requirements of peremptory nature—insisting upon its recognition—has proved to be the signal for some of "this free designing" in a building not otherwise marked with that character; see, else, the Washington Library of Congress and the unfinished N. Y. Library building.

So the designer, as he decides what form of window opening he will employ, decides also what the whole general style of his building will be—whether it will be high-roofed and with tall chimneys, if any; with dormer windows to light the space within the roof, and with such diversified outlines, both horizontal and vertical, as befits a picturesque composi-

tion; or whether the building shall be calm and grave, with strongly marked horizontal lines; a flat or nearly flat roof and the design of the building contained in its walls alone except as a projecting porch or entrance may modify the front.

To call the first of these methods the traditional one is to deny the use of that term to the second method; and yet the second method, the free method, may be traditional also. Have we not, indeed, begun our statement of the case for the second method by limiting the choice of its employer to certain recognized types of form—certain arches, certain pillars, certain ways of handling a piece of construction?

Let us try the effect of the terms *school method* and *practice method* as descriptions of the two methods of design. The one is that which (for our sins) is mainly taught to the young architects of the period in their schools. They are taught in this way because no other way is so convenient. You are a professor in a school of architecture; you have to submit a problem to a class; you have to keep a record of the relative excellence of the students in that class; you have to award praise and blame, perhaps even prizes and penalties, to the students who undertake the problem in question. It will be very much easier for you to say, Let us design a pavilion by the water-side, not to exceed so many feet in dimension—much easier to say this than to give the requirements of a private man about to build a small country house, or of a church committee about to undertake a small village church. But the pavilion by the water-side runs inevitably to grandiose reminiscences of the splendid European monuments shown in the books, which are, of course, at the disposal of the designer, or which have been at his disposal. The different designs for it can be compared with relative ease. The accuracy, according to the accepted authority, of the Ionic or the Roman Doric colonnade, its accuracy in general proportions and in the larger and the smaller details according to the standard of this, that or the other recognized authority, is easy to

decide. The general excellence of proportion it is not difficult to appraise; the merit (from the school standard always) of these different pavilions by the water-side can be compared with such accuracy that the better and the not so good marks awarded to the different students can be quickly decided on without the fear of serious injustice. But if there were in question twenty different designs for a ten thousand dollar country house, the discrepancies between the different points of view would be vast; and there would be twenty different points of view. It would take a committee of professors to decide upon them aright; and those professors would have to be men of practice, in order to appraise the whole merit of each—in order to decide how far A. B. might excel in the fitting together of his rooms and halls—how far C. D. might be inferior to him in that, but far better in the way in which his exterior details were handled.

It is therefore not amiss to call the first described of the methods of design by the name school method, or School Designing. In like manner it may seem rather obvious why the term Practice Designing is used for that other method, which also is described above.

There is no reason, in the nature of things, why school designing should be almost entirely identified with the different neo-classic styles. It is merely the fashion of the day to try to design as the Italians of the seventeenth century designed, or perhaps as the strong men of France at a later time faced their problems. In England, fifty years ago, and at a later time than that, the fashion was altogether different, and so far as there were schools of architecture, there and then, they taught Gothic church architecture, almost to the exclusion of other styles. This is reflected in the English books of the day, of which there are many, devoted to the Mediaeval styles almost exclusively, and to the English styles in the main. In Munich, too, then assumed to be a great art centre, there was a strong Gothic feeling; and the classes at the Polytechnic School, so far as they led up to the study of architecture as a fine art, were Mediaeval in their gen-

eral tendency. In France the classical feeling has always been very largely traditional in the best sense, for the strong artistic leaning in French Society has sufficed to make the changes of the Revolution less fatal to the continuous growth of art in the very country of the Revolution, than they have proved to be in other European lands. But the teaching of neo-classic art in France is a very different thing from that of the United States. Even the teaching of the art is not wholly in the direction of School Designing. There are some of the *ateliers*, or working studios connected with the Ecole des Beaux Arts in which a rather serious attempt is made to build up a wholly modern system of design; with a classical origin and under classical influence, indeed, but without a close adherence to classical forms.

On the other hand, if we were to substitute for our term, Practice Designing, some such term as designing in the Mediaeval spirit, we should belie and contradict the facts of history; for there can be no doubt that the people of Greco-Roman antiquity designed as freely as the people of the twelfth century after. The difficulty is, that we do not know how those Greco-Roman designers did their work, except in the huge public monuments where cost was disregarded, where splendor was the one thing required—splendor with a large and ample convenience. Little is known of dwellings, or of the public buildings of small towns. At Herculaneum we have the stuccoed brick columns and piers of the peristylar gardens, and in Pompeii we have houses almost complete up to their first tier of beams; in Rome, even, there are some private houses from which much may be learned, and some of these houses are of several stories each. But it remains true that from all our discoveries together we have no idea at all of the way in which a Roman of the first century would have looked at the problem of a street front; nor do we know how he would have treated a country house with many rooms, if smaller than those conceived by the great millionaires of

the metropolis, when building their villas at Tibur or at Tusculum or on the Bay of Naples. It does not help us much for our daily duty as architects to know the way in which an Imperial villa was distributed—its separate buildings scattered over much ground and mingled with the gardens. When we have a dwelling-house to build, whether it is to be of wood covered with shingles and fifty feet long, or of masonry and covering an acre of ground, in either case we are without knowledge, and without even the power of a close guess, how a later Greek or an earlier Roman would have looked at the question of its design. And, as for the street front, when Viollet-le-Duc was considering, about 1870, the subject of Human Habitation in all Ages, he was compelled (bold at drawing inferences as he was) to base his own design for a Roman five-story house and for a six-story house across the way, so closely upon what he had seen in different parts of modern Italy that the selection and combination of the details is a little laughable, although one accepts to the full the sincerity and the intelligent reasoning of that most dextrous of the restorers of the past.

In short, we are always busy in drawing inferences as to Greek art from the temple and the propylaea, with slight or occasional thoughts of the porticos which we believe surrounded the market-places of Greek towns. For Roman art of the first three centuries A. D. we accept most heartily the indications as to plan and disposition given us by the ruined dwellings which have been unearthed; but the moment we try to rear an edifice upon such a plan we are led, in spite of our efforts to the contrary, to a rather close study of the grandiose and costly buildings of the great cities. Now, if we knew as little of the Mediaeval towns as we do of those of antiquity, there would be no obvious choice, and the student of reality in design would be as much left to himself and to his own too bold inferences in the one case as in the other. But as it happens, we have dwelling houses of the twelfth century, though few; of the thirteenth century; of the fourteenth century in considerable abundance, and

in considerable variety; of the fifteenth century and later in plenty, one might almost say. We know quite well what the designer of the great Gothic period did with a house in town; we know how little it was really Gothic in style; how much it was a building of vertical walls and horizontal floors; the openings for doors and windows alone showing, nowadays, to the hasty observer, what the epoch of the building was. The small details, moulding and sculpture, and the way of superadding one part to another,—all that tells the story of the epoch to a more observing or a better informed looker-on; but, indeed, the house of the Middle Ages in Belgium, in Southern France, in Northern Italy, in Spain, and in Great Britain, is extremely well known. And here is the additional fact that our modern city house is the direct descendant of the Mediaeval burgher's house in a town of Northern Europe. The church, moreover, is Mediaeval entirely. We take churches as they grew up under the dispensation of Christianity in one or another district of the continent of Europe, and we alter them to suit our modern notions of design, but the church-plan and church-building is of Mediaeval provenience, all the time.

Now, the neo-classic wave of influence which passed over Northern Europe in the sixteenth century changed the aspect of the city house, though without changing its structure, and was coeval with the first appearance of the big, unfortified country mansion. Most of all in Italy was the new style used freely in the cities. And therefore it is that we may, if we choose, study neo-classic design in the streets of Italian cities, as far as they have not been ruined by very recent restoration and destruction; and also from the careful engravings made in the middle of the nineteenth century, and from photographs a little later in date, from buildings which have since become useless to us. The greater prosperity in the commercial sense of the Italy of our time is fast destroying the vestiges of fine old art; but still it remains true for a little while longer that the less modern-seeming towns

hold a little old art for our delight. We can study these fronts in Italy; but also with less confidence in the north, because in the busy and wealthy cities of northern Europe fine, early neo-classic buildings were rapidly destroyed to make room for larger and less refined structures, whereas the comparative poverty and neglect of the Italian towns down to perhaps 1870, left their lovely buildings of the Risorgimento unchanged except for partial ruin.

It would not, then, be accurate to speak of free, realistic, rational designing as being done in the Mediaeval manner—that would mislead. If the scholars in a modern school were bid to design in a mediaeval manner, they would go different ways, each according to his own proclivities. The student from Florence would have a very different notion of what the mediaeval manner was from that of the student of Scottish or of North German birth and education. And then, again, to use the term “mediaeval manner” would be to seem to forbid at once the use of the classical details and classical methods of planning or constructing, which would be extremely unwise. Why, it would even forbid the working by the modern man according to the examples set by the neo-Grec reformers of Paris in 1840 and thereabouts. It would forbid the study, with the enthusiastic ad-

miration which it deserves, of the Library of St. Geneviève in Paris. That style, the neo-Grec, is not Greek in any sense of the word. It does not pretend to be Greek, and whoever fastened the name neo-Grec upon it might be accused of creating a wanton misnomer. But it is absolutely non-mediaeval; and it is absolutely realistic, with no principle of design except to follow the necessities of plan and structure, and to see what comes of it.

“To see what comes of it;” if you are conscientiously a realist and something of a designer by nature, that is not a bad way of studying a future building which is entrusted to your guidance. Nothing absurd will come of it, because you will know how to hold your details in hand and make them work together, avoiding the folly of some avowed “eclectic” schools, and realizing that an Ionic pilaster is not the way to finish, at top, a Gothic buttress. Nothing ugly will come of it, because you are assumed, by the conditions, to have some sense of massing and proportioning, some feeling for contrast and for repetition, some joy in monotony and some interest in variety. And if people are troubled because they cannot name your Chosen style, you will be pleased, and will answer that you are not an archaeologist when you design.

Russell Sturgis.



GARGOYLE AT PRINCETON, N. J.
Gutzon Borglum, Sculptor.

Gargoyles Old and New

In his chronicle of the reign of bluff King Henry the Eighth the annalist Hall mentions a gorgeous but temporary structure on which were "gargylles of golde, fiersly faced, with spoutes running." It is not about such evanescent glittering baubles I wish to speak, but of the simple and often powerfully designed, the artistic yet somewhat barbarous gargoyle of stone, which reached its highest flight, produced its greatest effect on Gothic architecture, in keeping with the wealth of animal and bird forms, arabesques and foliations that is found therein, advancing from the simple serpent and dog to human figures or combinations of monsters and men.

Relatively unimportant compared with many other features of Gothic, the gargoyle has always appealed to popular fancy, and may be said to hold a more prominent place in the general idea of Gothic which presents itself to us when that style of architecture is mentioned than do the lancet window, the pointed arch or the flying buttress. And if one looks closer for a reason for its existence as a decorative feature in ecclesiastic and secular buildings there is an obvious cause for this. The gargoyle is a detail that can scarcely be overlooked owing to its position and the grotesque forms it has been made to assume.

The dragon as a demon of the storm and the water is common to Oriental mythology; the serpent heads that finish certain crosses in heraldry called gringoles afford another example of the mixture of myth and a later faith.

There is something fascinating in the appearance of a cathedral church during a rain storm when the whole building is set with little jets of water issuing from the jaws of dragons and wyverns, goblin birds and writhing cobolds, the falling streamlets shining out against the rain-darkened walls and roofs.

The number and variety of roofs on

Gothic chuches of large extent and the need of draining even much smaller surfaces than are found on the actual roofs, are supposed to furnish the reason for the many spouts that end in gargoyles or have gargoyles associated with them as a decorative feature. The problem was to get rain and melting snow away from the large roofs and the small, sending the drainage of slopes in a fine curve from the wall or buttress-front beneath, into some larger gutter, or clear of the main building into the street, the latter serving in turn the purpose of a conduit to carry the water to the nearest ditch or river. The building itself was less apt to leak, its stonework was not channeled by the rainwater, its foundations ran less risk of being undermined. Rainfall accumulating quickly in such a moist climate as that of Western Europe added its force, assembled from wide and intricate expanses of roof, to the good work of cleansing the streets—a needful thing in the middle ages! As the Gothic developed, gargoyles increased with the greater care expended on decorations and the protection of the stonework.

No wonder the architects of the twelfth and thirteenth centuries felt that adornment was required for the "lanceurs," the "canons," the spouts with which such a great structure as a cathedral church bristled. What is odd is the choice of subjects for gargoyles after the fashion, set apparently in Paris, Beauvais, Laon, etc., became general in the Seine valley.

But even today it is not necessary to speak of gargoyles in the past tense, for they are commonly introduced into the exteriors of modern churches and occasionally are still in demand for secular buildings. At Princeton University the new dormitory designed and presented by the class of '79 has been equipped with upwards of forty gargoyles, the work of Gutzon Borglum. It is true that modern construc-

tion for the relief of roofs from water, combined with modern drainage, no longer exacts the decorated waterspout as a working feature. They need be "practical" no longer, to borrow a word from the stage. But for three centuries the gargoyle remained so fixed a feature of Gothic architecture that a decent feeling for consistency demands its presence in modern examples, just as the hat retains its band and the coat its lapels, though band and lapel are no longer working parts. The once useful feature has become an integral part and holds its own as a decoration.

Among the Borglum gargoyles, some of which appear in the illustrations, one may see the harpy and griffon, the simple dragon and the ape, the lamprey eel and chameleon, the gnome and hunchback, wolf and bear, the panther and cat, the grotesque human mask and the demon's jowl. There are faces peeping through floral work, and visages drawn all awry by the claws of imps, as if tic douloureux or the toothache were personified.

In his Notre Dame de Paris Victor Hugo likens the building of mediæval churches to geological formations.



GARGOYLE AT PRINCETON, N. J.

Designed by Gutzon Borglum, Sculptor.

Every epochal wave of time adds its alluvium; every race leaves a fresh layer on the monument, every individual brings his store. It would be difficult to say when the gargoyle first made its appearance; perhaps in opposition to the view of Viollet-le-Duc it was coincident with elaborate stone structures and in a less striking form belonged to the

Romanesque before it blossomed in the Gothic. The Germans are wont to say "from the rain right under the spout" as an equivalent of our "from the frying pan into the fire." Old towns like Goslar, Hildesheim, Rothenburg, still show open rivulets down the middle of the streets during rainy weather; the spouts are still distributing the drainage of picturesque roofs, as of old, beyond the



GARGOYLE AT PRINCETON, N. J.

Designed by Gutzon Borglum, Sculptor.

Bürgersteig, the burgher's stepping stone or primitive sidewalk, into the roadway. These survivals explain the origin of the spouts for rainwater rather than the gargoyle. But if we could see the streets of mediæval towns exactly as they were before the age of Gothic churches, perhaps we should also detect here and there grotesque animals on the spouts carved of wood on such dwellings as ambitious burghers loved to ornament otherwise with carvings and pictures.

Nowhere more clearly than in the gargoyles of Gothic churches does one perceive that a wooden prototype has been repeated in stone. It is plain that a log bored or channeled lengthwise to form a waterspout has been finished in some eccentric shape—a chimaera, a harpy, a nondescript beast—and when required for a structure all in stone has been transferred to that material. Sometimes it is found that metal has been used where that does no harm to the artistic look of the structure.

At the same time it is worth noting that we have no certain records of gargoyles until after the Crusades, and that fact leads us to the Orient for the fash-

ion in gargoyles that meets us in the thirteenth century. Greek and Roman architecture are not without examples. But it is in the extreme Orient that we find exact parallels, in Ceylon, rainy Burmah and Siam, as many be seen by the illustrations of gargoyles recently discovered on old temple sites and published for the first time this year.

There is something that appeals to



GARGOYLE AT PRINCETON, N. J.

Designed by Gutzon Borglum, Sculptor.

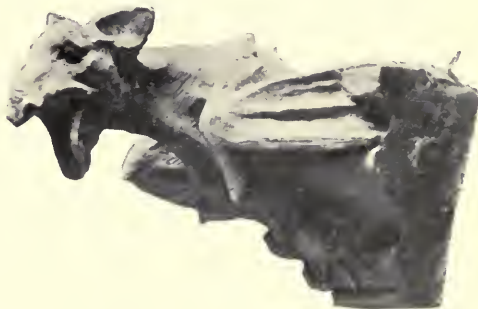
the sense of fitness in these grotesques in Gothic and Buddhistic architecture when seen in connection with the rest of the sculpture. Taken by themselves, divorced from their subordinate positions, they strike us a trifle coarse with the grotesquery of their distorted masks and muzzles. But seen in connection with the figures of divine beings and saints as they stand on their pedestals under their canopies, the whole combining to make a façade such as that of Rouen or Chartres appear like an intricate field of lacework, the gargoyles form a contrast at once pleasing and in harmony with good sense; they are minor parts of a great intricate whole, and should not be thought of separate from the other sculpture.

False views of art often spring from this root of ignorance as to the relation that objects now isolated once bore to their original surroundings. Examples of this in everyday life near to hand are the Chinese and Japanese curios which have been so widely appreciated by our art collectors. Ever since the advent of "chinoiserie" to Europe the finest qualities of Chinese and Japanese art works have been misunderstood, because European interiors do not suit

them; this lack of harmony continues to the present day.

But Europe and America have been as grievously at fault in classic things, more particularly with regard to Greek sculpture, which has been imitated and subjected to surroundings for which the Greek prototypes were never intended. We still mount caryatids where they are not merely anachronisms, but have no function to perform of supporting a superincumbent mass or embellishing an upright member. We hang carved wreaths and apply masks where these have no meaning. We imitate the bad taste of former generations by representing an arch which has lost its keystone, and we place elaborate groups of carved marble in rooms that lack the spaciousness, the open light from the sky, the marble architecture and floral surroundings that belong to them.

The gargoyle had its due place in Gothic churches in connection with the divine and human figures in sculpture and stained glass on the one hand and the floral and vegetal carvings on the other. These eccentric figures have their own part to play. They contribute to the sometimes heavy humor of Gothic art almost as much as certain faces



GARGOYLE AT PRINCETON, N. J.

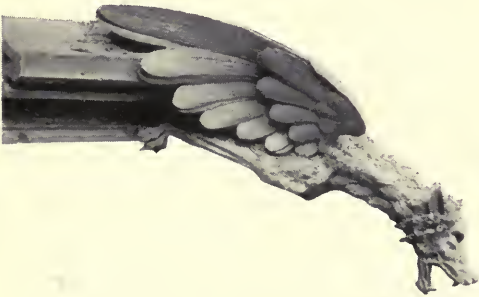
Designed by Gutzon Borglum, Sculptor.

and figures tucked away in the leafage of capitals within the church or under the seats of the stalls of the choir. Rarely, if ever, is satire expended on them, for they are apt to be too remote for an effectual girding at the pomposity of priests and monks—those perennial taskmasters and purse-bearers whom the architects and sculptors of the

church edifices held very often in the deepest dis-esteem. They belong rather to the realm of the bestiary, the book of fables and to the domain of minor supernaturalism, a very real land of the imagination, peopled with forms belonging to old, half-forgotten, but not entirely extinct religions.

As the red-skinned Christians of Mexico were once found to have stuffed the inner part of the high altar at Puebla with their old idols, without the knowledge of their cruel civilisers, so did pagan Europeans slyly introduce their discredited gods into the haunts of the new deities, enjoying the fun of getting the better of proud prelates who were ever ready to have them punished or even burned alive for devil worship. They also felt as did the submissive Mexican Indians that perhaps, after all, there might be some power left in the old demoralized gods, some uncanny virtue in their images, which it would be the part of wisdom to conciliate in case the saints were deaf, or otherwise too much engrossed to listen to their prayers. Cautious minds felt that the devil himself was too powerful a seigneur to exasperate.

In various odd forms the primeval



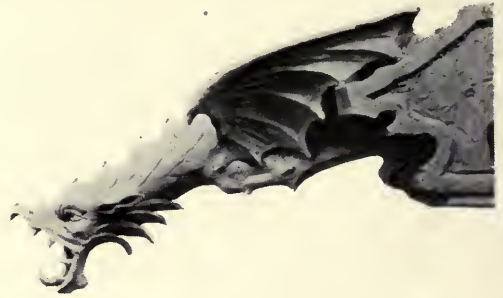
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worship of birds and beasts and imaginary creatures compounded of human and animal parts adheres to humanity long after strict logic has pronounced them and any belief in their efficacy absurd. That is superstition in its old, crude meaning, including belief in warlocks, were-wolves, demoniac hunters, the evil eye.

In the ancient annals of Rouen we seem to touch the very beginning and genesis of the gargoyle in a strange creature called La Gargouille, which devastated the fair land of the Senones long before the term Normandy became the general appellation of the country thereabouts, a demon whose existence was celebrated if not demonstrated, by curious rites that betray a pagan origin.



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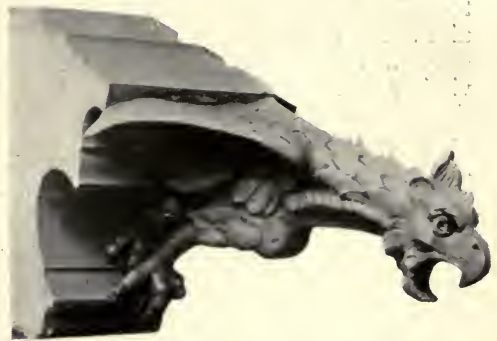
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The Gargoyle of Rouen was a very astute monster, who showed a partiality for young, soft-fleshed virgins, which one would scarcely expect in a creature so coarse of skin and with so violent a breath. For such a creature, with such a gullet, a Saxon pirate tanned by African suns and pickled by the brine of the Atlantic would seem a more savory article of diet. One can conceive the Gargoyle enjoying a Roman legionary in full panoply of arms, cracking a Roman knight as you would a nut. But tender maids were his pet specialty, and Rouen found it necessary to give him one from time to time in order to protect their husbandmen, flocks and herds. The staple of his human diet, however, was a meal of such men and women convicted of crime as Rouen could best spare, so that it became a practise to devote to the Gargoyle prisoners incarcerated for one reason or another, despite the fact that by so doing the people were deprived of one of their chief sources of amusement, the decapitation, the quartering or the incineration of their fellow man.

It was under Clotaire II. when Christianity was making slow headway against paganism in France which



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still held its own among the folk. A holy man from Rome had taken up his abode in a neglected fane of the Druids, had cleansed it of the foul goblins of the old faith, and begun to declaim against the sons of Belial. The time arrived for feeding the Gargoyle, and a deputation of the chief men was ready to take a noted criminal to the proper spot and leave him as a sacrifice. Saint Romanus perceived the opportunity offered him. "Let me take him to the Gargoyle" he exclaimed "and if I can exorcise the monster with bell and candle—you, on your part, must promise to accept baptism at my hands and build a temple here to the one true god."

The men of Rouen had no great desire to enter the haunts of the Gargoyle. They reflected that a Christian missionary was no ordinary dish, and the Gargoyle might be mollified, if, in addition to the criminal, they offered him a succulent foreigner. With their tongues in their cheeks, and a reprehensible flickering of the left eyelid, they closed the contract with Saint Romanus and watched him and the fettered criminal disappear among the great beechwoods on the other side of the Seine.

What was their amazement to see Romanus and the criminal return leading the Gargoyle in captivity, bound by the stole of the saint. His fiery breath all gone, his long tail dragging piteously behind! Still terrible to look upon, the Gargoyle was a danger no longer. Fastening him to a stake in the same square on which, centuries later, the Maid of

Orleans was done to death as a witch, the citizens heaped many dry faggots and bundles of straw such as they used for thatch about the monster and saw him reduced to cinders—all but his head and scaly neck, which remained incombustible, owing to the fiery breath that used to issue thence. It was from this part of the dread Gargoyle that wood carvers of later days took the design for the spouts, which are condemned to emit cold water as a perennial jeer and flout against the creature that seared men with his red-hot exhalations. It was thence, according to this voracious chronicle, that the gargoyle took its name.

Ever after, in remembrance of Saint Romanus and his prowess, the good citizens of Rouen have been in the habit of building a properly horrible dragon against Ascension day and parading him through the streets. He is known in the feminine as La Gargouille, notwithstanding the fact that such malefactors are always of the male sex; and they burn him on the public square with ceremony and great merriment, although not allowed to include human beings in the sport. The burning of human beings, it is true, did not die out, but it was done separately and on the most authenticated grounds of heresy or witchcraft.

In this variant on the story of Saint George and the Dragon we have a confused remembrance of the early pagan methods of disposing of criminals among the Gauls. It was their practise

to make the burning of criminals a popular spectacle. Giants and dragons large enough to be the cages for several victims were constructed of osier, and these huge effigies were carried about in triumph and finally burned with their human, living contents on a consecrated spot. Some such monster of willow-work and straw, which devoured criminals and was not averse to an occa-

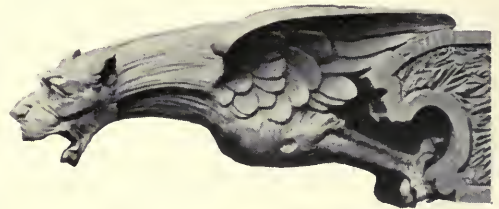
sented talismans to protect men from various ills. Pausanias mentions that Akroteros, a daimôn or genius belonging to the cortège of Bacchus, was remembered at Athens by a mask fixed in a wall. So we see that the same process was going on in classic times, the souvenirs of old rustic religions clinging to the temple walls as decorations rather than idols. Akroteros was doubtless some local form of Pan, the old god de-



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sional virgin as a *bonne bouche*, may well have lain at the bottom of the legend. A saint from Rome put an end to the Gargoyle, which we must imagine as an osier image like the famous Tarasque of Tarascon. The criminal saved from certain death by the Saint gives the clew. The Gargoyle was a spectacular machine devoted to capital punishment, and symbolized some ancient god of fire.

As such it takes its place among the goblins on the outer walls of Gothic cathedrals, degraded to base uses, but preserving a reminiscence of the old pagan days. The only parallel among the Greeks and Romans was the lion mask that decorated the roofs of temples or spouted water into the fishpond or bath. But that also can be traced back to superstitious origins, for the lion mask, like the mask of the Medusa and the head of the griffon, repre-

graded to a satyr who haunted the hill-tops, who in course of time was taken up and gathered into the general worship of Bacchus.

Gargoyles are an element in the love of nature shown by the sculptors and architects of Northern Europe during the middle ages, but they also reflect the supernatural side of nature worship which ran contrary to the ideas of Rome and Byzantium. In the long run the classical prevailed, and the architecture which included and protected them, as a great forest includes and protects creatures of every kind, was stigmatised as barbarous and flouted by the word Gothic, and so had to disappear. That its force in the twentieth century is not entirely spent is clear; for religious and secular buildings are still designed on lines that are accepted as Gothic, though the rebellious, forceful spirit of the old builders no longer inspires them.

Charles de Kay.

The Promised City of San Francisco

Some months ago the Architectural Record contained a brief notice of the plan, wrought under the direction of Mr. D. H. Burnham, for the improvement of San Francisco. The notice was based upon the summaries of the report which had been published in the daily papers of San Francisco, and these were, of course, fragmentary and incomplete; but in the meantime the full text of the report of Mr. Burnham, accompanied by the drawings prepared by his subordinates, has been officially published. It is now possible to estimate in a much more satisfactory manner the meaning and nature of Mr. Burnham's plan; and there are many reasons why such an estimate should be of peculiar interest, not only to architects and to the residents of the Pacific coast, but to all Americans whose patriotism contains any infusion of national aesthetic aspiration. Our object, consequently, in calling attention to the report more at length is not primarily that of describing and discussing the details of the plan. These details are of great interest and importance, but they might be meaningless except to people who are thoroughly familiar with the topography of San Francisco. The object of this article rather is to bring out some of the reasons why the plan is of more than local and technical interest, so that its future realization demands of patriotic Americans at least a portion of the same solicitude, with which they will follow the fate of the McKim-Burnham plan for the improvement of our National Capital at Washington.

In the first place, let us consider for a moment what part San Francisco is likely to play, economically and socially, in the history of our country. There can be no doubt that it is to be the metropolitan city of the whole division of the United States west of the Rocky Mountains. There will, of course, be other large and flourishing cities, such as Los Angeles on the south and Seattle on the

north; but San Francisco will dominate the other cities of the Pacific coast in much the same way as New York dominates the other cities of the Atlantic coast. It will be the center of the prevailing financial and industrial organization, the city to which well-to-do people will go in order to make their purchases and take their pleasures, and the abiding-place of the men, who will give form and direction to the intellectual life of that part of the country. As this whole section increases in population and wealth, San Francisco will benefit thereby in an altogether peculiar way. Its local industries and commerce will be of prime importance; but at the same time it will exact a tribute from the treasure of all kinds, which the people of the Far West will accumulate.

San Francisco has never received the recognition it deserves as an incipient metropolis, largely because it has not as yet, according to American standards, become very impressive in bulk. So far as the number of its population is concerned, it has ranked only with such cities as Buffalo and Cleveland; and Americans are slow to realize that a city may be smaller than Baltimore or St. Louis and yet at the same time be qualitatively of greater importance in the national industrial and social organization. It should be added, also, that for many years San Francisco did not grow rapidly enough to hold her own among cities of similar grade. From 1880 until 1896 it was, for reasons into which we need not enter, sunk into a condition of comparative industrial and commercial lethargy. Since 1897, however, its growth has been extremely rapid. Its population, according to the census of 1900, was 342,000; and the claim is now made that almost 450,000 people are resident within its limits. To these there should be added the 100,000 or more inhabitants of neighborhoods immediately tributary. If the existing rate of growth is continued, for the next fifteen or twenty

years, San Francisco will be surpassed in bulk only by such cities as New York, Chicago and Philadelphia. And there are good reasons for anticipating that its rate of growth will hereafter be greater rather than less. The whole section of the country, of which it is the commercial and industrial centre, is beginning a much more substantial process of economic growth. Its economic life was, until recently, characterized chiefly by the extravagant waste of enormous crude natural resources. It lived on the products of poorly worked mines and badly cultivated soils. Its population exploited these opportunities in the spirit of the gambler, and was making no sufficient provision for the future. The development of the fruit industry was the first step towards rearing a more permanent and productive economic structure. Recently this has been followed by the introduction into mining of more economic methods of extracting the metals, and by the beginning of manufacturing industries on a much larger scale. Petroleum is being used for fuel instead of coal, and extensive plans are being executed for transmitting electric power great distances from its sources in the water-falls of the Sierras. At the same time it looks as if agriculture, also, was assuming more wholesome and promising characteristics. The whole system of soil-exhaustion by the constant repetition of one crop is being succeeded by diversified crops, smaller farm areas and more careful methods of cultivation and irrigation. In this and in many other ways the economic condition of California and the adjoining states is more promising than ever before. There is no reason why this division of the country should not support ten thousand or more people, where it now supports a thousand; and whatever is done hereafter in the direction of developing these natural resources along permanently fruitful lines will of course benefit such a city as San Francisco even more than it will benefit the country. The typical life of California and the Far West has been hitherto the life in the mines or on the ranges and fields; but a more complex industrial condition and a

higher economic organization means, of course, that urban life will become relatively of greater importance.

We have dwelt upon the economic future of San Francisco, because, unless its future becomes in this respect more brilliant than its past, it will never gain the respect or excite the admiration of the practical American people. But if it once can be granted San Francisco may grow hereafter in much the same way that Chicago has grown in the past, the time is assuredly coming when it will exact the same kind of admiring respect from the rest of the country as Chicago does. The diversified character of its economic life alone will place it in a different class from such cities as Cleveland, Pittsburgh and St. Louis. At the end of the next thirty years several million people may well be living around the shores of San Francisco Bay, and these people will constitute one of the three most important industrial and commercial centres in the United States.

But if in one respect San Francisco will have the advantage over such cities as Pittsburgh and Cleveland, it will in another respect have the advantage over such a city as Chicago. Non-residents go to Chicago on business or to visit friends; but they will go to San Francisco just as they go to New York in order to amuse themselves. It is the one large city in the country, outside of New York, which is clearly stamped as a national pleasure resort. The inhabitants of the whole Pacific region will, of course, inevitably visit San Francisco when they wish to enjoy the diversions of city life, and to a smaller extent their example will be followed by the inhabitants of the middle West and of the East. Throughout the whole of the winter months the climate of San Francisco constitutes a potent attraction for all the residents of less favored regions, and as railway transit improves this attraction will become all the more powerful. It is true that San Francisco shares this advantage with such places as Los Angeles and Santa Barbara, and that these southern cities receive a larger share of the time and attention of tourists. But it is also true that San Francisco not

only is essentially far more interesting than its southern neighbors, but has the opportunity of making its superiority real to the majority of intelligent people. Merely as a health resort, the city has some limitations. Nevertheless it combines a mild, invigorating and equable climate with certain other advantages, which appeal more to the intelligence and imagination. Its site is, we believe, the noblest and most beautiful of any large city in the world (Constantinople alone possibly excepted). It is the American gateway to the Orient and the South Seas, and gains thereby a certain fascination. It is the city in which Americanized foreigners have proved to be most at home, and have lost least of their native idiom. These foreigners have profoundly influenced the amusements of the city, and have contributed to making it a most entertaining place in which to live. An easy, natural and spontaneous gayety characterizes the people. The theatres are numerous and good; the restaurants both inexpensive and acceptable; and the shops peculiarly attractive to the intelligent seeker after curiosities and bargains. Finally, it is the city, in and around which the people and things of manifest intellectual interest on the Pacific Coast are to be found; and this distinction, while it may not increase the railway travel very much at present, will in the end constitute one of San Francisco's peculiar sources of attraction. As soon as eastern people realize that California is not merely a health resort, but a state in which the better characteristics of the American spirit is coming to receive a particularly free and fragrant expression, then they may flock to San Francisco in much larger numbers than they do at present, and in a much more appreciative state of mind.

We trust by this time we have said enough to convince people, who are not already interested in San Francisco, that they have reason to be interested, and that any plan which seeks to make the city aesthetically more worthy of its higher destiny should receive the benefit of their sympathetic solicitude. But, of course, the people, who are much the

most vitally concerned are the San Franciscans themselves. If that city becomes adequate to its opportunities, if it ever really fulfills the extraordinary promise of its existing condition, it will be because its leading citizens understand what the opportunity is, and do not shrink from the sacrifices which its fulfilment demands. No doubt the bulk of the work necessary to give San Francisco the metropolitan and intellectual distinction, at which we have hinted, must be performed by individuals, acting in obedience to innocent and unconscious personal motives; but one essential task must be achieved by the community acting with the fullest and most definite determination to make San Francisco a great city. It is the community alone which can make the plan of the city—its physical constitution and appearance—adequate at once to its extraordinary situation, the manifest industrial needs of its future, and to its (possibly) higher destiny.

This brings us to a more specific consideration of the Burnham report. It is not an accident that San Francisco should be the first city after the national capital to have wrought for itself a new and comprehensive plan. Such a plan was demanded by two conditions—first, by the unique opportunity which the site affords, and, second, by the execrable manner in which, up to the present time, this site has been mutilated. The extent and the apparent perversity of that mutilation is almost beyond belief, but it is not beyond explanation. San Francisco grew, of course, with phenomenal rapidity during the first few years after 1849, and its incompetent government had to improvise a street plan without possessing the intelligence or the time to study the matter carefully. The only conception of a city which the good American pioneers brought with them, was that of an indefinite multiplication of rectangular blocks, but it so happened that this rectangular lay-out, which is inconvenient and ugly enough on a piece of flat land, is when applied to a hilly site still more inconvenient and inappropriate. It was the misfortune of San Francisco that the very characteristics



SAN FRANCISCO AS IT IS. Report of D. H. Burnham.



THE PROMISED SAN FRANCISCO.

Report of D. H. Burnham.

of its site which give it such rare distinction and beauty, were bound to be most defiled by a rigid system of rectangular streets. Her sin is worse than that of other American cities only because her opportunities were so much greater; and if the city had grown during its earlier years more slowly and under more normal conditions, it is possible that she would have adapted the lay-out of the streets to the grades of the hills, and so enabled her architects to put the peculiarities of her site to better use. The cows, it is said, laid out old Boston; and the pity is that they were not consulted about the lay-out of San Francisco. They would certainly have proved to be better surveyors than the pioneers; and even to-day the speculators, who are exploiting new districts in the vicinity of San Francisco, may well consider whether the disposition of a cow to go around a hill does not contain more practical wisdom than the common preference for a straight street at any price. At the very moment when the good citizens of San Francisco are acclaiming the Burnham report, they are permitting the new additions to the South to be laid out in the same bad old way. The truth is, of course, that the development of San Francisco, like that of other American cities, has been left to that generally ignorant and obnoxious individual, the real estate speculator, whose selfish interests demand lots and blocks of uniform size and with rectangular corners. He is as rampant to-day as he ever was; and San Francisco, like certain other American cities, will never enter into possession of her magnificent physical heritage until the interest of the whole community in a flexible and convenient street lay-out is asserted vigorously against those of the local real estate owners. The object of the Burnham report is, of course, primarily to introduce as much coherence and flexibility as possible into the old street system of San Francisco; and it will require for its realization on the part of the better citizens of San Francisco an amount of vigilance and hard work, proportioned to the past triumphs and the present influence of that arch enemy of the well-ordered city

—the real estate speculator and "boomer."

It may be inferred, consequently, that the Burnham report had to meet a peculiarly difficult situation. The new plan is not concerned like the plan for the improvement of Washington with a capital city, whose whole economic life is dominated by state activities. San Francisco is not even the capital of California. It is an industrial and commercial centre, which has been built under peculiar economic conditions; and any re-planning of the city must take into account these fundamental, industrial and commercial pursuits. At the same time, it so happens that this commercial city occupies an incomparably noble and beautiful site, and that its public spirited citizens are anxious that the city should receive and adopt a lay-out which shall take full advantage of the hills and the bay on which it is built. Moreover, in laying out this new plan, Mr. Burnham has had to keep in mind the limits of possible re-arrangement. In order to take *full* advantage, either for aesthetic or practical purposes, of the topography of San Francisco it would be necessary ruthlessly to destroy all that part of San Francisco which has been built upon the steep hills, bordering the bay on the side of the Golden Gate. Streets running at right angles to one another have been imposed on these hills, quite regardless of grade—quite regardless even of the fact that it would be almost impossible subsequently to drive a horse up and down the street. Yet it was impracticable entirely to obliterate this absurd lay-out. All that Mr. Burnham could do was to remove in some measure the practical inconveniences of such a plan, to reclaim certain peculiarly prominent summits such as Telegraph Hill, and finally to turn his chief attention to the improvement of that part of the city which was in the line of future growth, and which could be developed in relation to still unspoiled aesthetic opportunities offered by the topography of the city.

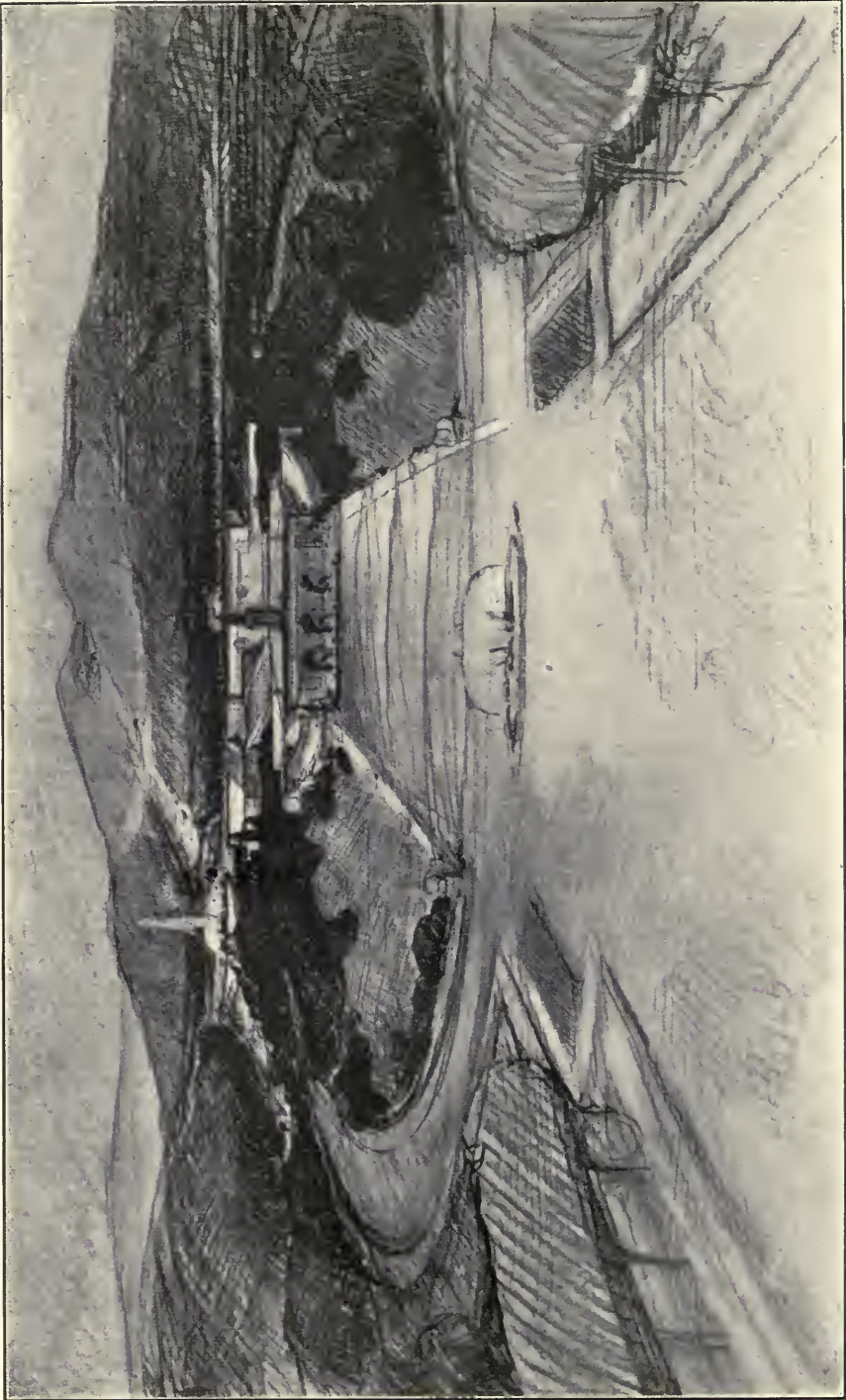
Mr. Burnham's plan may, then, be briefly summarized as follows: He proposes to deal with the inconvenience of

the existing rectangular city plan by encircling the city with a boulevard. All streets will lead finally to this boulevard, and access may be had from any one of them to another remote street by following the boulevard until the street sought for opens into it. But in addition to this boulevard, whose utility will be diminished, because it cannot well be made only the outer one of a concentric system, a number of new diagonal streets are proposed, which will serve the double purpose of facilitating communication and of uniting the older sections of the city with the proposed new San Francisco. This new city is grouped around a civic centre, which is situated on the most important existing street in the city, Market St., at its intersection with Van Ness Ave., a few blocks beyond the present City Hall. Business is pushing out along this street at the present time, and in selecting this location for the core of his new city Mr. Burnham has effected a useful union between his ideal plan and the actual business expansion of the city. The proposed new civic centre will, of course, be the site of a number of the larger public buildings, and from it will radiate the important avenues of travel. At convenient points these avenues again widen into circles, from which other diagonal streets radiate. The proposed civic centre, while it is situated at the intersection of two of the widest and most important of the existing thoroughfares, is essentially a new creation, because most of the avenues which pass through it, will have to be cut without much reference to the existing map of the city. A broad ornamental thoroughfare, the so-called Panhandle, is to connect the Plaza with Golden Gate Park, and is to be extended in the opposite direction straight to the bay. Market St. will run from the Union Ferries through the Plaza to and around the Twin Peaks. In the same way Van Ness Ave. is to be continued across the Square to another plaza, which would, it is stated constitute a convenient place for a Union Railway Station.

This general description, although it avoids many essential details, will not, of course, mean very much to a person

not familiar with San Francisco; but everybody who knows the city will understand that it constitutes an ingenious and complete means of connecting by broad thoroughfares its several main divisions. One arm of Market St. will lead directly to the shops and the banks. The other will aim for the Twin Peaks, which are the finest pair of hills which have been left comparatively unmutated by the existing city plan, and will form an artery of travel to an important new section of the city beyond. The Panhandle will run from the Plaza to the one park of which San Francisco can be proud at present, and its continuation beyond the Square will give direct means of communication to a busy manufacturing district. Van Ness Ave. will lead to what is at present the most desirable residential quarter, with which it will be better connected by several new diagonal and irregular streets, while it is proposed that its prolongation across the Square shall connect with a railway station, at which all the trains coming from the south shall enter the city. Thus the residence, the financial, the shopping and the manufacturing regions are tied together with broad, convenient and imposing thoroughfares, while at the same time the most beautiful parks and the undefiled hills are made much more accessible than they are at present. As the city grows in population these thoroughfares could be tunneled with subways, which would constitute a singularly effective means of inter-communication, and it is safe to say that if such a scheme could be even in some measure realized, San Francisco would be very much the most conveniently planned city in the United States. Its growth, instead of being confined by difficult, expensive and laborious means of inter-communication, would be enormously accelerated by unimpeded freedom of movement. At the same time an opportunity would be provided for the construction of a substantial, enduring, and, perhaps, a handsome city of brick and stone in place of the unsafe and existing city of wood.

Some mention should also be made of the new parks, which the Burnham plan



TWIN PEAKS AT THE END OF MARKET STREET—THE PROMISED SAN FRANCISCO. Report of D. H. Burnham.
(Sketched by E. H. Bennett.)



VIEW FROM THE SOUTHEAST, SHOWING THE TREATMENT OF TELEGRAPH HILL—THE PROMISED SAN FRANCISCO.

(Sketched by E. H. Bennett.)

Report of D. H. Burnham.

proposes to create. The steep hills, on and around which so much of San Francisco is and must be built, and commanding as they do magnificent views of the noble bay and the fine country sides to the south, afford on their crowns and slopes, opportunities for parks, which in themselves would repay a journey across the continent. These opportunities have so far been largely neglected, Golden Gate Park being the only important exception. Even Telegraph Hill, which is so steep that nobody but very poor people will live on its slopes, and around which so many racy historical memories gather—even Telegraph Hill has been left in a squalid, disheveled and almost useless condition. Mr. Burnham's plan proposes that wherever possible these mutilated hills shall be recovered, and that those which remain un mutilated shall be claimed by the community. It is proposed in general that the summits of all high hills shall be left pretty bare, while their slopes shall be clothed with trees, but the line made by this foliage should not be horizontal, but should be adapted to the varying contours of each hill. Level contour roadways around the sides of the hills are proposed, accented at places of interest by terraces and approached gradually from the abutting streets. The top of Telegraph Hill is to be made into a park, especially designed, in order to give some kind of foreground to the views of the shipping and bay to be seen therefrom, and the lines of approach are to be completely reformed. Russian Hill and Pacific Heights are to be reached by circular parkways. Similar treatments, adapted to the diverse conditions of each particular case, are proposed for Lone Mountain, Buena Vista Park Hill, Potrero Heights, Bernal Heights, Sutro Heights and the hills south of Islais Creek. The Presidio is, with the co-operation of the military authorities, to be made into a park, which will be a monument to the National Army. But the Twin Peaks and the Lake of Merced beyond are to be made the occasion of the largest and probably the most beautiful park of all. The Twin Peaks are

topographically the focal point of the city, and by the time San Francisco has a population of several millions, it may well be the most convenient spot for great popular festivities. It is proposed, consequently, that provision be eventually made in that neighborhood for public fetes and entertainment on a very considerable scale, so that this park will contribute more than any other single feature of the city to the fulfillment of San Francisco's obvious opportunity to become a great pleasure resort.

In making the foregoing summary of Mr. Burnham's report, we have for the most part intentionally subordinated aesthetic to practical considerations, because one absolutely essential condition of the success of such a plan is that it shall be justified on economic grounds. It must be worth in dollars and cents to the city of San Francisco as many dollars and cents that it will cost, and it remains to be seen whether the practical advantages promised by the plan can be economically bought by the continuous and considerable expenditure which its realization, however slow, will demand. Whether the adoption of such a plan actually will pay is a question which an outsider is not competent to answer; but it may be said in general that the plan, expensive and drastic as it is, ought to pay—provided San Francisco is growing and continues to grow as fast as its citizens claim. If the increase in population does not amount to more than about 30 per cent. each decade, it is entirely possible that wealth would not be accumulated in sufficient quantities to make possible even the gradual carrying out of such a plan. But if San Francisco is really beginning to increase in population at a rate of five per cent. or more each year, it is probable that the wave of its prosperity could carry easily even a vessel of such tonnage as the Burnham plan. Only in case it is too big for the city will it fail to pay.

Moreover, should this condition be fulfilled, San Francisco will begin the building of the new city under circumstances very much more advantageous

than those which obtain in many older and larger cities. It is still possible to reform San Francisco without incurring a prohibitive expense. The city is apparently just entering upon a period of more rapid and substantial growth, but this growth, while it has already caused a lively advance in real estate values, has not traveled so far along the existing thoroughfares as to forbid some retracing of the steps. Most of the new avenues suggested in the report are to be cut through a part of the city in which real estate prices remain moderate, and if early action were taken in the direction of legally laying out the Plaza, and its tributary avenues, the expense of this part of the scheme probably would not be more than the city could immediately bear. On the other hand, if nothing is done for the next ten or fifteen years towards the achievement of this Central Idea in the plan, it is entirely possible that the increase in real estate values will make the scheme impracticable. It is very desirable, consequently, that the advocates of the plan should first secure the adoption of this central idea, and should push for its early realization. The subordinate parts of the plan can be carried out gradually, but if the Plaza has to be abandoned because of the expense it entails, the whole scheme becomes comparatively valueless. It is just this Plaza which will make all the subordinate improvements pay.

In another respect, also, San Francisco can better afford to carry out a drastic plan of reform than can many older and wealthier cities. There is no city in the world which has so much to gain from making itself attractive—from giving itself an amusing, festive, and distinguished appearance. As we have already pointed out, it has great possibilities as a pleasure resort, and if at the present time the tourists flock chiefly to the southern part of the state, and often avoid San Francisco entirely, it is the San Franciscans themselves who are largely to blame. They have done little as yet either to advertise or to develop the rare and extraordinary advantages which their city enjoys. It is safe to

say that the beauties of its location are appreciated by comparatively few people in the East. The writer, for instance, before leaving New York, was asked frequently why in the world he proposed to spend a much longer time in San Francisco than in the southern part of the state. It is understood vaguely that the Bay is very beautiful, and that the city has some interesting shops and restaurants; but the current impression fails wholly to do justice either to the city itself, to its location, or to the surrounding country. Yet, as we have said, San Francisco is one of the few large cities in the world which are in a position to contribute vastly to the entertainment and to the good humor of mankind; and if the San Franciscans fail to give their city more of the festive atmosphere and the distinguished appearance which its opportunities allow, they will both rob their own pockets and stultify their spirits. While the mistakes and deficiencies of the city's past have been serious, they are to be explained by the economic and social instability, inseparable from the early history of an Eldorado. But if its citizens continue to act upon a narrow and ignorant view of the city's future, the only sufficient explanation will be that they are deficient in practical good sense, in liberal intelligence, and in tenacious good will. They will have beheld the Greater City from afar, and they will have rejected the vision.

Be it added, however, that too much should neither be demanded nor expected. The San Franciscans of the present generation have the foundations to dig, not the structure to rear; and Mr. Burnham's plan, rightly considered, is a sketch of the preliminary lay-out rather than that of the triumphal edifice. It is not desirable that too much haste should be made. We believe that it would in the end prove to be a misfortune rather than a blessing for San Francisco in case a rich man put \$100,000,000 into the hands of a competent Commission for the realization of the plan, and in case the Commission were granted by the Legislature full legal powers for the immediate building

of the complete structure. Such would not be the best method of reaching the consummate result. The citizens of San Francisco would obtain in this way a much more spacious, magnificent and convenient house in which to live, but we fear that their mansion would lack character and charm. You can plan to make a city convenient and appropriate, but you can hardly plan an edifice on a large scale that is to be both individual and beautiful. Such a city must necessarily be the work of many vigorous and formative minds, acting under all sorts of conditions, but gathered slowly into something like a coherent result by the influence of a common purpose and certain accepted traditions. There must be about it much that is accidental and mysterious as well as much that has been foreseen and proposed, and it must within certain limits be judiciously left to itself. Above all, it must be allowed to ripen slowly, so that it may not wear the aspect of a modern improvement, but will really be the outcome of the better sense and taste of the people of San Francisco, helped out by the formative imagination of a few. In this way all great cities must be built. Even Paris is the child, not so much of M. Haussman as of the French temperament and tradition. Wherever the attempt has been made merely to Parisianize other cities, the result has sometimes been imposing and grand, but it has also usually been pretentious and dull. The San Franciscans of to-day must expiate their past by being patient and self-sacrificing. If they push the work too far and seek a superstructure without a sufficient foundation, they could hardly build anything better than a House of Mirth, which would be festive without being either dignified or honest.

They must be content to have their successors rear the many-storied mansion, which, if it is adequate, will have about it something of the glamor of the golden land, and something of the nobleness of the Bay and its encircling hills. A city of San Francisco, which triumphantly crowned its location, could not but become one of the most precious national monuments of the American people.

Herbert Croly.

Postscript.—The foregoing article was written before the occurrence of the recent earthquake and conflagration, but we have allowed it to stand as it is, because it remains as true under the new conditions as it was under the old. Mr. Burnham's plan is an attempt to adapt the plan of the city to its topography, and the topography of the city has not been altered by the destruction of so many of its buildings. Indeed, the conflagration, deplorable as it was, offers San Franciscans a chance to improve the lay-out of the city at a much smaller expense than would formerly have been required, and it is to be hoped that certain steps in the direction of the realization of the scheme, which would have been postponed for years, can now be taken immediately. Of course, it is possible that the city may not be able to afford such expenditures just now, and that it will have to be rebuilt as soon as possible along the old lines. But we sincerely trust that such will not prove to be the case. San Franciscans need a better-looking and a more convenient, as well as a more substantial city, and it would be a thousand pities in case the recent conflagration cannot be made an opportunity for realizing more quickly some of the essential parts of Mr. Burnham's plan.

Indianapolis Court House and Post Office.

An attempt to meet the improving architectural taste of the country is manifesting itself more and more in the recent public buildings of our lesser cities. Every community as soon as the population reaches a certain mark must have its own Post Office, its Court House or its municipal building, and any old building will no longer do. Civic pride demands something pretentious, something dignified and architectural, something that the native can point out to the visitor, and of which he can proudly remark: You see the place used to be wild and wooly, but this is the way we do things now! This state of affairs has produced a great variety of very charming architectural problems, which have been creditably solved under the direction of James Knox Taylor, the Supervising Architect for the government.

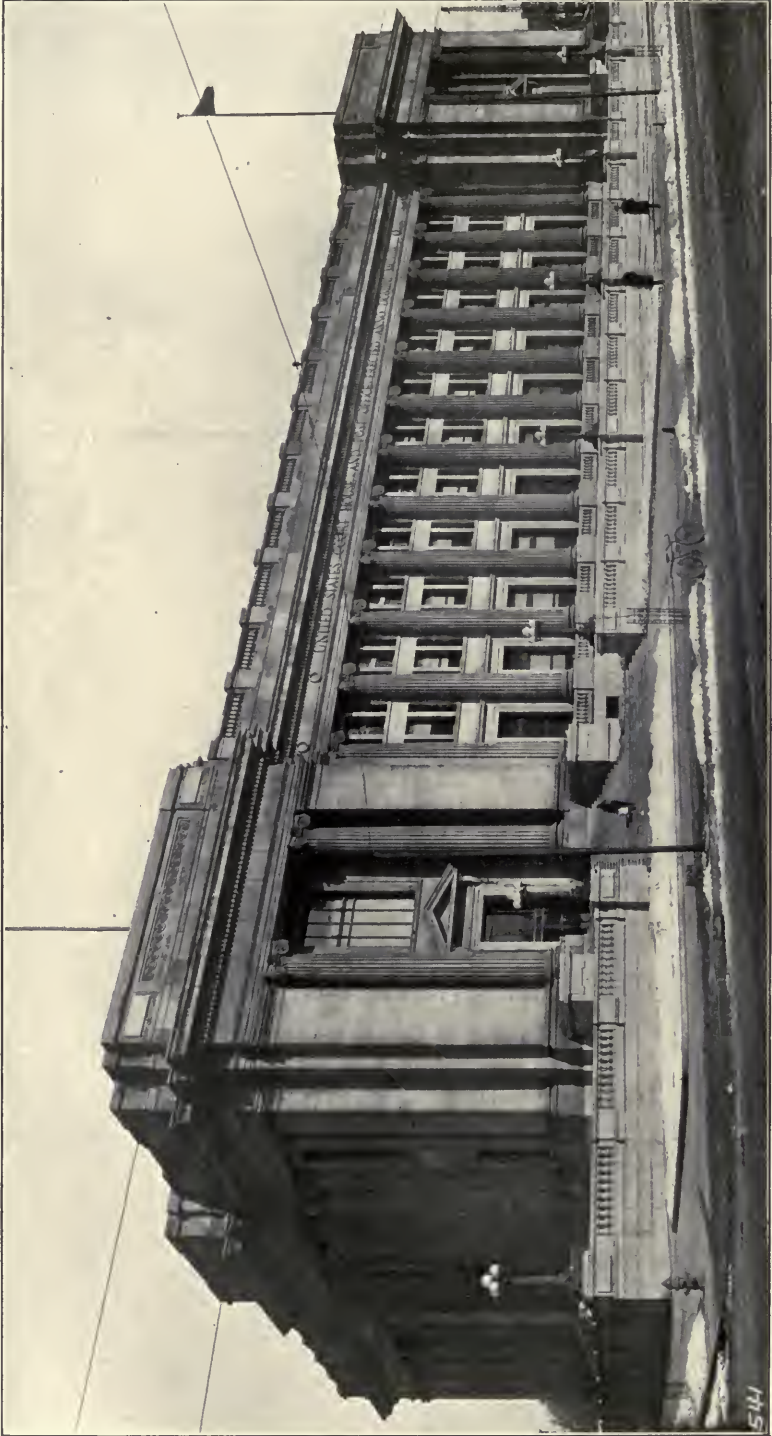
We reproduce herewith an example of the larger type of structure done under Mr. Taylor's supervision. In this case the building serves the double function of Court House and Post Office. The building covers a considerable area and presents a problem which offers the architect ample scope for exercising his ability to produce a monumental building. The result shows that he has not altogether failed to take advantage of the opportunity.

Stone is plentiful and cheap in Indiana, especially limestone; the entire walls have accordingly been incrustured with it and at a cost which would perhaps have necessitated the use of baser materials if attempted in New York. The architect seems, therefore, to have started with a substantial advantage.

The first impression that one gets of the exterior is one of many columns; how many? let the reader guess at a glance. He will perhaps need to resort to arithmetic for the answer. Though a bit tedious the colonnade gives the exterior a quiet dignity and expresses to some extent the judicial purpose of the building, while the many openings suggest the post office function.

It is perhaps not very clear why the designer should have seen fit to subdivide the second and third story windows by stone mullions into three parts and in such a way as to render the outer divisions practically useless for light-giving purposes, they being mere slits. This window treatment is a case in which the artistic fancy of the designer has resulted in something concretely impractical; he probably felt that the first story being more important than the upper stories, should have larger windows, at the same time the central divisions (which are respectable windows) without the slits, he probably thought looked insufficient to properly light the interior of the building, therefore his solution. If the colonnade escapes the fault of monotony the decorative treatment of the openings is unable to interest us partly on account of its bare hardness, partly because it does not seem to go well with the Ionic columns. The objection to bareness might be extended to the upper members of the order; the attic looks especially bare over the end pavilions; though more ornate but scarcely more interesting is the interminable balustrade over the curtain wall. The inscription in the frieze under it cannot be called happy; it does not fill the space well, and might perhaps have been used to greater advantage in a modified form on the pavilions, which emphasize themselves by their lack of architectural adornment. A French architect would not have been satisfied to leave such an uninteresting silhouette or to employ such a commonplace Ionic order. He would have felt the need of something more appropriate than a flagpole to accentuate the end of his composition; he would have placed some sort of a point of interest over or on the end piers or something on the axis of the pavilion; he would have varied his attic treatment or broken up the long lines of the cornice with blocks or consoles or anything to avoid the Einerlei from which the building does not entirely escape.

The excellent setting relieves this im-



PRINCIPAL ELEVATION OF THE INDIANAPOLIS COURT HOUSE AND POST OFFICE,
James Knox Taylor, Supervising Architect for the Government.

Indianapolis, Ind.



THE TWO-STORY INTERIOR COLONNADE WITH VERY FRENCH IRONWORK.
INDIANAPOLIS COURT HOUSE AND POST OFFICE.

Indianapolis, Ind.

James Knox Taylor, Supervising Architect for the Government.



COLORED MOSAIC AS WELL AS MARBLE PLAYS AN IMPORTANT PART IN DECORATING THE INTERIOR.

INDIANAPOLIS COURT HOUSE AND POST OFFICE.

Indianapolis, Ind.

James Knox Taylor, Supervising Architect for the Government.



ONE OF THE LONG VAULTED CORRIDORS.
INDIANAPOLIS COURT HOUSE AND POST OFFICE.

Indianapolis, Ind.

James Knox Taylor, Supervising Architect for the Government.

pression considerably and makes up by lamp-posts and little architectural devices for shortcomings elsewhere. It will be noticed that the forms employed on the parapet, that surrounds the terrace, and on the pedestal that supports the colonnade, are almost identical and that variety is effected by varying the proportion between baluster and post spaces and by treating the panels in slightly different ways. The steps leading up to the pavilions are particularly happy; they look frank and inviting.

The whole exterior composition, which pretends to be severely plain and admirable for the largeness of its parts rather than by reason of any ornateness, agreeably disappoints us on the interior by its stately corridors with their vaulted ceilings, its rich marble incrustated walls and floors, and a free and fanciful ceiling treatment in colored mosaic, which in some parts of the building would take one back to those charming villas of the Italian Renaissance.

H. W. Frohne.



A VERY EFFECTIVE COFFERED VAULT, SHOWING ALSO THE EXTENSIVE USE OF MARBLE FOR STRUCTURAL AS WELL AS FOR DECORATIVE PURPOSES.
INDIANAPOLIS COURT HOUSE AND POST OFFICE.

Indianapolis, Ind.

James Knox Taylor, Supervising Architect for the Government.

Roman Art.

Part I.

A recent number of the *Architectural Record** contained an article about a Greek temple. In that article we endeavored, in studying a monument, to evoke the entire field of art which that monument implied, to show what refined requirements such a building had to satisfy, and to convey a clear understanding of the leading principles of Greek art. A

which it might have answered have not been put. It must be studied in the spirit and not by the letter, and when this is done it will perhaps even to-day be fruitful in lessons.

It is in this same way that we propose now to study a few monuments of Roman art. We know the rôle which, in the Scandinavian mythology, is attributed to



FIG. 1. THE COLISEUM—ROME.

creation so perfect as was that art must be admired as long as men endure on the earth and continue to care for harmony, rhythm and richness of color in their edifices.

We endeavored to show what part of the Greek genius could be incorporated in our own. It has often been interrogated during the course of the centuries, but in most cases the precise questions

the "Mothers," who are the source of all life and guide our destinies. So the two arts, the Greek and the Roman, are the real "Mothers" of architecture, for they have played an all-powerful part in the evolution of architectural styles. These "Mothers" differ in stature and aspect, but both of them are truly noble, and we of the twentieth century are their unworthy sons.

*June, 1905.

These pages are being written under a grey, tinted sky on the shore of the English Channel, not far from Bayeux, where William the Conqueror lived. Well, the main roads leading to Bayeux to-day follow the very lines of the Roman roads traced nineteen centuries ago. Rome reigned here, and when the writer takes a bicycle ride from Bayeux to Courseulles he sees one of her mile-stones still standing, and it carries his thoughts back to that great Power which subdued the whole known world, from foggy Britain to the arid, sunburnt tablelands of Parthia and Persia.

If one wished to compare the value of Greek art with that of Roman art there can be no doubt as to what the result would be. Greek art would far surpass its antique rival. But if one measures the influence that the two arts have had upon civilization during the course of its development, then Roman art takes its revenge. Athens has remained Athens, the home of delicate and refined spirits. But Rome conquered the world and imposed her laws, which still fill our Codes, and her art. She triumphed twice: first, in the antique period, and again when, after a sleep of a thousand years, the force of her art was so great that it conquered the world anew at the Renaissance, since which time it has continued to retain its hold.

Look at the cornice of your ceiling, or the decoration of your fireplace, or the front of the house across the street, and you will see Roman ornamentation still triumphant, although enfeebled, degenerate and without relief or beauty.

* * * *

All Grecian architecture was summed up in the temple. It will not be difficult to find an edifice standing for all Roman architecture, but here it will not be a temple which, above all other edifices, embodies, for us, the Roman spirit. The times have changed. We are not dealing with those heroic and religious epochs which witnessed the founding of the Greek cities. We are entering upon the study of a civilization already far advanced in the ancient world, a civilization that has inherited much wealth, amassed by others. New tastes have developed.

The Roman, for whose splendor the entire world now labors, leads a sumptuous life in the city, a life of luxury and comfort formerly unknown. Domestic architecture scarcely existed for the Greeks, and it produced no work deserving of our attention. The Roman houses, on the other hand, are of the deepest interest, architecturally and historically. They show us the Roman spirit at its best—practical, ingenious, and aiming at largeness and solidity in architecture. Furthermore, we have an abundance of data to go upon here, enabling us to reconstitute the abode of a rich Roman down to the smallest detail. But, to have an edifice really representative of the Roman spirit, Roman art and Roman civilization, we must not take a private house, for with the Roman there was one consideration which dominated all others, namely, public utility. He was a citizen of Rome—*civis Romanus*—first, and a private individual afterwards. A practical people of conquerors, that is what the Romans were. The material organization of public life, the providing of roads, bridges, aqueducts and sewers, the building of basilicas, wherein justice was administered, temples, arenas, circuses, it was in these works that the Roman appeared at his best and displayed qualities which, although of almost opposite kinds, met together in him, namely, a conception of the big, the monumental, of what produces an effect and impresses the masses, together with a marvelously true notion of what is practical, of what is suitable for a particular purpose, a perfect adaptation of a building to the requirements which it has to meet, and, lastly, a taste for comfort which, until then, was a thing unknown. Those are the double qualities which make the Roman worthy of our admiration and to which the greatness of his art is due. To find a complete combination of those remarkable qualities and see them in action, there is one kind of edifice which must be studied in preference to every other: we mean the *Thermae*.

The *Thermae* are a magnificent and essentially Roman creation, in which the special qualities which the Romans brought to bear upon their architecture

were fully utilized. Never before had any *Thermae* been constructed which even approached those conceived and executed by the Romans. Afterwards came the barbarian invasions, and the Roman *Thermae* now stand in ruins, eloquent witnesses to a civilization so refined that we of to-day can scarcely picture it in imagination.

In order to complete what it is essential to say about Roman art, we propose,

once established, we shall only have to show what use the Romans made of their architecture.

* * * *

Roman architecture is characterized by the use at one and the same time of the full-center arch, copied from the Etruscans, and of the platband and the orders, taken from the Greeks. These two principles of construction are contradictory. That, however, did not

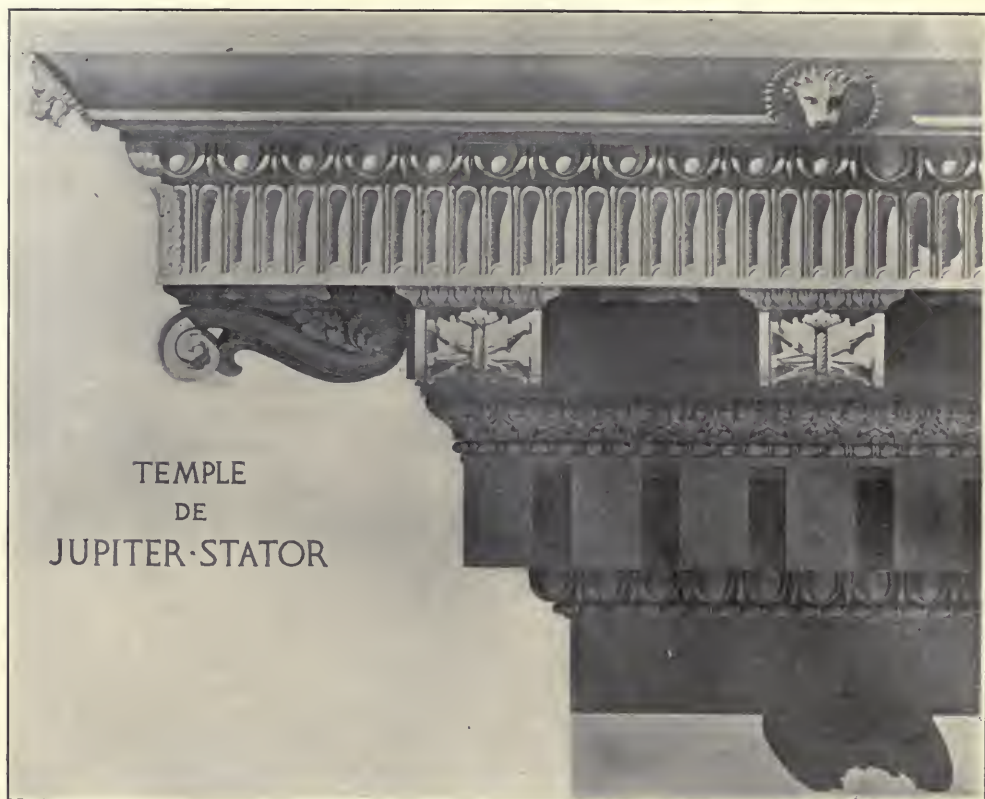


FIG. 2. THE CORNICE OF THE TEMPLE OF JUPITER STATOR—ROME.

after examining the *Thermae*, to cast a glance over a luxurious villa—that of the Emperor Adrian, at Tivoli—so as to show how much the Romans comprised in the term domestic architecture. Before we do this, however, it will be well for us to speak briefly of the particular combination of elements composing Roman architecture, which is not, like the Greek, an organic style, but a derived or secondary architecture. This

trouble the Romans, who brought them together. Discharging by means of a full-center arch is far better than discharging by a platband; yet the Romans put a platband over a full-center arch.

The vault principle involves a number of consequences: the springing points, the organs counteracting the thrusts, the external form of the vaults—cupolas or sharp-pointed timber-work



Fig. 3. Detail from the Temple of Mars the Avenger—Rome.

—which constitute an architecture having clearly marked characteristics.

In the same way, the adoption of the horizontal arch and the supporting columns necessitated certain forms, to the exclusion of others. The plan of the horizontal arch with supporting columns was followed by the Greeks to its extreme consequences. They never deviated from the road which logic and their artistic instincts told them was the only right one, and thus they created an admirable organic style—organic in that each member has its *raison d'être* and its proper place in the whole organism, not one being useless and each one fulfilling a function.

The French of the Middle Ages chose the opposite principle of the curved arch, and, after much groping, discovered a vault resting on pointed arches. With a logic not less rigorous than that of the Greeks of the sixth century B. C., and an artistic sense just as refined, they deduced—if we may so put it—from this vault system all the many consequences flowing therefrom. The small columns, the pillars, the buttresses, the counterforts, were precisely what they should be for the part they played in the edifice; and, following

them, all the details of the building took the forms which the ribbed vaults, the buttresses and the counterforts rendered inevitable. The windows were groined and made to fill all the space between the pillars, roses lighted the tympanums, and the counterforts were tipped by pinnacles. Then sculptured decoration bedecked and beautified all the vast edifice. In this way arose the second of the great organic styles, and the last for many centuries.

In both cases, the course followed was one and the same. Starting from different principles, Greeks and French arrived at different solutions, one as valuable as the other.

With Roman architecture it was nothing of the kind. It is made of a number of pieces; it is a compromise between strongly opposed principles, and therefore it must not be expected to display that rigor of development that marked Greek and Gothic architecture, nor, from that standpoint, to teach those admirable lessons which are to be learned from these, the only organic styles that the world has known. Yet many useful things can be learned from it.

In the first place, let us see what its building methods were. As stated in our previous article, the materials available and the economic conditions that prevailed made certain building methods obligatory, to the exclusion of others. The Romans were a practical people; they were organizers, and they well understood how to adapt the means to



Entrance to the House of Pansa—Pompeii.
(Restoration.)

the end. On the other hand, they were not refined artists, and they lacked that delicate taste which made Athens glorious. If the work was strong and solid, that was enough for them. Moreover, they had no difficulty in finding labor, for they possessed slaves in plenty, to whom they could pay just what wages they chose.

The process mostly followed by the Romans was the concrete process: that is to say, between facings in brick they put successive layers of mortar, sand and small pebbles, so as to form one solid mass. In this manner they covered vast halls with horizontal courses. For these heavy vaults they needed enormous resting points, and, as a matter of fact, the walls supporting them were of immense thickness. In the case of the Pantheon, for instance, the hall has a span of 43m. 40c.m., and the circular wall is 5m. 40c.m. thick, or, say, one-seventh of the span, measured inside. It mattered little to the Romans that these masses of materials required many workers, for they had laborers in abundance, and those laborers were slaves. It is also to be remarked that such a system of construction did not call for any skill on the workman's part. When the Greeks built the solid-jointed walls of a temple in dressed stone, and placed in position the enormous blocks composing their columns, it was necessary that the stones should be well and truly dressed. With the Romans it was different. A few skilled workmen for the outside brick facings was all they required. The filling-in could be done by slaves. Thus Roman buildings were what the prevailing economic conditions caused them to be.

For a long time the Romans used sun-dried bricks; but when they conquered the East they saw the superiority of the burnt brick. Augustus said that he succeeded to a Rome built of earth, and was leaving behind him a Rome of marble. He would have been nearer the truth had he said a Rome of brick faced with marble, for such was imperial Rome.

However, we are not writing a his-



FIG. 4. A ROMAN COMPOSITE CAPITAL.

tory of Roman architecture, but taking it as it stood at its best, under the Empire.

We have shown that in Roman building there were two very different things, viz., the wall, in brick with central part of mortar and small stones, and the casing, which, most often, was in marble, but occasionally in stucco. These two things—the construction properly called and the decoration—had distinct and independent existences. This is a new fact of great importance, and its consequences are strongly felt even to-day.

* * * *

In Greek architecture the same rhythm pervaded both building and decoration. The decoration was executed before being put in place, so that each member of the construction kept its individuality and was at once constructive and decorative. It was the same later on in France with the Romanesque and pointed styles. To give but one example of this, the curves of the arches, whether full-center or pointed, which crown Romanesque and Gothic doorways, were built of carefully dressed stones, and each stone,

which was a necessary and an independent part of the whole arch, was given a special decoration. Often it was a saint or a sacred person, but sometimes a decorative motive. Whether figure or ornament, it was sculptured before the stone was placed in position, and was, therefore, for that stone alone. There was no danger of one personage or ornament covering two or three stones. This is what may be described as animating building and decoration with the same rhythm. It is scarcely needful to point out the superior and unique quality of an edifice built according to these rules of harmony. When we look at a Greek edifice, or a French mediaeval one, we immediately grasp the fundamental lines, and even the smallest details of the building, which the decoration, instead of concealing, throws into clear relief.

In Roman architecture it was not so. The building-work and the decoration are independent of one another. In the former there were two entirely distinct parts, namely, the central mass, formed of a conglomeration of stones and cement in layers, or of stones and mortar, and a casing of brick. Over this came the decoration. Brick being neither a rich nor a handsome substance, it was not good enough for the proud Roman of the Empire, who was master of the world and who wanted his public edifices to proclaim his glory. So the brick wall was plated with marble. And to give a fitting exterior to the edifice had he not for models the masterpieces left by the Greeks—the temples, with their colonnades, their architraves and their frontons?

So the Roman took without hesitation all the members of Greek architecture. He took the column, the capital, the architrave, the frieze and the cornice, the triglyphs and the metopes, and the frontons; and he stuck all those things on his own edifices. But each of these members of Grecian architecture fulfilled a function proper to itself in the edifice. If they were there it was because they served a purpose. Take as an example the column in the Greek temple. It carries the entablature,

which itself bears the whole roof. Remove the columns and the roof falls.

Let us look now at a Roman edifice. We again find the column; but how changed! Whereas it used to form an integral part of an architecture with platbands, now it is in an architecture with arcades. It used to support the entablature, but now it supports nothing, for, as is seen in the example here shown (Fig. 1), the Coliseum, the arch rests, not on the column, but on imposts. What, then, does the column do? It is stuck on a mass of masonry which supports the arches. It only bears the entablature, which itself, moreover, is stuck on the front, above the arches, and does not serve any real purpose in the construction. Column and entablature could be suppressed without the edifice suffering thereby, whereas in Greek art they are the very edifice itself. In Roman architecture they are a plaything. But in the matter of decoration it is dangerous to play, because when one begins one doesn't quite know where to stop. When the decoration forms an integral part of the building it is confined within narrow limits; when it is independent, nothing restrains it. In the latter case, to go to an extreme is an easy step. But there is more than this. Decoration, when stuck on in the Roman fashion, loses all meaning, whereas in the organic styles, Greek and French, the decoration signifies something and serves to accentuate the construction. In the Roman method, it disguises the construction. This is a serious fault in Roman architecture.

We think it was Viollet-le-Duc who said, in his "Entretiens," that Greek architecture was like a nude man admirably proportioned, and all of whose members are in perfect harmony with each other and with the whole body, whereas Roman architecture, on the contrary, was like a man fully clothed, and whether the clothing was handsome or plain was unimportant, for one did not see the body, as it was hidden and disguised. The man might be misshapen and have very fine clothing, or



FIGS. 5, 6. FRAGMENTS FROM TRAJAN'S FORUM—ROME.



FIG. 7. ROMAN FRIEZE IN THE LATERAN MUSEUM.

he might be well built and wear shabby garments.

We owe independent decoration to the Romans, and we know too well what success it has met with in the world. During the Middle Ages, at the Romanesque and Gothic period, architects shook themselves free from the evil Roman influence in this matter of decoration; but as soon as the Renaissance came and the notion was conceived of

but façades, and we still continue to produce nothing else. The architect who cannot design a handsome front will never win a prize in any competition. Whatever may be the material employed, or whatever the purpose of the edifice, we *must* have a decorated front, with a profusion of ornamentation. And the ornaments that triumph on our fronts, whether the building be a railroad station, a hotel, a city hall, a



FIG. 8. FRAGMENT OF CORINTHIAN ORDER, THE PANTHEON—ROME.

seeking the so-called eternal principles of architecture amid the Roman ruins, this deplorable conception of independent decoration was unearthed also, and it has militated against good architecture to a greater extent than anything else, by causing to fall into oblivion that which really constitutes a work of art, where decoration is merely the external and ornate expression of the construction itself.

Since the seventeenth century architecture has consisted of very little else

factory, an apartment house or a private dwelling, are, of course, the Roman ornaments, exhumed at the same time as the Roman theory of independent decoration.

In Roman architecture the building proper is of the first class, and therefore it is an architecture which, in ruins, appears to better advantage than any other.* The decoration has disappeared, the marble plates, the capitals, all the facing, in fact, has been destroyed in the course of time, and

nothing is left except the solid courses of the walls, the bold vaults, and their enormous buttresses. There also remain the fine brick and concrete work, harder than granite, the general conception, always a grand one, and the plan, which is in every case a marvel of clearness and ingenuity. One stands in wonderment before those works, which, in their present ruined state, are of a purer beauty than they were when Time had not stripped them of their covering of marble, stucco and bronze.

* * * *

We have said that the Romans only took the members of Greek architecture for the purpose of using them as decorations. As they aimed at richness of effect it was natural that they should ignore the Doric order, the strong, severe beauty of which they could scarcely understand. In the same way, the refined elegance of the Ionic order escaped their perception. Yet they did employ both orders; the Ionic to a much greater extent than the Doric. It is needless to say that there was a marked difference between the pure Greek profiles and the Roman profiles. But their favorite Greek order was the latest and the least pure, the Corinthian. The apparent richness of the Corinthian order captivated them. It is the Corinthian order, modified, however, and transformed and further enriched, that we meet with in almost the whole of Roman art.

The innovations introduced into the orders by the Romans were not happy ones. For instance, they got the idea of giving the columns a square base. Nothing more awkward could have been imagined, as the corners obstructed men's movements in the temples, basilicas, porticos, and, in fact, wherever a crowd assembled. As for the entablature, of course it was no longer bound by the rigid rules which had been fixed by the critical mind and fine artistic sense of the Greeks. The frontons also underwent fanciful and unfortunate changes. It is to the Romans that we owe the heresy of broken frontons whose coping stops short in-



Fig. 9. Late Roman Altar, Showing Romulus Being Suckled by the Wolf—Also Other Legendary Subjects.

stead of rising to the top; and also the frontons in the shape of an arc of a circle. Think of what the fronton was in Greek architecture, and you will be able to measure the gulf separating the two arts.

Having said this much, and made these reservations, which it was necessary to do, we are now free to praise the splendor of Roman decoration. Look at our architecture, with its degenerate ornaments, lacking all emphasis, fancy, vigor and relief, and then turn to those noble Roman prototypes which it has been vainly attempted to imitate. There we see the ornament in glorious life, fruit of a noble imagination, and in an inexhaustible abundance. And there is about it a vigorous, masculine accent, a brilliancy of form, that never fatigues us.

We have gathered here a few typical examples of Roman decoration. Take, for instance, Fig. 2, which is a fragment of the admirable Temple of Jupiter Stator in the Roman Forum, and which displays in the cornice reproduced a superb example of Roman Corinthian. To this must be joined a detail of the

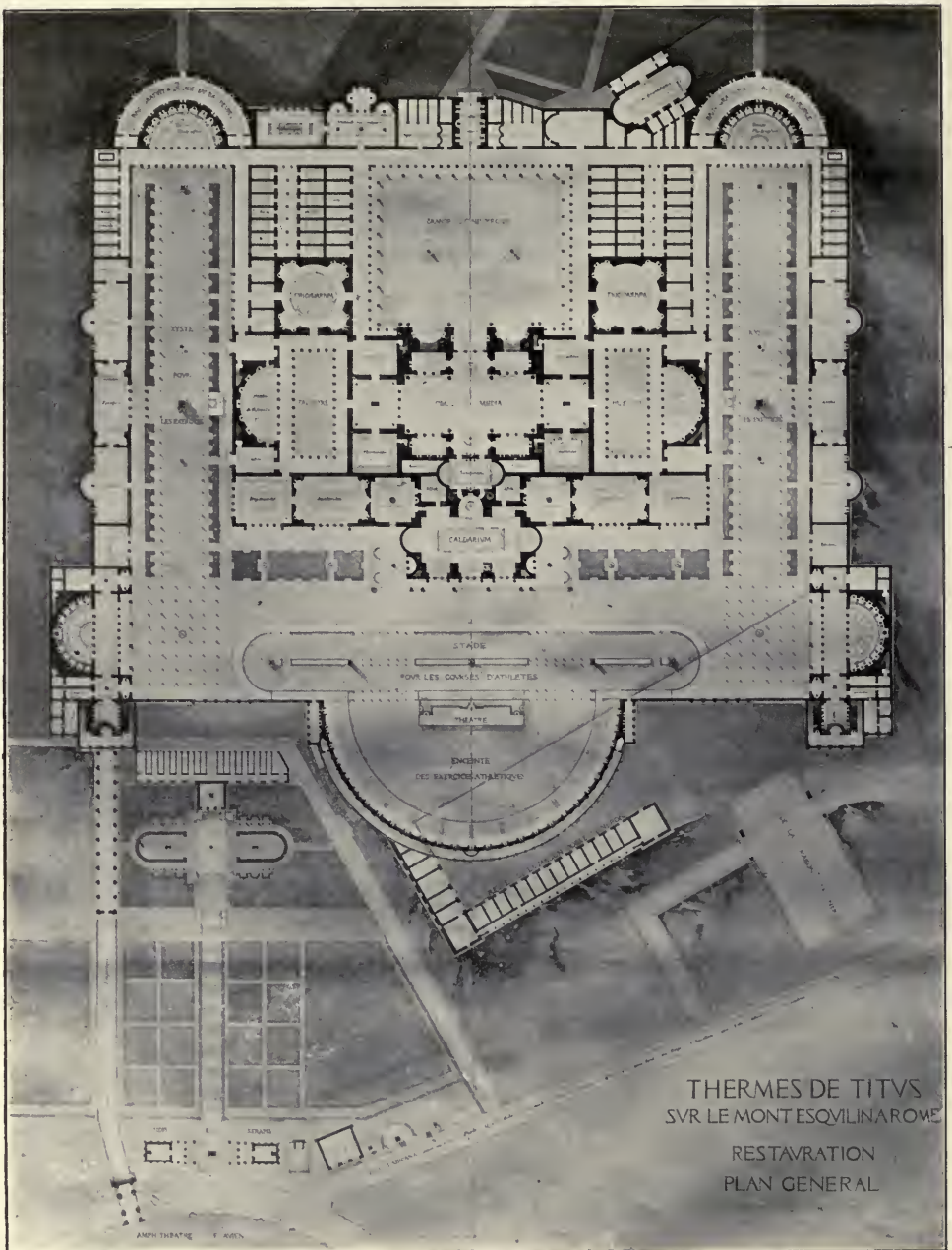


FIG. 10. PLAN OF THE THERMAE OF TITUS—ROME.
(Restored by Leclerc.)

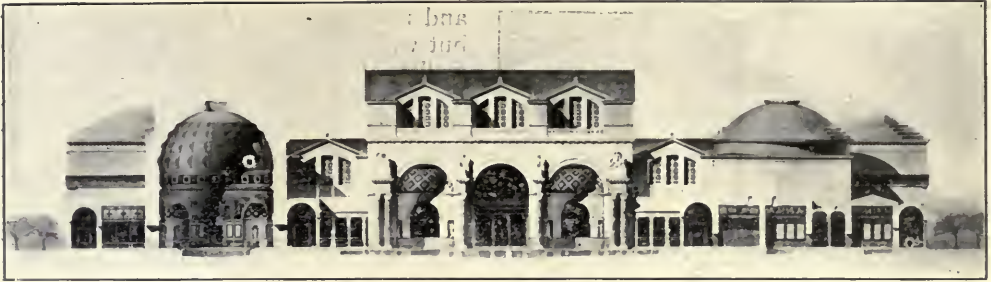


FIG. 11. SECTIONAL ELEVATION—THERMAE OF TITUS—ROME.
(Restored by Leclerc.)

coffer of the Temple of Mars the Avenger (Fig. 3). Both of these have been reconstituted by architects of the French School in Rome.

The six following illustrations show details of Roman decoration at different periods of the Empire: a composite capital (Fig. 4); friezes and coffers from Trajan's Forum (Fig. 5); a charming fragment found in the same Forum (Fig. 6), showing the Roman decorative fancy in all its graceful freedom; a light frieze preserved in the Lateran Museum (Fig. 7); fragments with fishes and shells, from Agrippa's Pantheon (Fig. 8); an altar of somewhat more recent date, found at Ostia, bearing historical or legendary subjects—Romulus and Remus being suckled by the wolf, etc. (Fig. 9).

It is impossible to look at this series of decorative motives, taken almost at random from among the numerous frag-

ments that remain, without realizing how much life, strength, graceful inventiveness, suppleness and fertility there was in Roman decoration. And everywhere, a thing which we have completely forgotten, an excellent relief, a true understanding of the play of light and shade which sculptured ornamentation ought to produce on a façade.

* * * *

But it is not in decoration that we must look for the great qualities of the Roman mind: it is in the plan, the arrangement of an edifice according to a fixed scheme, the execution thereof, that is, the building, that we find how admirable was the Roman spirit and how much there is to instruct and interest us even now.

The Roman wished to do things on a big, a monumental scale. Many conquering nations have had the same desire. Louis the Fourteenth was haunted

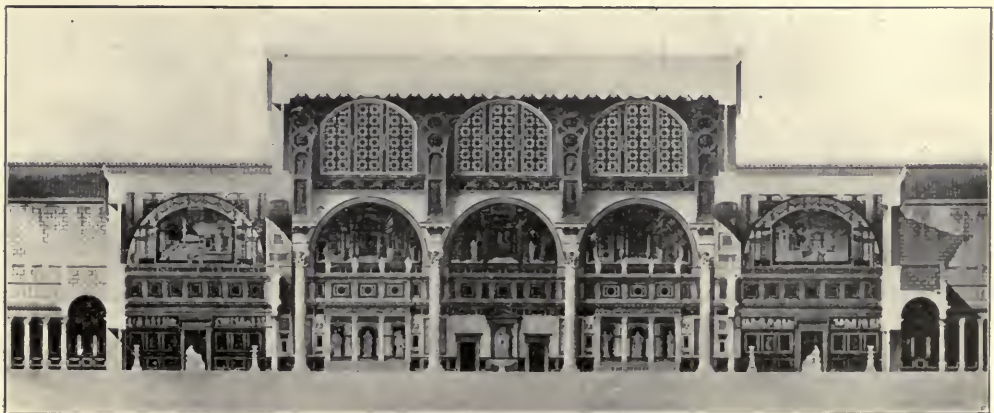


FIG. 12. RESTORATION—THERMAE OF TITUS.
(Restored by Leclerc.)



FIG. 13. THE FRIGIDARIUM.
Thermae of Caracalla, Rome.
(Restored by Viollet le Duc.)

by this idea, and he carried it out more than once. Since then, how many German kings and princes have there not been who have imitated the *Roi Soleil* and aimed at doing big things!

Louis XIV., when he built Versailles, did something grand and monumental, but that was all. Behind those façades there is no place for comfort or convenience, for the diversified life that must go on in an immense palace. With the Roman it was not thus. He wanted bigness, but, at the same time, his plan was a marvel of ingenuity. Nothing could be more practical, more convenient or more comfortable than a big Roman edifice.

Let us take the example of the Roman *Thermae*. There could not be any harder problem for an architect than the plan of these *Thermae*, considering all that the inhabitants of imperial Rome required of such an establishment.

A large number of people had to be accommodated there, and consequently an extensive space was necessary at the entrance. Then there had to be two large swimming baths, one cold, the other hot; rubbing rooms, sweating rooms (*sudarium*), private bath-rooms for invalids; bath-rooms for women, each preceded by an ante-chamber, and in most cases a portico was erected before the bath-rooms. At the entrance there had to be an admirably arranged vestiary. There had to be rooms for those bathers who wanted to have their bodies oiled. Inside the *Thermae* there had to be gymnasiums, meeting-rooms

and reading-rooms; outside the edifice, but within the grounds, there had to be walks, porticos, a *stadium* for racing, fountains and gardens. All these things were comprised in what the Romans named *Thermae*, and it is evident that the architects had a hard task to perform.

It must be noted furthermore that the price of the baths was a moderate one. For a small sum the bather could pass the entire day in the most luxurious manner imaginable. The taste for such baths became general, as can readily be understood, so much so, in fact, that in imperial Rome there were the *Thermae* of Titus, of Trajan, of Diocletian, and those of Caracalla, to mention only the chief ones; and that the last-named, which were not the most extensive in Rome, cover, in their splendid ruins, thirty-four acres of ground. There was not a single small provincial town that lacked a sumptuous bathing establishment of this kind.

Let us now take a close look at the way in which the architect executed this complex programme.

The first thing, and one to which he attached great importance, was the bearing of the building. He so placed it that the four corners faced the four cardinal points, a favorite arrangement with the Romans, because in this way none of the fronts were entirely deprived of sunshine. He used the most suitable materials for his purpose, viz., brick for facing, with pebble or other filling-in. He was thus able to erect fine, bold vaults, solidly buttressed. Such massive walls maintain an equable temperature inside and are preferable to stone, which absorbs too much moisture and is ice-cold in winter and damp in summer.

He carefully isolated his paving from the soil, so as to keep it perfectly dry and wholesome.

In Fig. 10 we give the plan of the *Thermae* of Titus, as reconstituted by M. Leclerc, a winner of the *Grand Prix de Rome*, and whose drawings are preserved in the library of the Ecole des Beaux-Arts, Paris.

On the entrance front there was a principal vestibule, and, on either side,



FIG. 14. THERMAE OF CARCALLA—ROME.—ROOM LEADING TO THE TEPIDARIUM.



FIG. 15. THERMAE OF CARACALLA—THE ARCADES OF THE FRIGIDARIUM, ROME.



FIG. 16. THERMAE OF CARACALLA, ROME.—THE PALESTRE.

rooms for the servants. On the left there was the oil store-room; then a spacious apartment; then a gymnasium; then, on the corner, small baths for the common people. On the right there were: another oil-room, a large vestibule leading to the *Thermae* of Trajan, a library, and, on the corner, some more free baths. Facing the principal entrance there was a very large cold water swimming-bath of square shape, and on either side of this there were private bath cabins, and the vestiaries. The cold swimming-bath was very properly situated on the northeast side.

One passed from there into the *Cella Media* or temperate room; thence into the *Tepidarium* or warm room, and lastly into the *Caldarium* or hot bath, which, according to the Roman rule, was on the southwest front. To right and left of the *Caldarium* there was a series of rooms of graduated temperature. On both sides of the *Cella Media* there was a *Palestre*, for those who wanted to indulge in athletic exercises before bathing. Both sides of the principal building were flanked by large arenas for exercising, and the various store-rooms were situated in the buildings which bounded the *Thermae* on the right and left. Finally, on the front opposite the entrance stood the *Stadium* or athletic ground, and the theatre.

All that luxury could supply was provided for the Roman citizen in those magnificent *Thermae* constructed by the Caesars. Nothing was lacking. All the most exquisite refinements that the mind could conceive were to be found by the Romans in their *Thermae*, and, at the same time, everything that could promote the well-being, vigor and suppleness of the human frame. Let the reader cast a glance over the reconstitutions shown in Figs. 11 and 12, which gives part of the front and some sections of the *Thermae* of Titus, and observe the diversity of aspect of those rooms. Here, it is a rectangular tank, open to the sky; there, circular rooms vaulted in. Here, a square room, terminated by an apsis; there, porticos. There are niches, containing masterpieces of statuary; mosaic floors; marble revetments at the foot of the walls; frescoes, and stucco

decorations. When we think of the beauty and variety of aspect presented by such a building we can well understand that the Roman *Thermae* belonged to so rich a past, to a life of such magnificence that their like will never be seen again.

A drawing which we have had made ming-bath of the *Thermae* of Caracalla, by Viollet-le-Duc (Fig. 13), shows the imposing appearance of the arcades and the decorated apses. Besides this, we have collected some photographs of the same *Thermae* of Caracalla, and these, too, bear witness to the striking grandeur of Roman art; those mute and colossal remains of a civilization that ruled the greater portion of the then known world. First we have the ruins of the room leading to the *Tepidarium* (Fig. 14). Next, the arcades bordering the *Frigidarium* (Fig. 15). Then the large paved hall which served as a *Palestre* (Fig. 16). One stands amazed at the size and beauty of these ruins. The central hall, intermediate between the *Frigidarium* and the *Caldarium*, was of similar dimensions to the nave of Saint Peter's, in Rome.

If one bears in mind that these *Thermae* were not only a miracle of luxury and beauty, but also of practical arrangement, and this, as we have seen, under the most difficult conditions, one understands what constitutes the real greatness of Roman architecture. This practicalness is seen in the smallest details. For instance, the heating was effected from below. The hot air circulated behind the brick facing, so that it was the walls that gave the heat. One can imagine what a task it must have been to heat such large quantities of water and air, and the difficulties which the architect had to overcome. The drainage also had to be faultless in a building where such large volumes of water were accumulated. Creations so perfect will ever remain an honor to the Roman, who displayed in them the master qualities of his mind. Furthermore, to his practicalness he united a sense of the big, the monumental, the impressive, which is, alas! the only thing we have taken from him.

Jean Schöpfer.

admission
to the
club, and
highly
successful
in its
results.



FRONT VIEW OF THE BUFFALO COUNTRY CLUB.

Buffalo, N. Y.

George Cary, Architect.

BUFFALO HOUSES

—BY—
GEORGE CARY, Architect





THE HALL—BUFFALO COUNTRY CLUB.

George Cary, Architect.

Buffalo, N. Y.



SOUTH ELEVATION, BUFFALO HISTORICAL SOCIETY BUILDING.

Buffalo, N. Y.

George Cary, Architect.

(Anderson's equestrian statue, "Progress," in front.)



NEW YORK STATE BUILDING, PAN-AMERICAN EXPOSITION,
NOW THE BUFFALO HISTORICAL SOCIETY BUILDING.

Buffalo, N. Y.

George Cary, Architect.

(Mrs. Whitney's Statue "Aspiration" in foreground.)



THE GRAND STAIRCASE HALL.



ANOTHER VIEW OF THE HALL, SHOWING ALSO THE GALLERY.
BUFFALO HISTORICAL SOCIETY BUILDING.



George Cary, Architect.

INTERIOR OF MRS. WALTER CARY'S HOUSE.

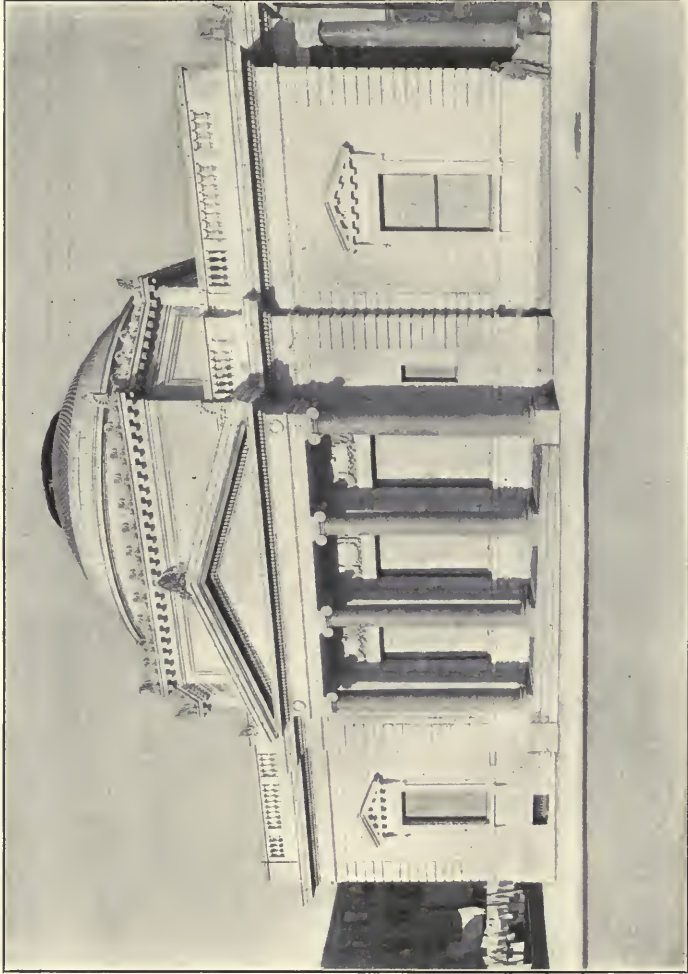
Buffalo, N. Y.



RESIDENCE OF WM. C. WARREN.

Buffalo, N. Y.

George Cary, Architect.



WILLIAMSBURGH TRUST CO.'S BUILDING.

Helmle, Huberty & Hudswell, Architects.

Brooklyn, New York City.



FIG. 4. ACOMA PUEBLO, NEW MEXICO.

A Type of Original American Architecture

The architecture of a people is as much a part of themselves as their habits of living; in fact, being free from alien or abnormal influence, the architecture of a people is one of their habits of living. It develops with the necessities born of the conditions under which it exists, and given this opportunity assumes the dignity of a type.

Doubtless the first thought raised by the words, "American Architecture," will be something ranging from the rude log hut of Lincoln's infancy, or the stately Mount Vernon home of Washington, to the modern steel-skeleton skyscraper, all of which are types created by American ingenuity to overcome American necessities.

The particular type of which it is here proposed to speak is one very remote from these things, however, one more truly American, indigenous to the soil, and influenced by no borrowed motif, but the rather furnishing its own.

This briefly concerns the domestic

architecture of the Pueblo Indians of the Southwest; a race probably older, certainly distinct from any other of the aborigines of the United States. These people are being civilized, Christianized, or subjected to some other process of elimination, so that they will soon become extinct, and with them their architecture will become a memory.

While many interesting examples of the original type are still to be found, the newer work shows the alien influence; and as the older buildings decay they will be replaced by work of another class.

The authorities of the University of New Mexico, contemplating a scheme for the future needs of that institution, have considered the adaptation of this style of architecture to institutional needs, and in this have the approval of some archaeological authorities.

The type is developed from the material most readily obtainable; and it most perfectly satisfies the conditions it



Fig. 1. Acoma Pueblo, New Mexico, Showing the Primitive Stairs of the Houses.

has to meet. The walls are built of stone or sun-dried adobe brick, laid in stiff adobe mud, built very thick, and plastered smoothly inside and out with the same adobe mud. Often the walls are then whitewashed with lime, and sometimes decorated with paintings. The adobe plaster when dry forms a very hard surface, reasonably waterproof, and perfectly airtight.

The floors for upper stories and roofs are formed by building in large timbers at the desired height; these support smaller timbers and the whole is covered with adobe and packed tightly. Arranged to drain toward the walls with scuppers to discharge the rainwater, these roofs do very well in a country of little rainfall.

Two or three-story buildings are the rule, passage from one story to another being obtained by pole ladders and by steps up the walls. The older Pueblo houses were often built about and facing a central plaza, thus giving a barren outside wall to strangers and neighborly comfort to those inside. Good examples of this are shown in the illustrations of



Fig. 2. Showing How the Successive Stories of the Houses Retreat, Acoma Pueblo, New Mexico.



Fig. 5. Laguna Pueblo Houses Built of Stone, from which the Plaster has Fallen.

Acoma Pueblo (Figs. 1-4). In this type the lower stories were originally built entirely without door and window openings in the walls, access being from scuttle holes in the roof.

The householder being on his roof, defense of this type of building was a simple matter of keeping the enemy from scaling the walls.

The successive stories retreat from the front, leaving open porches before each apartment. This is well illustrated in Fig. 2.

Some villages built in less strenuous times, perhaps, as Laguna and Zuni (Figs. 5-7), depart from the fortress type, enclosing the plaza, and follow more or less regular streets.

The photographs from Zuni Pueblo (Figs. 6 and 7) show an adobe built village; and that from Laguna (Fig. 5) shows some old stone walls, from which the plastering has fallen, as well as some newer work.

A very pictureque example of an isolated group is shown in the photograph



Fig. 3. An Acoma Pueblo Village.



Fig. 6. Zuni Pueblo, New Mexico—An Adobe Village.

of Taos (Fig. 8) in the northern part of New Mexico.

The illustrations given here are intended as examples of a type only, and are in no sense considered exclusive specimens.

Some excellent reproductions of the Pueblo style have been made by the Santa Fé Railway Company at the Grand Canyon of Arizona. The effects are obtained in cement and stucco on metal lath.



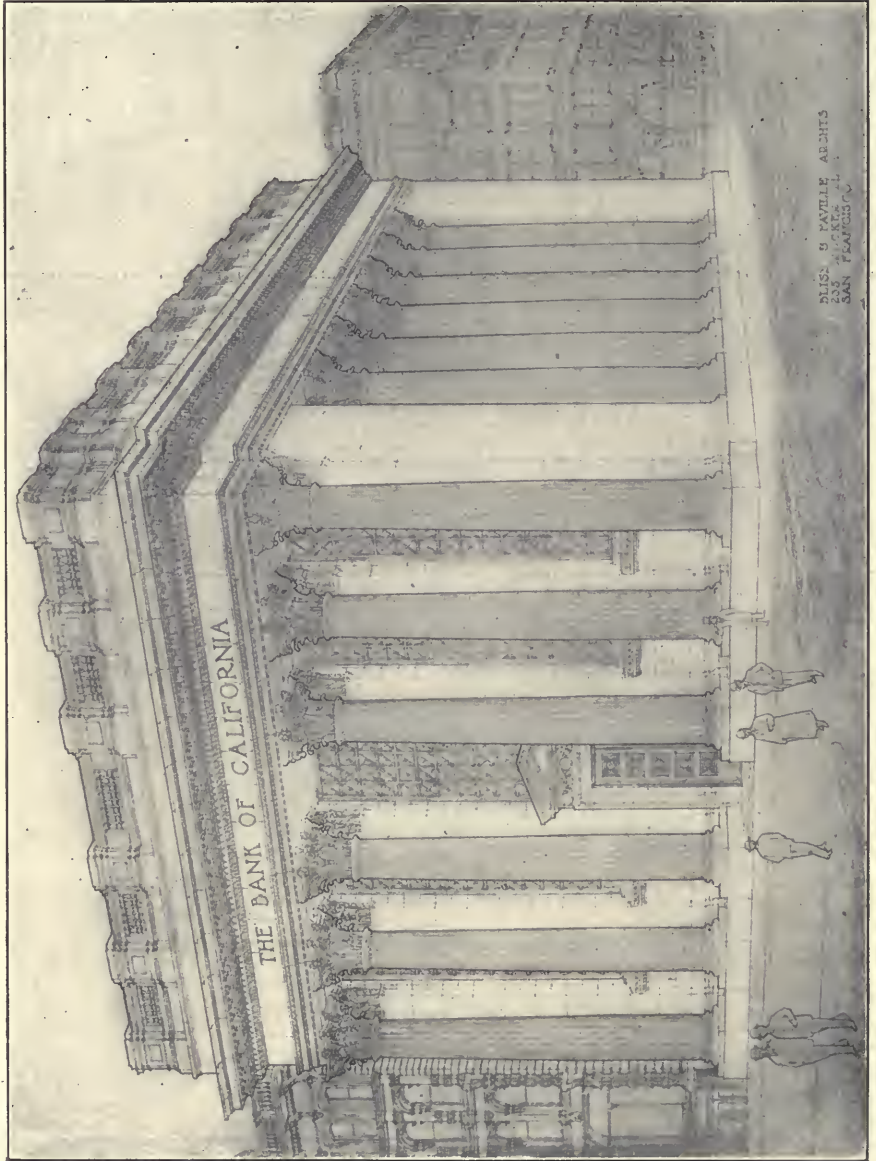
Fig. 7. Zuni Pueblo, New Mexico—Another Adobe Village.

If it be true, as we have read, that the characteristics of good architecture are that a building shall be in harmony with its surroundings; that the exterior shall be in right relation to the interior, the elevation being a natural development of the plan; and that it shall be free from meaningless and meretricious ornament, then Pueblo American architecture is good architecture, and deserves a moment of consideration; and it further possesses the merit of being a frank and logical expression of its purpose, and of the materials used.

Vere O. Wallingford.



Fig. 8. Taos, New Mexico.



BLISS & FAVILLE ARCHTS
233 MARKET ST
SAN FRANCISCO

THE NEW BANK OF CALIFORNIA.

San Francisco, Cal.

Bliss & Faville, Architects.

NOTES & COMMENTS

THE NEW BANK OF CALIFORNIA

We reproduce herewith a drawing of the new building of the Bank of California, which has been designed by Messrs. Bliss and Faville, and which promises to be one of the most imposing edifices in

the United States devoted to banking purposes. The general resemblance of the design to that of the building of the Knickerbocker Trust Company in New York will, of course, strike every one who is familiar with the latter building; but the architects are to be congratulated rather than condemned for their frank and intelligent attempt to make under happier conditions a revised version of a good thing. American architecture has everything to gain from the general acceptance of an excellent precedent, particularly when the architects who accept the precedent are not afraid to attempt improvements. It so happens that the site of the Bank of California is better adapted to a design dominated by a colossal colonnade than is the site of its predecessor in New York. The new building, instead of being situated on a corner, will have frontages on three important streets, and will be visible from many interesting points of view. The consequence is that the colonnade with modifications has been carried around the three sides of the building, which gives it a great advantage over its prototype on Fifth Avenue. Again, the varying sizes of the three frontages have necessitated the placing piers on the corners of the façade on Sansome Street, which distinctly strengthens the design. Another improvement has resulted from the fact that the architects in San Francisco have been more fortunate in their clients. When the building of the Knickerbocker Trust Company was first planned, it was with the idea that the whole height of the interior would be thrown into the main banking office, and that consequently the exterior design would be frankly expressive of the interior arrangements. Subsequently, however, it was decided that the company could not afford to appropriate for its own use so much tenable space, and the upper part of the building was turned into salesrooms and offices. The Bank of California, however, has not found it necessary to be as thrifty as the Knickerbocker Trust Company. Its main banking office will go clear to the roof of the building, and this fact has

given Messrs. Bliss and Faville, certain opportunities of which they have not been slow to avail themselves. The whole treatment of the windows and the metal work is more uniform and more interesting than it is in the case of the New York building, because it was not necessary to obtain the same amount of blank window space for the benefit of second and third story tenants; and when the building of the Bank of California is completed, we believe that this change will contribute as much as any other to its better appearance. In short, conditions have enabled Messrs. Bliss and Faville to introduce many beneficial improvements into the precedent they adopted, and their design is at once a merited tribute to McKim, Mead & White and an evidence on their own part of good sense and of high technical skill. For they have not only been enabled to carry out the design more completely, but they have revised and simplified the ornament. They have dispensed entirely with decorative patterns on the frieze, and it looks as if they had improved the detail of the cornice. One would hardly like to say in advance that the Bank of California will, considering the scale of its colossal colonnade, look as well in its surroundings of low buildings, as the house of the Knickerbocker Trust Company looks in its many storied background; but so far as one can now tell the new San Francisco edifice will constitute a most edifying example of the value of good architectural precedents and of the proper way in which to use them.

VENTILA- TION

The latest addition to that valuable collection of little technical handbooks, the "Van Nostrand Science Series," is "Ventilation of Buildings," the authors of which are W. G. Snow, S. B., and Thomas Nolan, A. M., M. S. The volume, or volumette, for it contains but eighty-three pages of text, 2½ x 4 inches, is a primer of a subject about which much is heard but little done. Beyond a casual consideration of the cubical space of certain apartments the architect usually relegates the entire problem of ventilation to the care of Health Boards and Sanitary Congresses. As a result, a majority of our buildings are, in this matter, precisely where the cave-dwellers left them

—no worse, perhaps, but certainly not much better off. While the facts of the problems are simple or, at any rate, well understood, the practical solution is extremely difficult to attain. Everybody agrees that proper ventilation is a most desirable provision, not to be wished for less in dwellings, apartment houses, stores and offices than in hospitals, barracks and prisons, but the necessary requirements in ninety-nine cases out of a hundred are shipwrecked, on either the rock of "expense" or the valetudinarian obstacle which the infirm name "draughts." In the strict sense of the term, few buildings are ventilated. There are windows for light and doors for egress and ingress, and, if by these channels a supply of fresh air is obtained, so much the better for the inhabitants. But this is merely passive or permissive ventilation. As a matter of fact

neary every city building demands ventilation of a more positive and regulated character. The old hot-air heater did, once upon a time, in its own erratic fashion, assist the situation, but of recent years the radiator has taken its place, and this, in its usual form, rather adds difficulties to the problem than removes them. The whole subject is well and clearly discussed in Messrs. Snow and Nolan's book. Small as the volume is, it covers the matter and sets forth not only the theoretic considerations but also describes the practical solutions which modern engineering offers to the architect. This is an age of little books, telegraphic treatises, and our authors have demonstrated for us once more how possible it is to exhaust a subject in all save its minuter details in a volume far removed in bulk from the "exhaustive" and often exhausting treatise.



THE OFFICE BUILDING OF THE BUSH TERMINAL CO.
Broad Street, New York. Kirby, Petit & Green, Architects.

**A JACOBEOAN
OFFICE
BUILDING**

It is amusing to contrast a design such as that of the new building of the Bank of California with the design of the offices which have recently been erected for the Bush Terminal Company on Broad Street, New York, by Messrs. Kirby, Petit & Green. The problems of design presented by these two buildings were, of course, very different, except that the two sites both had frontages on three streets, and both were to be comparatively low buildings; but the difference in the two problems does not entirely account for the difference in the two results. Whatever doubts one may have as to the architectural propriety of introducing colossal colonnades on the narrow streets of a city, there can be no doubt at all as to the impropriety of turning an office building in a busy thoroughfare into a Jacobean manor-house. A house of this character, no matter how good it may be in itself, must necessarily look affected and out of place in the midst of a lot of office buildings; and when the offices of the Bush Terminal Company are surrounded, as they eventually will be, by skyscrapers, the impropriety will become still more conspicuous. In such an environment the conscious affectation of its appearance will make the building almost trivial in effect. Its comparative insignificance in size instead of being discreetly passed over, will be emphasized. Jacobean garden fronts are all very well in their proper setting of lawn, trees, shrubbery and vines, but on Broad Street, New York City, their social situation is analogous to that of a little over-dressed English lord in a gathering of rough American cow-punchers.

**LANDSCAPE
GARDENING
IN
CALIFORNIA**

Landscape architecture and gardening as an art can hardly be said to exist in California as yet, and this is only natural, because California is one of the newest States of a new country, and the art of landscape gardening is one which, for economic and social reasons, is almost the last of the arts to be assiduously cultivated. Of course a great deal of artificial planting has been done of late years both in public parks and on private ranches and estates; but the object of this planting has been almost entirely practical or horticultural. The rancher who builds a house on a bare plain or hills will nearly always surround it with

a mass of eucalyptus or cypress trees, which will serve both as wind breaks and as protection against the sun, while in the fashionable suburbs near San Francisco and further south quantities of trees and shrubs have been planted in the vicinity of the largest houses. But, we repeat, the practice of landscape gardening and architecture as an art can scarcely be said to exist. Local architects who are familiar with the whole field of California rural architecture state that there are scarcely a dozen estates and gardens in the whole coast country, which have been planted for the purpose of making the trees and the shrubs contribute to an architectural effect. Even well-to-do people rarely understand that the character and distribution of the large vegetation on a country estate is vitally associated with the design and the situation of the houses, and that expert advice and assistance are needed as much for the layout and planting of the grounds as for the planning of the buildings. The planting is placed in the hands of some Scotch or German gardener, whose chief purpose is to sell as many plants as he can to his customer, and whose point of view at its best is exclusively that of a horticulturalist.

We have been informed by local architects that there is not a single gardener resident in the State who is capable of taking an architect's plan and of designing a planting scheme in reference to the salient architectural lines and masses; and this is a fact which young men who graduate this spring from schools or courses of landscape gardening will do well to bear in mind. A great opportunity awaits them in California, and in case they were competent and trustworthy they would have every chance of building up a lucrative business. Of course, it would for a number of reasons take time. In the first place the vegetation of California is peculiar in many respects, and would require careful preliminary study by a man who had been brought up in the East. Not only does the landscape gardener have an enormously greater variety of plants to draw upon, but the habit of shrubs and trees common both to the Pacific and the Atlantic coast is different in each locality. It might well take a newcomer several years of study and practical experience to master the material conditions necessary to the practice of landscape gardening in California. Furthermore he also would be handicapped in the beginning by the fact that, as we have already pointed out, many people who spend money upon planting do not as yet realize that they need the assistance of a

man who unites scientific and technical training with practical experience. Nevertheless he would have every assurance of winning out in the end. He could depend upon the assistance of some of the architects, and he would have behind him the big palpable fact that the coast country of California provides the most wonderful opportunity in the United States for landscape gardening on a large scale.

The opportunity which California offers is extraordinary both because of the great need of extensive artificial planting and because of the unusual resources which the landscape gardener has at his disposal. Those parts of California, in which men are being and will be tempted to erect large country houses, have not been well provided by nature with trees. The coast country, which is best adapted both by climate and beauty of landscape to human habitation, is a country of low and almost bare hills and valleys, and the architect when he comes to design a house in such a neighborhood has a free hand. He can arrange almost with precision for the kind and amount of foliage which he thinks will contribute to his architectural scheme, and if his scheme is an elaborate one, and includes long approaches, terraces and gardens, his plans will necessarily call for an amount of planting to which we are not accustomed elsewhere in the country. Moreover, as we have said, not only are the trees and shrubs upon which he can draw almost inexhaustible in variety, but they possess in certain notable and familiar instances the quality of being peculiarly adapted to the uses of the architect and the landscape gardener. The live oak is under any circumstances one of the most beautiful trees in the world; but it in addition looks extremely well around the right kind of a house. The height to which it ordinarily grows harmonizes with that of a low building; its habit of growth is both picturesque and symmetrical, and its foliage is dense enough to moderate the rays of the sun without at the same time entirely shutting out the grateful warmth and light. The eucalyptus, on the other hand, while it is not adapted to planting in the immediate vicinity of a house, serves admirably whenever it is desirable to create in a landscape the effect of masses of dark foliage, which are to be seen from a distance. Then in the Monterey cypress the gardener has a tree than which there is nothing better for hedges and dense dark screens. We have mentioned these three trees because they are so common and so very useful; but they are, of course, only three in a thousand.

There is no effect in the landscape or in the vicinity of a house which an architect might desire to get, and which would be denied him because of meager horticultural resources. He can even dispense entirely, if he pleases, with the use of deciduous trees and plants, and design the grounds and garden so that the effect of the masses of foliage will be constant throughout the entire year.

The fact that the opportunity for effective planting is so rare in quality must in the long run make it just as unusual in bulk. In such a country so bountifully furnished by nature with the material for its own adornment and so blessed with a mild and invigorating climate, the desire to build and to plant must surely follow upon the opportunity. Californians themselves are better able to afford such luxuries than they were formerly; and it is not only Californians who will build during the next thirty years. Rich American families will want villas and country places in California just as wealthy Europeans want villas on the Riviera. The coast country of California is bound to become the great American pleasure garden, which will be frequented quite as much in the summer as in the winter, and which will constitute an irresistible attraction to all sorts of people with leisure. Of course it will attract many families who merely want to spend money and to loaf, but it will also attract others who will appreciate what a chance it affords to enjoy the highest interests and pleasures of country life. It may be inferred, consequently, that young landscape architects and gardeners are not taking very much risk in settling in such a country. They must be prepared for a longer period of apprenticeship than would be necessary in the East, and probably for certain discomforting experiences at the outset of their career; but in the long run if any of them should fail it would be their own fault.

THE MAJESTIC BUILDING

The Majestic Building, illustrated herewith, is one of the latest additions to the list of Chicago skyscrapers, and its design shows a mixture of well and ill-conceived ideas. The use of white terra cotta glaze on the street façade is wholly to be commended, because that material is both architecturally and practically well adapted to the task of veneering a twenty-story fireproof building. The design has,

furthermore, been kept tolerably simple, and the architect has attempted to make the side of the structure which is shown in the photograph even more conspicuously than is the front attractive by means of a little ornamentation. His devices to this end are not wholly successful, but they at least indicate that he did not propose to ignore the comparative conspicuousness of this aspect of the building. It is too bad, however, that he did not simplify still more his street façade. It is covered with a great deal of trivial ornament, which nobody will ever see from the narrow street on which the building is situated. This ornament looks, as a matter of fact, somewhat better in the photograph than it does on the actual building, and it seriously diminishes the value of what might otherwise be a straightforward, if commonplace, treatment of such a towering structure. One has only to compare the side of the building with the front in order to understand what the architect has lost by unnecessary ornamental detail.

FREE ARCHITECTURAL SCHOOLS

This country at the present time stands on the threshold of an artistic awakening, or should we say an educational awakening. The different schools of architecture are reorganizing their curricula, widening their fields and entering on new ones. Foreign influence is beginning to tell all over the country. The ever increasing number of foreign taught architects, sculptors and painters is no doubt paving the way for a future popular artistic tolerance if not a taste for things beautiful among the American people. The sentiment is making itself felt not only in professional circles but also at Washington. A bill has been introduced by Mr. William Alden Smith to remove the duty on certain objets d'art and art books, and is now pending before the House of Representatives. American artists of note have circulated a petition for "Free American Art" in support of the measure. The intelligent client is demanding something more of the artist than mere utilitarian qualities. All of which looks very promising for an artistic American sentiment in the near future.

In architecture the Society of Beaux Arts Architects is doing much to help along the cause by spreading its ateliers in the large cities. Mr. Carnegie has been interested in the cause; he has endowed an annual scholarship which permits one man, chosen from among the most talented students of

architecture, to supplement his studies, especially in design, at the Ecole Nationale et Spéciale des Beaux Arts in Paris. But there is a feeling now among architectural authorities that this training in design is too restricted to the chosen few, and that something must be done by the different architectural schools to make it easier for a greater number of the draftsmen in the offices to avail themselves of academic privileges. In France the needs of academically trained men is not so great in number as in the United States. A firm like McKim, Mead & White do in a year perhaps as much work as all the important architects in France do in the same time. In France the public work is done exclusively by architects recruited by the government from the most talented men of the Ecole; a few are added each year, and the demand is amply filled, but in this country it is different. While we have State architects, they do not occupy the high place that is enjoyed by their French brethren, besides most of the important work is done by private interests under pressure and in fields more widely different than in other countries.

This difference in ultimate demand must naturally call for a difference in supply. How shall we get men properly fitted to do this work? The ready answer is by establishing more architectural schools and by making them available for the great mass of architectural aspirants. But how is a man to acquire all that it is necessary for him to know to make him a well-equipped architect, and this in a reasonable time? It is easy enough to understand that the French atelier system should work so admirably in France, the Frenchmen spend, six, eight or ten years to acquire their artistic training, and are consequently about thirty years of age before they begin serious work; only the talented ones stick it out and a most finished product results. The Ecole is free, and living expenses in France for the student are low, giving the poor an equal chance with the rich.

In the United States the comparatively few who are financially able, spend four or five years acquiring their architectural education, which in most cases includes not only professional subjects, but chemistry, mathematics, and other things that it is necessary for an architect to be acquainted with but which should have been mastered previously in another school, thus reducing the really effective time given up to professional training, from a quarter to a third. At the end of this time the students who are in most cases just beginning to grasp the relation of

things are turned loose upon the world, the majority to do no more artistic work, the very talented and ambitious to enjoy post graduate and foreign privileges. But this lucky number includes only a small part of those who ultimately practice the profession. The

ment to take a hand in the matter of free architectural schools. Like the French, we might have a National School of Fine Arts in the capital; we might supplement it by smaller schools in those parts which seem most in need of them. These schools could



Chicago, Ill.

THE MAJESTIC BUILDING.

A. G. Zimmerman, Architect.

great majority must shift for themselves and get at odd times whatever they can at the Beaux Arts Ateliers and the various art schools and lecture courses, a very hard and unequal struggle.

It would seem high time for the govern-

be operated in addition to those now existing as private corporations. Each school would attract its own students and a natural cooperation would be sure to result. The various public libraries and museums would form valuable adjuncts. H. W. F.

A New Aid in the Specification Room

The making of specifications is not the easiest of the Architect's tasks. It is beset with many small vexations and some real problems. Certainly one of the vexations is to keep pace with the market. Manufacturers are incessantly introducing new goods, and of the old goods new models, new patents, new styles, new sizes. It is not an easy thing, and often it isn't an inexpensive matter to keep one's self or one's staff "posted." The ever present salesmen from the building material firm constitute a sparkling fountain of information, but the main source of information is either the advertisements in technical journals or the mass of catalogues that are annually deposited in architects' offices. The latter are undoubtedly of much service, but how much more valuable they would be were they:

- (1) Prepared with an eye to the Architect's necessities.
- (2) Edited so as to exclude all superfluous and useless matter.
- (3) All printed of a uniform size.
- (4) Put together in an organic manner, and arranged for the purpose of "reference."
- (5) Thoroughly indexed so that any particular item might be turned to instantaneously.

Every architect makes some effort to solve "the catalogue evil." His first attempt at a solution is to consign to the waste paper basket instantly a large proportion of all the trade literature that reaches his office. Some of this discarded material might prove of great value later on, but one can't preserve everything when one has so much to preserve. Too many catalogues get into one another's way. They get mislaid, they get lost; they are all of so many sizes and shapes, from a postal card to a big quarto volume, that they cannot be handily arranged without great trouble and con-

siderable expense. Moreover, if they are to be placed in some sort of order, some plan of arrangement becomes necessary, and a plan is not so easily arrived at as one may superficially think. If any one thinks to the contrary, let him attempt the arrangement of three or four thousand catalogues! He will certainly not succeed offhand. It is, of course, not difficult to arrange a number of catalogues in alphabetical order. This is merely a matter of labor, though not a small item at that. But a catalogue plan to be of any assistance must be a plan that enables one to find what one does *not* know as well as what one does. The alphabetical order does not help us far to *that* result. Undoubtedly, it enables the architect to put his hand upon the Richard Doe Company's catalogue, but it may well happen that he is not looking for a particular catalogue, but for a particular line of goods, or a particular product which is to be found only in some one catalogue and that catalogue for the moment unknown.

Thus, very few architects are content with a mere alphabetical arrangement of their catalogues. They devise a system whereby all "subjects" are grouped together. So that this work shall not be too extensive and too costly to maintain, they discard all but a comparatively few catalogues of firms with whom they are acquainted, or with whom they have had dealings. The rest go to—the waste paper basket. Millions of dollars are thus wasted.

Many attempts have been made to solve the problem, but they have all more or less failed. To be really successful requires a broad, comprehensive method, operated upon a co-operative principle—that is, all architects and all building material firms of standing must work together for a common object. Clearly, this cannot be accomplished by individualistic effort. The task must be entrusted

to some central agency to act as the agent of both the architect and the building material firm.

As a matter of fact, an agency of this character is at work to-day, and some four thousand architects and three thousand engineers, contractors and others have approved the "New Catalogue Method" devised by The Architectural Record Company under the title of "SWEET'S" INDEXED CATALOGUE OF BUILDING CONSTRUCTION. The first edition of this encyclopaedia of building materials is now in daily use in a majority of specification-rooms from Maine to California. The purpose, the idea, the method, and the principle that underlie "SWEET'S" INDEX as a real solution of the catalogue problem has received a stronger endorsement and more general commendation from the profession than has ever been given to any effort hitherto made on their behalf. It is not merely that the work is approved—the publishers have received some four thousand letters of encouragement—but the profession as a whole is heartily co-operating so as to enlarge the scope of "SWEET'S" and develop and perfect it.

The second edition of "SWEET'S" is

now in preparation. It will be very much more extensive than the first, and this latter will also be perfected in many of its details. The ultimate purpose is to include in a set of volumes all the catalogues of the standard building material houses. Several hundred firms have already adopted the "new method," and others are rapidly dispensing with the old, loose, promiscuous, inefficient catalogue. A great mass of information has thus been gathered together, and been made available for ready use in the specification-room. The architect is freed from all expense. It is not necessary for him to preserve a great mass of trade literature, nor to keep any one on his staff to maintain it in order. A few volumes on a shelf place all information at his finger's ends. He can refer to anything for which he is looking as readily as to a word in the dictionary. The process is simple, literally as simple as A, B, C. A scientific Cross-Index makes him master of the situation, even to trade names, branch office addresses, and the like.

Any architect who has not yet received a copy of "SWEET'S" will be entitled to it free of cost, provided he will send his name and address to the publishers.