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HOUSEHOLD FURNISHINGS.

IN that unbroken chain which connects the soul of man with the surface of the earth, furniture—which touches the house on one side and the body on the other—is an important link. The word is here used in the larger sense, covering all the household appliances, all movables, from the bedstead to the teaspoon. They are all part of the furnishing of the house; all serve for the extension of human power and activity, and all are evolved by the same great law which gives us feet to stand on and teeth to chew with. Let us follow for a moment the lines of development which have filled our moving wagons with household impedimenta.

It is in this field that we find most fully exemplified that marvelous advantage of the human creature who makes to himself innumerable ulterior conveniences in passive and active furniture; the writing desk, for instance, being passive and the pen active, and thereby multiplies and develops his power a thousandfold. All furniture is based on bodily needs, and its value is to be measured by its right meeting of those needs.

A chair is meant to sit on, and so rest the body without lowering it to the earth entirely; so saving the exertion of getting up again. It is safer, easier, cleaner than lying on the floor. Originally a mere stool, the back was added to further rest the trunk muscles and the arms.

The literal fact of furniture being an extension of the body is easily enough shown. The human body of to-day is so constituted as to be able to receive such and such sensations, perform such and such labors, sustain such and such stress. It is an instrument varying greatly from the body of the early savage, or of a lower animal. In some ways it is superior, in others inferior; such as it is, it is conditioned upon the furniture which allows its varied activities.

If the human hand had to do all the work itself, as the monkey's paw does, it would not be the human hand. If we dug with it, we should lose the finer susceptibilities of touch at once, and grow heavy claws. If we used it for spoon and fork, with teeth our only knives; if we were forced to do a tenth part of the day's work "with our bare hands," we should soon have no hands to do it with. They would lose the distinctive characteristics which make them hands. The infinite subtlety of development shown in the special tools of some trades, needles for instance, paint brushes and the exquisite subdivisions of a dentist's tiny instruments; these carry with them the hand of delicate and varied use. And were it not for such tools we should not have that hand as it is. The elephant's trunk and its one finger is a wonderful organ; the flea has a good outfit of vivisection tools in its mouth; but there is nothing else in nature that ap-

proaches the human hand with its derivatives. That which makes it a hand instead of a paw is the capacity for varied use, and the capacity for varied use depends upon its tools. They are parts of the body, like patent detachable finger nails, transposable teeth and the like.

It is plain then, this being so, that the laws of construction, their use and beauty, must be considered in continuous regard to the human body. They have, of course, their own absolute condition beside; matters of durability have to be considered as well as adaptability, and the relative value of different materials.

To the household economist the chair represents so much physical rest, modified, of course, by personality; so much beauty of its own; so much relation to other articles associated with it, and so much durability. To the average purchaser a chair is not judged, surely, even by the first of these considerations, and the others are lost sight of altogether.

Our forefathers, who made things so strictly for use, and that in most cases governed as strictly by economy, missed but one factor of beauty, and that is ease. The beauty of any usable thing, from a leg to a ladle, is based on three conditions: use, ease and economy. "You must have something to stand on, must you?" says Nature. "Very well, here's a leg; doesn't work easily? I'll fix it." And forthwith she adds joints and kneepans and all manner of ropes and pulleys to make it go. Then when it is strong to stand on and easy to use, she shears off all superfluities and "behold how beautiful the limb is!"

The maker of the ladle is governed by the same considerations. It must be a perfect ladle to begin with; it must conform in every curve and line to the comfortable use of its holder, and it must have no needless weight or substance. Here is where certain ostentatious teaspoons fail of beauty; there is too much material for either our ease of use or their necessary durability. The pitcher that does not pour well cannot be beautiful, though of gold. The glass so frail that it needs

to be under glass for protection, is not beautiful in common use; nor is the china whose easy use would be its sure destruction. The spider-legged table, and the insect family of chairs; the things that creak when you sit down and tip over when you get up, these are not beautiful.

If a thing is of a light and frail appearance, as a bamboo chair, it should be also so simple in construction as not to suggest waste labor. And if a thing is rich in inlaid work or carving, it should be solid enough to endure time and strain, else its beauty carries a constant element of distress and so ceases to be beauty.

Beauty, be it observed, is not by any means a "mere matter of opinion." Beauty has its laws and dies upon the infringement thereof. It is quite possible, of course, to believe an ugly thing to be beautiful, through association of ideas, false education, low perceptive faculties and the like; but because a thing seems to a person to be beautiful it does not by any means follow that it is so. Take, for instance, the African admiration for extremely fat women, the Chinese admiration for deformed feet, our own admiration for deformed waists; that a given object conveys pleasure to the eye by no means proves it beautiful. We Americans, as a whole, have a low national taste, and need much honest study before we can recognize true beauty. And even after we have learned a good deal about it, there remains the endlessly varied application according to our personal and industrial and social and economical limits. When it comes to house furniture, that, like home architecture, is modified by so many necessities as to make any clear high beauty impossible.

Suppose we begin to plan for parlor furniture: carpet, tables, chairs, sofas, curtains, etc. Everything has to be modified by many considerations. If it is a family room, it must not offend the personal taste of any member of the family. The varied use of every article by many people modifies its possibilities immensely. If there are boys, a certain grade of furnishing follows; if babies, another; if cats and dogs, another. Furnishing *depends*. It

depends on so many things that we cannot hope for high beauty in the ordinary household; but still in certain rooms in some houses there might be noble furnishing; in others much that is pretty; and in all a harmony and sweet reasonableness, now almost unknown. It is quite possible also for each of us to learn to know good furniture when we see it, as well as good architecture, and if our household exigencies require cast-iron and tow-cloth things, to see to it that they be harmoniously constructed.

Let us consider in detail one article, say a chair. Being meant to support the weight of the human body, the chair's personal beauty requires that it shall show power to do this, and not greatly more. If a chair looks strong enough to support a weary elephant, it is not beautiful; nor if it looks as though a cat's weight would strain it. Support is the first requisite of a chair. After that the relative comfort of the support enters into the beauty of the chair. It must in all ways conform to its use. These demands complied with, it has minor considerations of its own. Not being always occupied, it should not be built so as to suggest too painfully the absent sitter, for a self-respecting chair has some character of its own. Grace and power in its lines, fine material, true decoration—these may make the chair a thing of beauty in itself even when empty. But none of these things must ever interfere with the comfort of the user, the chair's reason for being.

This reasoning holds good for every article of furniture. First, its use to man; second, its own laws of construction and decoration; third, and here only the individual can dictate, its relation to the thousand needs of household life. One generalization may be permitted on this line. Knowing that household needs are various any conflicting, and so require a low, common denominator, no article in a room should be of any marked eccentricity.

The private room may show more of this; but high specialization in furniture calls for the same specialization use, such as the peculiarly personal

or professional use of the dentist's chair, barber's chair, invalid's chair. For household use certain low-toned harmonies are best; things restful, useful, quietly beautiful, not too pronounced. A Bengal tiger on a hearth rug, for instance, one of the favorite designs of rug in many middle-class English houses, can never be considered as soothing, and it is happily being replaced by something less suggestive of barbarism.

The background for all furnishing comes under the head of decoration, and is a study in itself. For the furniture itself there are always three principal considerations: (1) the size of the apartment in which it is to be placed; (2) the purpose of the room, and (3) the object or use of the articles themselves. To these considerations others must be made subservient.

There follow then certain practical considerations—the nature of the materials employed, mineral, vegetable and animal; their relative durability and destructibility. The nursery, for instance, or other room which children are to occupy with some sense of space and comfort, demands absolutely different treatment from that of the drawing-room given chiefly to the reception of guests. Until within a generation a "set" of furniture has been regarded as a necessity for a well-furnished parlor, and the average housekeeper, notably in New England, having little money to spend, invested it in hair-cloth, the most hideous as well as the most durable of all fabrics the mind of man has ever evolved. In its natural colors a species of iron-gray, it was a trifle less objectionable, but inscrutable desires on the part of the buyer brought the dyer to the front and gave inky and glossy blackness as the result. Repulsive in color, slippery in finish, to that degree that no mortal could do aught but slide uneasily on the cold ungracious surface, the New England mind seized upon this as the ideal, and for generations held to it with fervor. The "rep set" followed—usually dark green or red—and this was a great step forward. Gradually, with the slow development of a faint

sense of beauty, cretonne and other fabrics have come into use, while the growing familiarity with Japanese and other Eastern fabrics is teaching us the value of an admixture of mineral materials, as gold, silver or copper thread.

The cottage requires a lighter order of furniture than the mansion; but this does not mean flimsiness of construction or poor material for covering. Wool invites moths, and in our furnace-heated houses where life is made easy for them, wool is always liable to their attacks. But there are beautiful combinations very durable in quality, in silk or cotton or linen, as well as in silk and wool. At this point one is tempted to take up room by room with the best type of furniture for each, but limitations of space make this impossible since each type of house must have its own standard. But there are good and helpful authorities all certain to develop taste and power of judgment in the buyer. Sir Charles Eastlake's "Hints on Household Taste," though one of the oldest, remains one of the best and most suggestive. Litchfield's "History of Furniture," a superbly-printed and illustrated volume, gives us the finest models from the Greek and Egyptian down, is much in the same lines as that of Jacquenart, while the recent volume on "Colonial Furniture," will enable even the unwary buyer to distinguish between Chippendale and its imitation. "The Magazine of Art," "The Art Journal," and a few other art periodicals often give elaborate descriptions of artistic furniture with illustrations, sometimes with schemes of furnishing adapted to varying purses.

Probably nothing can more thoroughly train the eye than a study of ancient models never excelled in either beauty or finish. The British Museum contains six chairs, the earliest examples of the ancient Egyptian theories, and all about the same height as our present chairs. A beautiful one is of ebony, turned in the lathe, and inlaid with collars and discs of ivory, the seat being heavy cane slightly hollowed. Another of turned and polished rose-wood, has a seat of skin and folds pre-

cisely like our modern folding chair, but much more securely. They chose heads of animals for ornamentation as did the Assyrians, and their couches, tables and cupboards were all heavy, solid and finely carved, the seats being upholstered or embroidered with the richest materials. Both the Greeks and the Romans used folding chairs, carrying them in the chariot for use in the Forum lecture-halls and baths. Form and construction remained much the same, the Greek predominating, and perfection of finish being regarded as the first essential, being in each case according to the material employed.

The renaissance in art made great changes in architecture, and all this transition was exemplified in the furniture. The princes and nobles of Rome, Florence, Venice and Milan ordered and often designed the most sumptuous chairs and tables, cabinets, beds and chests, and as an almost uniform training was given the artists who resorted from Italy, the work done by them in Spain, Flanders and Germany, especially under the reign of Charles the Fifth, can hardly be distinguished from that of Italian artists in the same period. The beauty of this sixteenth century work, however, declined in the seventeenth century—nor has it had serious attempt at reproduction until the present day, when fixed and often most unlovely forms are giving place to genuine artistic designs.

The construction of a perfect chair means many things. Each part should be as perfectly united to the next as if it had grown in its place; and this means well-seasoned wood, exactly cut tenons and mortices, very hot glue of the best quality, and the proper pressure in putting it together. Lightness for ease in moving is another requisite. If carving is used, it should be absolutely subordinate to the outline and comfort of the sitter, never interfering with the dress, nor being liable to breakage from having salient points, masses or ornaments exposed. The same general laws apply to couches and beds, and the ancients worked them out at once, held to them rigorously, and would look with consternation at

our veneered, warped, mis-shapen products, made to sell, and utterly cheap and mean in expression.

The sensitive touch of the human hand must be in anything that holds high artistic quality, and the factory can never give us distinctive work. As we learn once more this law known thousands of years ago, each of us will want at least one piece of furniture designed by an artist—by ourselves if we have artistic perception—and in time we shall all return to the earlier ideals, learn the place of ornament, and gain once more a distinct conception of a bed, a chair, a couch, a table. The evolution of each is as clearly traced as that of the chair, and in the beautiful volume by Kuhl and Köner, on "The Home Life of the Greeks and Romans," one may find the history of all they regarded as furniture.

The most perfect adaption to the use required of it, and the utmost beauty of line and finish, characterized even the simplest and humblest piece of furniture or bit of pottery; and to gain again the beauty of these two essential points, in our modern work, we must study the creations of the past and learn the thought of the beauty-loving Greek, and of the nation that followed in his train.

In its intimate relation to human life, furniture forms a direct expression of the class, "age, sex and condition of servitude" of the user. Each class, varying in its needs, varies commensurately in its furnishing; another evidence of its place as an extension of human power and activity. As the human creature varies and develops, his furniture varies and develops in absolute relation to himself.

Poverty, luxury, intelligence, all are shown in the furniture, the upward growth manifesting itself quickly in luxuriant outburst of new things; and the downward in the slow processes of unrepaired decay.

It is our misfortune—the misfortune of those of us who have approximately what furniture we want; that our evolution into "heterogeniety" is neither "definite" nor "coherent;" that we do not grasp the principles which relate the development of furni-

ture to life; and therefore the orderly arrangement of our rooms, and the carefulness of our dusting, does not give truth or peace to discordant collections of upholstered articles, having neither intrinsic nor relative beauty.

At this point we find, as usual, that the higher specialization of man's work has given him more perfect furniture. A finely appointed office or study, with its desk breathing embodied business, its chair of complex possibilities and perfect comfort, and its revolving bookcase that seems so glad to serve the wish of its master; this shows a more advanced degree of furnishing than is possible in the home. To study such an office, or turn her attention with equal care to the kitchen of a buffet car or a steamship, the arrangement of a laboratory, a store, or any room devoted to special uses, would compel an intelligent woman to thought on the immense deviations found in the home, and whether such deviation is in the lines of progress or against it.

Why does a man prefer a leather-covered, stuffed easy-chair to a rattan rocker with a blue ribbon woven into its official decoration, and a tidy pinned to its back? It is not a matter of personal opinion merely, nor is it a question of sex, necessarily, for the woman of business does not admire the cobwebby rocking chair, above the smooth comfort of the other one. The leather chair rests the body, does not stick to the clothes, does not in any way obtrude upon the notice, does not fasten to the back when you get up, does not tip over when it is touched. The leather chair is a piece of true evolution, rightly modified by modern needs. It is not so nobly beautiful as the Greek or the Roman chair, but it is beautiful in its right service of existing man, and so, legitimately beautiful after all.

How came to pass that other thing with the tidy on it? What process in evolution has bestowed upon us the museum of tip-overables in these rooms of ours which should breathe only of rest and pleasure?

The process is something after this order. The life of the average woman

is so spent in conflicting interests and industries that she cannot develop any true taste for large truths of relation. She is accustomed to unrelated activities and their unrelated utensils; used to going from stove to dish, from dish to duster, from duster to sewing machine, with one hand it may be, rocking the cradle all the time. It does not therefore distress her to see a ribbon on the parlor coal-hod, a gilded milking-stool painted with daisies, or a rolling-pin covered with velvet. Relation not being in her life, why should she feel the need of it in her furniture? She herself must answer a multitude of needs; why, then, should not the table carry whatever one may choose to put upon it?

Were women sensitive to the discord about them they would die sooner than they do, which is needless. Moreover, our women in their sheltered lives develop more of personality, whim, caprice, passing and changeable preference, just as children do, a thing that more general life modifies in man.

Save to the occasional artist, it is rarely that it occurs to a man to express his personality in his furniture. He does not "like it this way" and that way, and the other way; and change it about for variety's sake, as she does. He got it for a purpose, placed it for a purpose and used it for a purpose; "liking" it only as it serves his purpose. Therefore he does not tire of it, and it does not tire the beholder.

Is the home then, because of these facts, to be turned into a howling wilderness of leather and hardwood? Heaven forbid! Within the limits of easily learned artistic laws, this very personality and variability, the modification to multiple use and occupancy, the teeming suggestion of youth and age, and all sweet natural living—all these are precisely what gives household furniture its charm. Just as woman herself, comparatively unspecialized and so still promising all things; serving as the artist's model and the sculptors' type of great thoughts—standing for the figure of Liberty, Justice, Truth—because she is not too

closely fitted for a special task, but expresses humanity in the abstract, so our household furniture which does not speak of work, but of rest: not of concentration, but of diffusion; not of where we are going to, but of where we come from—breathe calmness and beauty and peace.

Two things most needed in our conception of right house furnishing are these: 1. The elimination of all that speaks of toil. Home is peculiarly a place of rest; though the birthplace of all industries. All the special furniture that speaks of special task should be as far as possible banished or at least concealed. 2. A thing of vital importance of which we seldom think. While our home is from the beginning and essentially "the place of children" yet we do not, either in building or in furnishing, allow for their needs and pleasures. It is a peculiar oversight, and one which will be remedied when the household economist has voice in the choice and building of the home and its furniture.

On most of these points our minds are chiefly a blank, we who were brought up in homes where childhood was unplanned for, and who, going to the new nest, think more of Cupid and Hymen, and possibly of Mrs. Grundy, than we do of the family the home is meant to shelter, make no provision in our purchasing for the larger half of the occupants. At any one time there are more children than there are grown up people, and they are more important. They are "always with us."

Children as a permanent class have yet to be considered, but such they undoubtedly are. Should not then the furnishing of the child's home—all the home the child ever has—be planned with some consideration of his needs and pleasures? As it is, the most he can hope for is a "high chair" to bring him to the adult table, and possibly a little "rocker" to hug and fall down stairs with.

The children must "get up off that floor," of course, for though it is the child's natural resting-place, it is not arranged for his health and comfort. So they sit in people's laps for a while, or struggle about uneasily in big chairs

and sofas, and disport themselves on stools and hassocks under protest; being hurried meantime with constant directions as to how to sit, and reiterated commands to "keep quiet," until they can go out of doors or go to bed; even when out, being usually cautioned not to sit on the ground, vainly, however—thank Heaven!

Shall the human home, then, be furnished like a kindergarten? No, but there should be, so to speak, a kindergarten in every home or near one. The child should have his furniture as well as we. And furthermore, knowing that our homes are the homes of children, we should not fill them with articles of constant temptation to the normal activities of childhood. A human home is not a museum; it is a place to live in peaceably, young and old—more especially the young.

Fortunately this need is being in a degree recognized, and furniture of good quality is being made for children's use, from the little enameled iron and brass bed, the most rational type of bedstead, to the small bureaux, tables, chairs and other fittings that belong with them.

The room in which much living is done—living with its innumerable modern demands—requires substantial as well as beautiful furniture. And no one has better given the essentials than William Morris, who, in an essay on "The Beauty of Life," in his "Lectures on Art," describes what he regards as essential to the ordinary sitting-room of a healthy person:

"First, a book-case with a great many books in it; next, a table that will keep steady when you write or work at it; then several chairs that you can move, and a bench that you can sit or lie upon. Next, a cupboard with drawers; next, unless the cupboard be very beautiful with painting or carving, you will want pictures or engravings such as you can afford—only not stop gaps but real works of art on the wall; or else the wall itself must be ornamented with some beautiful or restful pattern. We shall want also a vase or two to put flowers in, which latter you must have sometimes, especially if you live in a town. Then, there will be the fireplace of course, which in our climate is bound to be the chief object in the room. That is all we shall want, especially if the floor be good; if it be not,

as by the way, in a modern house it is pretty certain not to be, I admit that a small carpet which can be bundled out of the room in two minutes will be useful, and we must also take care that it is beautiful or it will annoy us terribly."

This last is a trifle extreme, but for the rest I think we may admit that both children and their elders would be far more at ease if every item were carried out literally.

I have been in houses where, from top to bottom, there was absolutely not one spot where one could really live, since beds were too fine to lie upon, chairs too frail to sit upon, tables too shaky and uncertain for comfortable writing or drawing, and all things over-ornamented, and generally calculated to spoil temper and shorten life. Can one imagine that the children with their sensitive organization are not tormented and hampered in the same way? For them, if for no other reason, we need to study the laws of furnishing and give them models that will form taste and make cheap vulgarity forever impossible.

The factor of nobility, not only in the evolution of furniture but also in our relation to it, is an important one to the student. Remembering the principle that the value of human production is in proportion to its durability and usability; to the number of people who can use a thing and the length of the time for which they can use it—we see that the value of a special article of furniture is greatly limited by personality. If one is peculiarly shaped, and one's chair is peculiarly shaped to fit, it is less valuable as a chair, and would sell for less at an auction. On the other hand, it would cost more to have it made, and it is of far more value to the owner because of this peculiarity.

Here is a sharp line to be drawn in reference to personality. If we do one kind of work and are accustomed to one kind of tool only, there grows up a certain intimate relationship between that tool and us which adds greatly to its usefulness. But if it be lost and we are forced to use a slightly different tool the change detracts from our useful-

ness. To have comfort or power depends on one's one special furniture is a limitation of use in the line of racial retrogression.

To be localized then, and stationary, to be fixed to one's own implements is a subhuman condition, and one to be guarded against. A free and easily adjusted relation to both furniture and tools is to be sought, else one is held down by material limitations. These are in outline the laws and principles of furnishing and furniture, and when they

are better understood we shall find life a nobler, sweeter, easier process. The child surrounded by beauty and order will grow up smoother and rounder in character, less irritated, less rubbed away. The adult living among beautiful and orderly forms, all peacefully serving their uses, will find a clear atmosphere, either for work or rest, and the improved grade of humanity so fostered will manifest itself in kindred improvement in every other branch of sociologic progress.

Helen Campbell.



ELECTRIC LIGHTING OF MODERN OFFICE BUILDINGS.

THE arrangement of electric lights in an office building, and of the wiring for them, is generally the last thing in connection with the design to receive attention from the architect, and it is frequently the case that no thought is given to the disposition of the wires until after the contract is let and the construction of the building well under way. The result of such a proceeding is that the wiring is only accomplished by a reckless cutting of plaster and tiling, and even of the flanges of iron beams, at no little expense.

The principles which govern the running of electric wires in office buildings are by no means difficult or complicated, but it is invariably advisable to give them due consideration, and to make proper allowance for this important branch of the building construction.

Of the two great systems of incandescent lighting, the "direct-current" and the "alternating," the latter is but rarely encountered in office-building practice. Its advantage is found in transmitting current for long distances, and even where it is used the "converter," which transforms from a high to a low electrical potential, is placed outside the building, and the low potential wiring inside practically conforms to the principles of direct-current wiring on the "two-wire" system. Incandescent lights are moreover invariably, for electrical reasons, wired in some form of what is known as "multiple-arc," as distinguished from "series" wiring, which is generally used for direct-current arc-lighting. In "multiple-arc" the lamp terminals are all connected together electrically into two wires, which connect direct to the dynamo terminals, instead of being connected one after another as in series. (Fig. 1.)

There is, however, an important modification of the ordinary "two-

wire," multiple-arc which is frequently met with in office building practice, and is known as the Edison "three-wire" system. This was devised by the great inventor as a means of reducing the size of the mains required, where the current was to be carried any considerable distance. There is no particular economy in using the three-wire system in an office building which installs its own dynamos and plant, but in most of the large cities the Edison system is installed under public franchise to furnish light from central stations, so that in buildings which take electric light from the public mains the wiring has to be adapted to the three-wire system.

The general principle of the three-wire system as distinguished from the two-wire will be readily understood by reference to the diagram of Fig. 2, and also to Figs. 3 and 4. In it the dynamos are set in pairs, the positive terminal of one dynamo being connected to the negative terminal of the other. The positive and negative mains of the system are connected to the free terminals of the two dynamos and a "neutral" wire is run from the connection between. The lamps are all connected between the neutral wire and one of the outside wires, and should be divided as equally as possible between the two "sides" of the system. It will be readily understood that if they are divided absolutely equally, when all are burning, there will be no current flowing in the neutral wire at the dynamo, and the economy of this system arises from the fact that the neutral wire need only be of size sufficient to carry the current necessary to make up the difference in load between the two sides, while between the positive and negative mains the difference of electrical potential is twice that in the two-wire system, with the same difference at the lamps, enabling much smaller mains to



Fig. 1.

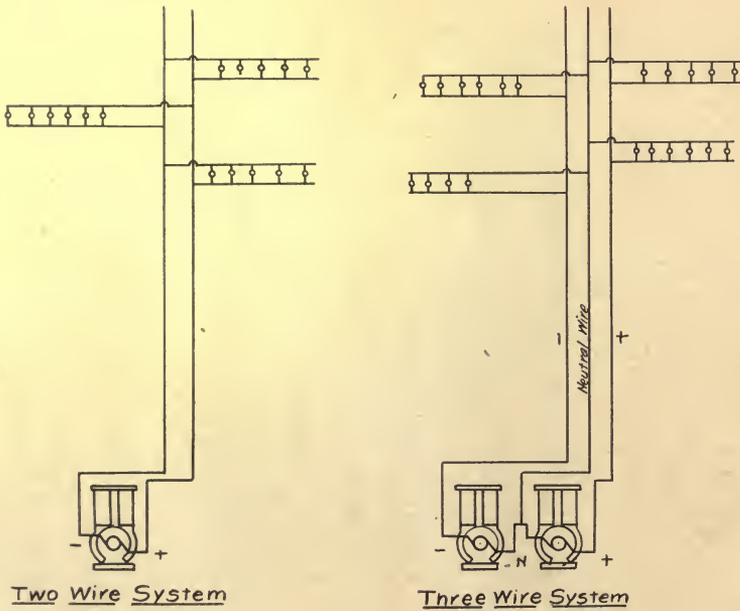


Fig 2.

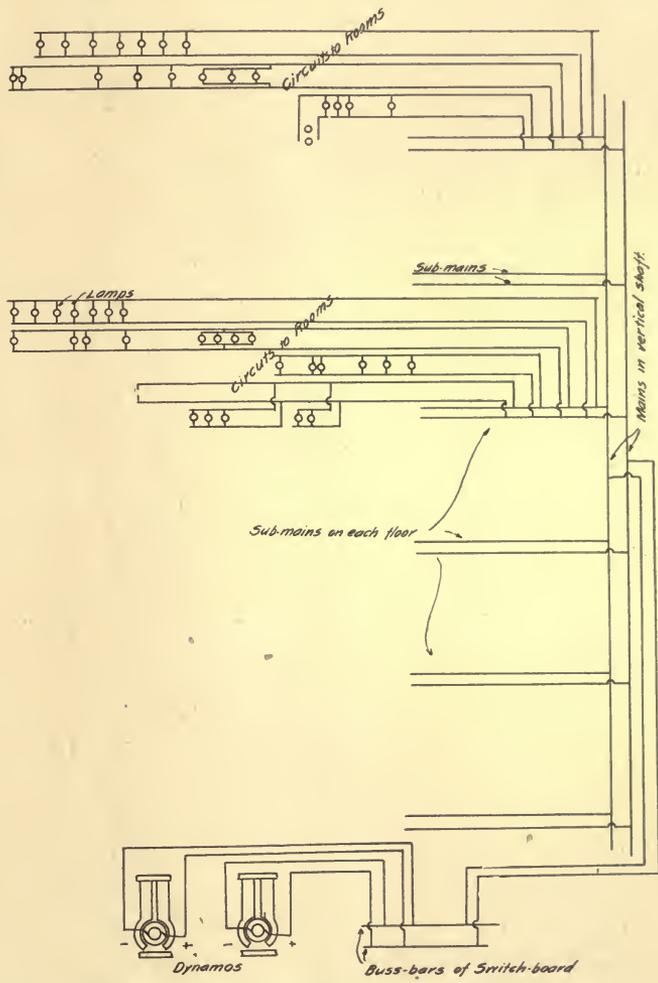


Fig. 3.- Diagram of wiring for Office Buildings (Two Wire System)

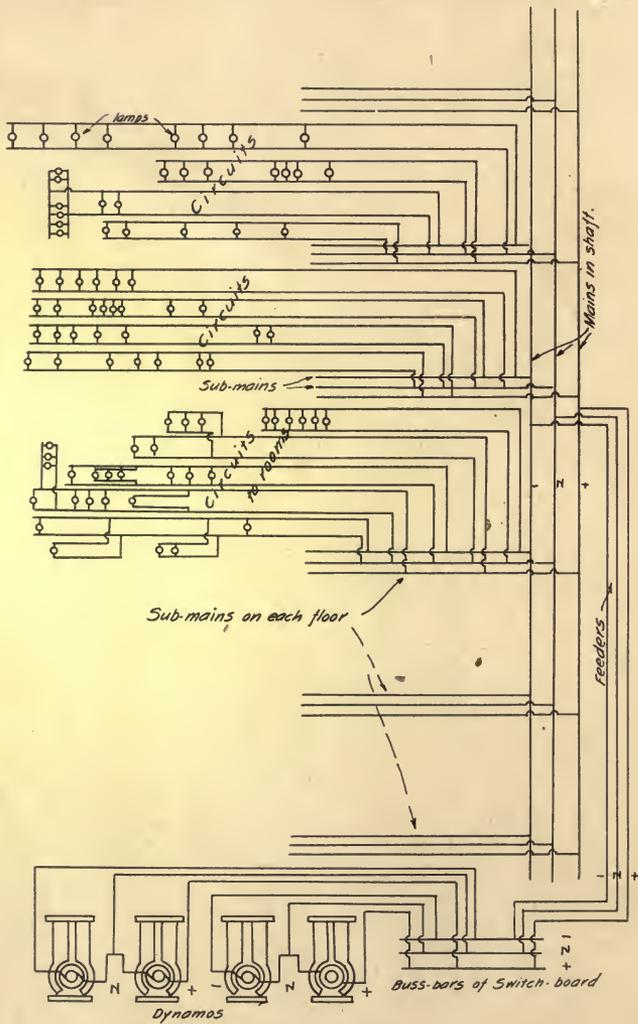


Fig.4.-Diagram of Wiring - (Three Wire System)

be used with the same percentage loss of potential.

In office buildings it is almost invariably found most convenient to run the "mains" vertically through the building, and "distribute" the connections to the lamps from these at each floor. The mains are run from the basement to the attic as straight as possible, and are generally located in a ventilating or pipe shaft. "Sub-mains" are taken off at each floor, and are run to a "center of distribution," at which point all circuits are taken off for the individual lamps. No circuit should supply more than eight lamps, and each is invariably connected to the submains through a safety fuse "cut-out," which melts and breaks the connection should any accident occur to "short circuit" the lamps or wires. It is of course possible to run submains to more than one center of distribution on each floor, although if the floor area is large it is generally better to have two or more sets of mains running vertically, as it is generally the case that the arrangement of rooms and corridors brings the centers of distribution for the various floors directly above one another. The feeders which run from the mains to the dynamo switchboard are connected to them at about the middle of their electrical load, for, were they connected at the lower end, as might seem more natural, there would be a much greater loss of potential at the lamps on the upper floor than at those on the lower. For the same reason, in a very high building, much over ten stories, the mains are divided into two sections, and a separate set of feeders run from the switchboard to each section, as indicated in Fig. 5. This arrangement affects a still more uniform distribution of current.

These general principles of the wiring system will be more easily understood by reference to the diagrams of figures 3 and 4. The "sub-mains" should be provided with fusible cut-outs, at the connection to the mains, and similar ones should be placed on each set of feeders at the switchboard.

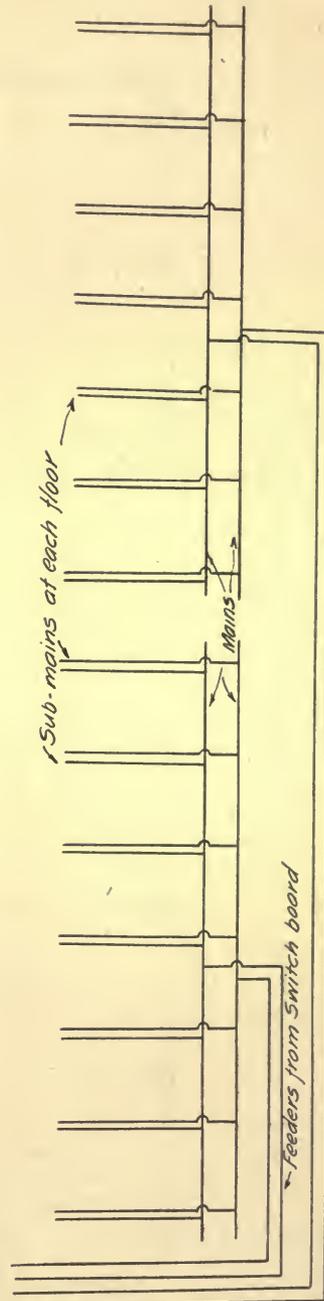


Fig. 5. Diagram of Main and Feeders in very high buildings (Two Wire System)

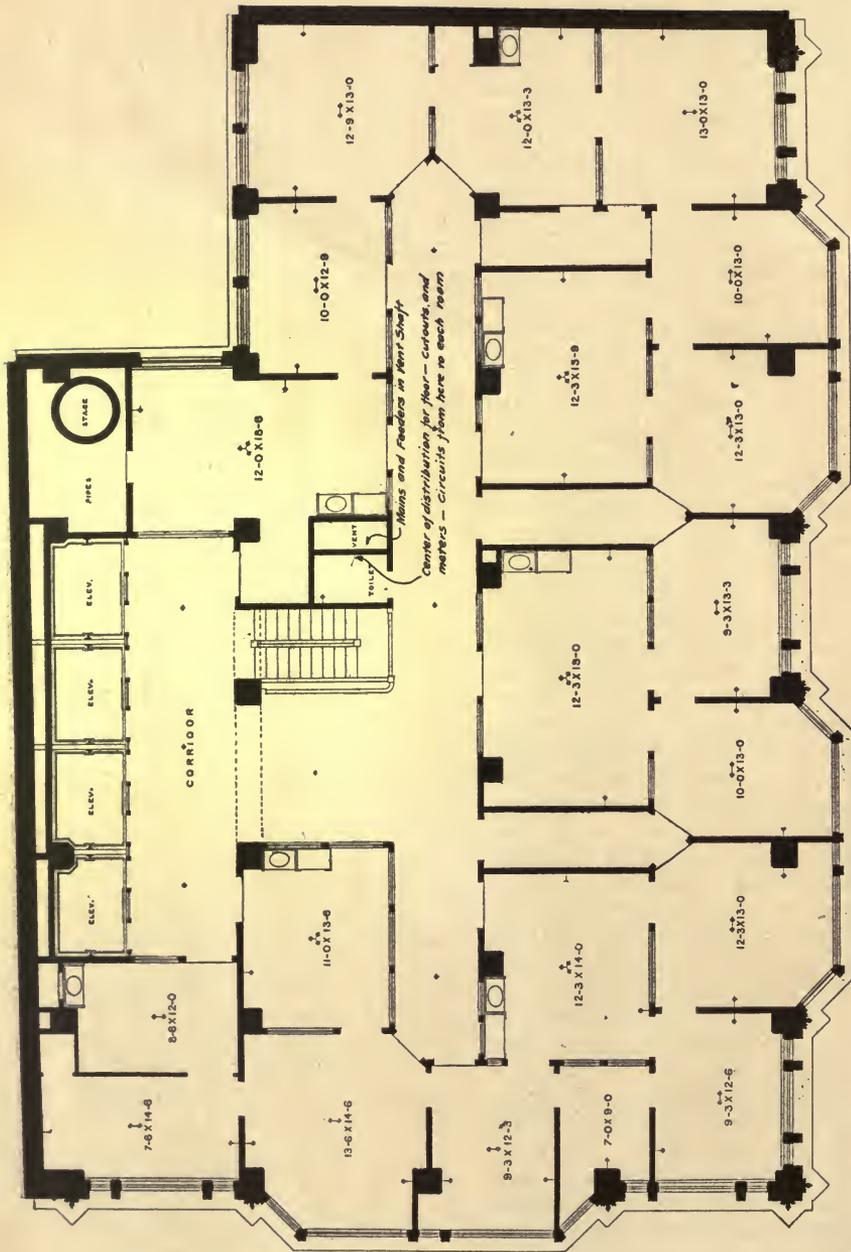


Fig. 6. Typical Floor Plan Reliance Bldg., Chicago.

Where the current is taken from a commercial system the "buss-bars" of the switch board are of course connected direct to the street mains, and in such cases an independent system of mains and feeders is usually run up the building to supply only the lights in the corridors, toilet rooms and janitors' closets, so that these may be kept entirely independent from the lights used by the tenants.

It will now be seen that the shaft in which the vertical wires are run must contain from four to nine wires, depending upon the height of the building, and whether or not the three wire system is used; and these numbers might be doubled if a separate system be installed for the corridor lights. These wires are always large and heavy and should be run perfectly straight and supported on a firm wall by means of iron brackets and glass insulators, and should be set at least three inches apart so that joints may be readily made and inspected. They should, moreover, be kept free from contact with gas and water pipes, and should be easily accessible for inspection throughout their entire length. They are sometimes of necessity run in special small shafts built against a wall or column, and in such cases if they cannot be hung on brackets and insulators they should be run in conduits, and cabinets should be built around the joints where the sub-mains are taken off.

In regard to the wiring for the lamps on each floor, there is much that may be said. The "center of distribution" for the circuits should be located as near as possible to the center of the floor area to be covered so as to reduce the average length of circuits. It is of course desirable to have this point near the mains so that the sub-mains will be short and in most arrangements of rooms a "janitor's closet" is placed adjacent to the main pipe shaft so that unless the shaft is a long way from the center of floor area, the circuit cut-outs are best placed in such a closet, which also avoids locating them in a more conspicuous place.

The cut-outs are best set on the wall in cabinets made preferably with slate or marble backs and sides, and with iron doors. If made of wood or even with wood doors, the wood work should be lined with heavy asbestos paper. If meters are used on the circuits it is much better to place them directly in the cut-out cabinets.

As before stated, not more than eight 16-candle-power lamps are placed on one circuit, otherwise with a varying number of lamps lit, there will be too great a variation in their brilliancy. Of course, if all the lamps are in a cluster and are turned on together by one switch only, any number can

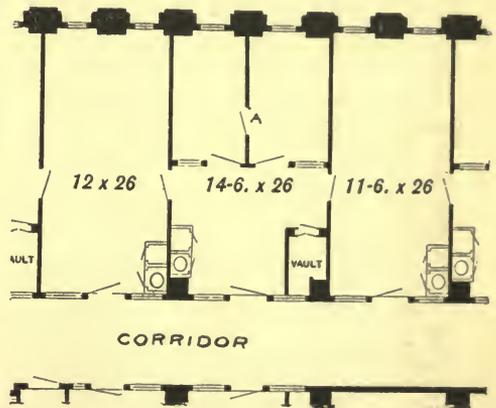


Fig. 7.

be put on one circuit. In practice, however, all the lights of each room are almost invariably put on separate circuits, so that each room is independent of the others, and where the rooms are small there are generally but four or six lights per room. If rooms are divided as shown at "A," in Fig. 7, those which have no direct corridor connection and open only into one room, may safely be put on the same circuit with the corridor room. After the offices in the building are rented it is always found advantageous to have the wiring of each room distinct, and if light is furnished through meters, it is absolutely necessary, as it is never possible to know

exactly in what arrangements the rooms will ultimately be rented.

In the matter of meters, it is, in the opinion of the writer, always desirable to put them in on every room. This is almost invariably done where current is supplied from a public station, but even where the building installs its own dynamo plant, there is much less dissatisfaction among the tenants when they pay for the amount of light actually used, rather than a flat rate per light per month.

In regard to the various methods of running the circuit wires, there is opportunity for much discussion, and although the conditions in a large number of buildings might seem very similar, yet no set of rules can be laid down which would cover the detail of more than one building. The primary essential in any wiring system is perfection of insulation, but just what is necessary to perfect insulation under a given set of conditions is invariably open to dispute. In the earlier days of office building wiring, it was considered quite sufficient to cleat the rubber insulated wire on the tiling of walls or ceiling and imbed it rigidly in the plaster, and the wiring in many buildings done in this way several years ago is to-day giving practically perfect satisfaction. In recent years, in order to protect the wires more absolutely, a number of varieties of "electric conduits" have been put upon the market, and are urged as essential to a good system of wiring. These conduits are tubes made of vulcanized paper or hose, and sometimes covered with a thin sheathing of brass, or even iron pipe is used. The idea of a conduit was primarily to form a raceway from which a wire could be withdrawn and renewed without injury to walls or plastering. It is, however, difficult to put up conduits so that this can be accomplished, but to that end, when they are used it should be insisted that they be put up complete with long radius bends and joints as few as possible, and carefully made, and that the wires be drawn in after the completion of the work. Conduits are now advo-

cated as essential by many engineers, and although the ordinary insulation on a good rubber covered and braided wire is sufficient when new, it is considered to be liable to deterioration when imbedded in plaster or in the cinder covering of a tile floor, and the conduit might therefore serve as a valuable protection against this danger as well as against the danger of mechanical injury during the construction of the building, and during alterations and repairs afterward. If mechanical protection is especially desired, nothing is better than an iron pipe, but unless it is itself lined with a vulcanized insulation the iron is not an insulator, and it is claimed by some that the action of the iron and iron rust will, in a comparatively short time, deteriorate the insulation, and a nail can be driven through a brass covered paper conduit almost as easily as through the ordinary paper ones. The electric conduit is unquestionably desirable in certain places, and under certain conditions, but the advantages of the different conduits should be carefully weighed by an expert to meet the conditions of each separate building. The only real test of a conduit, or of an insulated wire for that matter, is the test of time under practical conditions, and few, if any, of the conduits have been in use long enough to have thoroughly met that test.

There is, moreover, another important consideration in this connection. It is a matter of practical experience that in any office building or store building a large percentage of the lights are never put in as originally laid out, and after the building is occupied changes are continually being made in the arrangement of partitions and furniture to suit tenants, which invariably involves changes in location of lights and wiring. The conduit may permit the renewal of a wire, but it will not permit a change in the location of lights without greater disturbance of walls and plastering than would probably be necessary were no conduit used. It may be put down that

on an average the location of all lights of an office building and the wiring corresponding are changed at least once in six or eight years, and in many cases much oftener, and within the rooms a circuit can often be successfully run principally in a moulding. But this is only within the rooms. The corridor partitions are generally more staple, and the wires running down the corridors between the centres of distribution and the rooms are consequently more permanent. A very large number of wires radiate down the corridors in all directions from the cut-outs, and adequate provision should be made for them. They are generally run on the ceiling, though frequently on the floor. If they are put on the floor there is much more danger of mechanical injury during construction, and there are generally various pipes crossing the floors which have to be passed. In any case these wires should be well protected, as well from each other as from external injury, and it is therefore desirable to run them in conduits or in channels built into the walls, though even if this is done the wires must be carefully secured and protected, and kept well separated. In any case whatever, the circuits should be carefully laid out so that the wires will not cross one another.

In the matter of distribution of lights in an office building there is but little to be said. Where the floor area is divided up into small offices, the lights should be placed with due reference to the probable location of desks and other office furniture. In

small rooms, except those occupied by doctors and similar professions, ceiling outlets are not as useful as wall brackets. In rooms of considerable floor space which are used for stores or salesrooms, the most ideal light is one which is diffused from small clusters of two or three lights each, distributed uniformly on the ceiling. If this is carried to an extreme, however, where the ceilings are low, it will give one the feeling of not being able to get away from the glare of light. This is often experienced in basement restaurants. Also, where a large space is broken up by columns, the effect which their shadows will produce must be considered, and a very good illumination is often obtained by rings of lights arranged about the columns and carefully worked into the ornamentation.

In a large open space with not very high ceilings, one sixteen-candle-power lamp to seventy square feet of floor space is fairly good lighting, but they are often put in one to thirty or thirty-five square feet, while fifty to sixty feet per light may be considered an average. For small offices, the necessity of having two or three lights to every room generally makes the average lighting about one to forty or forty-five square feet of floor.

Each building, however, involves special features, both in construction of wiring and distribution of lights, and only a careful study of the existing conditions and necessities in each case can attain a system of lighting which will be thoroughly satisfactory both to the owner and tenants.

Wm. S. Monroe, M.E.

THE SMALLER HOUSES OF THE ENGLISH SUBURBS AND PROVINCES.

PART II.—CONSTRUCTION.

SECTION I.—FOUNDATIONS.

IT is apparent to everyone that the foundation of a building is one of the most important parts of its construction, and it behooves us to go somewhat carefully into this subject. In dealing with the subject I propose dividing it into two heads, viz.:

ORDINARY AND ARTIFICIAL.

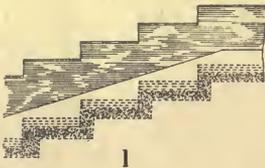
As artificial foundations come more within the province of the engineer I do not propose to describe them here.

ORDINARY FOUNDATIONS

may be divided into two classes: In the first class, those of rock, clay, gravel, chalk and sand; in the second class, those on soft ground and ground of varying qualities, defective in parts, but not such as to require piling or timber rafts.

ROCK.

Solid rock, when uniform in character and with an upper bed either horizontal or perpendicular to the pressure upon it and of a thickness



sufficient to bear the weight safely, is a foundation of the first class. If, however, the rock is (like some clay slates) liable to disintegrate when exposed to the weather, it should be covered with a bed of concrete. In the case of foundations in rock *on a slope* it is advisable, to save cost of excavation, to step the footings, that is to carry only a small portion of the footings level, say 8 or 10 feet, and to have the next length of 8 or 10 feet at a

higher level, keeping the higher portion of each length the same distance below ground as in Fig. 1. In rising or stepping the footings care must be taken that the projecting footings of the lower portion are taken sufficiently under the upper to prevent a straight joint and to transmit the weight.

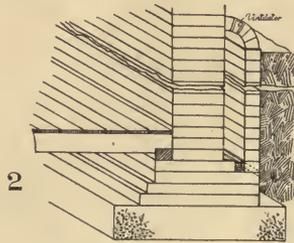
CLAY

in various degrees of consistency is found in most places, and when sound and tolerably dry and protected from the action of the atmosphere (which latter must be done) by making the foundations deep and covering the bottom of the trenches with concrete is a good soil to build on.

One element of danger with clay is the continual change caused by atmospheric influences, which are very liable in hot weather to cause cracks and to form deep fissures by which water is led below the surface. This causes the footings to become defective unless they are placed deep enough to be out of the reach of such channels or fissures and are well drained.

GRAVEL

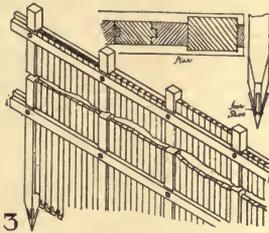
when sound, makes the best possible foundation, for, being pervious to water, the surface drainage is ena-



bled to run away and so to leave the footings free from moisture, while in a clay foundation the water is penned

in on the site and where there is a basement or cellar it becomes necessary to either line the walls with asphalt on the outside or to build "dry-areas" round the basement walls (Fig. 2).

If the gravel should be found loose and coarse it is then requisite to form a bed of concrete on which to rest the foundations. If found very unsound, it is then necessary to prevent the soil



from shifting by treating it with sheet piling (Fig. 3).

CHALK

like clay varies immensely in its value as a good foundation, but with care and proper treatment can be made reliable. It is found at times as hard as a rock, while it is also found as soft as paste. Chalk at all times, whether found in a hard or soft state, should be drained, and in cases where springs are found to exist they should be most carefully diverted but not dammed out, as if so treated they are apt in rain or wet weather to burst through and so damage the foundation.

SAND

forms a good foundation when prevented from escaping laterally by sheet piling or other means. Care should be taken to exclude water more particularly from a sand foundation as it is likely to wash away the sand and so cause a settlement.

Having now described the qualities of the several strata referred to in Class I., their treatment for foundations and the several defects to which they are liable, attention must be called to a few rules in daily use which are applicable to all foundations.

TRIAL PITS.

Before commencing work these should be dug or borings made at different points on the site in order (1) to ascertain the nature of the ground, (2) the thickness or inclination of the strata, (3) to find out if water exists and at what level, and (4) if there are any springs. If the latter are found, their sources should be ascertained and arrangements made to divert the current of water.

Having decided the depth and character of the proposed footings, the bottoms of the trenches should then be carefully examined and sounded to ascertain any local defects and then leveled throughout in one plane, if convenient, or in successive levels of the several lengths where stepped.

DRAINAGE.

The ground should be well drained before digging to increase the firmness of the soil. All bad portions should be cut out and made good with concrete and loose portions rammed solid or removed. Care should be taken that, where filling up deep holes, the concrete is allowed to settle before the ordinary foundation is added thereon, so that there may be no unequal settlement throughout the varying depths of concrete.

FROST.

All foundations (especially those on clay) should be of such a depth as to be free from all effects of frost. In England this should be not less than 3 feet for ordinary soil and 4 feet for clay.

PERMANENT DRAINAGE

is necessary to keep foundations dry so as to prevent dampness, damage by frost, or subsidence through the action of water.

Now let us turn our attention to foundations in those classes of soil which we have placed in the second class; viz.:

COMPRESSIBLE SOILS.

Foundations in these soils require great care, more especially when the

buildings to be erected are of varying heights. It is advisable in this case to spread the weight carefully and equally over as wide an area as possible, carefully ramming the bottom of the trenches as solid as possible and levelling before the building is commenced, and thoroughly tying in the whole structure throughout so as to guard against unequal settlement.

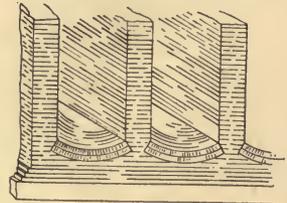
SOFT TOP SOIL.

When the surface of a site to be built on is composed of a soft soil overlying a firm one, if upon testing the depth it is found not to be too expensive, it will be best to take the whole down to the solid; or else a number of holes may be sunk and piers built up from the solid, on which arches should be turned to support the walls above. This is open to objection as it is throwing all the weight on to certain small areas, which is quite at variance with the purpose we look for, namely that a foundation should transmit the several weights which it has to carry over the whole area of ground by means of footings so as to reduce the pressure by giving them as extended an area as possible. Consequently such piers must have an ample area of base in order to overcome this objection.

In the case of a *stratum of good ground overlying a soft one*, if after examination the stratum is found to be strong enough to bear the weight proposed to be put upon it (which would best be found by testing on either side of the proposed footings), then spread the weight as evenly as possible thereon, taking care that the soft substratum has no chance of escaping, by piling, if necessary, at the side. Should the soft substratum have an outlet on the side of a hill or river it will probably ooze out and cause a settlement, moreover if the soft stratum should be peat it will be advisable to drain it before commencing operations.

Next, as to a foundation of uneven quality, part firm and part soft, it is evident that such a foundation cannot be built over without some special treatment or there would be unequal

shrinkage, and defects of all kinds would show. In such a case one must be guided by the nature of the building to be erected, by the distance apart of the firm portion of the foundations and the depth of the unsound. It may be best to build piers upon the solid margins of the unsound portions, with connecting arch over on which the building is erected, the base of the piers being connected with arches called "invert," which transmit the weight equally towards the bases of both piers (Fig. 4). In forming such invert arches it is necessary that they should have an efficient abut-



ment on both sides so as not to overbalance the resistance of the end piers.

Arches have been used at times on a foundation of clay to keep out water from a cellar, in which case they should be laid after the building is up and of sufficient weight to counterbalance the thrust of water, otherwise the pressure is apt to throw the side walls out. Such an instance came under our notice on the South coast a few years ago.

Having pointed out the various soils to be dealt with, we need only note in conclusion that the following are the qualities that a good foundation should possess:

- (1) It must be perpendicular to the pressure put upon it.
- (2) It must be solid, or if yielding, it must be equally so over the whole site.
- (3) It must be unaffected by atmosphere or other influence.
- (4) It should be of sufficient area to bear the pressure put upon it.

We may also call the attention of the reader to the definition of a proper foundation under the Metropolitan Building Act, wherein it states that:

"No house, building or other erec-

tion shall be erected upon any site or portion of a site which shall have been filled up or covered with any material impregnated or mixed with any faecal, animal, or vegetable matter, or which shall have been filled up or covered with dust or slop or other refuse or in or upon which any such matter or refuse shall have been deposited unless and until such matter or refuse shall have been properly removed by excavation or otherwise from such site. Any holes caused by such excavation must, if not used for a basement or cellar be filled in with hard brick and dry rubbish."

The same act requires that "the site of every house or building shall be covered with a layer of good concrete at least 6 inches thick and smoothed on the upper surface, unless the site thereof be gravel, sand or virgin soil."

Now, having dealt with the removal of surface soil, the act goes on to that quality of a foundation with which we have yet to deal, viz., the area required for the pressure, and states thus: "The foundation of the walls of every house or building shall be formed of a bed of good concrete, not less than 9 inches thick and projecting at least 4 inches on each side of the lowest course of footings of such walls. If the site be on a natural bed of gravel, concrete will not be required." Thus again stating that gravel in its natural state is the cheapest and best foundation.

Although 4 inches is mentioned above as sufficient for the bed of concrete to project beyond the footings, yet in practice it is always provided that the least width of concrete beyond the lowest course of footings shall be 6 inches. In the constructions of these footings a sparing use of mortar in spots loaded with the greatest pressure is advisable.

We need not here go into the question of weight that may be put onto foundations which would never be overloaded in the case of an ordinary house.

This brings us to a close of this subject, one of the most important in the

matter of building and one in which too much care cannot be taken.

SECTION II.—WALLS.

BRICKWORK.

On the rebuilding of London, after the great fire of 1666, brick was the material universally adopted, and an act then passed for the erection of the new buildings described the thickness of the walls according to the number of bricks. In the brickwork of the buildings erected in London at the end of the 17th century (during the reign of William and Mary), and the beginning of the 18th (during the reign of Queen Anne), the brickwork was in many cases enriched by ornaments carved with the chisel, a method of ornamentation, which with the revival of Queen Anne work has been of late years much in vogue. (There is no doubt that we owe a great deal of the brickwork of the 17th century to William of Orange, who brought it over from Holland, where it was extensively employed, as mentioned above.)

It is not our intention here to go into the question of the manufacture of bricks, but to point out a few of the characteristics of good bricks and then to mention a few of the kinds in common use and to follow this with some remarks of a general character.

ADVANTAGES.

A good brick can easily be told, as, in addition to being (1) free from cracks and flaws and (2) from lumps of lime which are liable to be slaked by damp and thus expand and "blow," it should give (3) a good, clear metallic ring when struck with another or with the trowel; the surface of its sides and face should be (4) level and not hollow and (5) not too smooth or the mortar will not adhere thereto. Insufficiently burnt bricks absorb a large proportion of water and so are liable to decay. It is very generally stated that a good ordinary building brick should not absorb more than one-sixth of its weight, of course vitrified bricks (such

as what are known as blue bricks) would not absorb more than one-fifteenth of its weight.

Great care should be taken that underburnt bricks (which are generally called *grizzle* or *place* bricks) are not allowed to be used, even for the interior of walls.

Bricks in the neighborhood of London average $8\frac{3}{4}$ inches in length by $4\frac{1}{4}$ inches in width and $2\frac{1}{2}$ inches in thickness and weigh about 7 lbs. each.

The actual dimensions have varied somewhat, as in general they were made longer and thinner than the present day; in fact, more after the Roman type of brick. This long, flat brick has many advantages in appearance and can be obtained nowadays by special order.

It is a matter of taste, but, speaking personally, I am inclined to think the light red varieties are more pleasing than the dull red kind, especially in the neighborhood of London where everything tends to get grimy after a short time.

The color in red bricks is produced by the presence of iron, which in varying quantities produces the different light and dark tints.

YELLOW BRICKS.

These are what are known as the ordinary London stocks which are made around London and district. Some kinds have been used for facings, especially what are known as picked stocks with washed stocks for arches, but they are principally used for backing to walls and internal work to be plastered on. They are a rough kind of brick, but being composed of clay, burnt with coke-breeze, they are sound and useful for the purposes indicated above. There are several varieties, such as cutters, facings, paviers and hard stocks, each being used for its special purpose.

WHITE BRICKS.

Those known as Suffolk are among the best and are suited for face work in the districts for which they are found. Used in London, they are

somewhat objectionable, as they get grimy and have little warmth of color and do not give the homelike appearance which is so necessary to the houses which we are discussing.

THE TIPTON BLUE BRICK

is used as a facing material with red bricks, in which it is occasionally placed to form patterns as in the 16th century, but it does not harmonize so well as in these old examples, the difference being that they were burnt with wood fires instead of coal.

GLAZED BRICK.

These are especially treated with a thin coating of white or colored enamel. They would not of course be used, in a general way, externally, but for areas and courts they are especially applicable as they can be kept bright and clean by being occasionally washed down, besides which they reflect light; for this reason a cream color is better than a pure white, which will be found too glaring.

Salted bricks or salt-glazed bricks have a thin glaze over their surfaces which is produced by throwing salt in the fire while the burning process is in progress. These are also useful in the same way as glazed bricks and they have been used as a facing to buildings in London, being of a pleasing brown color.

ORNAMENTAL BRICKS AND MOULDED BRICKS.

The manufacture of these have much improved of late years, which taken conjointly with the so-called Queen Anne movement has led to the use of moulded and ornamental bricks to a large degree in our smaller houses. Moulded bricks, that is those turned out of a mould, are better than those which are rubbed after burning, as the surface of the latter kind is liable to disintegration.

Rubbers, namely the class of bricks which are used for gauged arches and for carving, have considerably more

sand to facilitate their cutting and shaping, and are consequently more porous.

The moulding and facing red bricks made by the Rowlands Castle Co., Hants, hold, deservedly, a high place, and have been used as a facing for the Hotel Metropole, Brighton, by A. Waterhouse, R. A., and numerous other important buildings; they are of a rich red color.

Moulded bricks of every conceivable section are made by the above-mentioned and other firms, and are used to make up cornices, plinths, string-courses, diaper panels, etc.

It is a matter of taste whether colored mortars are admissible, but personally I do not think they ever look so well as a good white mortar joint. Blue and black mortars are, however, occasionally used, especially with red brickwork. Struck weathered joints are better than "tuck" pointing, which is never allowed by any architect worthy of the name.

WEATHER TILING TO WALLS.

A few words as to the methods of employing weather tiling.

The great point to be considered is the method of fixing the tiles to the wall. This *can* be done by nailing battens at a distance apart, but this is not a good plan and, in my opinion, should not be adopted. It leaves an air space which is liable to be overrun with vermin of all sorts, and, besides this, the battens



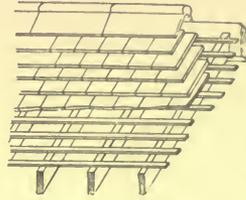
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are liable to rot with age, and there is the expense of fixing them.

The best method is to build the walls with bricks on edge, then the nails which hold the tiles to the walls can be driven into the joints of the

brickwork without the need of any battens at all. This wall may be 9 inches thick or 12 inches if desired (the bricks being on edge), and the wall will therefore be four bricks thick in a stretching course of a 12-inch wall (Fig. 5).

Ornamental tiles may be used either in bands, or for the whole wall; and we are inclined to think that when



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the roof is plain-tiled (Fig. 6) it makes an agreeable variation to have some part of the surface of ornamental tiling, as it is called, that is to say hung with tiles having a cut or circular end; but this, of course, is a matter of taste. Anyway, if you have bands of ornamental tiling, have them in broad masses, and do not fritter the surface away in small strips.

HALF-TIMBER.

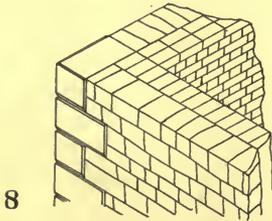
The popular demand for picturesque buildings has led architects to revive the ancient and almost obsolete style of timber-framed houses, filled in with plastered panels, and, in spite of the many discomforts of this construction in our climate, numerous examples are constantly being erect-



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ed (as in Fig. 7). Many, however, of these are only scene painting, so to speak, the owner being protected from the consequences of his fad by a hidden brick wall. On this are fixed deal boards, duly stained and provided with the indispensable, but now purposeless, wood pins, correctly projecting. Some architects endeavor to make their constructions more de-

fensible by attaching these boards to the studs of the usual type of internal partition framing, employing some means, such as packings of slag wool, fillings of concrete, plaster, etc., to rectify its serious defects as an external protection. In no case, however, is the old construction adhered to, which is not surprising when we remember that in old examples beams 12 inches wide are set apart only their own width, the quantity of timber, often oak, in such houses being hardly credible. The gable ends of roofs seem to be the most legitimate places to employ such half-timber work, as damp and cold are not so much to be feared, and some scope is afforded for the picturesque fashion which seems to require a country house to be, or appear to be, built of as many different materials and methods as possible. The overhanging stories of the old



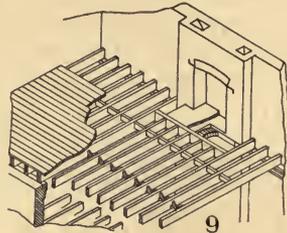
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houses are of great value and could be easily and safely done nowadays with iron and concrete floors and walls, but we should not like to see such constructions cased in the timber forms of departed epochs.

STONE.

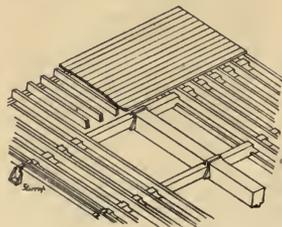
We do not propose to occupy the space that this material requires for its full treatment, because with us the small house is not wholly of stone unless it happens to be in one of the stone-producing districts. Generally the stone-work consists only of freestone dressings to brickwork, or of special features, such as a stone doorway, or a bow window in a construction or design of other materials. For such features a fine colored yellow stone, called Ham Hill, is often employed. The stone is liable to have holes full of clay in it, and is very

troublesome to work on this account. It carves in a coarse way, lending itself well to the reproduction of the vagaries of the Flemish or German Renaissance, and when well employed, as with well-colored red



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bricks, has a very quaint and charming effect. Bath stone and Portland are the other two main freestones employed in dressing. The former is cheap, but has a life of only about twenty-five years in London, while Portland, though hard and durable, weathers black and white in a special fashion, the color effect of which lends itself to a somewhat severer type of work than the class of home we are discussing. For this latter work a loose, irregular stone, often to be found upon a country site, is employed for rubble walling, requiring either brick or freestone quoins and dressings, and of course a brick internal lining, the walls not being less than 20 inches thick (Fig. 8). This rubble work is left rough, though usually more or less regularly coursed, and is extremely suitable, more especially for the first story, the upper part being often weather-tiled and the chimneys built in brick. In certain southern districts, flints found in the chalk are admirably adapted for



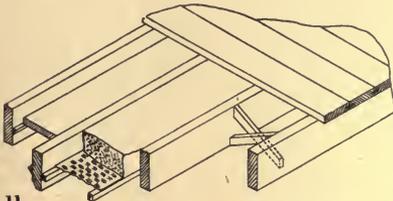
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building, either used as concrete with brick bands, quoins and dressings, the flints being somewhat arranged on the

face, or, better still, squared and set like an ashlar walling in miniature, which latter method combines well also with freestone dressings instead of brick. When flints are used unsquared, the brick bands are highly necessary for the construction. They must be carefully studied for effect, everything depending upon their intervals, the number of courses, the jointing and the thickness of the bricks.

SECTION III.—FLOORS.—ORDINARY.

The simplest form consists of joists (for sizes see below) placed side by side, on the upper side of which the



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floor boarding is nailed (Fig. 9). To the under side are nailed the laths to which the plastering is secured. Double floors are sometimes used in which "binders" are introduced and separate joists are used to support the ceilings, which is a much better construction, as it prevents the sound passing above and below (Fig. 10).

These different kinds of more or less complicated timber constructions are rapidly going out of date, since the introduction of iron and its general adaptation in the construction of buildings. Single flooring is therefore mostly used and when it has to be strengthened an iron girder is made use of.

For houses where a fireproof construction is not desired the ordinary floor is still used, and when properly plugged with slag wool on expanded metal lathing between the joists it makes a fairly sound-proof floor, but it is always open to the objection that these spaces harbor dirt (Fig. 11).

We may here add the table of scantling of timber joists for floors, as

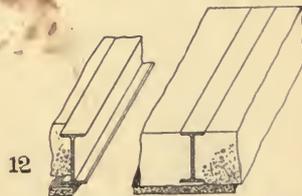
issued by the Ecclesiastical Commissioners, which may be taken as a reliable example of everyday practice.

Length of bearing in feet.	Breadth 2 1/4 inches, depth in inches.	Length of bearing in feet.	Breadth 2 1/4 inches, depth in inches.	Length of bearing in feet.	Breadth 2 1/4 inches, depth in inches.
5.....	5	10.....	8	15.....	10 1/2
6.....	5 1/2	11.....	8 1/2	16.....	11
7.....	6 1/2	12.....	9	17.....	12
8.....	7	13.....	9 1/2	18.....	12 x 3
9.....	7 1/2	14.....	10		

When the bearing exceeds 8 feet the joists should be strutted by one row, and when it exceeds 12 feet by two rows of struts. These may be either slips placed herring-bone wise or pieces of boarding nailed between the joists from one end of the room to the other to keep the joists firm in position (Fig. 11). In the class of houses we are considering such wooden floors are the usual practice, though attempts are being made to bring iron and concrete and other forms of fire-resisting floors into greater use by endeavoring to bring down their cost to that of their rivals, and in the process the rigidity of these floors is in danger of being sacrificed by undue economies in the scantling of the ironwork.

IRON GIRDERS AND COKE-BREEZE FLOORS.

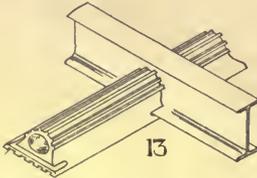
A method now being adopted in large flats, and which is considered very little if any more expensive than ordinary wooden flooring, is as follows: Rolled iron joists, 6x3 (varying according to span), are placed 3 feet apart centre to centre, between which and flush with the upper face of the joists is placed the concrete 6 or 6 1/2 inches thick. The underside of this,



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which is left purposely rough, is plastered in the usual way, but without, of course, the intervention of laths (Fig. 12).

The concrete is composed of 4 or 5 parts coke breeze to 1 of Portland cement, and the flooring is of selected wood blocks $1\frac{1}{2}$ inches thick, laid direct onto concrete; in other cases ordinary flooring boards are nailed direct onto the coke breeze concrete,



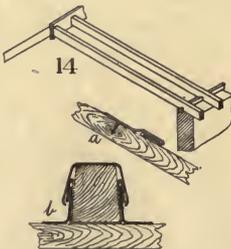
which takes nails well, care being taken that the concrete is perfectly dry.

This is a sanitary construction, abolishing the objectionable hollow spaces of the ordinary wooden floors which are liable to become receptacles for dirt and vermin and favor the spread of fire.

MARK FAWCETT'S FLOORING

lately introduced with great success, and said to possess the following advantages: The fire-resisting material, a tubular lintol, is not the load-carrying material, but is a permanent centring protecting both the iron and concrete. There is a continuous cold air current always passing between the fire-resisting material and the load-carrying material. The cold air current is utilized for supplying fresh air without draught to Tobin tubes or internal walls, stoves, etc.

In buildings of the warehouse class, the tubular lintols or permanent cen-



tring save the cost of plastering, the appearance of the ceiling being sufficiently pleasing.

Floors are constructed on this sys-

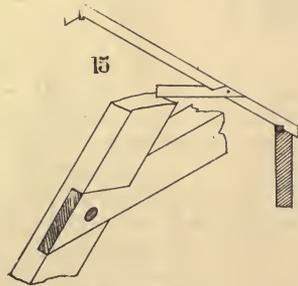
tem with great facility and dispatch, and are said to be more sound-proof, lighter, and as strong as solid concrete.

Fig. 13 represents a fire-resisting floor, somewhat similar to Fawcett's, the difference being Fawcett's tubes are laid diagonally on plan.

SECTION IV.—ROOFS AND ROOFING MATERIALS.

It is not our intention here to go into the question of the construction of various forms of roof, because in the houses we are treating of they of necessity are of a simple character.

The simplest form, namely, what is known as the "couple roof" (Fig. 14), consists of two rafters resting on their lower ends on a wall plate, and abutting at their upper ends onto a ridge-piece, to both of which they are spiked. If a horizontal beam, called a "collar," is fixed to each pair of rafters, to con-



tract the tendency of the rafters to push out the wall, the roof is then called a collar-beam roof (Fig. 15).

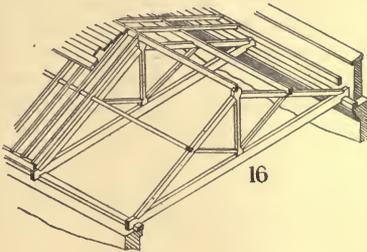
This form of roof may be used up to 15-foot span. But, in general, it is hardly safe to use it for roofs of more than 15 feet span, unless, as is generally the case, the partition walls go up, on which can be laid what are called "purlins," which are placed from wall to wall horizontally so as to support the under side of the rafters and prevent any tendency to push out the walls.

Above 20 feet span it is desirable, unless use can be made of the partition walls, to adopt a "truss," and such a one, called a "king-post" truss, Fig. 16, and consisting of a tie-beam, prin-

cial rafters, king-post, struts and purlins, may be used from 20 to 30 feet span; above which the queen-post truss must be used (Fig. 17).

When an open timber roof is adopted, as in large halls or billiard rooms, the roof is often, as it were, brought more into the room by means of a strong collar-beam of a curved form, or in other cases a hammer-beam roof may be adopted (Fig. 18).

We give below a table, which may be useful, of the least inclinations which are necessary for the different roofing materials which we are about to discuss. It must be understood that for the purposes of getting rooms in the roof, or for appearance sake, these



may be varied, but it should be understood that no less pitch should be given.

ANGLE OF INCLINATION.

Kind of covering.	Inclination to the horizon, degrees.	Height of roof in parts of span.
Copper	3.50	1-30th
Lead	3.50	1-30th
Zinc	4.0	1-29th
Slates (large)	22.0	1-5th
Slates (ordinary)	26.33	1-4th
Asphalted felt	3.50	1-30th
Thin slabs of stone or flags. 29.41		2-7ths
Pantiles	24.0	2-9ths
Thatches of straw, etc. 45.0		1-2
Plain tiles	45.0	1-2

The materials used for middle-class houses, and which are most appropriate, are tiles, slates, stone slates, and occasionally lead and copper, for small roofs over turrets and the like.

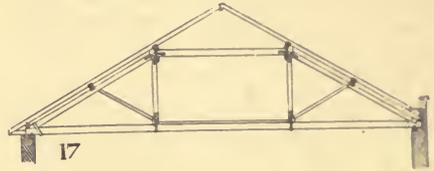
TILES.

These are of various manufacture.

Pantiles are only used for outhouses which do not require to be made absolutely watertight, and are not used in the best class of work.

Plain tiles are rectangular in shape

or may be moulded to various patterns. They are generally about $10\frac{1}{2} \times 6\frac{1}{2} \times \frac{1}{2}$ inches thick. They are now

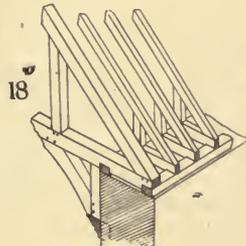


usually formed with nibs on their upper end, which rest on the tile batten and every third course only is nailed. Either copper nails, $2\frac{3}{4}$ inches long, should be used, or galvanized iron nails. The tiles should be laid so that the gauge is not less than 4 inches, to insure sound work.

Broseley tiles have acquired a reputation for being hard and impervious to moisture, and are made by several firms in the Broseley district in which the seam of clay is found from which they are manufactured. They are made in various colors, such as red, strawberry, brown, brindled and blue.

Broomhall tiles are also much used, and the makers say that they do not require heavier timbers than those for slates, and this is pointed out as an advantage. It is also pointed out as an advantage over slates that they are 14 degrees cooler than a slate roof in hot weather, and make a warmer covering in winter. Also snow is not so likely to slide off these tiles, and the cost is about equal to ordinary slating.

Very good tiles are also to be had from other districts, as in Berkshire and Kent.



Advantages.—Tiles are warmer in winter and cooler in summer, and this is a great consideration in a house and

one which ought to weigh well with an architect in designing a house.

In general appearance they are much to be preferred to slates, and give, it seems to us, a warm and comfortable appearance to a house, which is much to be desired.

The weathering properties of tiles are one of their greatest charms, and add to the picturesque appearance of a house. Who of us has not admired those lichen-covered tiled roofs which cover the old-fashioned cottages studied all over England?

Disadvantages. — These are, we should be inclined to say, none, but our practical readers might object. In a general way they are heavier and require stronger roof timbers, and of course they absorb moisture more than slates, and are therefore more liable to communicate it to the rafters, but these tendencies can be overcome by going to a good maker and insuring that the tiles are thoroughly burned.

SLATE.

Slate is a species of argillaceous stone which, in consequence of the intense lateral pressure to which it was once subject, splits easily and in very thin sheets along its plane of cleavage.

Slates are, of course, used largely and are of various sizes. A good slate should give a sharp metallic ring when struck, should not absorb water to any appreciable extent. There are several varieties which are found in various parts of England and Wales. Wales especially is renowned for its slate quarries, Bangor and Penrhyn being especially famous.

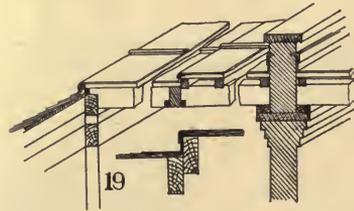
Irish slates are, as a rule, somewhat thicker and of a coarser grain. Those from Kilkenny and Killaloe are amongst the best known; these are also thicker and coarser, and are exceedingly hard and tough. Slates are also found in the north and south of England, in Westmoreland and Cornwall. Those from Ambleside and Langdale, in Westmoreland, are of a beautiful green color, and are infinite-

ly preferable to any other form of slate for the modern dwelling house.

Stone slates, or tile-stones as they are sometimes called, are very much thicker than ordinary slates and may be rather described as sandstones than slate. They were formerly largely used for roofing purposes in Devonshire, Somersetshire, Gloucestershire, at Oxford, and around Horsham in Sussex, and make a picturesque and durable roofing material, and although heavy compared with ordinary slating have the advantage which tiles have over slates in that they are non-conductors of heat and keep the house cooler in summer and warmer in winter.

Advantages. — The advantages which slates possess are principally their non-absorbing qualities and their natural lightness as compared with tiles, which enables slighter timbers to be used in the construction of the roofs with which they are covered.

Disadvantages. — In appearance they are inferior to tiles, and the pur-



ple colored or dark blue kind from Wales are especially offensive to the eye. They have no weathering qualities, being of a cold, hard and unpleasing appearance, which in a climate like England is very depressing. (These remarks do not apply to the green variety of Westmoreland, etc., or to the stone slates described above.) Another objection to slates is that they are conductors of heat which makes the houses roofed with them cold in winter and hot in summer, which is a serious drawback when, as is generally the case in a country house, we have bedrooms in the roof.

LEAD.

Lead is not much used for the class

of houses about which we are writing, but is occasionally required for flats, etc. On reference to the table above it will be seen that it should be laid at a low pitch; when it is placed otherwise, it is liable to "creep" or "crawl" down the slope of the roof by the action of the sun. Lead is heavy and the timbers must accordingly be made sufficiently strong. It is laid in widths with the edges between the two sheets dressed over semi-circular wooden rolls, about 2 feet 3 inches apart, centre to centre. The "drips," *i. e.* the sinking where the overlapping of the sheets take place, are placed about every 8 feet down the slope of the roof so as to coincide with the length of the sheet of lead (Fig. 19). The lead should be left perfectly free to expand, and for this reason should only be nailed on one side, leaving the other free so that the whole sheet is able to expand. The nailing should be done with copper nails to prevent any galvanic action.

ZINC.

Zinc is laid much the same way, but as it expands more than any other metal great care should be taken that no solder, screws or nails should be used, but the zinc should be held in position by zinc clips, and should not be less than 14 gauge.

Messrs. Braby have done a great deal towards popularizing the use of zinc, and by only manufacturing the best material have done much to cause the reintroduction of the material in place of lead.

COPPER.

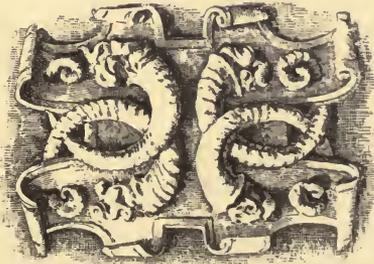
Copper is another material principally used for small ornamental roofs, such as turrets, bay-windows and the like, for which it is very effective. Copper oxidizes by the action of the air, and what is commonly called "verdigris" is formed on the surface; it is, as its name imports, of a bright green color, and forms a protection to the copper, itself preventing further oxidation.

SHINGLES.

Shingles are made of hard wood, such as oak, larch, etc. In order to be durable, care should be taken that they are split or torn and not sawn or planed. They are usually 12 inches long and 6 inches wide and about $\frac{1}{4}$ -inch thick, and laid with 4 or 5 inch gauge.

They are principally used for roofs of a small description, such as turrets to roofs, bay-windows, summer houses, boathouses, etc., and are effective in these positions.

Banister F. Fletcher, A. R. I. B. A.





Near Lisieux.

CHATEAU MESNIL GUILLAUME.

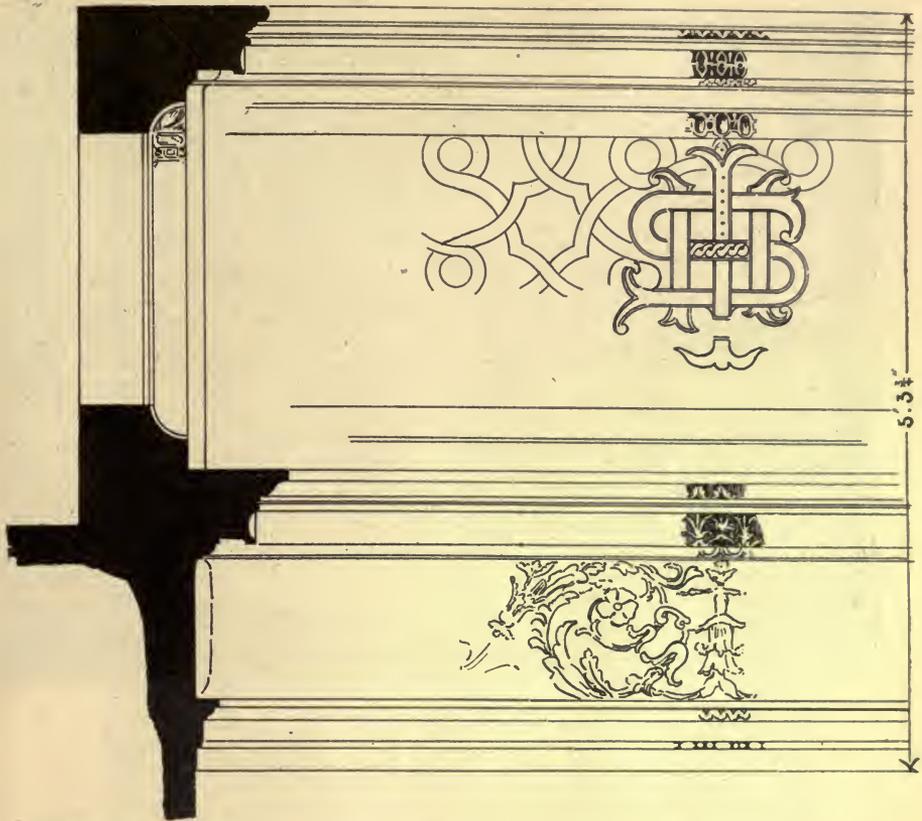
THE EARLY RENAISSANCE IN FRANCE.

IT seems strange at first sight that France, which had been the nursery of Gothic art and the home of one of its two great schools, should also, and at a very slightly later date, have become the seat of the most picturesque and graceful form of the Classic Renaissance; and yet such was the fact. By the commencement of the 16th century the Renaissance had become thoroughly established, not only in its birthplace, Florence, but throughout the Italian peninsular, and had shown that it was a style in which not only great and formal works were possible, but that it was capable of treatment in a light and tasteful way, open to the display of both delicacy and originality. Thus it was suitable to an imaginative, wealthy and progressive people, as the French were at that time.

Building, too, was passing out of the hands of the ecclesiastics into those of the rich nobility, and a period of comparative peace and ease was tending to the erection of comparatively unfortified châteaux, more suitable for the entertainment of large numbers of guests than for purposes of defense; and a departure from the Gothic methods of building, so closely associated in previous centuries with the erection

of the great cathedrals of the country, was natural, and almost to be anticipated. Methods of planning, however, which had grown with the people and had been found suitable for their needs were not to be so easily cast aside as systems of decoration, and the result was that which is the delight of the modern seeker after the architecturally beautiful—the French châteaux of the time of François I. and subsequently, built upon Gothic plans with Renaissance ornaments of the most refined and delicate order.

But yet there was a little ecclesiastical work done, and it may be well to consider it before turning to the secular. Two churches, St. Eustache and St. Étienne du Mont, were erected in Paris at this time, the former a curious, lofty and inartistic pile, with attenuated shafts and pilasters designed in a manner suitable for small wood carving and executed largely in stone; the latter an incongruous mixture, picturesque by moonlight but utterly confused when viewed in daytime externally, while internally evincing Gothic unity of composition combined with Renaissance forms—though the pointed arch occurs round the channel. Its principal architectural feature, however, is the unique



St. Étienne du Mont, Paris.

DETAIL OF PARAPET—ROOF LOFT.

rood screen, with its flat elliptical arch of 27 feet span between two circular staircases, a portion of the detail of which is illustrated, and which bears the date of 1600 upon the underside of the keystone. It is a marvel of constructive masonry and full of instructive detail—instructive as showing how pliable are classic forms of ornament capable of original and artistic treatment such as is adapted to modern needs—the needs of the late 19th as of the late 18th century.

Outside of Paris, however, no new churches of the early Renaissance are found, but here and there additions have been made and repairs executed in the new style, the best-known example being St. Pierre at Caen, with its flimsy, wedding-cake like ornament. Much better is the southern side of the nave of the little cathedral

at Guingamp in Brittany, where the native granite, necessarily used, has called for more solid, if decidedly quaint treatment, the effect in the western doorway being somewhat similar to that of Spanish work.

Somewhat more of the character of St. Pierre at Caen are the little Renaissance door, niche and buttress introduced at the west end of the south aisle of that little church of many dates, St. Alpin, at Chalons-sur-Marne; only in that example the slender ornament is not overdone, and serves but to accentuate and to enrich the plainer work around, while the flat mouldings and general refined delicacy of the early Renaissance contrast most markedly with the forcible rolls and hollows of the early Gothic central door.

Of church furniture, altars, screens,



WEST DOOR—GUINGAMP CATHEDRAL.

doors and other movable fixtures, there are naturally many more examples, almost invariably extremely rich and beautiful. Of these, the altar in the north transept at Dol Cathedral, and the oak doors of the cathedral at Beauvais, and of the Church of St. Maclou at Rouen, are sufficient to give as examples, the former almost mistakeable for early Florentine, and the doors more wealthy in deep art enrichment and more characteristically French; but all good. The doors of St. Maclou, however, are later than the others, and so less made up of the elaborate canopy work of the early and middle 16th century, while more square and solid; for the canopies were relics of the previous Gothic style.

But in spite of numberless similar examples, it is in civil buildings mainly, as has been already said, that the influence of the Renaissance is seen, and to them it was apparently best suited. The châteaux are the best

known buildings, large, imposing, often rambling edifices—according to whether they were early or late, and of one only or of several periods; but, passing by those whose names are household words, and whose photographs everyone has seen, such as Blois, Chambord and Chénonceau, three typical examples only can be mentioned here.

The Maison Fontaine Henri, near Caen, the seat of the Marquis de Cornulier is, if small, one of the most beautiful little erections on the continent, its charm being considerably enhanced by its lovely situation upon a wooded bank, reminding one of Heidelberg; its massing being so picturesque and thoroughly in keeping with the sylvan scenery. It is a jumble of high-pitched, almost perpendicular roofs, and tall dormers and chimneys rising above a wall of irregular plan, itself encrusted with rich ornament. Most of this, like



Chalons-sur-Marne.

WEST DOOR—S. ALPIN.

the general arrangement, is late Gothic, rich traceried panelling and strings of crisp cut foliage, with transomed and mullioned windows, square headed or with the upper angles rounded off, and having interpenetrating mouldings, the ribs of which are each carried on a separate base; while imitation buttresses and ogee-curved hood-moulds, as well as traceried parapets go to complete the tale of Gothic features. Yet combined with these are slightly projecting pilasters, and panels and friezes carved in low relief with acanthus and anthemion scrolls, in which grotesque animals and birds are worked, and framing sculptured medallion portraits, the production of Renaissance workmen employed sim-

ultaneously, apparently, with those of the Gothic school; while superimposed orders rise up one side of the building, and the little well-head is purely Classic—freely treated Doric, beautifully proportioned, even though the rules laid down by the great Italian masters were considerably departed from.

In the time of François I. the Renaissance became thoroughly established, and it is to that monarch and his nobles that we owe the foundation of all the most important châteaux. He, himself, loved best that built for him in the midst of the forest at Villers Cotterets, in the north of France, but unfortunately there is not much of it left now to attest its former grandeur.



SOUTH DOOR—BEAUVAIS CATHEDRAL.

it having suffered greatly from the British army after the battle of Waterloo, and during subsequent events. Now, a "Maison de retraite," or species of government almshouse for old people, has been erected upon its site, the old front, throne room and two staircases, or so much as remained of the original building, being incorporated in it, carefully repaired and restored where necessary by the supervising architect.

The little sketch accompanying this gives a fair idea of the decoration, the shell ornament over the niche, the Salamander (the emblem of François I.) in the pediment, and the small nude figures on the pediment, together with

the exquisite proportioning and modelling of the parts, being characteristic of the entire period.

A little later and the châteaux, particularly the small ones, like that of Mesnil Guillaume, near Lisieux, reverted to the square "keep" plan of the Gothic castle—or, perhaps we may say more correctly, were built on the lines of the square courtyard and palaces of Italy, with the addition of an external moat. Heavy cornices now became the fashion, under the heavily projecting eaves, and the ornament deteriorated, following the usual course of the Renaissance alike in Italy and France and England; but yet the large and square low building, once more of



Near Caen.

WELL-HEAD—MAISON FONTAINE HENRI.

semi-military character, still possesses unity and picturesqueness, and the lack of good detail in stone or wood is frequently compensated for by charming bits of ironwork.

Of less importance than the châteaux, but yet quite as characteristic of the times, are the buildings pertaining to the municipalities, which in France, as in their neighbors on

north and south—Italy and the Low Countries—were rising into great commercial importance. Everywhere trade was flourishing, and, as a natural sequence, everywhere there was much building of a sumptuous kind. In Rouen alone, most mediaeval of French cities, there are two well-known examples of the François I. period—the Grosse Horloge and the



Rouen

HOTEL BOURGTHÉROULDE.



Reims.

HOTEL DE VILLE.

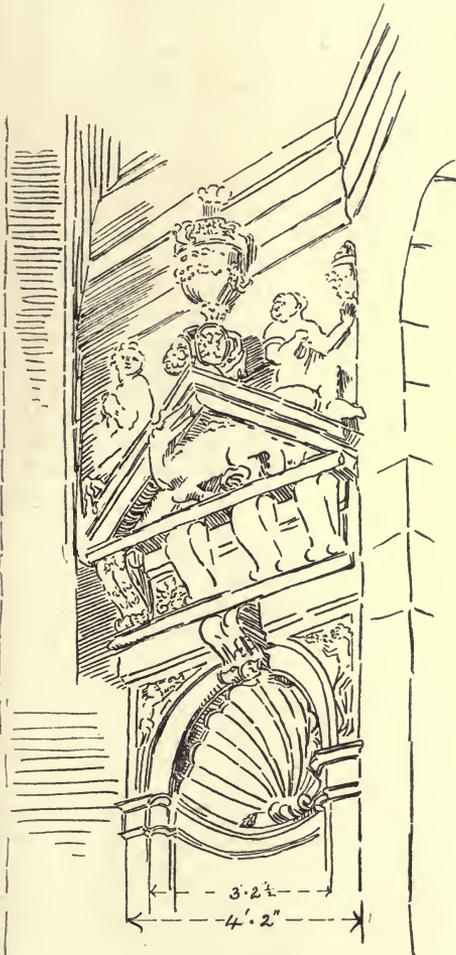
Hôtel Bourgthéroulde. The former of these consists of an arch over a narrow street, supporting the great clock from which it takes its name, and, with its flanking walls, forms but an adjunct to a yet older building, of

balancing in perfect harmony. The latter, the Hôtel Bourgthéroulde, is literally encrusted with sculptured ornament, executed in the soft limestone of the district which is decaying rapidly. A famous series of panels represents the meeting of François I. with Henry VIII. on the Field of the Cloth of Gold, and contain a great number of contemporary portraits of the persons who took part in that event; but the architecture, though exceedingly elaborate, can scarcely be considered to be true, as the design is more suitable for execution in wood than stone, turned, or apparently turned, balusters being introduced in the window jambs to serve the purposes of attached columns. It is a trick which of late has found much favor in England, especially with workers in terracotta—or, possibly, an error of judgment rather than a trick, due to want of consideration of the treatment demanded by the material being dealt with more than any deliberate intention to use ornament only truly applicable to a material which could, in actuality, be turned in a lathe, and so to deceive the unwary into the idea that stone and terra cotta were capable of such usage.

By the time the Hôtel de Ville at Reims was built in the reign of Henri IV. the builders had gone further, and were even using twisted columns with natural ivy and other creepers twining round them; but the general designs had become more formal, with an attempt to use orders in a stiff manner and in conformity with rule, the eye, and the native French perception of proportion, being no longer trusted, with the result, of course, of the production of lifeless forms in place of the imaginative and the beautiful of the previous century.

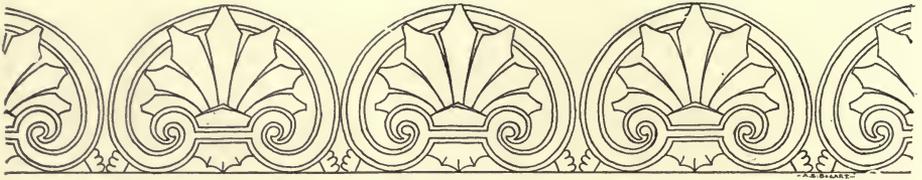
The country abounds with similar examples to those here mentioned, which are scarcely even the great examples but only such as occur in profusion almost everywhere. To see them all would occupy a lifetime—to describe them properly, many a large folio volume.

G. A. T. Middleton.



Niche in Main Recess Over Entrance—Chateau de Villers-Cotterets.

which the tower yet remains. It was erected in 1527 A. D., and is full of rich carved detail, some in low and some in high relief, and is so varied in design that no two capitals, and not even the two halves of the same capital, ever exactly correspond, though



SCULPTURE AS APPLIED TO THE EXTERNAL DECORATION OF PARIS HOUSES.

TWENTY years ago the external ornamentation of French houses was, in general, of a very sober character. Sculpture had little or no part in it. With the exception of certain districts inhabited by the nobility the house fronts were all alike. It was an unbroken dullness, an uninterrupted poverty of decoration. A few mouldings on the cornice, or some rosework or some pellets on the frieze, or a little vermiculated work on the basement, were considered marks of great luxury. To go beyond this—for a cornice to be supported by caryatides, for instance—was an extraordinary proceeding. Even to think of it was regarded as a sign of extravagance and want of sense. We will cite the case that occurred about ten years ago of a scrivener's son, who, having inherited a million dollars or so from his progenitor, narrowly escaped seeing his fortune placed under the care of a legal guardian on the simple ground that he had spent 50,000 francs on the sculptural decoration of the façade of his house. His mother pressed urgently for this measure, and it was only by a miracle that he managed to avoid losing the free disposal of his property.

Those were good times for incapable and indolent architects. Their plans were simple, and, we may add, always the same. They had not to worry about giving variety, brightness or majesty to the lines and displaying the riches of their science or the fertility of their imagination. We cannot blame them if the majority of the houses erected in the first two-thirds

of this century indicate no attempt at art and no creative power. The architects just followed the instructions of their clients, who, fonder of their shekels than of art, and only anxious about being comfortably housed, had no sense of beauty or yearning after elegance, and recognized but two good qualities in a dwelling—in the first place cheapness, and secondly, convenience. The state of things at the present day is no longer the same as it was then. Although our upper middle class have preserved a touching regard for economy—what we call *l'amour du bas de laine*—there seems to have sprung up, in these closing years of the century certain wants and desires of a more refined and elevated character. No doubt their artistic education is far from being complete; no doubt they still lack a sound conception of the beautiful, and can be induced to believe that Will-o'-the-Wisps are lanterns. Yet it is evident that the trivialities amid which they take their ease no longer satisfy them, or, to put it in other words, they are no longer at their ease amid those trivialities. Things graceful, genteel and sumptuous have ceased to be the appanage of a select few. During the last few years a comprehension of artistic things has manifested itself in everybody to a greater or lesser extent. Molière said: "Le mauvais goût du siècle en cela me fait peur." Were such an opinion expressed now, it would be uncharitable, if not unjust. Our contemporaries may not possess an exquisitely fine sense of the defects and the beauties of works of art, but

they at least show a genuine desire to acquire it. However downy and softly lined a piece of furniture may be, it is not thought much of by a Parisian of the year 1896 if its style is not harmonious or if its curves have not at least a pretension to majesty and elegance. Even in the lower middle classes we find dwellings that have the aspect of little museums. Every day these apartments are more and more crowded with beautiful objects; articles of virtu made expressly to please the eye; and it seems very natural that this growing craving for luxury should overflow the halls and drawing-rooms and display itself on the house fronts.

It might almost be laid down as a law that the outside of an edifice reveals the nature, aspect and purpose of the interior. Some of our young architects are inclined to extend this law as far as possible. They are partisans of what may be termed speaking architecture. According to them, the ornamentation of an edifice ought not only to make known its purpose, but should, besides, proclaim the owner's profession, or even some episode in his life; further, still, it should relate any historical scene that may have been enacted on the spot where the edifice is erected. Thus, M. Paul Héneux, having been entrusted with the erection of the new Town Hall at Les Lilas, a charming little place near Paris, conceived the idea of treating all the sculpture of the building with lilac. The capitals, the balcony, the frieze, and the flowerwork placed above the dormer windows, represent nothing but sprays, bunches, leaves and petals of lilac. The brackets of the windows are also formed of flowers of the same spring shrub. As to the baluster of the grand staircase, it represents a trellis with branches of lilac climbing over it. Yet the architect has avoided monotony, and has produced the most graceful variations upon the single theme adopted by him. We will also mention a house designed by M. Paul Héneux. In this case all the sculpture has been inspired by

the profession of the owner, who is a druggist. The frontals of the dormer-windows of this house are ornamented with garlands of mallows and poppies. The frieze is composed of Renaissance motives in the ornamentation of which other medicinal plants figure. Finally, on the first story there is an escutcheon that recalls the origin of the fortune of the owner, who is the disseminator of some kind of ointment or elixir. Not far from this house—a fact which tends to prove that this style of speaking sculpture is spreading in Paris—there is another dwelling, belonging to the Abeille Insurance Company, all the decoration on which consists of bees, hives and honey-combs. In an adjoining street a large export house has pilasters ornamented with Mercury's wands and a frieze representing exotic fruits and plants, while the caryatides of the two large doors at the entrance stand for Europe, Asia, Africa and America. No doubt this sort of decoration may appear somewhat specious; but however specious it may be, it is sufficiently interesting, and already sufficiently common, to justify our mentioning it here.

A hankering after novelty, a desire to have something that has not been seen before, is beginning to get possession of us. Quite the opposite of our fathers, who, with few rare exceptions, took fright at the slightest attempt at originality, we all try more or less to do something that is out of the common. It may be that in so doing we follow the example and the impulse which have reached us from the New World. It is well to note, also, that in consequence of the teachings of Gustave Flaubert and Paul Verlaine, of Carpeaux and Auguste Rodin, a triple revolution has taken place in France—a revolution in literature, in painting, and in sculpture. Our minds and our eyes have become weary of stale styles, and at a time when all the arts are being rejuvenated our architecture also has felt the need of new life; it realizes the necessity of going forward at a moment



FIG. 1.

when the Unknown is retreating step by step before the advancing sciences.

We do not know whether our architects have yet attained any great results, at least in their general plans. A sort of fatality causes them to stumble incessantly against the solemn five orders, and, notwithstanding all their efforts they fail to free themselves from the ancient styles. Let us, however, congratulate them upon having discerned amid those old styles the purest and most harmonious of them, and upon having preferred above all others the admirable influences of the Gothic and the Renaissance. After all, even if our architects are most frequently inspired—and sometimes happily inspired—by these two styles, they take care not to copy them servilely. "If we always do the same thing," said one of them to us wittingly, "we don't always do it the same way." Hence result constant attention to motives of detail and an endeavor to vary the ornamentation of new houses failing variation in their structure.

Persuaded that the view of a thing

is far more eloquent than a description, however minute and precise it might be, and especially so in regard to our present subject, we should have liked this article to be illustrated by a very large number of photographs. Unfortunately, some of the most artistic Paris edifices are located on avenues and boulevards, and the trees that line these boulevards and avenues have in some cases prevented our photographer from taking certain negatives that we desired to have. Still, we are convinced that the series of photographs here reproduced will give a sufficiently clear and synthetic idea of the sculptural ornamentation of the exterior of the houses now being constructed in Paris.

Our first illustration represents a private house in the Gothic style. It attracts and charms the eye by its graceful and harmonious aspect. The architecture is at once picturesque and logical. The details of the ornamentation are in accord with the whole work. The chambranle of the door with its sober and elegant archivolt,



FIG. 2.



FIG. 3.

and the chambranles of the windows, are quite in the style from which the architect has drawn his inspiration. The frieze is very handsome, and is skilfully broken by the balcony, which is supported by a console resting on a small column similar to that of the door arch. The architect might have increased the number of the figures, but he has had the good taste to leave this display of luxury for cathedrals, contenting himself with a cat, a gargoyle and a watch-dog. We even regret that the last named, who emerges symbolically from his niche, should have been placed on the first story. From a decorative, as well as from a symbolical point of view, he would have been more effective between the door and window of the ground floor.

There is, perhaps, no art that requires more delicacy and *finesse* than the art of ornamentation. Everybody appears to admit the principle that the ornamentation should arise out of the general form itself; that all the special details must be in harmony with the

original idea and contribute to the synthetic aspect. Everybody seems to admit this principle, which is not merely a principle of architecture, but of art also; and yet, in practice, we often see this undeniable principle ignored. Thus, a number of Paris houses are so wanting in unity that one would imagine them to be the result of two distinct operations: first, the building, and afterwards the ornamentation. This error arises, no doubt, from an excess of ingenuity on the part of some of our architects, who unwittingly allow themselves to be dazzled by the fascination of the detail and do not sufficiently take into account the essential point, namely, the general form. Our second illustration affords an example of this kind of mistake. It represents the house that was formerly inhabited by Madame Sarah Bernhardt. This abode of the eminent tragédienne was in the Louis XIII. style, brick and stone. A very picturesque part—too picturesque even—has been added as an afterthought. That is evident. All



FIG. 4.

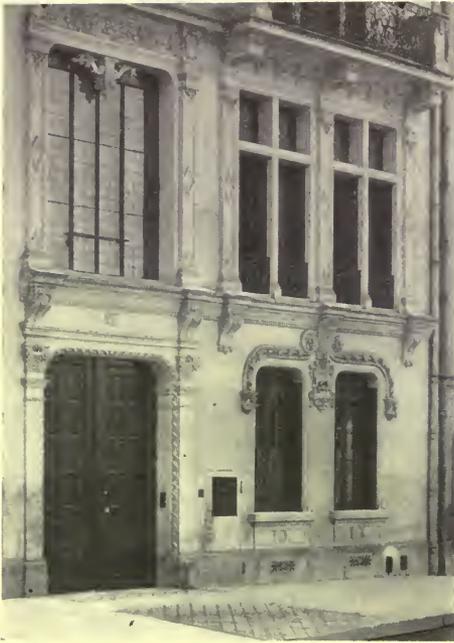


FIG. 5.

the sculptural and ornamental portion has been treated by a man who was undoubtedly clever and imaginative, but who attached no importance to the original conception, and has consequently disfigured, or at least debased it. Certainly, this house may please at first sight by its very strangeness, and some of the details of its decoration, taking them apart from the rest of the edifice, are worthy of attention. Yet it is none the less true that the work is lacking in homogeneity and connection. The numerous affected little motives, the turret, and the inaccessible balcony—all this is vaguely inspired by the house of Jacques Coeur, at Bourges: it is illusory and clashes with walls so different in style.

Nor can we approve of the mixture of luxury and rustic simplicity shown in the house pictured in our third illustration. But the purpose of this article is to give as exact an idea as possible of the external ornamentation of Paris houses, and not to confine ourselves to a few preferred examples. Hence, it was useful to include here a

specimen of a kind of edifice that is held in some favor in this city. Leaving our readers to make their own commentaries, we will single out the Gothic crown of the left-hand window, the large window with its iron lintel, and the two salamanders, also in iron, that decorate the bresssummers. Let us also draw attention to the four stone brackets dressed like rockwork, the two on the lower story supporting two athletes, and those on the upper story, two dogs sitting with a nonchalant air.

The Louis XV. house, the characteristic part of which is depicted in our fourth photograph, is treated simply and in perfect taste. While drawing inspiration from Blois Castle, the architect has displayed a delicate and circumspect art of his own. The balcony is really remarkable. It is charming in every detail. The three little monks that support it and behind which fabulous small animals are intermingled, are sculptured with great care, as are also the gargoyles and the graceful moulding which extends over



FIG. 6.

the voussoirs of the door. We would point out, too, that the window grating is a delicious piece of ironwork. Such a dwelling might well take the fancy of one of our transatlantic readers. If so, and if our reader should find the house too small, it would be easy for him to enlarge it by placing to the left of the door a building similar to that on the right. The house would thus be increased by more than a third, and would lose nothing thereby; it would, perhaps, even gain in elegance and harmony.

The façade shown in our fifth illustration appears to us equally pleasing. It is in a very agreeable and very graceful form of the gothico-renaissance style. The proportions between the full and the open parts are exceedingly happy. The sculptures on the frieze, on the pendentive of the left-hand window, and on the consoles, are elegant and full of nobility. The architect has disdained ornament for the mere sake of ornament. Although he has paid great attention to the window frames of the ground floor, it is not at the expense of the general appearance; and if we detect a certain excess of refinement in the fabulous animal that bears the escutcheon and in the volutes flanking it, we must admit it is not very loud or affected.

Our next photograph shows two ground floor windows, the ornamentation of which recalls in certain points the ornamentation of the two windows belonging to the preceding illustration. This enables us to draw a curious parallel. Evidently the architects of these two houses have both bestowed great attention upon the sculptural decoration; but it is not difficult to gather that their efforts have not been equally successful. The dragon and the little imps which, in our sixth illustration, bear the platband and the balcony, are certainly very delicately worked; but they are somewhat out of place beneath a balcony and a plain moulding in the Renaissance style and above two windows of Gothic architecture. One is also astonished to see those balcony consoles, which are modern, thus

bringing together, without transition, three styles that clash terribly. Therefore, at the risk of repeating ourselves, we will again give a word of warning to those who, unreflectingly pay so much attention to the application of vain arabesques, and who, puerilely absorbed by this captious decoration, lose sight of the general plan. We welcome as cordially as anybody all efforts that are really new and original. It is, however, necessary, that this originality should consist in something besides haphazard amalgamations of dissimilar styles. If a man appeared in public dressed from neck to knees like a page, with a high hat and Wellington boots, would that be sufficient to justify the assertion that a new kind of costume had been invented? Would such a person even be considered original? In the same way, before thinking of any ornamentation whatever, it is necessary to create the form, and then, when the form is found, it has to be ornamented in a logical fashion—in such a fashion that form and ornamentation shall be in absolute harmony, and even appear inseparable and inevitable. Artists in general, and particularly architects, who are not sufficiently impregnated with this truth, expose themselves to serious mishaps. We greatly fear that this is the case with the architect who is responsible for the construction of the house the astonishing façade of which is shown in our seventh illustration. Verily, this architecture is quite modern—modern at all events in the sense that it does not resemble anything done previously. But if by modern architecture is meant architecture appropriate to our present needs and tastes and taking account of recent inventions—telephones, lifts, etc.—then the example in question is as little modern as could be. Those four consoles in imitation of the buttresses of a church do not serve any purpose whatever; neither, for that matter, does the escutcheon of doubtful heraldry supporting a column which goes with the balcony above about as gracefully as a stove pipe



FIG. 7.

would do. Those ornaments near the capitals are without motive or use, and the rest of the decoration is not much better. One may well ask what aim the architect of this building had in view. It is difficult to believe that he wished to produce something artistic. Perhaps he desired to revive the art of decoration. If so, we can only hope that he will be better inspired in his future efforts.

The house shown in the next photograph (No. 8) seems to us not less original. But, at least, this one is the work of an artist and it responds, also, to a special taste. All the private apartments are together; the dining-room and smoking-room on the ground floor, and the bedrooms at the top of the house. The immense window, which lights a large hall, is treated in the Renaissance style, and the harmony of all its details is perfect. We would specially point out the pleasing proportions of the mullions and their pilasters. The delicately sculptured frieze represents cupids who are waving streamers,

which they tie and untie around beautifully chiselled medallions. The garret window, comprising two stories, is very elegant with its Corinthian pilasters and capitals, its frieze and its fronton, in the center of which appears a head bent inquisitively towards the street. This garret window finishes off the house in a very successful manner. It will be remarked that only the windows and their frames are decorated, the walls remaining plain in order to heighten the effect of the said windows and frames. Of course, such architecture could not be resorted to generally; but a building of this kind is eminently suitable for a collector—for an artist who desires to devote the best part of his house either as a splendid gallery for his collections or as a studio for himself, where his tastes and his work as an artist impel him to pass the greater portion of his time.

Our ninth photograph shows an abode that is evidently more practical, generally speaking, than the preceding one. The style is rather mongrel,



FIG. 8.



FIG. 9.

but the architect has at all events had the skill to combine out of dissimilar motives a sufficiently harmonious whole. Apart from those unsightly chimneys that disfigure it, the house is, in the main, pretty and pleasing. The projecting Renaissance turret resting on consoles has an exquisite effect, and we see no reason to reproach the architect for having sought inspiration, for the treatment of the upper part, in the skylight of the staircase of the Ecoville mansion at Caen. It is a pity that he did not also copy the fine decorative chimneys of former times and spare us the sight of those horrid modern stove-pipes!

In our tenth illustration is seen a specimen of a kind of construction which, treated with discernment, may be made very elegant. In the present case the architect does not seem to have succeeded in giving his work the air of distinction at which he certainly aimed. He has fallen into the usual error, namely, the dangerous confusion of styles. Taken by itself, that Renaissance attic story has a hand-

some appearance. The niches and the pilasters are quite in harmony. The motive above the attic and which is surmounted by the arms of the owner, is not without charm, while the choice of the three statues, their attitudes and their execution bear witness to a genuine sense of the beautiful. Why is all that marred by the remainder of the building? Why is the ornamentation entirely confined to the upper part of the edifice? Above all, why is this upper part, which is in the Renaissance style, placed over a basement and a first floor in a Louis the Eighteenth style? One would say that the work was conceived at two different times, by two different architects, and that, for some inexplicable reason, the two parts were joined together. In acting thus, it is true that a certain amount of talent can be displayed, but it is not architecture.

We have said that houses surmounted by an attic story afford scope for considerable elegance. They have



FIG. 10.



FIG. 11.



FIG. 12.

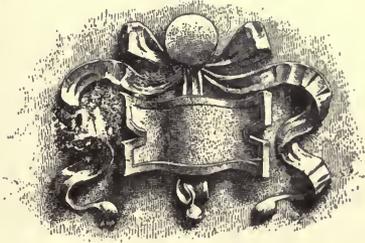
besides, one incontestable advantage; they help to hide those wretched modern chimneys of which we have just spoken. And it is really necessary to disguise them, seeing that we seem to have forgotten the art of rendering them attractive by decorations *ad hoc*. With a very few exceptions, the roofs of Paris houses have now a deplorable aspect. An idea of this can be formed from the photograph (No. 11), which we put before our readers. It has seemed to us that it would be rather amusing to place alongside of this view another one representing some roofs ornamented with the sort of chimneys that used formerly to be put on first-class houses. This simple parallel speaks for itself and will suffice to show what talent our predecessors were able to bring to bear upon even the most ordinary things. (Fig. 12.)

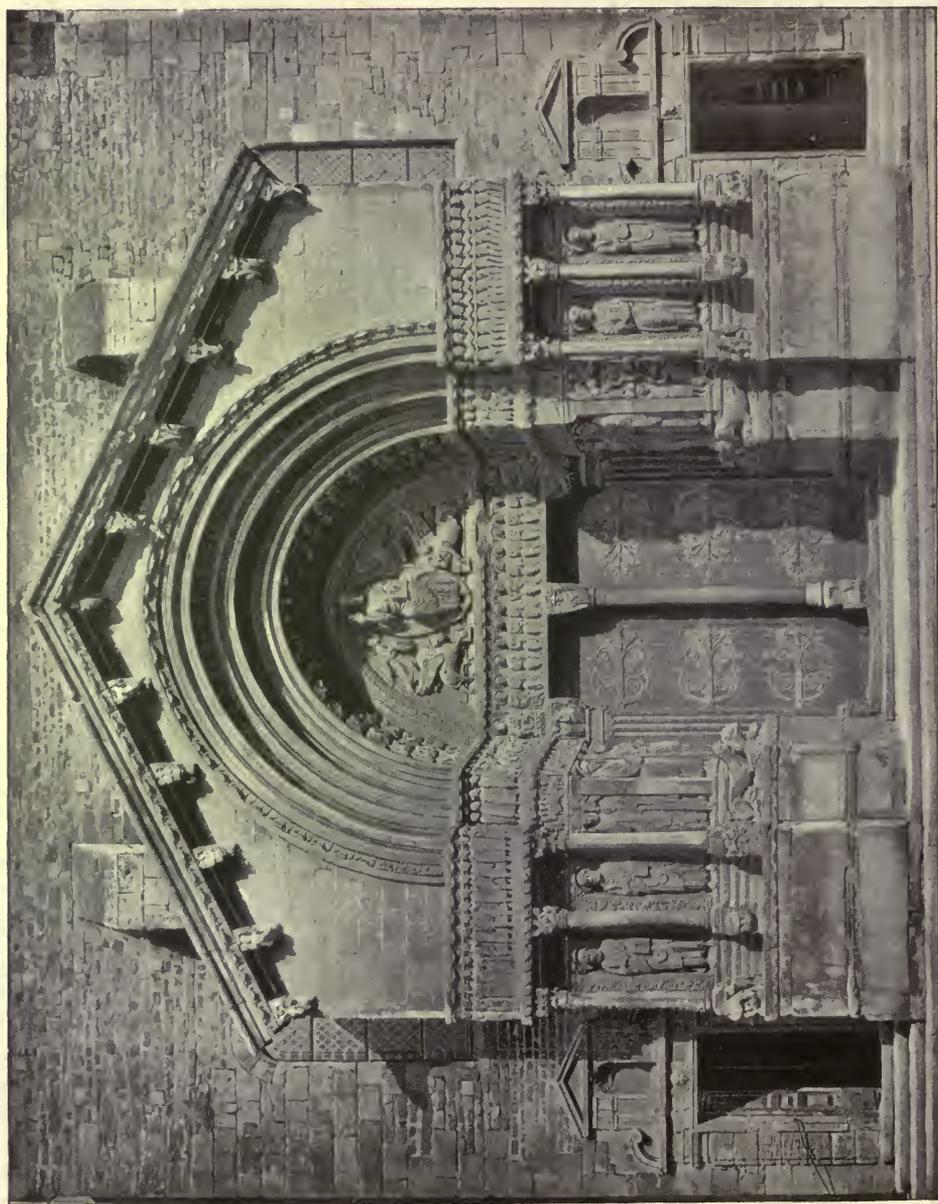
Cannot contemporary architects do as well as those of former generations? In view of the new needs, and

with all the new resources of modern life, will no young architect of talent come forth and endow us with a style that shall be in accord with our tastes and requirements? The houses of today are provided with lifts, telephones, electric bells, and the electric light; and if, on the one hand, it is depressing to give them the appearance of a factory, it is, on the other hand, an outrageous anachronism to surmount them with an Ionic entablature, for instance, or a Byzantine dome.

Upon the whole, modern architects seem to us to be remarkably well-informed in regard to the ancient styles. They are past masters in the art of appropriating. They also know, when required, how to erect works and manufactories arranged in accordance with the most practical ideas of our day. This being so, we think that the time has come to take into account beauty as well as utility—in a word, to proceed synthetically.

Fernand Mazade.





WEST PORTAL, CATHEDRAL OF S. TROPHIME, ARLES.



S. TROPHIME, ARLES, NORTH GALLERY OF CLOISTER.

FRENCH CATHEDRALS.

Part VIII.

THE CATHEDRALS OF PROVENCE.—IV.

I.

THE Cathedral of S. Trophime at Arles is at once the most famous and the most important of the cathedrals of Provence. Few cities of France have had so varied a history as Arles. It reached its utmost splendor under Constantine, when its population exceeded 100,000, though to-day it does not equal a quarter of that number. In 879 it became the capital of the kingdom of Arles, and in 1150 a republic, and its people to-day still retain many peculiarities of appearance and of disposition that attest their ancient lineage. Always the centre of active life, it was natural that the cathedral church should be a structure of unusual interest. An archbishop no

longer occupies its episcopal throne, but its great church still fascinates the student and the traveller, delights the artist and the seeker after the rare and the beautiful. Its western portal is one of the most sublime products of the sculptor's art in the south of France; its cloister is scarcely less renowned and beautiful; its nave is a most interesting type of Provençal Romanesque, but its late Gothic choir destroys the symmetry of the ancient fabric and introduces an unpleasant note of discord into its stately interior.

Called S. Étienne prior to 1152, when the remains of S. Trophime, the Apostle of Arles, were transferred in solemn state from the church of S.



CATHEDRAL OF S. TROPHIME, ARLES—WEST FRONT.

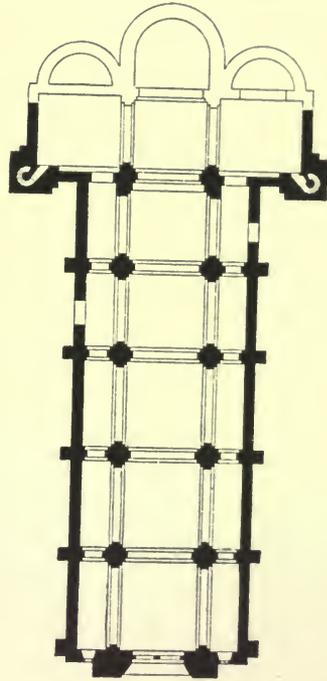
Honorat to the cathedral, which then assumed its present name, the history of the church goes back to the time of Constantine. At least it is known that a church of St. Étienne existed in Arles as early as the first quarter of the fifth century, and it is not unreasonable to infer that it had been in existence for some time before. Although its early form has been utterly lost to us, the primitive church must have been an edifice of considerable importance. Three councils of the early Church were held within its walls, in 314, 442 and 451, which brought together prelates and clergy from many parts of the Christian world, testimony alike to the importance of the city and to its religious activity. The most important of these councils was the first, at which the Donatists were condemned. In this church, also, S. Augustine, the Apostle to England, was consecrated bishop, and its early history is filled with the names of holy saints, many of whom have left their mark upon the church at large, as well as upon the city of Arles.

II.

Of the date of the building of the older parts of the present cathedral nothing definite is known. M. Révoil does not hesitate to attribute it to the ninth century, and other writers have dated part of the walls of the façade and of the aisles to an earlier period, with a general reconstruction in the eleventh century. The earliest authentic date we have is 1152, when the name was changed to S. Trophime. The entire rebuilding of the choir, by the Cardinal Louis Allemand, begun in 1430, totally modified this portion of the edifice, but the nave and aisles, and parts of the transepts still retain their Romanesque character. In plan the church closely resembles the cathedral of Vaison, differing in its larger dimensions, and in having shallow transepts, to which were applied semi-circular apses that, with the central apse, completed the east end, and all of which disappeared in the building of

the new choir. It was thus almost identical with the Cathedral of S. Paul Trois Châteaux, with which it has many features in common.

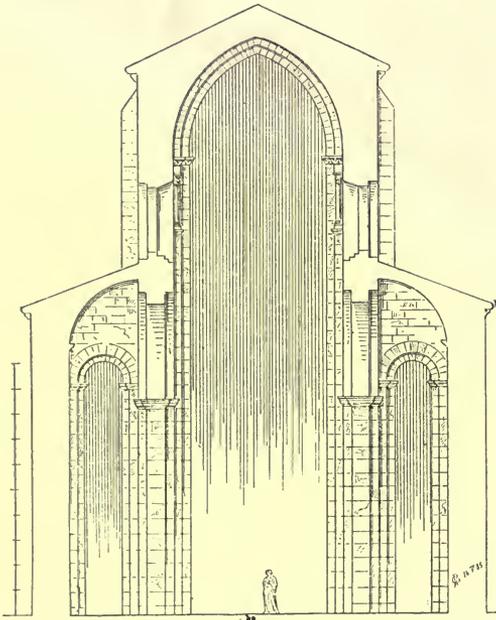
The nave consists of five bays with a pointed tunnel vault, and with narrow aisles, whose vaults have a quarter-circle section. A transverse section shows a striking similarity with the cathedral of Vaison, but the proportions are different. All parts are loftier and narrower, the nave vault rising above a sort of clearstory over the aisle, but the structure is the same, and its position in the chain of Pro-



Plan of the Cathedral—XII. Century.

vençal churches not less apparent, though its proportions give it a loftier aspect and a more impressive interior than any other church in Provence. The piers, as in other aisled churches of its epoch, are formed of an assemblage of rectangles, a broad pier with a projecting centre carrying the double arches of the nave vaults, which like the piers, are without ornament.

There is the suppression of ornament usual in the churches of the eleventh and twelfth centuries, the only relief being a band of acanthus leaves at the base of the vault and around the piers,



Transverse Section.

where it serves as a capital. The aisle piers, which form part of the main piers, have small plain moulded bands for capitals, stopped by the piers of the nave arches. The outer piers of these nave arches are cut away for small columns, as in the cathedral of Avignon, with capitals surmounted by square blocks, the fragment of an entablature. The arches between the nave and aisles are pointed, except in the fifth bay, where they are round. A small round-topped window of the eighteenth century in each bay forms a clearstory and lights this solemn and majestic interior, whose fine proportions and beautiful effect does not need enriching ornament to give it grace and interest.

The aisles are narrow, with a loftiness that adds to the apparent restriction of their width. Double round arches resting on plain piers, with

small moulded capitals and without bases, as the main piers, divide the bays. Chapels, that, at various times, have been added to the aisles, destroy the original character of this part of the church, which has no longitudinal or wall arches usual in this type. Beyond the fifth bay of the nave is the crossing with a dome of the Provençal form, encased in the tower, which is one of the most striking central features of any Provençal church.

The pointed double arches that enclose the crossing are much lower than those of the nave, but as seen from the western end the nave appears to be closed by a low arch with a wall above it. The nave vault ends against this wall on a single arch, supported by a pier as before, but whose upper part is cut in half with a small outer column, completing the resemblance to the double piers. This construction has suggested the idea that the crossing bay is a survival of an earlier church, which could not be removed on account of the weight of the tower. But there is no reason to date the tower earlier than the nave, and so lofty a structure on the crossing is without precedent in earlier buildings in Provence. On the contrary, this lowering of the crossing arches is characteristic of many Provençal churches, and may be seen in the cathedrals of Vaison, Sisteron and S. Paul Trois Châteaux, though in none of these is it so marked as in S. Trophime. It should be remembered, further, that the nave of this cathedral has the highest Romanesque vault in the south, and its builders may well have hesitated, when they determined upon a tower, to carry its weight on arches as lofty as those of the nave.

Within, the crossing has the usual small pendentives, the wall between them and on them inclining forward to form a circle, which is merged into a very flat dome without the intervention of a string course. The west, north and south walls of the transepts belong to the Romanesque cathedral, but they have been so much modified internally that scarcely more than their pointed tunnel vaults, at right angles

to the nave, remain to show their original form. Nothing now is left of the ancient eastern part of the cathedral.

III.

The centre of the west front is filled by the famous portal, one of the most splendid monuments in the south of France, and one of the finest portals of the middle ages. This superb structure is applied to a wall otherwise barren of ornament, and offering a striking contrast to its rich and elegant detail. The outline of the façade tells the story of its internal structure. In the centre is the nave wall, utterly plain, with a low gable having a narrow cornice of dentiles, whose intervening spaces are filled with carved designs. This cornice has a short horizontal member returned at each side. The clearstory end of the wall is flanked with shallow buttresses, continuous with it, and in the centre is a modern round arched window, with a rectangular one beneath it.* Below, on each side, is the sloping roof of the aisles, with similar cornices. The upper part of the façade wall is built of larger stones than the lower, and is partly covered with plaster.

In the lower part of this simple wall is the porch, which is slightly wider than the nave. On each side is a small and ugly doorway built in the seventeenth century, and above, lighting the aisle, a round headed window. All this plainness helps to bring out the splendor of the central portal, which is so grand and beautiful as to have the effect of being placed against the church, rather than an integral part of it. But we need not quarrel with such a detail in the majestic effect of this gigantic work.

The portal is formed of a broad arch, pointed, yet so near the half circle as scarcely to be visible in the outer

*Chapuy's drawing, made in 1829, shows only the round head of the upper window. The apex of the gable is surmounted by a high, slender, pointed arch with a gable. The west end of the south aisle wall is pieced out straight to the adjoining houses, from which rise a small flying buttress behind the end wall buttress. All these unimportant additions were removed in the restoration of the cathedral by M. Revoil, who gave it, as far as possible, its primitive form.

arches save in the geometric elevation. The under surface is decorated with a double row of angels—the upper part of the body only—representing the heavenly host in the scheme of the Last Judgment, which is the theme of the sculptures. Outwardly the arch is extended in a series of finely moulded rolls and hollows, with an outer fillet decorated on its inner surface by a band of foliage. This series of arches is carried on a rich substructure, whose inner wall is treated with pilasters with statues between them, while without, and extended beyond the arch to the ends of the porch, is a short colonnade of three columns on each side, whose bases stand on richly carved pedestals, which, in their turn, stand on a high plain base with mouldings and decorated bands. Below are the steps stretching across the whole front. Above the arch is a flat gable, with a cornice resting on large carved corbels, among which we see symbols of the Evangelists, the Lion, the Ox, the Eagle, and the Angel, while other animal heads and large acanthus leaves complete the series.

The structure of the portal is superb in its simple and direct design, but its rich sculptures make it incomparably splendid. The theme is the Last Judgment, a favorite subject for the doorways of the Romanesque and Gothic cathedrals, and the most southerly completed one in France. In its latest form, in the north, this terrific scene was confined to the tympanum; here it is spread over the whole portal, and is presented on a scale of unparalleled magnificence. In the centre of the tympanum is a majestic figure of Our Lord, seated on a throne in a mandorla. His right arm is raised in benediction, while the left grasps the Volumn or book. Around Him are the symbols of the Evangelists, the Lion and Ox below, the Angel and the Eagle above. All hold books, save the Eagle, below which hangs a scroll. These figures are not confined to the actual area of the tympanum, but project beyond it, partly cutting into the mouldings of the surrounding arch,



S. TROPHIME, ARLES, NORTHWEST ANGLE PIER WEST GALLERY OF CLOISTER.

which is decorated with a very rich series of Roman detail, the outermost being a Greek fret.

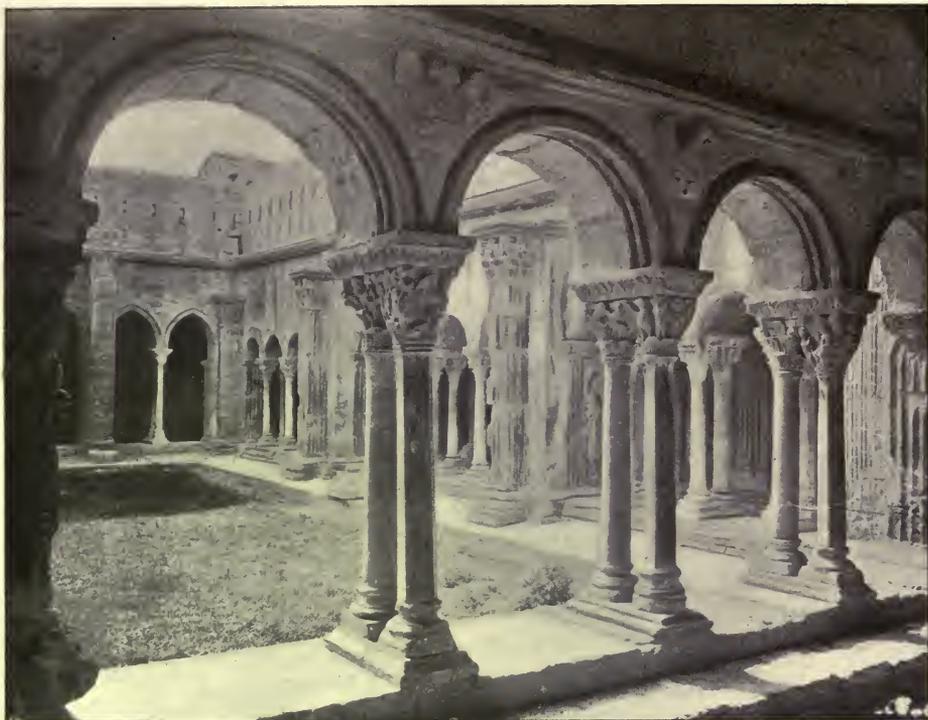
Below is a frieze, carried wholly around the porch from one end of the nave wall to the other. In the centre, under the tympanum, are the Twelve Apostles, seated on a bench, and notwithstanding their somewhat formal attitudes, characterized by considerable individuality and movement. Each holds a volume of the scriptures, but the formality of their arrangement is relieved by the different gestures and inclinations of the heads, which is intensified by the fact that while most of them are conversing with each other in groups of two, an odd figure, occasioned by making the two central ones face each other, forms part of a group of three on each side, which, moreover, are not placed symmetrically. The sculptor had, therefore, advanced considerably beyond that formal arrangement which is to be seen in many early sculptures.

Taking now the events represented in the frieze in their regular order, beginning at the extreme left of the spectator, as he stands facing it, we have, first of all, on the return end at the beginning, the Temptation of Adam and Eve. Then, immediately on the outer face, begins the procession of the Just; first women standing facing the spectator, then a body of men, clothed in identical and somewhat formal garments, and looking towards the centre of the porch. They are continued around the return at the centre, where they are headed by two crowned personages. Beyond, and on the inward return, is an angel handing a soul, represented, as usual, by a small child, to the first of three seated figures, Abraham, Isaac, and Jacob. Each holds two souls in his lap, and below their feet are small figures rising from the grave. Then come the Apostles, with a seated and majestic figure gazing earnestly towards them at their right.

On the inner return at our right is a standing angel (S. Raphael?) with a sword, guarding the gates of Paradise, and shutting out the souls in purgatory beyond it, among which are a couple of bishops. Then come the condemned in hell, naked and bound with a cord, with flames of fire at their feet. They move towards the right and fill the position corresponding to that of the procession of the Just on the opposite side. On the further return is hell itself, crowded with souls in torment, already partly consumed by huge flames. The theme, to complete the conception of the artists of the Middle Ages, is finished by two panels on the lower faces of the ends of the porch. On the left, at the beginning, is a gigantic angel weighing the souls of the departed, and on the right a huge demon, grasping two souls, with another before him, with a band of fire below. Save for these two panels, which are detached from the upper part of the scene, though doubtless with the intention of emphasizing their importance, and impressing the terror of the one and the horror of the other, this is one of the most detailed, as it is one of the most elaborate representations of the Last Judgment produced in the Middle Ages. It is thoroughly symmetrical and architectural in fulfilling its role as a sculptured decoration, yet it is distributed over a broad surface that might at first glance seem unsusceptible to such organized and harmonious treatment. Every part of the terrible story is illustrated with utmost distinctness, and the spectator has but to look upon it to understand its meaning and realize its teachings. The sculptures throughout exhibit very considerable variety and individuality; every part is sufficiently varied to give relief and change, yet the whole is entirely natural and unforced. The freedom with which the sculptor has handled his work is well illustrated in the liberties he has taken with the space at his disposal. We have already seen an instance of this in the disposition of the symbols of the Evangelists in the tympanum; not less

noteworthy is the fact that the figures in the frieze all slightly exceed the space allowed by the architectural lines, the heads rising against the lower mouldings of the cornice, which is surmounted by a band of acanthus.

The sculptures of the lower portions of the porch are not directly concerned with the subject of the Last Judgment, but each group and statue, each image and almost every bit of decoration has a meaning that raises it above mere decoration, and makes it an integral part of a highly developed scheme of sacred symbolism. The carved pedestals of the columns illustrate in picture and in symbol humanity under the law of Moses. A man, half-clothed with the skin of a beast and holding a crook, represents the first industry of mankind. His lost immortality is indicated by an ox's skull. Scarcely has he entered into life than he meets with vices, figured in the adjoining base by a group of hideous fantastic monsters. A lion's head on the next base seems to be decorative only, and introduced for symmetry between the parable of man's vices and the representation of his feebleness portrayed in the story of Samson and Dalila on the last base. On the other side of the doorway the first base shows Daniel in the lion's den and his succor by the prophet Habakuk, suggesting a contrast with the story of Samson that could not have been otherwise than evident to the contemporaries of these sculptures. A lion's head comes next, and the third column has a group of animals in combat, expressing the disorders of humanity before the coming of the Redeemer. On the return at the right are two signs of the Zodiac, the Archer and the Lion, the latter doubtless being chosen because the lion is the symbol of Arles, both indicative of the march of time. The modern traveller may see in these bases only grotesque decorations, now greatly injured by time. But they were more than this, for even the fighting animals expressed an abstract idea, and their value in the scheme of the portal is not



S. TROPHIME, ARLES, THE CLOISTER.

less notable because of their small size and relatively unimportant position.

The columns which stand on these bases are short graceful shafts with charming capitals. The outer of each group are Corinthian-like in form, and of two types, while the central ones have entwined foliage. Behind them, on the walls, is a series of panels, separated by richly carved bands, enclosing a large statue. The two end panels, we have already seen, form a portion of the scheme of the Last Judgment. The others contain, counting from the left, S. Peter, S. John, S. Trophime, S. James Minor, and S. Bartholomew or S. Thomas; on the right of the door are S. Paul, S. Andrew, the Stoning of S. Stephen, S. James Major and S. Philip. The church having been originally dedicated to S. Stephen, his martyrdom has a proper place on its portal, and the statue of S. Trophime is given a conspicuous position for obvious rea-

sons. Each Apostle, save S. Paul, who carries a phylactery, holds a book inscribed with his name and a short inscription. The innermost pair of statues on each side are within the arch, and stand facing each other. Below them, as pedestals, are huge animals typifying the heresies they have trodden under foot. It has been suggested that these statues, which are distinguished by remarkable feeling of life and action, and which are carved with scrupulous attention to detail, are later than the other part of the portal, since they are slightly too large for the spaces they occupy. But this is a characteristic of every part, the sculptures of the tympanum and of the friezes extending beyond their architectural limits also. There would appear, therefore, no room for such an opinion on such grounds.

Above the statues, and below the upper frieze in which the details of the Last Judgment are shown, is a smaller frieze, the height of the capitals of the

columns. A variety of subjects are represented in it, in a mediocre manner and with that disregard to chronology the mediæval artist was frequently guilty of. The scenes chosen are the Dream of Jacob—more likely the Dream of Joseph—the Annunciation, the Nativity, the Angels announcing the good news to the Shepherds, the Presentation in the Temple, the Purification, the story of the Magi, the Massacre of the Innocents, and the Flight into Egypt, ending with a strange collection of animals on the right.

The capitals of the piers at each side of the doorway and the capital and base of the delicate slender shaft that divides it in two are also decorated with symbolic sculpture that should not be overlooked in considering the full effect of this majestic portal.

This great work of art fascinates and delights one by the splendor of its composition, the varied imagination of the artist, the subtlety of its allegory, its superb plastic qualities, its decorative value, and the refinement of its execution. It is the work of no ordinary artist, but of a master of the first rank, who here made the work both architectural and sculptural, combining the two arts in the happiest manner. The effect is astonishingly rich and splendid, yet there is no overloading and no crowding. The great statues of the Apostles have ample room for their dignified personalities; the processions of the Elect and the Condemned move in stately symmetrical lines. A great lesson in Christian doctrine is taught in this portal; its stones, its statues, its animals, even, are alive with meaning and with truth. Yet the lesson it teaches, the truth it emphasizes, the structural work it accomplishes, is done in so orderly and sober a manner that one scarcely realizes how varied are its parts until it has been carefully and minutely studied. And if the theme and scheme are great, so also is the plastic skill with which it has been carried out. The utmost variety in expression and in attitude character-

izes its numberless statues, though within rather narrow limits. Perfect freedom in handling the chisel is not, indeed, to be found here, but great strides are made towards it. The detail of the architectural mouldings, too, is rich, symmetrically patterned, and varied.

Not the least important problem suggested by this portal is its origin. The combination of sculpture and of detail is almost without parallel. The detail is extremely rich and very Roman in character; the sculpture, in theme and application, suggests the usage of northern France, rather than the sparsely decorated churches of the south. Arles is rich in Roman monuments, and the sculptor of the portal need not have gone beyond the city for his models for architectural ornament. But nowhere in Provence are the Roman models so richly used or more abundantly employed. Obviously, only an artist who was familiar with other forms of decoration than those of Provence could have carried out such a work. Further than this it is not possible to go without indulging in pure speculation. M. Viollet-le-Duc has attributed the detail to Romano-Greek-Syriac origin, and the sculpture to northern France; but he does not explain how these influences came to be joined in this one work.

There is but one other portal in France that directly approaches that of S. Trophime, and that is the portal of the neighboring church of S. Gilles in Languedoc. It is larger, having three doorways instead of one, but neither in execution nor in idea does it equal the splendid composition at Arles. The arches are round, but the general idea is much the same as in S. Trophime. The sculptures illustrate the life of Christ, and are thus more varied than those of the other church which are chiefly concerned with a single subject. The portal of S. Gilles is probably the earlier; the great statues in the main wall are more archaic in their attitudes and costume, and the Corinthian motif appears in most of the capitals. At S. Trophime



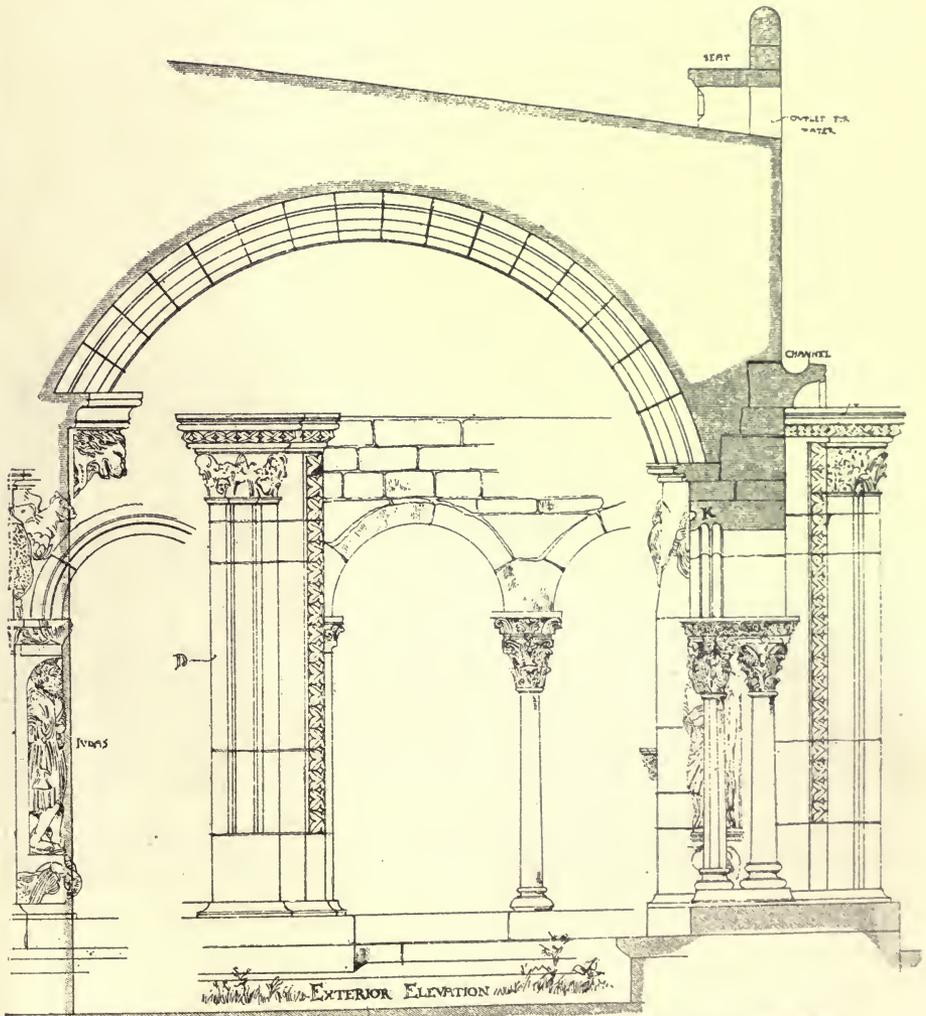
S. TROPHIME, ARLES, DETAIL OF WEST DOORWAY.

the detail, though more Roman, is worked with greater care, and the sculptures show an advance in every particular. At most, however, only a short period of time can separate these two works, both of which evidently belong to the twelfth century.

IV.

Quite as splendid, and as well known as its portal, is the cloister of S. Trophime, which is reached by a flight of steps in a narrow passage beyond the south transept. It is a slightly ir-

regular rectangle, whose north and east walls date from the twelfth century; the west was transformed in 1389, and the south was given its present aspect in the sixteenth century. The older parts justly rank among the most interesting monuments of their kind in France. The arcades consist of three wide bays, separated by piers, and each containing four small round arches on coupled columns, both piers and columns standing on a broad continuous base. The walks are covered with a rounded tunnel vault, that is stopped on the enclosing walls at a



SECTION AND ELEVATION OF CLOISTER, S. TROPHIME, ARLES—EAST GALLERY.
 Drawn by Arthur Needham Wilson. From *The Builder*.



S. TROPHIME, ARLES.—THE CLOISTERS FROM THE QUADRANGLE.
(From *The Builder*.)

higher level than its origin over the arcades, giving an elliptical or segmental section. The arches which sustain this vault rise, on the arcade side, from a projection applied to the piers between the bays, while on the enclosing walls they rest on large corbels, grotesques and animals, with small cornices of acanthus leaves that are a continuation of a plain string at the origin of the vault. A single rib runs diagonally across the junction of the vaults at the corners.

The sculptured decorations of these two galleries are amazingly rich, and rank with those of the portal in their iconographic value. In the north walk the arcade arches are plain and unornamented; in the east walk they are wider, higher and lighter, with simple mouldings on their inner edges; obviously of a slightly later date.

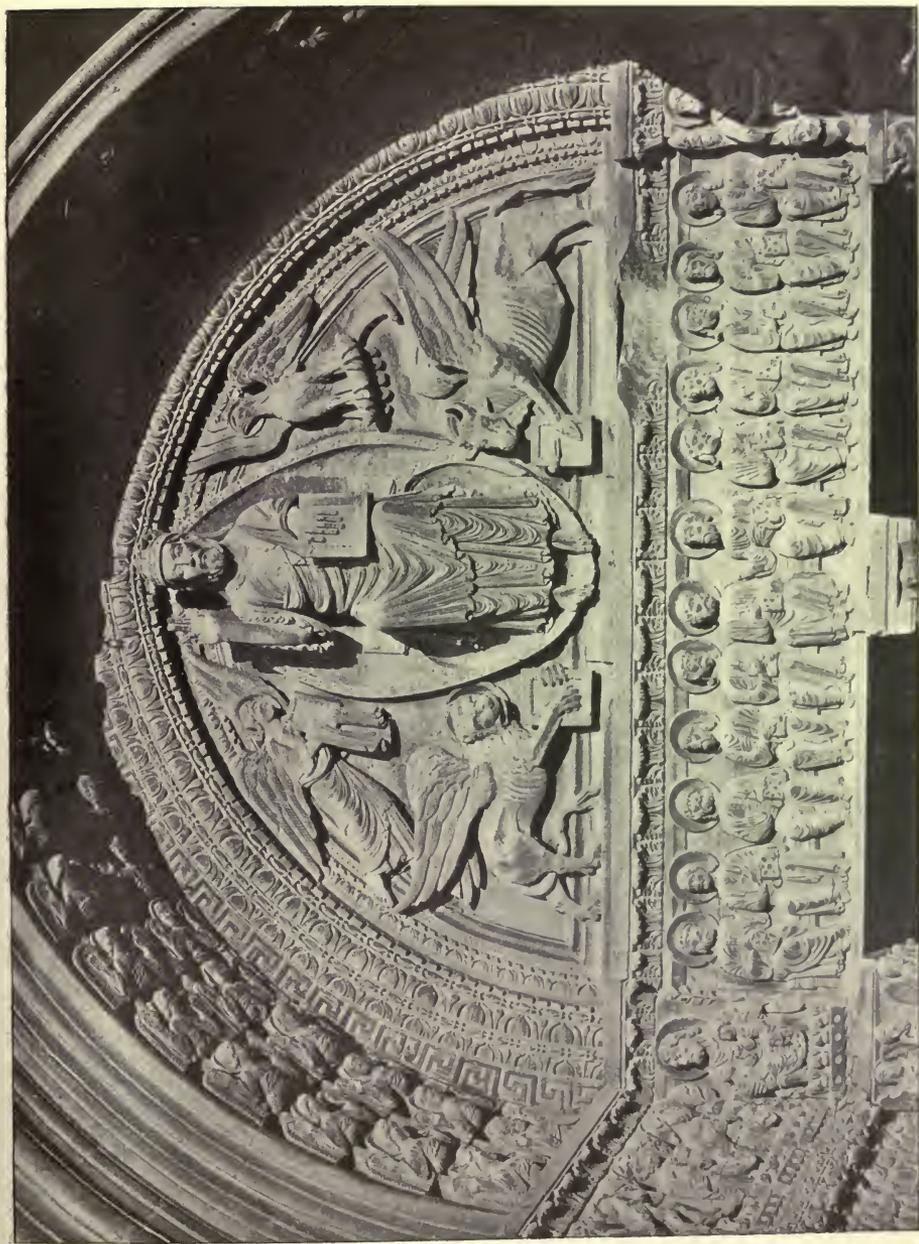
The angle piers are complicated pieces of masonry elaborately decorated with sculpture and with detail. The main portion of each face towards the walks is decorated with sculptured panels, containing one or more reliefs, while large statues on the three inner corners emphasize these important points. The piers between the bays of the arcades in the north and east galleries are somewhat similar to the corner piers, but less monumental in design. The central part, which carries the vault arch, has a statue on a high pedestal, while the pilaster which should support the adjoining arch of the arcade is cut away for a statue standing on a low base. In the east walls the piers are similar, but the central statues have disappeared. Over one of the piers is a relief of a man in armor battling with a gigantic beast; over the other is the Lamb and the Cross of the Baptist inscribed in a circle; in the tympanum of the arches is a series of greatly defaced figures, representing the Wise and Foolish Virgins.

Interesting and varied as are the sculptured figures the greatest beauty of these galleries is in the capitals of the columns. The shafts are short and delicate, and round or octagonal.

The capitals are large, superbly carved with an almost bewildering power of imagination, and each pair, as is usual with work of this date, is cut from a single block, with an abacus, which, in most instances, is also splendidly decorated with foliage or with wreaths. The capitals are foliated or decorated with scenes and figures. The former show the Corinthian motif, and are beautiful and rich examples of a considerably altered type that still distinctly recalls the original. The pictorial capitals illustrate an immense variety of themes, by both figures and groups. A good many of them are in a greatly defaced condition, but in all of them the scenes represented are graphically shown with directness of expression and very considerable dramatic skill.

Of the enclosing walls of these two walks that of the eastern scarcely calls for mention. It is entirely featureless save for several unimportant openings, and a Renaissance door opposite the end of the north walk. The corbels of the vault arches are similar to those in the north walk, but with decorated abaci. The north wall contains, next to the featureless archway from the cathedral, three of the original bays of the enclosing wall, consisting of arches on columns with channelled piers between them. They are a good deal restored.

The rebuilding of the remaining galleries was begun in the south walk in 1389, by Archbishop François de Conzié. The main piers have pedestals and niches for statues, all now disappeared, the statues having been cut from separate blocks, instead of, as in the older walks, forming part of the structure; the space between these piers is divided by a thinner pier, making six bays in all. Each contains two pointed arches, with coupled columns in the centre, and their outer edges continued as a columnette on the face of the pier, where it forms part of the bundle of columnettes which carry the cross vaults of the passage. The small foliated capitals of the columnettes of the vaults belong to the style of the



S. TROPHIME, ARLES—SCULPTURE OVER WEST DOORWAY.

walk; those of the intervening columns, however, recall those of the previous walks, though distinctly later in style. The inner series of capitals are pictorial, the subjects being taken from the ecclesiastical history of the first

fine strong coping; on the angle pier just above it is a holy-water font.

The western gallery closely resembles the south. It contains seven bays, each with a pair of pointed arches, but the piers are all of the same size,



CHAPITEAUX DES ARCADES DE LA GALERIE SEPTENTRIONALE.
Cloître de St. Trophime D'Arles.

century, instead of representing scenes from the bible as in the earlier walks. The capitals of the outer columns are foliated or consist of a symbol of an Evangelist. The columns are all round and more slender than before, and the arches have mouldings on both edges. The enclosing wall is decorated with arches like those of the arcade, with bundles of applied columnettes, whose capitals are foliated towards the east, and have small groups towards the west. At the southeast angle of this gallery is a large well-head, with a

and similar to the smaller piers of the south walk, though the columnettes are more slender. The arrangement of the capitals is the same, but the subjects of the pictorial ones are considerably varied, including both legendary and scriptural themes.

The rich sculptured decoration of the walks is not reproduced in the ornamentation of the quadrangle; the walks were in constant use, and there the storied capitals and suggestive sculpture had natural and necessary place. The exterior capitals of the ar-



ELEVATION DE LA FACADE MERIDIONALE SUR LE PREAU.
Cloître de St. Trophime D'Arles.

acades are scarcely less rich, in their superbly varied foliage, than the inner pictorial ones, but it is interesting to note, as an evidence of the appreciation of the situation by the designers of the cloister, that with but one or two exceptions all the outer, or more distant capitals, are foliated. On the north, piers between the bays are strengthened externally by square channelled pilasters, with Corinthian-like capitals. The original piers on the east have disappeared, and in their place are fine Gothic piers, with the central face treated as three applied columnettes, with a dog-tooth ornament on the pier behind. On the south the larger piers have small plain pilasters towards the quadrangle, without capitals. The west walk is supported by buttresses, whose edges are treated as small columnettes. None of these piers, buttresses or pilasters support anything, and it is doubtful if the older ones, at least on the north side, ever carried an architectural member. A short distance above the pilasters and running around the quadrangle, is a small hollowed ledge; it is the gutter built at the period of the older walks. In the thirteenth century the slope of the roof, which then descended over the vaults at a rather sharp angle to this gutter, was raised and supported on a high piece of wall above it. The new roof is only slightly inclined, and forms an open walk above the lower arcade. A bench and coping were built at the outer edge, and under the seats a series of narrow slits were cut that permitted the water to fall down into the original gutter.

From the cloister is obtained the best view of the great central tower. Though one of the highest structures in Arles—138 feet—its considerable size is dwarfed by the immensity of the church, and its location over the crossing deprives it of the value it would have had as a dominating feature in the façade. It is square, rising in three stages, and surmounted by a low upper story or attic. Each stage is slightly recessed behind the other, and all are treated with considerable se-

verity and uniformity. The first is divided in the centre by a flat pilaster, connected by a cornice of four small arches with a similar pilaster at each end, each bay having a small round arched window close to the central division. The second stage is similar, but without the dividing pilaster in the middle. In the third stage the middle pilaster reappears, all three with Corinthian-like capitals, and a round arched window in the centre of each bay. The attic story has seven small rectangular openings in each face, and is surmounted by a low four-sided pyramid, dating from the early part of the nineteenth century. Apparently the builder of the tower of the cathedral of Avignon, when he rebuilt it in the fifteenth century, found his inspiration in this structure, using the double division of each face and placing his windows close to the central pilaster as in the first stage of S. Trophime.

V.

The historians of the cathedral of Arles have generally been content to rest their labors with the parts of the church we have now seen, dismissing the new choir and other later parts, with a few short sentences. The method is not wholly unjustifiable, since the additions in the fifteenth century enlarged the church at the expense of its beauty and harmony, while further changes in the seventeenth century helped to emphasize the difference between the old and the new without adding beauty or grandeur. From the point of view of the art historian there is, therefore, little more to be said, but an historian of the cathedrals of France cannot thus lightly dismiss his building when he reaches a part that does not interest him. He must take the cathedrals as they have come down through the centuries and it is necessary, therefore, to briefly glance at the later additions to our church.

The choir of S. Trophime is really a Gothic church of the fifteenth century

applied to the nave of the twelfth. It is considerably wider, both in the sanctuary and its aisles, than the preceding parts, though but three bays deep. The piers are semicircular towards the choir with corbels supporting the upper parts of the transverse arches of the vaults and the diagonal and longitudinal ribs. Deeply moulded arches continued in a band without capitals to the floor open between the piers into the ambulatory. There is no triforium, and the clearstory is formed of a large two-light window, now blocked up. The three bays at the east are similar, but the ribs and arches of the vault are applied to the piers without corbels.

The ambulatory of the choir is very irregular. It was apparently intended to erect a polygon of seven sides, but if we count by the vaults it has thirteen bays, two of which are half bays caused by the irregularity of the plan, and if we count by chapels we have eight bays, the first on the north containing two small chapels. In no sense is this a chevet; the chapels are of various shapes and sizes; their vaults are different; the piers between them, their entrance arches, and even the vaults of the ambulatory exhibit variations and differences in size, direction and in form it would be tedious to enumerate. The difference in date which this irregular construction implies is not sufficiently marked, nor of enough importance to warrant extended study. Even the nave did not escape the petty improvements of which the choir is such a distressing example. Two small late Gothic chapels, each different in design, are opened out from the third and fourth bays of the

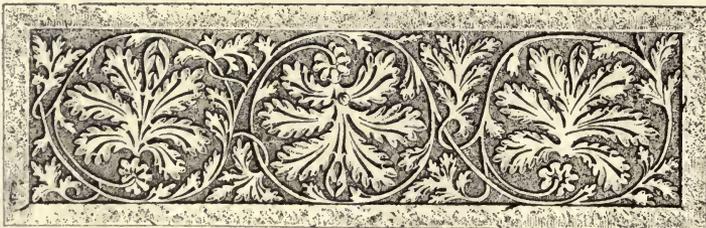
north aisle. In the south aisle is a large chapel entered from the fourth bay, and extending two bays to the eastward.

The additions of the seventeenth century are chiefly apparent in the transepts, and thus, though doubtless by accident only, the various epochs of the interior are well separated from each other. The operations carried on at this time did, indeed, extend much further, and included many "restorations" and defacements in the nave, all of which have been happily removed by M. Révoil in his restoration.

Each transept has in its outer wall a large monumental doorway, with Ionic pilasters, an entablature and a pediment with a cartouche in the centre. Above is an elliptical tribune supported by an elliptical vault over the doorway, and a large segmental-topped window with an ornamental frame. On the south side the door leads to the sacristy, on the north to a large square chapel with a pointed cross vault.

In the corner of the west wall of the north transept, close to the aisle of the nave, is a small door, by which we may, if we choose, leave the cathedral. It leads to a narrow passage, with a flight of steps, opening onto a small court, surrounded by houses. Under one of these is an archway to the street. Here we may end our visit, but it is better and pleasanter to return to the south transept, pass once more into the wonderful cloister, and thence to the street, not forgetting, in ending our visit, to look again upon the great west portal, whose majestic statues have looked down upon seven centuries of peoples.

Barr Ferree.



PANEL FROM THE CLOISTER.—S. TROPHIME, ARLES.



FIG 4.—INTERIOR OF SAN STEFANO (OUTSIDE THE WALLS) AT PISA.
 Photographed to discount the perspective illusion. Compare Fig. 5 Brooklyn Institute Survey.

PERSPECTIVE ILLUSIONS IN MEDIEVAL ITALIAN CHURCHES.

IT is now twenty-six years ago since I made (in 1870) my first observations of a hitherto neglected class of phenomena in the medieval churches of Italy. These observations were limited in extent, but were revolutionary in scope and in suggestion, or suggestiveness. Although they were almost wholly confined to the Cathedral of Pisa, and other churches in the same city, the implied results were very far-reaching in their antagonism to current views of medieval building. It was impossible to assume that certain phenomena had developed and disappeared in this single town. It was certain that they had historic origin before the time of the given buildings and historic continuation subsequent to their period, and certain that there must be affiliated phenomena in other localities. On the other hand it was clear that the phenomena were not universal and it appeared doubtful that they could be widespread. Otherwise it seemed to me that their discovery could not have been left to me to an-

nounce. This dubious condition of my own knowledge on the subject prevailed down to last year, when I was enabled by the co-operation of the Brooklyn Institute of Arts and Sciences to make an examination of a very systematic character for the whole of Italy, lasting over five months, and assisted by an able architectural expert and surveyor.* Most of the photographs used in illustration were made by him with all the precautions to insure accuracy which are known to photographic science and the surveys shown are also his work.

Before the present year I had made only one publication on the subject, which was confined to Pisa, and which appear in Scribner's Magazine for August, 1874, under the title of "A Lost Art."

In the arrangement of illustrative matter I shall combine the observations of 1870 with those of 1895, making a pivot of the buildings in Pisa for various classes of phenomena, diverging to the corroborations and similar

*John W. McKeeknie, Esq.

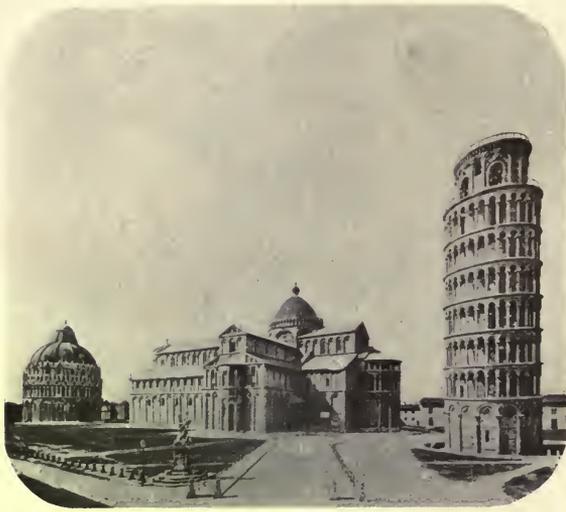


FIG. 1.—CATHEDRAL, LEANING TOWER, AND BAPTISTERY AT PISA.

facts now found in various other parts of Italy for the given set of phenomena and then returning to Pisa for the indication of a new series of phenomena.

I shall therefore beg my readers to enter with me the public square in Pisa, which contains its world-famed architectural monuments, just as I first entered it in the month of February, 1870. The Leaning Tower fronts us first. What I have to say in later Papers points to a solution of its mystery, as far as intention is concerned, and also throws some light on the purposes and evolution of this construction. As we all know, the question between accident and intentional construction is one which has been long debated and never settled, so far.

As I entered this Piazza del Duomo near the point from which this picture was taken (Fig. 1) I was struck by an obliquity in the lines of the cathedral which seemed to me to call for an explanation, and perhaps to be related to the inclination of the tower. The central string-course of the side walls is out of horizontal two feet. It slopes downward to that extent between façade and transept; being highest at the façade and lowest at the transept. This obliquity is found on both long

sides of the cathedral.* On both sides the string-course of the transepts slopes downward from their outer extremities to meet the downward slope on the side walls. Fig. 2, showing the oblique string-course, is a photograph made for me by Mr. C. F. Cox, of New York, in 1894. It is the first picture ever made for the purpose of showing the obliquity, which is slightly exaggerated by a turning of the camera. (The exact deflection from the horizontal is shown by Fig. 12 in the preceding issue of the *Architectural Record*.)

On the given occasion I took a walk outside the walls of the city in order to study this obliquity from a distance, and as I came round to the neighborhood of the Lucca Gate and was still outside of the city, I stumbled on the little village church here shown in Fig. 3, the eleventh, or twelfth century Romanesque church of San Stefano. Humble and ugly as it is, it has one feature which allies it to the Leaning Tower, and one which allies it to the sloping cornice. If we consider the Leaning Tower as a freak or eccentricity, rather than an accident, it has a counterpart here in a round arch cor-

*Photograph in parallel perspective in the preceding No. of the Magazine, Fig. 12.

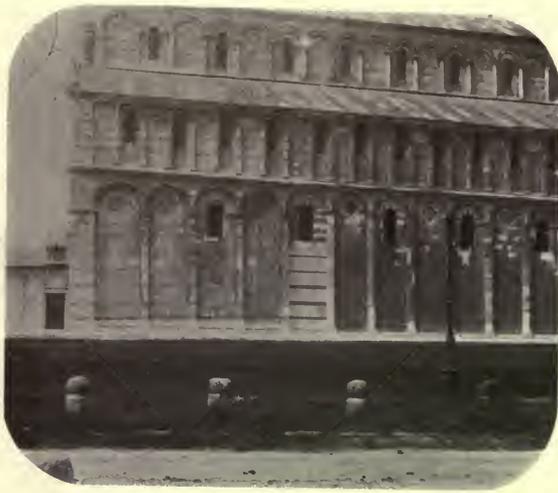


FIG. 2 — OBLIQUE STRING-COURSE OF THE PISA CATHEDRAL.

Photographed for the Author by Mr. C. F. Cox, of New York, in 1894. The first picture ever taken for the purpose of showing an obliquity of construction.

nice with its parts built in diminishing dimensions, so that it disappears in a short series of small projections at one end. If we go inside this little building (as I was led to do by this curious exterior trait) we shall discover the secret of the sloping cornice of the cathedral. Here is the interior, built to represent a sham perspective, on the principle practiced by every theatrical scene painter of the nineteenth century (Figs. 4 and 5). The measures of our survey show that the pier spacings diminish about ten feet in the direction toward the choir. The arches drop about five feet in the same direction. (The capitals also drop, but I omitted to furnish the data to Mr. McKecknie. The section is incorrect in representing the capitals as horizontal.) The pavement slopes up toward the choir six inches. In the eighteenth century the church was entered at the end which now forms the choir, and the widest bay was used for the choir, but this arrangement undoubtedly reversed an earlier one, to which the modern restoration has returned. This appears from an examination of the present façade, which

is certainly the original façade of the church.

The optical effect of a trick in modern stage setting which correspond to that seen in San Stefano is represented by the diagram here shown (Fig. 6).

I carried with me in 1870 most of the important German compendiums on the history of art and architecture, and was thus aware that the Middle Ages are not at present credited with having practiced these perspective illusions. Aside from a reference by Fergusson to the Cathedral of Poitiers as having an illusive scheme of perspective, I have not been able in a course of reading which has lasted for twenty-six years to find any references in modern authors to the subject. (The notice in Baedeker appears to be taken from Fergusson.) The cases in Italy are, however, fairly numerous, as shown by my surveys of 1895. In my ultimate publication of details, I shall furnish surveys from over thirty-five Italian churches, showing related phenomena of this class.

We will now return to the oblique string-courses of the cathedral, with



FIG. 3.—SAN STEFANO (OUTSIDE THE WALLS) AT PISA.
From a Photograph by the Brooklyn Institute Survey.

the suggestion obtained from the little church of San Stefano, that they were also intended to produce an optical effect. What this effect is from certain points of view is shown by Fig. 7.

The conclusion that the sloping string-courses of this cathedral were intended to build in perspective effect is reached in the following way: As a matter of fact they do have this result. As a matter of fact we can show similar devices inside the cathedral and inside a great many other churches. The optical effects of direct increase of dimension are, of course, only obtainable from certain points of view. What these effects may be from other points of view I shall consider later. The theory that the cathedral string-courses were sloped without a purpose is to me inconceivable. An explanation, based on the height of the first story of the façade, may be suggested, but will probably not be insisted on when related facts in other buildings have been considered. The measures taken for this slope by our surveys are the first ever made for the given obliquity. The first measures for this phenomenon were taken for me by Mr. C. F. Newton in 1887,

through the kind intervention and assistance of Prof. Wm. R. Ware, but no levels were known till those of 1895, taken by Mr. McKecknie. It is a phenomenon which is generally overlooked by visitors to Pisa; as it is discounted into an optical effect. The most remarkable instance of this habitual oversight is furnished by Mr. Ruskin in his "Seven Lamps" (see the "Lamp of Life"). It there appears that in looking directly at this string-course he could not decide whether or no it was out of horizontal.

Before calling attention to an arrangement of arches in the Pisa cathedral interior, which corresponds to that of San Stefano, but which has a much more subtle character, I should like to call attention to related facts, as developed by my surveys of 1895, for a number of other Italian cathedrals and churches.

We shall first take note that the choir of the medieval church is generally the objective point of these illusive arrangements of interiors, as being that part of the building to which the worshipper is turned, and the one which he faces when entering by the main door.

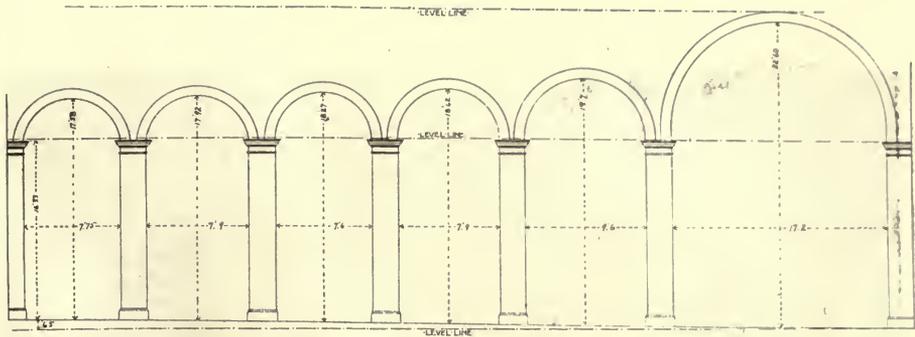


FIG. 5.—SECTION OF SAN STEFANO (OUTSIDE THE WALLS) AT PISA.

The bay assigned to the choir is on the left. Pier spacings diminish 10 ft. and arches drop 5 ft. in the direction toward the choir. Pavement slopes up six inches in the same direction. Compare Fig. 4. Brooklyn Institute Survey.

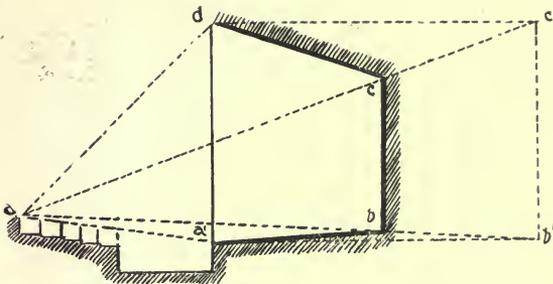


FIG. 6.—DIAGRAM FROM THIERSCH.

Optische Täuschungen auf dem Gebiete der Architektur. (Optical Deceptions in Architecture.) Showing the increase of apparent size obtained by a modern stage setting.

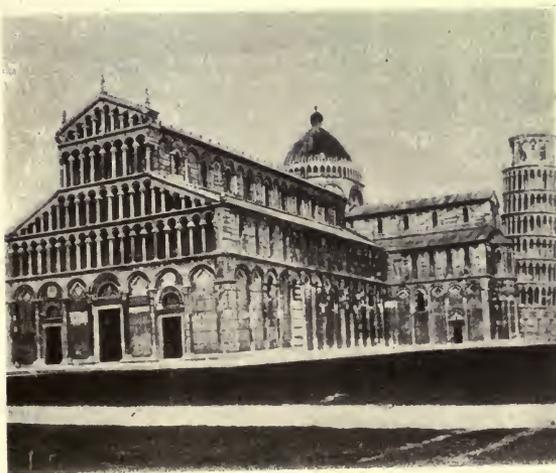


FIG. 7.—PISA CATHEDRAL.

From a point of view which discounts the sloping string-courses (Fig. 2) into perspective effect.



FIG. 8.—SIENA CATHEDRAL.

Showing the arches spanning the nave at the transept and supporting the dome. The further arch drops five feet lower than the near one. Compare Fig. 9. Photographed for the Brooklyn Institute Survey.

In the cathedral at Siena there is a very ingenious device to exaggerate the length of the church, and the distance of the choir. Of the two large arches which span the nave under the dome, the second is five feet lower than the first. The device is only detected by comparing the two arches in question, when one is under the dome, and this can only be done with some difficulty, as suggested by our photograph looking up into the dome. It is impossible to evade the illusion from any standpoint taken in the nave. (Figs. 8 and 9.)

Now what might be considered fortuitous or accidental in one case cannot be so considered when the same facts are found to occur in the same way in a series of buildings; but in the confusion and variety of impressions which overwhelm one in a vast cathedral, a trait like the one specified escapes the attention of the most exact and careful observer. It may be noticed accidentally, but in such a case, unless there is a pre-existing suspicion of a wide diffusion of similar arrangements and of a controlling purpose in all of them, the isolated fact is ignored

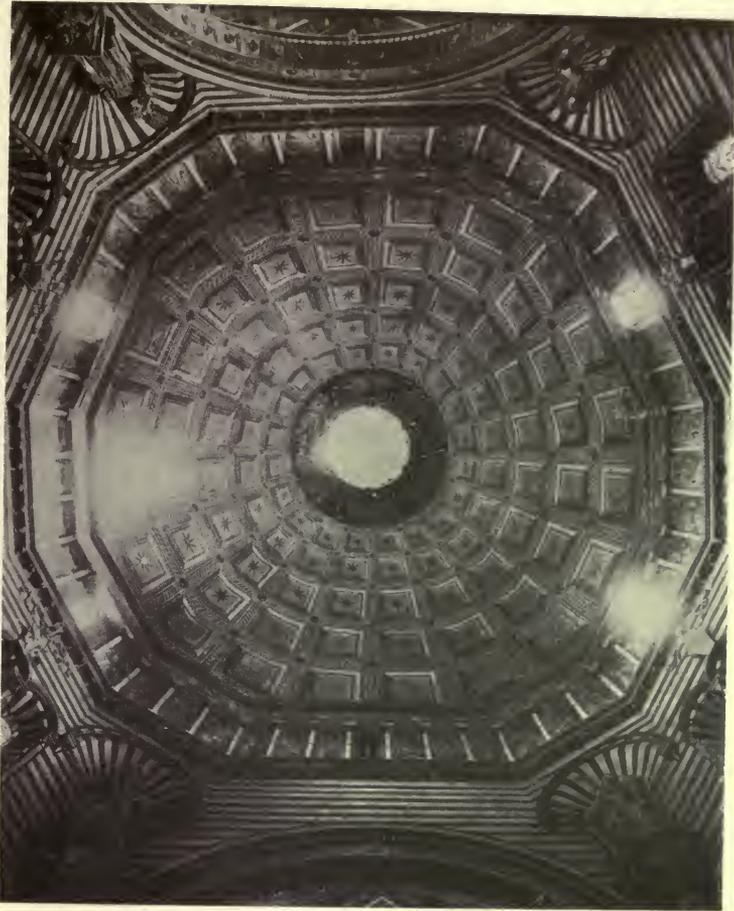


FIG. 9.—THE DOME OF SIENA CATHEDRAL.

Photographed to show the disparity in the height of arches spanning the nave. Compare Fig. 8.
Brooklyn Institute Survey.

and forgotten. What has been lacking to the study of medieval architecture so far has been, first, the suspicion that the phenomena existed, and, second, a systematic search for them. It was my good fortune, at the outset of my own studies, to stumble on a building of such conspicuous and palpable trickery, that the suggestion of the prevalence of a system of such devices was natural. If I had made the rounds of the Italian cathedrals in 1870, as they are made under ordinary circumstances, by other students, and if I had, at the close of such a tour or during its extended progress, entered the church of San Stefano in Pisa, I am quite

certain that I should have regarded it as an isolated eccentricity, and have paid no further attention to it. So it might possibly be in the case of some other student with the instance of the arches at Siena; but in my own experience Pisa happened, for some curious personal reasons, to be the first Italian town which I had ever visited as a student of medieval architecture. San Stefano happened to be the first church in Italy that I ever entered for purposes of study; for the sloping string-course of the cathedral had so taken possession of my curiosity that I had not yet seen its interior when I entered that little church. San Ste-



FIG. 10.—PISA CATHEDRAL.

Showing the arches spanning the nave at the transept. The nearer arch is pointed, the farther one is round and drops three feet lower. This view discounts drops in the nave arches of 1.64 (left) and 1.98 (right) (feet and decimals); see gallery levels and sections in the next issue. Photographed for the Brooklyn Institute Survey.

iano gave me a clue. The Pisan churches, and especially the cathedral, turned out to be saturated with similar devices.

Hence, the Brooklyn Institute Survey of 1895, which entered every well-known church in Italy and hundreds of minor churches, with one definite object in view, which was to observe and collect all the facts bearing on one certain question. These facts must be viewed as a whole, and I hope that they may be considered as a whole, after the individual and sequent mention is terminated.

At Siena the perspective illusion is assisted by the treatment of the apse, which is placed wholly below the string-course which elsewhere defines the base of the clerestory. We have thus a line of arches crossing the church, each dropping far below its

predecessor. A moment's observation will show the peculiar lowness of the apse, but the effect on the eye remains the same, as regards the impression of distance.

There are four other Italian churches known to me in which this same particular illusion obtains in the use of transverse arches—S. Nicolo at Bari, the cathedral of Piacenza, S. Maria Novella at Florence, and the cathedral of Pisa. The last three cases correspond to that just shown at Siena. Murray's guide-book speaks, of two pointed arches as spanning the Pisa nave at the transept, but only one is pointed. The second is round and drops at least three feet below its fellow. (Fig. 10.) At Piacenza the drop is four feet. In S. Maria Novella it is about two feet. The arrangement of S. Nicolo at Bari is shown by the sec-

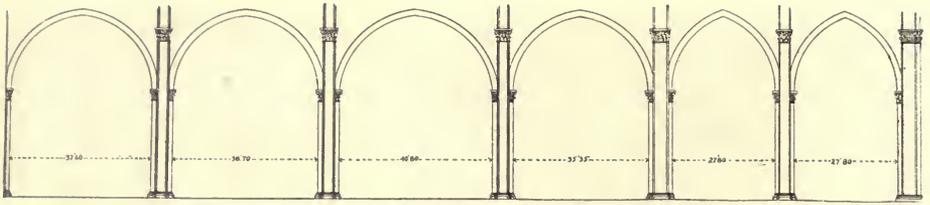


FIG. 12.—SECTION OF S. MARIA NOVELLA AT FLORENCE.

Showing a maximum diminution of pier spacings of 13 ft. in the direction of the choir. Brooklyn Institute Survey.

tion from our survey (Fig. 11). The transverse arches of this church were built in at a later date than its erection, and during the Gothic period. They develop a perspective scheme otherwise apparent in the arrangement of the arches and the capitals of the nave. As for the arcades of the clerestory their curving line builds in perspective from all points of view. That this arrangement of the arcades is not due to accident is proven by the fact that it holds on both sides of the church. The same argument as to purpose holds for the arches and capitals of the nave, viz., that the same general arrangement is found on both sides. The measures in detail are entered on the section and a summary of results is given beneath. The maximum drop of the nave arches is three feet and of capitals 1.65. (The discrepancies of intercolumnar spacing are connected with an obliquity of the ground-plan, for which the survey will be published in a later issue.)

These correspondences in devices to increase the effect of dimension are certainly not fortuitous, and as regards results they may fairly be called subtle. It is much more difficult to detect them than it is to see them after they are pointed out.

An astounding illustration of the popular oversight of discrepancies in dimension which are naturally discounted into effects of perspective is afforded by the church of S. Maria Novella at Florence, where there is a diminution of pier spacings toward the choir of so pronounced a character that there is a difference of thirteen feet between the widest and the narrowest bay (Fig. 12). In the

cathedral at Arezzo there is a difference between the first and last bay of twenty-one feet (Fig. 13). The only parallel cases known to our Survey for such extraordinary discrepancies in measurements, are the converging walls (narrowing toward the choir) of S. Giorgio in Velabro at Rome, and of S. Stefano at Venice. In the former case the church is seventeen and a half feet narrower at the choir end (Fig. 21). The latter church is twenty-three feet narrower at the choir end.*

It is remarkable that a new theory, or a new point of view, for medieval churches, should obtain corroboration from such a well-known church as S. Maria Novella. Its peculiar arrangement has been so generally overlooked that there is even a published ground-plan of this church which represents the piers as spaced at regular intervals (in Reynaud's "Traité d'Architecture"). This church has, however, been mentioned in publication for the given phenomenon; the only case of such mention known to me among all the buildings to be cited. The discrepancy in measurements of spacings is mentioned by Burckhardt's Cicerone and by Baedeker's guide-book, whose art references generally follow Burckhardt, but the illusive, perspective purpose has escaped the perception of these authorities. This is clearly due to the lack of collated facts regarding similar phenomena in other churches, such as those just mentioned, and others which I will now proceed to mention. One of these cases is the cathedral of Fiesole,

*The plan is published in the preceding Number of the Magazine.

where the maximum diminution of pier spacing toward the choir is eight feet, as between the widest and nar-

the record against myself that this fact either escaped my notice in 1870, or made such slight impression on me as regards its real magnitude, that it was immediately forgotten. In 1895, Fiesole was a new revelation (Fig. 14).

In face of a photograph* fixing the facts from a defined point of view, it seems impossible that any one should overlook them. But it is one thing to be in a large building with the eye wandering from one point to another; and another thing to have the eye directly fixed on a photograph made for a special purpose and from a special point of view, all of whose features are seized at once. There is no discounting of effects when we look at a photograph. In the building it is impossible not to discount the effect to a certain extent, even when one is aware of the facts.

As regards the instantaneous detection of the facts as stated by the survey of a church section or by a photograph made for the purpose, it should be remembered that in a section drawing like that of Fig. 14, the cutting off of the upper wall directly over the arches offers the contrast of a straight line which does not appear in the church. As regards the photograph from Fiesole (published in the preceding Number of the Magazine, Fig. 6), the cutting off of the wall over the large arch again assists the instantaneous detection of a fact which is by no means so clearly apparent in the church.

That the discrepancy in size of arches at Fiesole is generally overlooked cannot be doubted. There are too many tourists who have been in Florence (and all such visit Fiesole), who will testify to their own oversight to leave this point in any doubt. That the fact of an irregularity perhaps not wholly appreciated as to amount is occasionally noticed at Fiesole and then ignored, as having no pertinence or meaning, is doubtless also true. That is because the given observer has not happened to notice

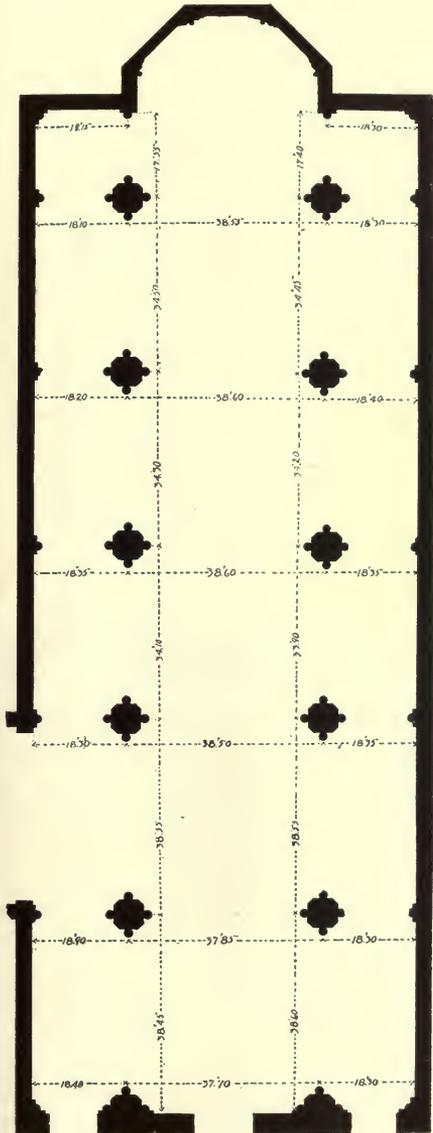


FIG. 13.—GROUND-PLAN OF THE CATHEDRAL OF AREZZO.

At the third bay the spacing decreases 4 ft.: at the last bay it decreases 17 ft., total diminution 21 ft. Brooklyn Institute Survey.

rowest bay; the maximum drop in the line of arches being three feet nine inches. I have here to make

*See preceding Number of this Magazine. (Fig. 6.)

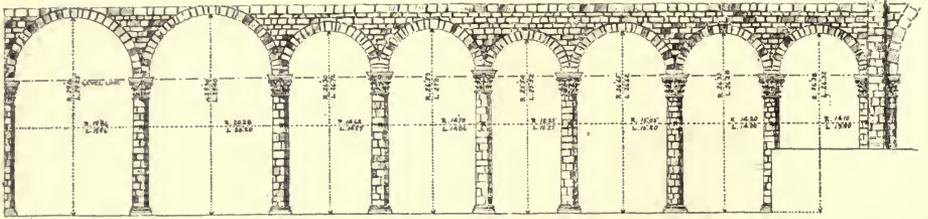


FIG. 14.—SECTION OF THE CATHEDRAL OF FIESOLE.

The choir is adjacent to the last bay on the right. The bays narrow toward the choir (maximum about 8 ft.) and the arches drop in this direction (maximum, 3 ft. 9 in.). Brooklyn Institute Survey.

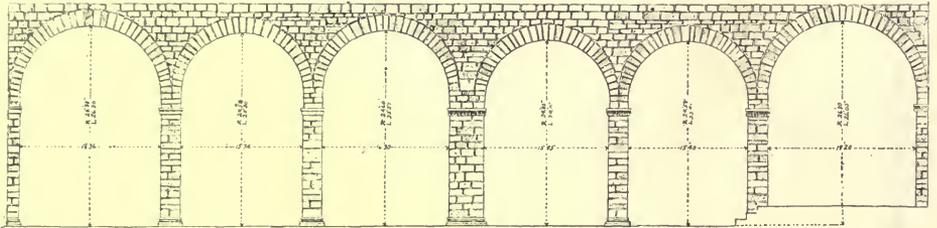


FIG. 15.—SECTION OF SAN PIETRO SOMALDI AT LUCCA.

The choir is the last bay on the right. The measures show a maximum drop in the arches of 3.30 (feet and decimals) and a maximum diminution in pier spacings of 3 ft. Brooklyn Institute Survey.

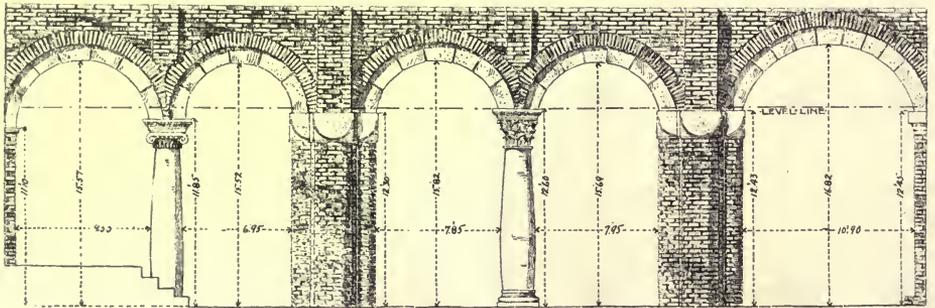


FIG. 16.—SECTION OF SAN STEFANO AT BOLOGNA.

The choir is on the left. Spacings narrow toward the choir 4 ft. Arches drop toward the choir 1.30. Capitals drop toward the choir 1.35. Brooklyn Institute Survey.

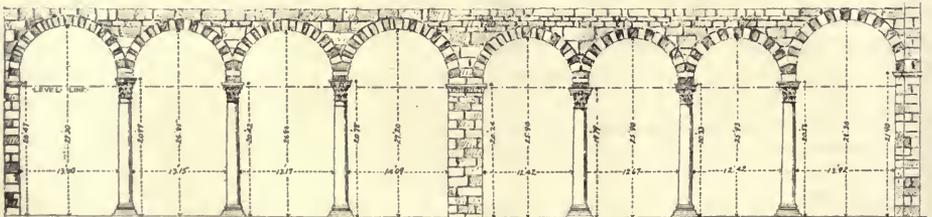


FIG. 17.—SECTION OF SANTA MARIA BIANCA AT LUCCA.

Beyond the last bay on the right are the transept and choir. The maximum drop of the arches toward the choir is 1.40 (feet and decimals). Brooklyn Institute Survey.

that the same or similar facts hold at Cremona, and in San Ambrogio at Milan, at Prato and Arezzo, and Pavia, at Borgo San Donnino, and Bologna, at Bari, Troja, Fiesole, Narni and Toscanella, at Pisa, Lucca, and Palermo, and in the Roman church of San Saba. At Lucca there are three churches of this type and at Pisa there are four. Detailed surveys have been made for all buildings which are mentioned.* The proof of constructive intention is obtained partly from the schematic arrangement of measurements, partly from a comparison of the measures on the two sides of the church, and partly from the frequent repetition of an arrangement in one direction. At Bari and Cremona allowance has to be made for some remarkable variations analogous to the phenomena in S. Maria della Pieve, at Arezzo.*

Both S. Maria Novella and the Fiesole cathedral will illustrate a subtlety generally found where this given device is used of narrowed spacings or dropping arches, viz., of giving the maximum dimensions either to the second, third, or fourth bay, according to the length of the church, in preference to giving the greatest dimension to the first bay, as was done in S. Stefano at Pisa. On entering a church, we do not generally look directly either to left or right, and we most naturally begin to make our experimental estimate of dimension a little farther down the nave. In such cases, the standard of size for the whole church is taken for granted as being that of the adjacent large arches. A mathematically perfect perspective scheme was not attempted. Perspective tricks like that of Bernini, in the Scala Regia of the Vatican, were generally foreign to the Middle Age. All that was sought was a physiological illusion based on the habits of the eye, which is accustomed to argue from the nearest dimension to others which are more remote.

As regards the beginning of a scheme at the second, third, or fourth bay and as far as a line of arches is concerned, a line which rises first and falls afterward is more effective for perspective illusion for all points of view in which both ends are visible than one with an even descent. This will be understood by experts in optics without explanation and I will not offer the reasons here. Examples of such an arrangement are seen in the clerestory arcades of S. Nicolo at Bari (Fig. 11) and in the arches and capitals of S. Saba at Rome (Fig. 23). In the given class of churches minor irregularities are frequently found in the schemes of arrangement of piers and arches, but we have in most cases an immediate check on the theory of carelessness. For example, at Fiesole the sixth arch from the façade is considerably higher than its fellows and breaks the scheme (Fig. 14). But this holds on both sides of the church at the same bay, therefore, the discrepancy is not accidental. There are side doors opposite this bay; possibly this is the explanation, but I shall show later that in many cases schemes were intentionally broken to avoid detection, or the appearance of a too obviously deceptive arrangement, or to introduce an element of irregularity for its own sake; that is, for the sake of variety or the picturesque. If we compare the heights of arches at Fiesole, we shall find that none are commensurate, and yet we shall be able to prove that the heights were all purposely calculated, approximately as built. Both arches of the second bay are higher than the first, both arches of the third bay are lower than the second, both arches of the fourth bay are higher than the third, both arches of the fifth bay are lower than the fourth, both arches of the sixth bay are higher than the fifth, both arches of the seventh bay are lower than the sixth. This cannot be accidental; the law of chances is against it. When such facts are repeated in a multitude of cases, as regards correspondence of details in two broken schemes, certainty be-

*An exhibit of these surveys was made in Brooklyn in June, which will be repeated this October, November and December.

*Plan in the preceding Number of the Magazine. See Fig. 9.

comes absolute that the builders knew what they were doing, and this certainty reacts on the cases where ir-

to struggle for a proof of this, but such is the prejudice of the nineteenth century in favor of its own ideals of mathematical and exact symmetry, that up to date the astonishing impression rules the civilized world that the Middle Ages produced the most remarkable works of art without knowing how they did it.

The subject of intentional irregularities due to a sentiment for the picturesque, deals with another class of medieval phenomena and the proofs for intention are obtained in various ways, to be subsequently explained. I only wish to say here that irregularities in the employment of a perspective scheme can generally be proven intentional off-hand, as I have just shown at Fiesole. The limit of irregularity due to indifference to regularity or to the natural limitations of building material or building methods varies in different buildings. It can generally be estimated by a comparison of various measurements. There is an underestimate of the technical capacities of the best medieval builders in some professional quarters, owing to the medieval frank disregard for the conventional accuracy of the modern architect. This underestimate is also partly due to the hasty assumption that some carelessly constructed buildings represent universal practice. In fact, up to date there has been no effort to distinguish between intentional and accidental irregularity in medieval building.

In basilicas, which have no transept, and showing a perspective scheme, the last span of arches at the choir generally widens, for practical reasons, and to give the extra space desired for the chancel. (See S. Pietro Somaldi, Lucca; Fig. 15, and S. Stefano, Bologna, Fig. 16.) There are also many cases of an arrangement of arches intended to obviate abrupt contrasts of dimension, or abrupt breaks in the line of arches. Where the church has a transept the span next adjacent is frequently increased in size to effect a transition of lines and dimensions. This occurs both in churches without the previous drop in

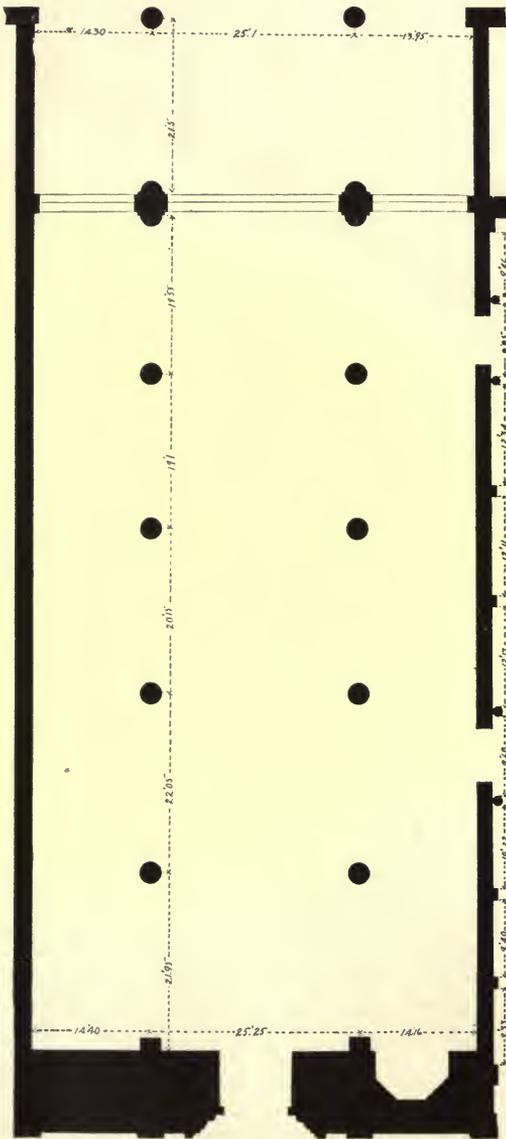


FIG. 18.—GROUND-PLAN OF THE CATHEDRAL NAVE OF PRATO.

Showing a maximum diminution in pier spacings of 3 ft. in the direction of the choir. The last bay widens toward the transept which is omitted from the plan. Brooklyn Institute Survey.

regularity appears without the evidence furnished by duplication. It is too bad that we should have

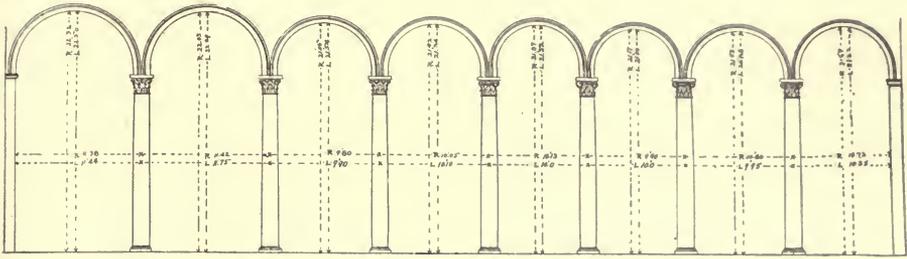


FIG. 19.—SECTION OF S. FREDIANO AT PISA.

The last bay on the right is the choir. The heights of the bays between entrance and choir show a drop of 1.62 (left) and .79 (right) in the direction of the choir. Brooklyn Institute Survey.

arches, like S. Paolo Ripa d'Arno at Pisa, and in others which have the drop, like S. Maria Bianca at Lucca (Fig. 17), or the diminution of spacings, like the cathedral of Prato (Fig. 18). Such an abrupt contrast as we find in the sixth bay at Fiesole was clearly intended, but it is quite unusual. The Florentine Romanesque is not as subtle as that of Byzantine Pisa and the Florentine churches are generally lacking in "refinements."

My experience in the Pisan church of S. Frediano will show the difficulty of detecting these deceptive arrangements, even when they are anticipated, or careful examination is made for them. During three weeks spent in a first visit to Pisa our party examined S. Frediano three times without detecting a scheme here shown by survey (Fig. 19). On this occasion there were three pair of eyes at fault, for my survey of 1895 was assisted in many parts of Italy by my nephew, a young architectural student,* as well as by a regularly employed surveyor. On a second visit to Pisa, when I was attended by Mr. McKecknie, S. Frediano was again visited and again without discovery of the facts. Mr. McKecknie's final departure for home was made at this time, after the expiration of the five months which he had contracted to spend with the expedition, and I was left alone in Pisa. I subsequently made three separate visits to S. Frediano, having a suspicion that there was something to do in this church and finally undertook to take

the measures, which show a drop of arches on both sides of the nave, as shown by the section. A similar experience was made in Milan, where my time was limited. I hesitated a full hour in San Ambrogio before risking the time required by a survey without certainty of results. The survey showed a maximum diminution in pier spacing of three and a half feet and a maximum drop in the arches of one foot. A like experience was made in the Siena cathedral, where our party spent two days' time before noting that the first pair of arches in the nave are three feet higher than the following arches. I did notice a diminution of spacings at Prato of three feet until the measures had been taken. I shall be able to show in the next issue of this Magazine that the limit of error due to carelessness or the coarseness of materials, in medieval buildings of the class quoted, is not greater than three inches. I ought to add that the case of the nave arches at Siena is quoted only as an instance of the way in which important discrepancies of dimension may be overlooked in the very act of making a search for them. There are no indications of a scheme in the measures of the other bays at Siena.

There are three published ground-plans of Italian churches which have walls converging in the direction of the choir; although the implication of purpose contained in these plans has been overlooked by the given publications; clearly because the related facts have not been collated. These

*Mr. Nelson Goodyear.

churches are the Roman basilicas S. Bartolommeo, S. Giorgio in Velabro, and S. Maria in Cosmedin. As to the perspective results of such converging lines, we shall first draw attention to a diagram of the Piazza of San Marco at Venice (Fig. 20). The case of S. Giorgio in Velabro, at Rome, represents a similar plan and involves a similar optical result (Fig. 21). A small plan published by Hubsch, without measures, seems to show these facts with approximate exactitude, but Hubsch has published another Roman

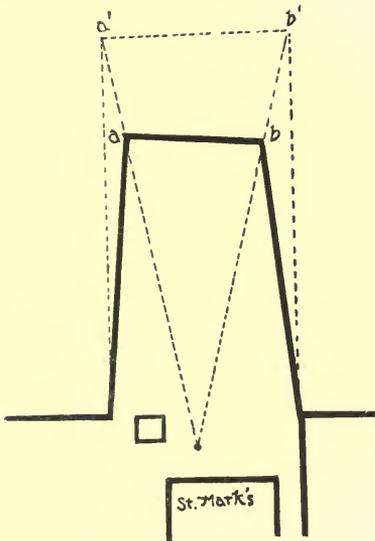


FIG. 20.—PLAN OF THE PIAZZA OF S. MARCO AT VENICE.

Showing the apparent increase of dimension produced by the converging sides of the piazza. From Thiersch, *Optische Täuschungen auf dem Gebiete der Architektur*. (Optical deceptions in Architecture.)

church (S. Maria in Cosmedin), which shows a convergence of five feet, as having exactly parallel walls. Knapp publishes a large plan of the same church, with exactly parallel sides. S. Maria in Cosmedin is also given an absolutely rectangular and mathematically parallel plan by Gailhabaud, who also publishes S. Giorgio in Velabro incorrectly. I have no knowledge of any plan of S. Stefano at Venice, excepting the one made by our survey. This church is mentioned by Street, "Brick and Marble Architecture in North Italy," as having a nave 48 feet

wide. Clearly Mr. Street must have overlooked the fact that this nave is 35 feet wide at the choir end* and that the whole church narrows in, 23 feet. I took the measures in San Antonino, at Piacenza, showing that its walls have a convergence toward the choir of 9 feet; but this church has been published by Osten, "Bauwerke in der Lombardei," as an absolutely regular parallelogram. I mention these discrepancies between the real facts and the published plans because they show that the whole subject of medieval irregularities has been neglected up to date.

The most remarkable oversight of modern times in the study of Italian churches regards those with pavements sloping upward toward the choir. The perspective effect of this arrangement is suggested by the diagram (Fig. 6). In 1870, I knew of one case, the church of San Pierino at Pisa. Our survey of 1895 discovered over eighty-five churches having this peculiarity. It occurs in churches as well-known as the cathedrals of Genoa, Siena and Orvieto, the Capella Palatina at Palermo, the church of S. Francis at Assisi, S. Mark at Venice, and the well-known church of S. Maria Ara Coeli at Rome (Fig. 22). See also sections of S. Saba at Rome (Fig. 23), and of S. Giovanni in Zoccoli at Viterbo (Fig. 24). Another illustration is that of S. Pietro at Assisi, published in the preceding number of this Magazine (Fig. 7). This phenomenon has even survived in the Renaissance period. In some apparently Renaissance cases we may assume an older pavement as having been relaid on the slope of an older church, which has been made over or rebuilt. This may hold of some Renaissance churches in Genoa, but the slope in the cloister at Calci, near Pisa, is sixteenth century. The slope also occurs in the Renaissance churches S. Annunziata and S. Gaetano at Florence. The Renaissance cases are, however, wholly exceptional, outside of South Italy, where

*Published in the preceding Number of the Magazine.

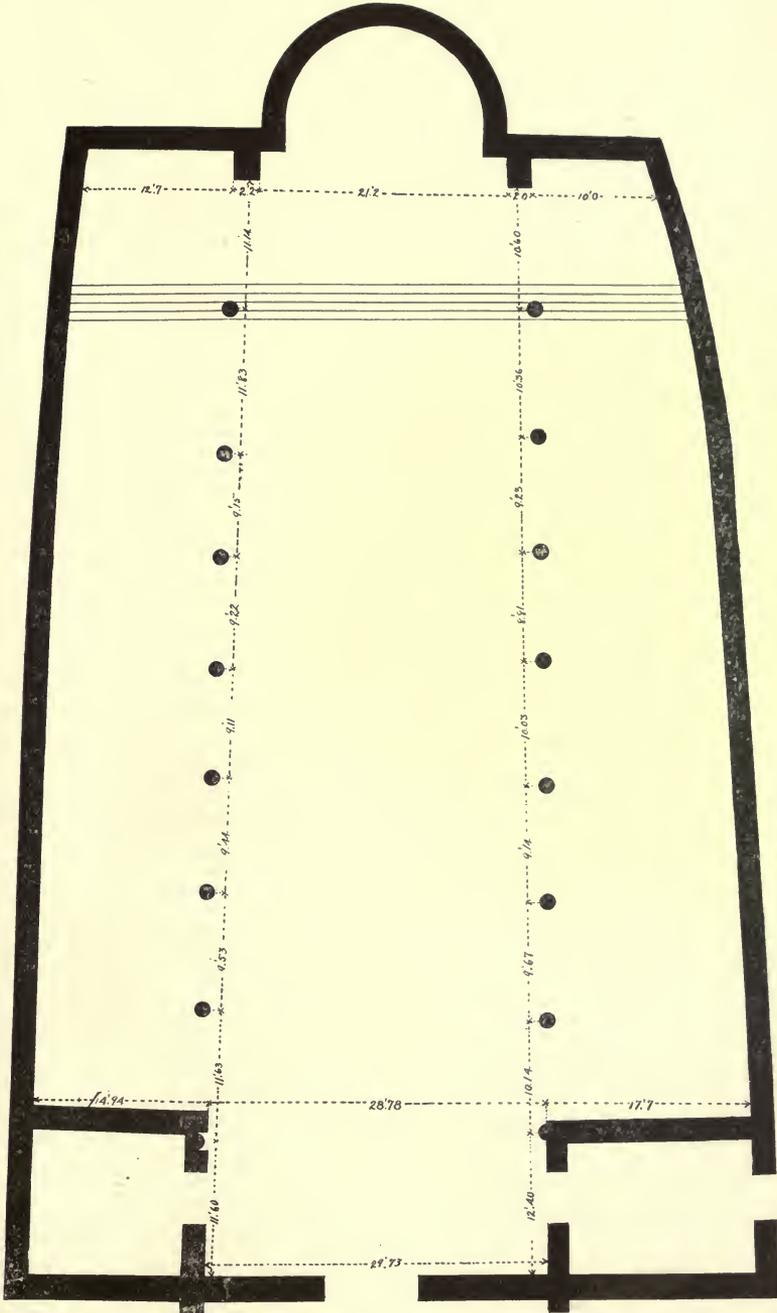


FIG. 21.—GROUND-PLAN OF S. GIORGIO IN VELABRO AT ROME.

The walls converge toward the choir to the amount of $17\frac{1}{2}$ ft. in a length of 81 ft. Brooklyn Institute Survey

other survivals of medieval arrangements are much more general than they are elsewhere. In the whole of Italy I have only been able to collect six cases of a slope downward towards the choir, and all of these appear to have been due to building to the surface.

There is no phenomenon so widespread in Italy as that of the rising pavement. It can be dated to the fifth century in S. Sabina at Rome, and is probably related to the already known cases in Egyptian temples, in which cases it has been ascribed to a purpose of perspective illusion by Maspero, by Poole and by Rawlinson. Rawlinson says, in his "History of Egypt," p. 258: "The contrivance for augmenting the apparent size of buildings of which we have to speak in conclusion, is the following: Egyptian buildings, of large extent, for the most part rise as we penetrate into them. When we pass from one limb to another, we generally ascend a few steps. Sometimes, however, the ascent is more gradual. At the Ramesseum and again at Edfou, the level of the ground rises from column to column, each column being placed on a low step a little above the preceding one. The effect is similar to that produced in a modern theatre by the slope of the floor to the back of the stage. It is aided by the general arrangement of doors and pylons which diminish in size as we advance. An illusive perspective is thus obtained, the vistas of pillars seem twice the length that they really are and the entire building appears to be of a length almost interminable." Some of the facts above quoted have been noticed by me at Denderah. I believe that Maspero is the original authority for suggestions on this subject.

In the Italian churches the eye tends to translate a part of the rising slope into a downward slope of the arches, according to a well-known law of optical illusion, by which the eye tends to average between any two lines or surfaces, a deviation from the actual normal, which really holds only for one of them. This illusion offers an addi-

tional reason for the general oversight of this phenomenon. The optical transfer minimizes a part of the lower slope and both convergences are set down to perspective. In my own experience I have found it impossible to correct the impression that the arches drop towards the rise of the pavement, when looking across the nave of a church, and actual measurements have been necessary in many cases to correct this impression, which is naturally assisted by the knowledge that in many churches the arches actually do drop in such a manner towards the choir. As regards oversight of this phenomenon, I have not yet happened to meet a single individual who knows of its existence in a single Italian church. A rise of one foot in four bays was overlooked by both my companions in the first Genoa church which we examined. Some fellow travellers did not notice a rise of a foot and ten inches in the Genoa cathedral. I spent the best part of a day in S. Francis at Assisi without noting a slope of one foot and did not discover it until a second visit to Assisi. A rise of three feet in 81 feet was overlooked by an artist friend at Ravello. The astonishing fact about this rise is the frequency of its appearance in all degrees of pitch between three inches and over three feet for the length of the church. The wide diffusion forbids any local explanation, and the uniformity of direction as regards the choir can have only one meaning. There is no doubt that individual instances of the slope must have been casually noticed by many persons. Here again it is the absence of collated facts or the indifference of the observer which have prevented the drawing of conclusions.

All people who visit Rome are familiar with the church of S. Maria Ara Coeli (Fig. 22). I have interviewed a number of experts who know this church and who are not aware that the pavement has a rising slope of over three feet. I must plead guilty myself to having overlooked this fact in 1870 and in 1895 I overlooked the fact that the circumference of the columns near the transept is three feet less on both



FIG. 25.—THE SLOPING PAVEMENT OF S. SABA AT ROME.
(Compare Fig. 23). Photographed for the Brooklyn Institute Survey.

sides of the church than it is at the entrance, which was observed by Mr. McKecknie. This diminution in size of the columns shows the care taken to avoid such an actual upward slope of the arch line as would result from placing a line of columns of equal height on an upward sloping foundation. These columns being taken, as usual in the old basilicas, from earlier Pagan ruins, it was possible to select them of gradually decreasing height and size in such a way that the circumference of a column near the transept varies as stated, from that of one at the entrance, by three feet. Thus the gallery line above, which corresponds closely to that of the arches, rises but three inches on one side and drops nine inches on the other, while the rise of the pavement is two feet nine inches, in the same distance.

The church of S. Saba at Rome illustrates a similar choice and arrangement of columns, with the distinction

that here, the arches drop on both sides of the church to meet the rise of the pavement, thus accenting still farther an effect of illusive perspective. (Fig. 22.) In general, it holds of all these churches with rising pavements that the arch line is brought down to the horizontal and the effect is (as explained) to make the arch line appear to drop still lower. This again involves an illusive effect as to one's position in the church. In looking straight across the nave the point of view appears to slant toward the choir.

The following churches, which have the rising pavement, also have the drop in arches: S. Maria della Vittoria at Palermo (the vaulting drops three feet), S. Saba at Rome, S. Pietro at Assisi,* S. Frediano and S. Stefano at Pisa. A complete catalogue of the eighty-five churches, with the meas-

*Illustrated in the preceding Number of the Magazine.

urements for each case, will be soon published.

So far, we are only at the threshold of a curious topic. The phenomena so far noted are of four descriptions, all of which will come inside the experience and practice of a modern theatrical scene painter; the illusive effects of an upward sloping floor, of a downward sloping arcade, of converging walls, or other variations of dimension, as in pier spacings, transverse arches, etc., tricking the eye in one direction. But in so far as these devices tend to an opposite effect in a contrary direction, they are not generally available for exteriors. It would also seem to hold for interiors that in so far as the devices are subtle and inconspicuous, in so far they would be comparatively ineffective, and that in so far as they are bold and strongly defined, in so far they are open to detection. The general oversight by travellers and Italians of the very palpable perspective trick which was played by Bernini in the Scala Regia of the Vatican, and the general oversight of the eight feet discrepancy in pier spacings at Fiesole, or of the thirteen feet discrepancy in S. Maria Novella at Florence (which I found to be unknown to some very distinguished Italians at Florence) show that boldness in the use of such devices may escape general detection and yet these are tricks which are palpably open to detection. There are, at all events, other optical refinements in medieval building of a far more subtle character.

I have placed these more definitely obvious devices in the front of my demonstration, because they establish one conclusion, which has so far never been admitted or asserted for medieval builders, viz., that they did contemplate and consider optical effects. When this important point is once ad-

mitted, we have a foot-hold for the consideration and explanation of more curious phenomena.

We will close the list of palpably intended perspective devices by quoting measurements from the gallery levels and sections of the Pisa cathedral to be published in the next issue of the Magazine. The arrangements here are the most interesting, because the most subtle, which have been found by the survey. The drop of the nave arches in this cathedral begins at the fourth bay and amounts in feet and decimals, to 1.64 (left) and 1.98 (right).

We will also quote measurements for some of the churches not illustrated and so far too briefly noticed. In all these cases the choir is to be understood as the objective point of the deceptive arrangements. In S. Michele at Pavia the combined measurements for nave and gallery arches show a drop of 19½ inches (left) and 15 inches (right.) At Borgo San Donnino the pier spacings narrow 20 inches (left) and 21 inches (right). The arches drop 10 inches (left) and 12 inches (right). At Cremona the bays narrow from the second bay to the choir 74 inches (left) and 67 inches (right), with a corresponding drop in the arches. At Piacenza (cathedral) the bays narrow between the second bay and transept 26 inches (left) and 15 inches (right). In S. Michele ai Scalzi, Pisa, the capitals drop, from second to last, 2.70 (left) and 2.64 (right) (feet and decimals). In S. Pietro, Assisi, the arches drop 2.60. In S. Maria in Pensola, at Narni, the capitals drop .75 (left) and .80 (right). At Troja the capitals drop .57 (left) and .35 (right). Surveys have been made for these and for other churches, giving measurements in detail, which will be published shortly.

Wm. H. Goodyear.

THE WORKS OF R. H. ROBERTSON.

ROBERT HENDERSON ROBERTSON was born in Philadelphia, April 29, 1849, and his general education was obtained at Rutgers College. After graduation he first entered the office of Henry Sims, of Philadelphia, whose ecclesiastical work in academic Gothic is that by which he is best remembered. After leaving Mr. Sims, Mr. Robertson continued his studies in the office of Mr. George B. Post, in New York, and began practice on his own account in that city in 1871. Within the two or three years succeeding he had made himself remarked among persons interested in architecture by his published designs for seaside cottages and country churches, by a competitive design for the New York hospital, and by an executed work—the Phillips Presbyterian Church, in upper Madison avenue—in a free and rather individual version of Victorian Gothic. In 1875, upon the appointment of Mr. William A. Potter to be Supervising Architect of the Treasury, in place of Mr. Mullett, he and Mr. Robertson formed a partnership under the style of Potter & Robertson, which lasted until 1878. The results of this partnership were a number of college buildings and the local hotel at Princeton, and some country churches, in the design of which both partners took part. Soon after the dissolution of the partnership Mr. Robertson, like most other sensitive practitioners at that time, was greatly impressed with the work of Mr. Richardson, and with the capabilities of Romanesque architecture, and for the succeeding decade, most of his own work, which rapidly increased during these years in extent and importance, was based upon the Romanesque, whether domestic, commercial, ecclesiastical or “institutional.” Still later he underwent the influence of the classic revival, and since 1890 much of his city work has borne testimony to that influence.

This meagre outline of Mr. Robertson's professional career shows in the first place that his training and his practice have been exclusively American, and, in the second place, that he has taken part in every one of the successive “movements” that have agitated American architecture in his time. He began his work, as nearly every sensitive designer trained in the same way and at the same time began it, in Victorian Gothic. I ought to have inserted in its proper chronological place that he toyed awhile even with Queen Anne, the “free classic” with which Mr. Norman Shaw startled the British islands twenty years ago, and of which Mr. Hudson Holly made himself the literary apostle on this side, the voice of one crying in a wilderness of Victorian Gothic. Mr. Robertson's tendency in the direction of Queen Anne never amounted to much more than a “velleity,” and as to the works in which it was embodied it may be said of them, as Johnson said about Warburton's notes on Shakespeare: “I suppose, now that the ardor of composition is remitted, he no longer numbers them among his happy effusions.” That the robust Romanesque of Richardson made an end of Queen Anne was distinctly to its credit. In each of the modes in which he has really worked it may fairly be said of Mr. Robertson that, without any care at all for academical correctness, he has managed to attain an individual and an interesting version of the style.

The very first example of Mr. Robertson's work known to me, the Phillips Presbyterian Church (1871), indicate his talent and prefigures his subsequent successes. It is Victorian Gothic, there is no doubt about that, and it exhibits the indifference to academical correctness which was especially the characteristic of Victorian Gothic, as it was practised on this side of the Atlantic, but it shows

the individuality which in some cases was a compensation for this indifference and in others an aggravation of it. The general scheme is very successful. There is an effective balance, without any attempt at formal symmetry, between the two sides and they are effectively reconciled and dominated by the central feature, the big angle-tower of which the central third is a square and solid shaft. The tall and narrow openings on each side of the gable on the avenue front serve their purpose of detaching the gable, while keeping the whole front in one plane, and the openings are so placed and treated as to relieve the expanse of wall without weakening it. The tower with its saddle-backed roof is very good indeed. The color-treatment is more violent in its contrast than its author, or any other designer, would adopt to-day, and the detail generally more insistent in scale. But the motive is valuable enough to be worth developing by the author's later lights, and as a first work the church is full of promise.

The other works of the architect's novitiate were for the most part country houses. In the early seventies it was very unusual for an architect to be invoked to design a city house, the speculative builder applying his Procrustean recipe with equal hand alike to the huts of the poor and the mansions of the millionaires, which were mere expansions of the brownstone fronts of the ordinary householder. The country houses, and especially the shore cottages, were by no means the sumptuous erections of a later day, but the simplest possible constructions of clapboards and shingles, in which the architectural effect of the whole depended mainly upon the picturesque quality of the outline, and of the detail upon the most straightforward and vernacular treatment of the humble material. Some of our architect's earliest essays in this kind were such as he need not be ashamed of to-day. Indeed, such a cottage as that of Commodore Baldwin, at Newport, or as

some of the shore cottages on the Jersey coast are distinctly more appropriate to their purpose of "villegiatura" than the palaces which it is now the fashion to rear in like situations.

Perhaps the best known results of the partnership of Potter and Robertson are the buildings at Princeton, where the individual works of the senior partner are, however, still more in evidence. The works of the firm there comprise Witherspoon Hall and the hotel. These are both in Victorian Gothic, and the hotel very much in Victorian Gothic, its red brick walls being emphatically belted with light stone, of which the alternate voussoirs and the lintels of the lintelled openings of the arched openings are also composed, and additionally variegated by the parti-colored slate of the roofs and of the tower that animate the skyline. To say that the hotel is good as country hotels go would be to damn it with praise altogether too faint, for we all know how badly they go. In fact it is a very animated and picturesque building, and I do not recall any of the later exceptions to the rule of badness, exceptions in which picturesque quality is attained by shingles and creosote, in which the result is more satisfactory or more strictly the consequence of faithful and artistic design, or in which animation is gained at less sacrifice of repose. Witherspoon Hall is properly of a much more sober aspect, a cliff of rough, gray stone, kept as solid as the exigencies of the lighting would allow, but yet not solid enough for the best effect, set upon a base of a darker stone with which also the wall is banded, and crowned with a steep roof, this time in monochrome. It is in the gabled end that the need of many windows entails damage upon the architecture. The entrance front, however, is gratifyingly massive and is moreover exceedingly well composed, with its recessed centre, in which the solidity is rather emphasized than weakened by the staircase lights, and the effective balance of the two projecting and unequal wings.



Clifton Springs, New York.

CHURCH (1876).

Potter & Robertson, Architects.

A still more successful composition is that of a church at Clifton Springs, in which the lateral porches are carried up into a narrow gabled transept, cut at the centre by the main gable, while the whole pyramid culminates in an open wooden belfry steeply roofed. This is really a brilliant performance. Mr. Robertson employed the same motive many years afterwards, in the church at Madison avenue and Sixtieth street, but not, it seems to me, so successfully in the complete subordination and convergence of the whole mass to the central feature.

As all architects know, those were

lean years that followed after the panic of 1873 had done its perfect work. But during these years Richardson found enough work to keep him busy, and the architects of the whole country interested, and when the revival of building came, early in the eighties, there was scarcely one of the younger and more open-minded designers whose work did not show some trace of his influences. Mr. Robertson's work for the decade shows that he felt this influence strongly, and the most conspicuous and important of his buildings between 1880 and 1890 may be classified as Romanesque. A glance



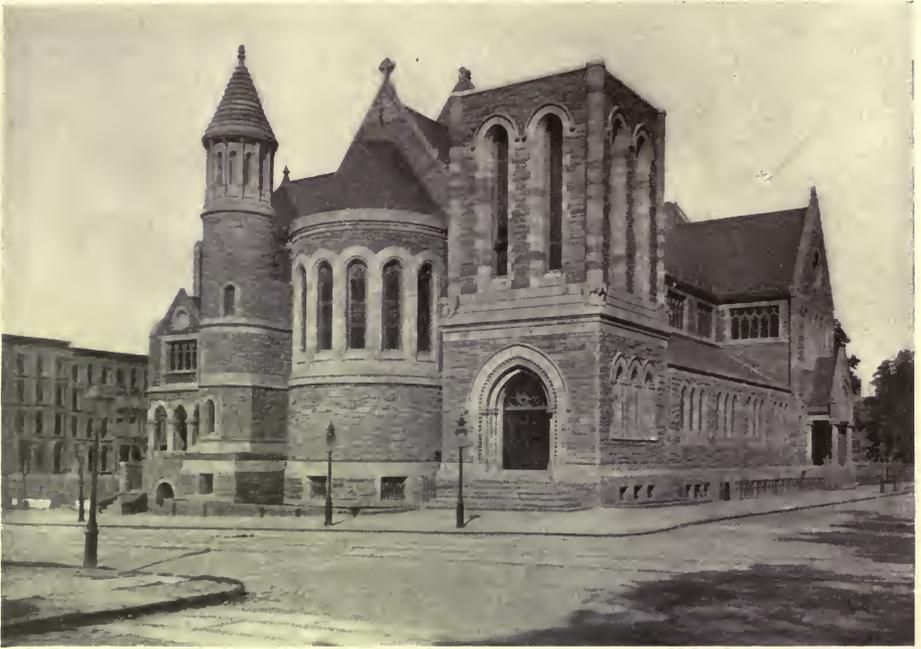
MADISON AVENUE M. E. CHURCH (1884).

60th Street and Madison Avenue.

R. H. Robertson, Architect.

at the illustrations will show that he has never been a purist, nor aspired to the praise of academical correctness, and he took up the Romanesque in his own way and arrived at his own expression in it. Perhaps the first of his works in this kind to attract general attention was the Methodist church, at Madison avenue and Sixtieth street, to which I have just referred as showing the same motive employed in the church at Clifton Springs. This, as will be seen, was rather loosely Romanesque, and not at all Richardsonian. Indeed, Profes-

sor Kerr, who, in his continuation of Fergusson, gives this church and St. James', further up the same avenue, as typical illustrations of American freedom in church architecture, denies that it is Romanesque at all, and calls it "round arched Gothic." We need not quarrel about names, and we may own that the style of this is designated rather by the subordinate parish building at the left, which is pretty unmistakably Romanesque, than by the church itself, of which the main entrance, for example, and the clerestory are quite distinctly Gothic. When I



ST. JAMES' CHURCH (1887).

Madison Avenue and 71st Street, New York City.

R. H. Robertson, Architect.

say that the motive is not so consistently worked out here as in the earlier example I mean mainly that the tower is too important to serve merely as the apex of the pyramid. The broad masses at the angles supply an ample base, but the transverse mass, here hipped instead of gabled, seems to foretell a mere finial rather than the stark tower, without a separate sub-structure, but at its base in the plane of the main wall, which rises through it, and the predominance of which tends even to confuse what would otherwise be the main motive of the façade. The main entrance, with its deep and modelled arch, and with the smaller arches flanking it, is very successfully managed. The shaft of the tower, after it has disengaged itself from the wall at a point marked by a band of flowing leafage, rather classical than even Byzantine in treatment, is appropriately stark and solid, the strong vertical lines of its narrow openings enhancing its apparent height. The treatment of its crown-

ing member with the rounded angles developed into capitals, and with a cornice which indicates rather a separation than a transition is less fortunate. The belfry stage is evidently not a belfry stage, but rather a watch-tower, the angle openings in each face being quite open to the sky and furnished at the base with a projecting balcony. The relevancy of such a crowning feature to a church tower is not obvious, but the picturesqueness of it is, and the tower is very effective, although a plain hood of roof would have crowned it more appropriately than the complicated roofing which has been devised for it. The plainness and amplitude of the rough-faced wall forms a good foil for the more elaborated features, and for the carved ornament which is sparingly introduced, and its brown contrasts well with the red tiles of the roofs. Undoubtedly this is one of our noteworthy churches.

Its successors in the same kind are even more noteworthy. St. James' at

Madison avenue and Seventy-first street, the other example chosen by Professor Kerr of American freedom in church architecture, is scarcely Romanesque at all in detail, being, so far as it need be classified, in an early, indeed the earliest, phase of French Gothic. Still, the reliance it shows upon the disposition of the masses as the source of its effect, and the simplicity of the architectural detail, including the paucity of mouldings, pretty evidently ally it with the Romanesque revival begun by Richardson, and it could scarcely antedate that revival. The peculiarity of the church is that the apse occupies the centre of the front between the tower and the parish building, from which it is separated by a turret. One would suppose from the illustration that this arrangement had in view to preserve the orientation of the altar. In fact the orientation is reversed, for the apse is at the west end. The unusual disposition has in view only a picturesque composition, and this it decidedly attains. The doorway at the base of the tower is very well and purely detailed in early Gothic, while the shaft of the tower derives a pretty distinctly Romanesque expression from the powerful roll-mouldings at the angles and from the displayed symbols of the Evangelists which decorate the merging of these into the wall at the base. The other Romanesque detail is the "lisene" or flat buttress, which marks the division of the bays along the side, and which, like the angle-rolls, is a reminiscence of Lombardic building. Only the first stage of the tower, as will be seen, is completed. The next, the shaft proper, shows two very tall openings in each face, and, above an open and rather rich belfry stage, a crowning lantern. The tower is evidently necessary to the completion of the composition, but even in its incomplete condition, this west end will be admitted to be a very successfully studied performance. The apse which is its central feature is well framed by the gable wall above it, and between the plain mass of the tower and the subordinate building. The plain flank of aisle-wall and

clerestory is terminated at the east end by a transept balancing the tower and completing the composition. It is an illustration of the freedom of eclecticism which has been employed in the design that the gable of the picturesque porch which forms the entrance to this transept is filled with Perpendicular tracery. The side of the church, with the balance of the terminal masses—the tower and the transept—is as effective in its way as the front. In spite of the incompleteness of the tower, which is an integral part of the composition, the building is architecturally one of the most interesting churches of New York.

The Rutgers Riverside Presbyterian Church, although as free as St. James', and showing no more care for the praise of "correctness," is distinctly Romanesque, and is one of the noteworthy works of its author in that kind. The plan turns to architectural account the peculiarities of the site, and, as often happens where the facts are faithfully followed, converts apparently unpromising requirements into sources of effectiveness and individuality. The street corner upon which the church stands is an obtuse angle, and the church is nevertheless set upon it rectangularly, the front being perpendicular to the line of the side street. This leaves a considerable space between the avenue (the Broadway Boulevard) and the inner angle of the church, and this space is utilized by the erection here of the tower, thus well projected and detached from the church, to its considerable advantage. This detachment is nearly complete, for the space behind the tower, as far as the transept, is also reserved so as to secure the ample lighting of the interior, no matter what disposition may be made of the adjoining lot. What has been built of the tower is in general much like the base of the tower of St. James', excepting that the doorway is detailed in Romanesque instead of Gothic, while the heavy Romanesque angle-rolls of the Gothic building are omitted. In the photograph the church seems to be almost in monochrome. In fact three tints of sandstone are em-



RUTGERS RIVERSIDE CHURCH (1889).

Boulevard and 73d Street, New York City.

R. H. Robertson, Architect.

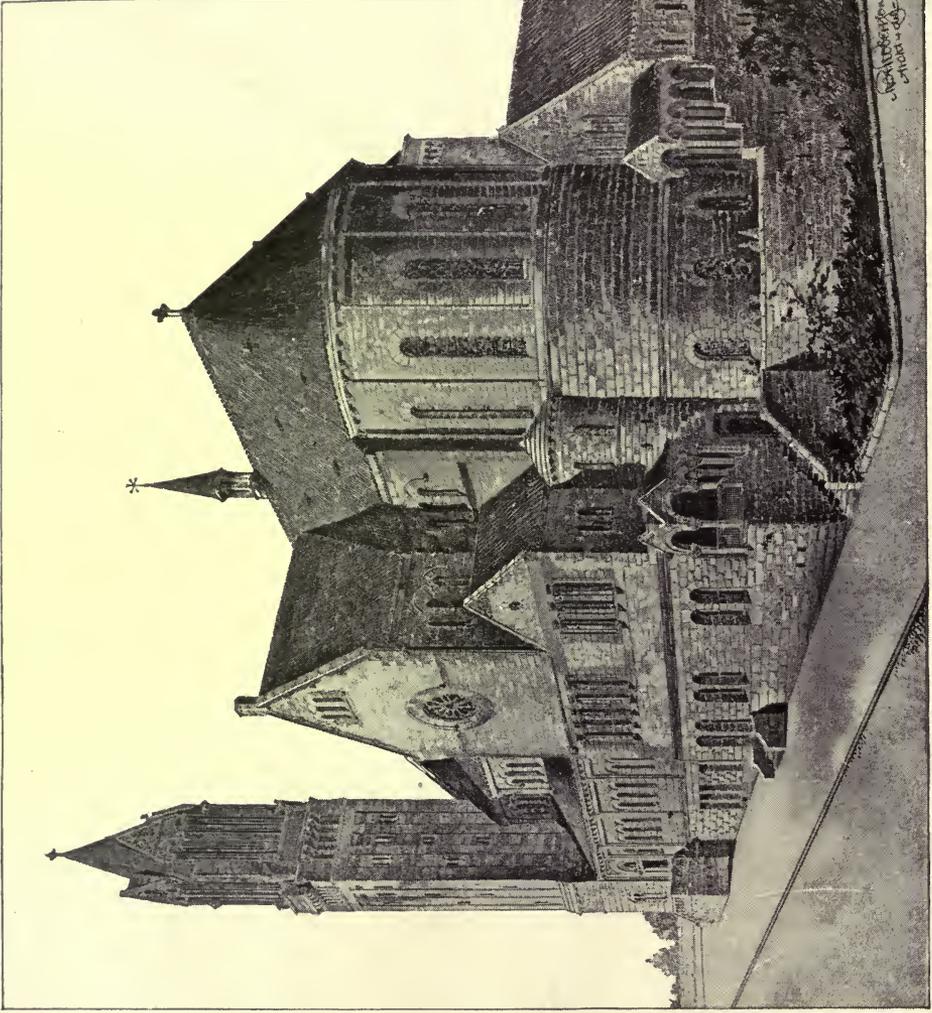
ployed in it. The field of the walls is in the reddish Potsdam sandstone, while the wrought work is for the most part in the purplish New Jersey stone, in alternation with which, in the voussoirs of the arches, is used the darker brown of the Longmeadow stone. Although, if an architect's range of choice in tints were as wide in stone as it is in pigments this combination is scarcely that which he would select, its contrasts are effective. The Potsdam stone, an excellent material for use in rough masses, is too intractable for carved work, and the employment of the two brown-stones in the voussoirs forcibly expresses the structure of the arch, and to some extent supplies the place of more elaborate and more costly modelling. The front is an effective composition effectively detailed. The canopied and pillared porch at the centre, with its flanking pair of openings, makes an impressive entrance, although the entasis of

the shafts is much exaggerated. The proportions and the modelling of the arch are excellent, and its effect is heightened by the mouldings and ornaments, here in pure Romanesque, well designed and well executed, as is also the carving which fills the tympana of all the door-heads. The triplet of arches above is bounded and separated by the Lombardic lisenés, here developed into complete pilasters with capitals, and supporting the carved symbols of the Evangelists. Inasmuch as the pilasters serve no purpose but to carry the symbols of an "evangelical" denomination, it seems that they would have been more effective for being detached as independent features from the wall in which they are engaged, and this, as we shall see, seems to have been the view of the architect himself in a subsequent work in which a similar feature is carried much further. In the present instance, the

pilasters are neither constructive nor frankly decorative, and the front would probably be better without them, although, with or without them, it is an interesting piece of architecture. Upon the whole, however, the new flank is even more interesting, being in fact one of the most successful things we have in its kind. It is effectively framed between the turret at one end and the transept that constitutes the Sunday school at the other, and the expanse of the rough reddish wall, which would be impressive of itself, becomes much more impressive through the treatment by which it is relieved. This treatment is in a tolerably consistent Romanesque. The bays, both in the aisle-wall and in the clerestory, are divided by pilaster strips, in the former case starting from the sill course and in the plane of the wall below, so that each triple opening pierces a recessed panel framed by the projecting wall below, by the pilaster strips and by a plain but sufficient dentilled cornice. The jambs are un moulded and the only relief to the absolute plainness is the carved blind arch of the central opening. In the clerestory, this arch is opened, and a darker stone is introduced at the impost and in the vousoirs. The difference suffices to give variety without impairing the homogeneousness of the treatment. The gabled transept at the west end is another successful piece of design. The projected porch below is one of the picturesque features which Mr. Robertson seldom fails to give us, even in buildings to which the feature does not seem to "belong." Here the feature is entirely appropriate, indeed an integral part of the composition and gains correspondingly. It is a triplet of arches in the lower story, with a central arcade of four openings above, flanked by gablets, each pierced with two arches. It is a successful piece of design, and an appropriate termination to a very satisfactory church.

St. Luke's, Convent avenue, is also distinctly a Romanesque church, and perhaps the most successful of the

group we are considering, although like all the rest but the first, it suffers from the absence of the tower designed for it, and the tower is here perhaps more important as a part of the design than in the others. This building, like the last, makes a demand upon the ingenuity of the designer by one of those unusual dispositions which the architect ought to hail as opportunities, but which the commonplace architect is apt to bemoan as intractabilities. In this instance the peculiarity is the sudden and sharp decline of the ground from the front, until at the rear it is lower, by the height of a very tall story, than at the sidewalk line. The rear view is quite as important as the front, and it behooved the designer to make it worthy of its conspicuousness, as it will be agreed that he has done. The basement wall is returned at a right angle in a square and solid mass of masonry adequate to its architectural purpose of serving to spike the structure firmly to the ground and establish it in its place, a purpose which is still further fulfilled by the wing of perfectly plain wall that encloses the staircase. The upper run of this staircase and its landing give occasion for a very happy feature of porch and arcade, a reminiscence, I suppose, of the famous staircase of Canterbury. The other features that fill the space of the choir-aisle, the gabled vestry-room, if it be a vestry-room, and the attached turret, with the doorway at its base, form a picturesque huddle from which the stark-mass of the plain round apse is effectively detached and by which it is effectively relieved. The church throughout is notably severe in treatment and owes much of its impressiveness to its austerity. There is nowhere any elaborate moulding nor as yet any elaborate carving. Doubtless the capitals of the arcaded porch of the front, at present mere blocks, are meant to be elaborated some day, and the arcade of five openings in the gable to be enriched. But even so the architectural character will be that of austerity, of a building relying for its effect upon the disposition and proportion of



Convent Avenue, New York City.

ST. LUKE'S CHURCH (1892).

R. H. Robertson, Architect.

its masses alone. This has been so successfully studied that the result is one of our most noteworthy churches. The difference in tint of the two stones employed serves everywhere to carry out the design and to emphasize the structure. The tower, as designed, is of the same austere character as the body of the church, a plain, almost solid shaft, buttressed only with strips after the Lombardic manner, and crowned with a belfry-stage, which is still of a monastic severity. By reason in part of the situation of the church and in part of the design, the tower is, as has been said, more necessary than in the other churches we have been considering, and it is to be hoped the parish may soon see its way to the architectural completion of the work.

I have already had occasion to refer, and shall have occasion again to refer, to Mr. Robertson's felicity in "features." An example of this felicity is his addition to the Church of the Messiah in Brooklyn of a tower, or rather of a lantern, which consists of a circular colonnade, roofed with a steep hood, and set, by means of a transition which shows much cleverness and ingenuity, upon the old and square substructure. There is no patent incongruity between the new work and the old, and yet by means of the slender elegance of this crowning feature, and of the rich porch which he also added, the designer has contrived to impart a positive and grateful architectural character to that which before was absolutely characterless and commonplace.

In these churches it is plain that Mr. Robertson has attained an individual and an interesting version of Romanesque. This is equally plain in the secular works that are more or less loosely in the same style. Of these I am compelled to put first in merit the beautiful station at Mott Haven. In this there are not only the elaborated single features which we rarely fail to find even in those of his works in which we fail to find a composition to the total effect of which all the parts contribute. We find also unity, unity in variety, and the features are parts of a physiognomy. The building and its de-

pendencies are nearly a monochrome in red—nearly, but not quite, for common brick of a good color is used in the walls, pressed brick in the jambs and arches, red tile in the roof and red terra cotta in the ornament, and the slight variations of tint that result add life and charm to the design. There is scarcely any building more featureless than a railway station reduced to its simplest expression. It is a low shed with a sheltered platform. But then it may without incongruity have a porch, a clock-tower is especially appropriate to it, and the baggage yard may be allowed its own gate. With no other sources of variety than these an artistic architect may make a charming building, as we see here, or rather as we saw here, for the recent changes in the tracks, involving the removal of the station, have been carried out with a quite ruthless disregard of or insensibility to the merits of the work, and have destroyed or mutilated the dependencies that were integral parts of the composition. Perhaps the most successful point in the general composition is the skill with which the whole low substructure, by means of the separate treatment of its separate roofs, is grouped about the central tower and made to converge to it. But the treatment of the several features is equally happy in their general form and in their proportion, and the detail is very carefully and successfully studied in scale as well as in design. There are some happy innovations, such as the rounded soffits of the free-standing arches, but evidently nothing is done for the sake of novelty. Upon the whole this seems to me the most perfect, the most uniformly and consistently excellent, of the work the designer has yet done. If it happened, as it may have happened, that he had at the time of its design more leisure on his hands than has usually fallen to his lot since he became a busy architect, the work certainly got the benefit of that fact. One need not grudge successful architects their incomes in order to recognize that the artistic and the mercantile standards are different, and that "the hand of little employment," whether or



NEW YORK CENTRAL STATION AT CANANDAIGUA (1888).

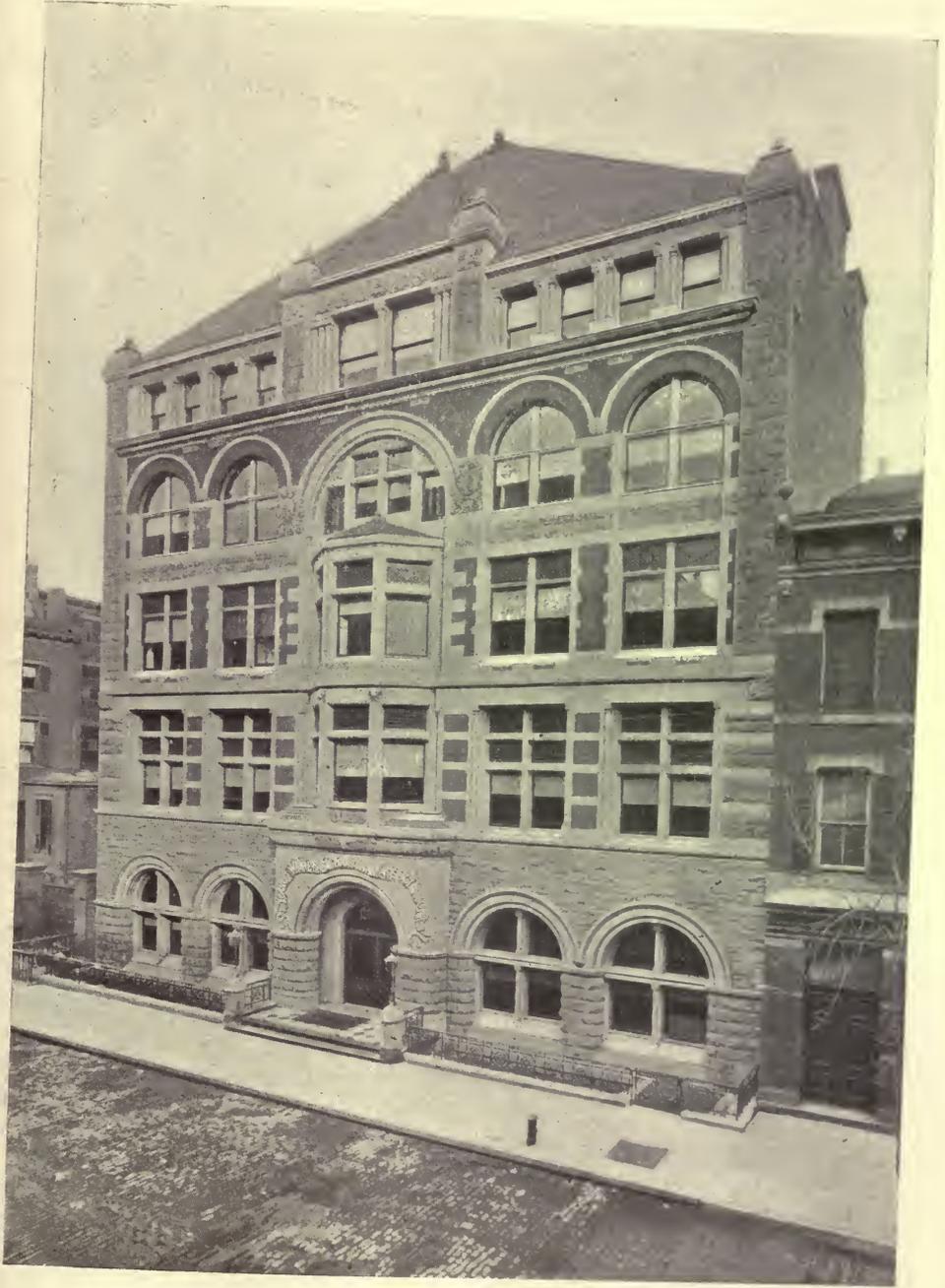
R. H. Robertson, Architect.

not it "hath the daintier sense," which Shakespeare attributes to it, has necessarily the more careful touch.

There is another station, at Canandaigua, which is noteworthy as showing in a much simpler and less elaborated form, the essential merit in composition of that at Mott Haven, that is to say, the harmonious subordination of the rest to the dominant feature. This seems to me to have been the essential merit of Richardson's design, which the present work recalls. This recalls it more obviously in the choice of the Richardsonian combination of material, though it does not show the tremendous exaggeration by which Richardson so emphasized the point of his design that the wayfaring man could not miss it. Apart from all that, the wayfaring man of a cultivated mind cannot come upon such a piece of work as this at a country station without feeling gratitude to its designer.

An earlier work than the Mott Haven station, and perhaps a more conscious and deliberate essay in historical Romanesque, is the Young Women's Christian Association in

Fifteenth street, an interesting application of the style to a modern street front. One of the things to be kept mainly in view in a situation in which the architect cannot command his surroundings, is the desirableness of conformity, and in the shiftings of New York this involves conformity not only to what exists, but to what may probably come to pass. This is a duty of what may be called artistic civism, and Mr. Robertson seems to me to be noteworthy and laudable for the extent to which he keeps it in mind. In some European cities it is enforced by public authority, but in American cities there is no compulsion to it except what the designer voluntarily imposes on himself. The present front "will go" with anything that a civilized designer is likely to adjoin to it. It is a symmetrical, decorous and well-behaved composition, with a massive basement, a well lighted superstructure, of which the lightness does not threaten the stability, and an effective colonnade by way of attic under a visible roof. The massiveness of the basement seems to be obtained at some



YOUNG WOMEN'S CHRISTIAN ASSOCIATION (1883).
Fifteenth Street, New York City.

R. H. Robertson, Architect.



East 16th Street, New York City.

MARIA LOUISA HOME.

R. H. Robertson Architect.

sacrifice either of expression or of practicality—where does the floor line come?—but in the superstructure there is no suggested sacrifice in either direction. The central feature is an effectual safeguard against monotony, without being excessive, and upon the whole the building is an exemplary street-front. Much the same may be said of the counterparting front on the street in the rear, which is very properly, less institutional and more domestic of aspect. The front, however, has an emphatic triple division, the construction is expounded throughout in the design and the whole is relieved from commonplace and receives a touch of picturesqueness through the colonnade at the top and the well-tailed porches.

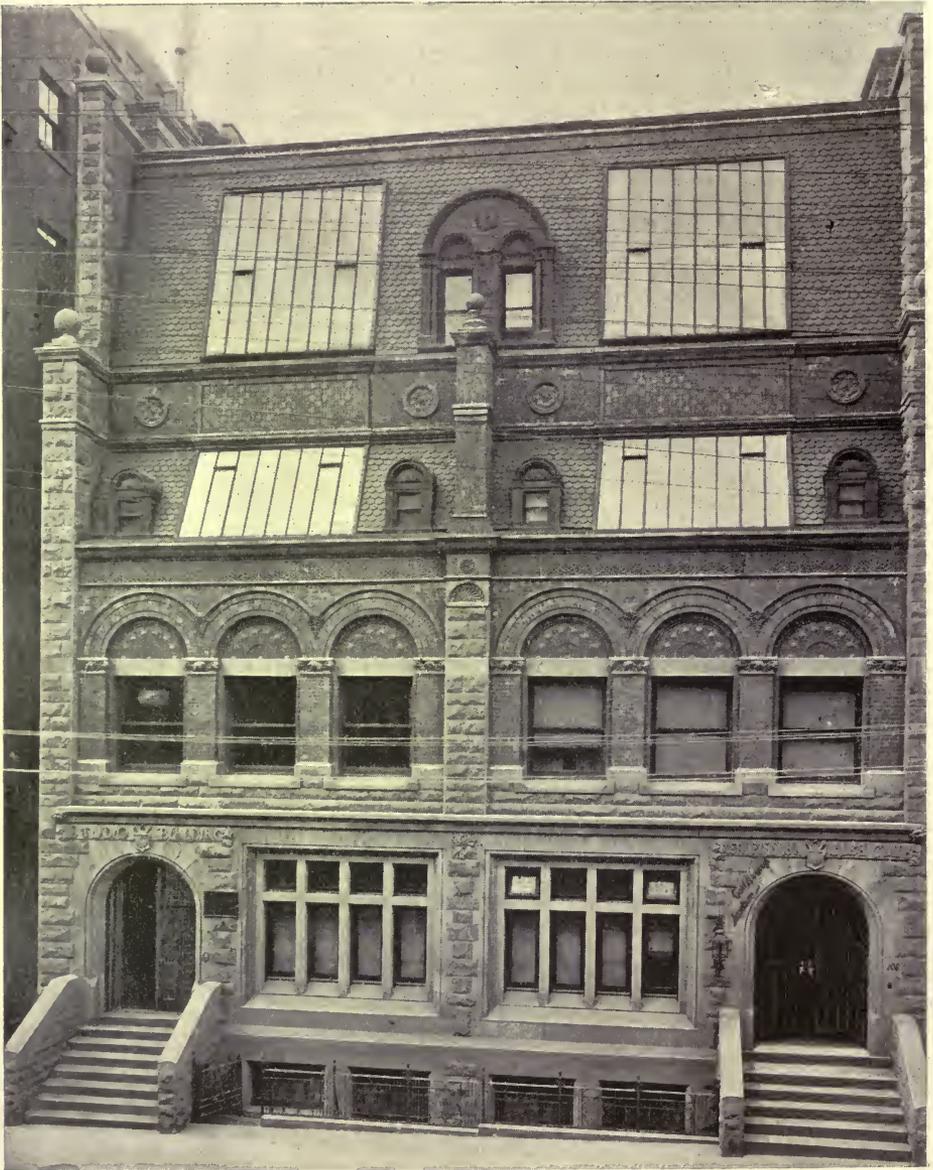
That is, however, a distinct infelicity in the design by which the piers that run through four stories are aligned in whole or in part over the openings of the basement. Plainly either they should have had visible means of support in still more massive piers below, or else the whole basement should have been of such massiveness as to count, with reference to the superstructure, as a virtually solid wall.

The Railroad Men's Building, at Forty-fifth street and Madison avenue, is an interesting and picturesque structure, in the nature of a club house. The nearly square corner building is the centre of a composition which has now been completed by an extension on the street, corresponding to and more or less balancing the extension on the avenue front shown in the illustration. The general treatment of the building is plain. It owes its effect, which is very good, first to its general disposition and picturesque outline, next to the successful adjustment of its voids and solids, and then to its effective combination of color. A superstructure of tawny brick for the field of the wall, with red brick and red terra cotta for the emphatic fronts of structure, surmounts a basement of red Scotch sandstone and is surmounted by roofs of varnished brown tiles. Ornament is sparingly introduced, but always at the

right place, in the right quantities, and of notably good design. Mr. Robertson has done nothing better in its kind than the canopied doorway with its rich reeded pier and decoration in terra cotta, and the equally rich and spirited carving of the stone buttresses of the "stoop."

Undoubtedly by the same hand is "The Holland," at Broadway and Forty-fifth street, a three-story building which, by its modest altitude, denotes that it is a provisional structure, meant to last only until a more definitive disposition is made of the ground on which it stands. This is not suggested by the architecture, which seems substantial enough. The combination of color is the same as in the previous building, and the building derives picturesqueness from the emphatic projection of the varnished roofs over the walls and from the belts of shadow thus secured. The "feature" is the entrance to the upper floors at the centre of the front, a rich and baroque construction of a round pediment in terra cotta upon a pair of plain piers, that suggests a Batavian origin. Although the building seems out of place where it stands, one would be very glad to meet it, barring the painful attenuation of the angle pier to an iron post, in a suburb or an inland town to the permanent conditions of which it conformed. Of course the tenuity of the angle is not to be imputed to the designer, being the result of a commercial demand.

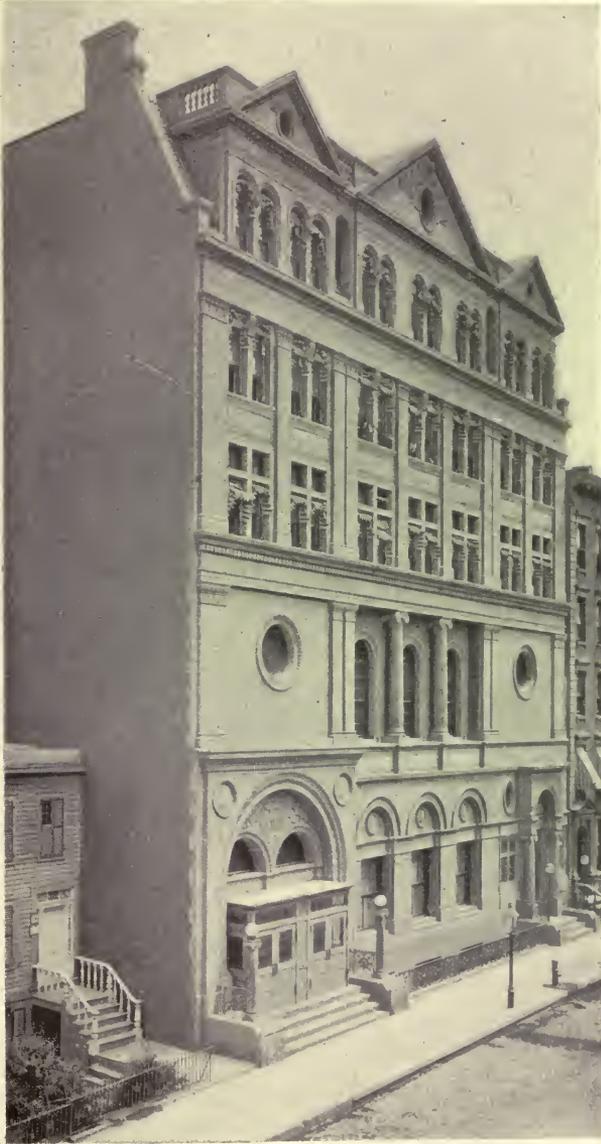
Another unusual type is what is now known as the Studio Building in West Fifty-fifth street, but was originally erected for the Mendelssohn Glee Club, to which the rent-paying studios were merely a preface. But the preface prevented the signalization in the architecture of the primary purpose of the building, which was in fact indicated only by a sign over one of the two equal entrances. Externally the building, as it was designed and built, was a studio building only. The front is of only fifty feet, though it looks very much longer, thanks to the emphasis put upon the horizontal lines, even though it is divided at the centre



West 55th Street, New York City.

STUDIO BUILDING (1885).

R. H. Robertson, Architect



West 40th Street.

MENDELSSOHN GLEE CLUB (1892).

R. H. Robertson, Architect.



ACADEMY OF MEDICINE (1889).

West 43d Street, New York City.

R. H. Robertson. Architect.



ENTRANCE, ACADEMY OF MEDICINE (1889).

R. H. Robertson, Architect.

by a strong vertical line, apparently the emergence of a party wall. The wall is but of two stories, the remaining two being in the roof. The unusual disposition gives the building great quaintness, though it is evidently not sought for that purpose, and indeed explains itself to every passer. The treatment is perfectly straightforward and logical, a stone basement, a middle term in brick and terra cotta, and a tall roof in red tiles and glass, nearly as tall as the whole substructure, in two pitches to accommodate two tiers of studios, and with a band between them enriched with ornament in terra cotta. The triple division is very strongly emphasized by the change of material and the radical change of treatment, which, moreover, is evidently not arbitrary but the result of a straightforward and idiomatic following out of the nature and capacity of each material. In a line drawing it would be as plain as in the photograph or the fact that the basement

was of stone, and the middle story in baked clay and the roof in slate or tile, with features and ornaments in terra cotta. The perfect naturalness of the treatment gives much of its charm to this unpretentiously picturesque street-front.

A very much more important work is the Academy of Medicine in Forty-third street. It must be owned that the interest here is in the parts rather than in the whole, that the features, interesting as they are in themselves, do not make up a physiognomy. In the first place the front, but that it has only a single entrance, would indicate two buildings rather than one. This separateness seems to be sought and is certainly emphasized. The three pairs of arches under the gable, for example, are not only not repeated along the adjoining wall, where they are succeeded by two lintelled and mullioned windows, but a change of material enforces the change of treatment, a field of rough brownstone succeeding the

field of red brick, and the dormer that crowns the lateral wall having no counterpart in the wider front. Hide the front below the cornice over the great arcade, and you will say unhesitatingly that it is the front not of one building but of two, designed it is true, so as to help each other, and in conjunction, but by no means parts of one whole. The one continuous feature is the big arcade, of which the three openings to the left are quite congruous with the front in which they stand, but the two to the right are plainly excessive in scale and exaggerated in treatment for the front to which they belong. Indeed this exaggeration is the chief fault in the design of the narrower front considered, as one must consider it, by itself. Moreover, the arcade loses much of the impressiveness to which its scale and design entitle it, by the lack of abutment. In order to give it assurance of stability it should be framed between massive flanks of wall rather than these terminal piers, which, quite adequate for an ordinary front, are quite inadequate as the ultimate abutments of an arcade that exerts so powerful a thrust. Mr. Richardson's instinct for structural expression frequently failed him at this point, and made him indifferent to the visible abutment of his tremendous arches, although it is not only demonstrable but obvious that the more powerful an arch with insufficient abutment the weaker is the construction. The effect of the arcade here is still further weakened through the cutting of the bases of two of its openings by the balustrade of the porch. The main defect of the design is a defect of unity. The front is neither single nor twofold, and the architect must, we think, be convinced by the contemplation of the completed front that the impulse which led him to divide it in design was a mere caprice. The successes are successes of detail, rather of features, and how good the features are. The porch is of a more than Romanesque, of an Egyptian massiveness, and, with the background of solid shade secured to it by its own projection and still more by the re-

cession of the wall behind it, is a very telling feature. Such carving as it bears is excellent, though a greater quantity would have protected the porch from the criticism that its massiveness degenerates to rudeness. The single pillar is powerful, though the entasis is much exaggerated, as is the case with the attached columns throughout, and entails an unfortunate effect. Another feature is the treatment of the narrower front above the arcade, that formed by the pair of mullioned windows and the heavy dormer. Another is the main gable, in which indeed the relation of the three pairs of arched openings to the quadruple colonnade leaves something to be desired, but which has spirit and picturesqueness, and in execution derives a singular charm from the contrast with the stone of the mellow and velvety brickwork.

I have used up so much of the space to which I am limited in talking about Mr. Robertson's work in Romanesque that, while that phase of his work is by no means exhausted and interesting examples of it have been passed over altogether, there is very little room left in which to speak of the other phases. But I am the less sorry for this because the Romanesque, or at least the Romantic, phase of his design seems to be so much the more characteristic and important as to constitute artistically the bulk of his work. Of course it is idle to quarrel with any individual architect for "keeping up with the procession" and changing his style when it is clear that the fashion has changed. Fatal to architectural progress as these capricious changes may be and are the individual architect who merely submits to them is to be commiserated. He has always ready for his critic the trite plea of the French criminal, and the critic cannot fairly repeat the retort of the French judge. Certainly the present critic does see the desirableness of his subjects survival and continued practice of architecture, in whatever mode may be the mode. But then Mr. Robertson's Romanticism is so inveterate, and the characteristic of his best work is so



Springfield, Ohio.

FRONT VIEW, RESIDENCE OF A. S. BUSHNELL, ESQ.

R. H. Robertson, Architect.



Irvington, N. Y.

DR. WARNER'S HOUSE (1896).

R. H. Robertson, Architect.

evidently picturesqueness, even when it becomes a rather random picturesqueness, he is so much more at home in free architecture that it is a distinct loss that he should have felt constrained to "follow a multitude to do" classic. The loss is the greater because his free and eclectic version of the mediaeval styles shows, upon the whole so steady an advance in the sobriety and restraint which it is the more necessary that an architect should impose upon himself when it is not imposed by his style. Take for example the Romanesque house at Springfield, Ohio, and the large country house at Irvington, which is distinctly composed in late English Gothic, and of which the main merit is the unity of the composition and the subordination to the total effect of the picturesque features for which one very seldom looks in vain in Mr. Robertson's work. Another country house

at Irvington is less extensive and elaborate, but not less successful, although the ample music room seems to have been appended as an afterthought, and does not properly form part of the design. This is one of the characteristic American successes in which a work that is of no style yet has style.

This is the merit of a number of town houses that Mr. Robertson has done, of which some that it is not feasible to illustrate here are as significant and successful as those that are shown. A house-front in a row is a difficult problem, because in this also the architect must conform not only to his actual surroundings, but to what his surroundings are likely to be. A "purple patch" of picturesqueness that seems to hold up its neighbors to public odium is a piece of incivism from which one gladly turns to an example of dull decorum. The twenty-foot front in Fifth avenue, herewith shown, is a



Irvington, N. Y.

COUNTRY HOUSE.

R. H. Robertson, Architect.



Irvington, N. Y.

FARM BARN.

R. H. Robertson, Architect



Scarborough, N. Y.

MR. H. WALTER WEBB'S HOUSE,

R. H. Robertson, Architect.



Scarborough, N. Y.

MR. H. WALTER WEBB'S HOUSE.

R. H. Robertson, Architect.



Fifth Avenue, New York City.

PRIVATE RESIDENCE

R. H. Robertson, Architect.

case in point. The decorum of this indeed does not become dullness. It is a well-composed, harmonious front that is none the less worth looking at because it does not force you to look at it. What makes it especially pertinent and exemplary is that it replaces an aggressively picturesque front by the late Wrey Mould in particolored Victorian Gothic, which many New Yorkers will recall. Of course this was not without interest in itself, but it was so evidently "unneighborly" that it is no wonder the owner found it a social duty to replace it with something less importunate. The same praise of conformity and decorum belongs to the dwelling in Fifth avenue, near Sixty-eighth street, and to other dwellings by the same architect in upper Fifth and upper Madison avenues. If one can add a touch of picturesqueness without disturbing the

air of peacefulness and good neighborhood which is the first essential of a town house, all the better, but he incurs a certain risk in the attempt. Mr. Robertson has several times ran the risk and escaped with impunity, notably in the design of two dwellings in West Fifty-fourth street, of which one in particular, No. 50, is especially exemplary as showing how a piece of domestic architecture, which is only a street-front, may respect all the conditions and relations of its place and yet be an individual and charming work.

As might be inferred from his work in the romantic styles, Mr. Robertson's work in classic is extremely free and does not solicit the praise of purists. The only academic piece of classic he has essayed, I think, is a tomb at Irvington, which is as studiously and consciously "correct" as if in designing it



Fifth Avenue, New York City.

MR. JOHN H. INMAN'S HOUSE.

R. H. Robertson, Architect.

the author had had a professor in his mind, and which is a very successful essay in its kind, successful that is to say in the adjustment and the scale of forms and details all settled for the designer beforehand. Another work as consciously classic, the Savings Bank in Ninth avenue, is not quite so successful, because here the consecrated forms had to be adapted to practical requirements. The portico, taken by itself, is an "example," but the longer side lacks not only formal symmetry, but artistic balance, and the skylighted dome does not so dominate the building as to account for and justify the

transeptual arrangement. It is pretty evidently either too important or not important enough.

Of course in these things the manifestation of individuality is not to be looked for. Where he has permitted himself more freedom, however. Mr. Robertson has succeeded in imparting a distinctly individual character to his classic designs. This is eminently the case with the building of the United Charities in Fourth avenue, and the building of the Mendelssohn Glee Club in West Fortieth street. Though there are few specific resemblances in the detail of the two, nobody who had



CHAS. T. YERKES' HOUSE (1896).

Sixty-eighth Street and Fifth Avenue, New York City.

R. H. Robertson, Architect.

seen both could doubt that they were the work of the same architect. In each case the building seems to have been planned according to its requirements, and the classic detail employed to garnish the disposition arrived at by this manner of design. This was the method of the free classic building in Germany, France, England, everywhere, indeed, out of Italy. It entails, indeed, a complete sacrifice of purity, and this in a wider than the scholastic sense, but it offers in compensation a homely picturesqueness and an unsought quaintness that are not without their charms. This attraction these buildings have and it is perhaps enhanced by the fact that their composition, while it is coherent, is

highly irregular. The United Charities is unmistakably an office building, in which there is no sacrifice of the practical requirements, but which nevertheless has an architectural interest, by reason of such features as the ample entrance, the order that embraces the upper stories, and the spreading dormer gables of the roof. The Mendelssohn Glee Club, on the other hand, suffers from the fact that the front of two stories, corresponding to and indicating the floor and gallery of an ample auditorium, is surmounted by three stories of rentable apartments, which are much too important to be regarded as a mere appendage of the principal apartment, and which are not, and perhaps could not be, architectur-



RESIDENCE, THOS. A. MCINTYRE.

West 75th Street, New York City.

R. H. Robertson. Architect.

ally incorporated with it. It will be agreed that the music-hall, taken by itself, is a very successful performance, and that, if it had been commercially practicable to omit the two interpolated and architecturally irrelevant stories, and set the roof duly modified, above the second story, the result would have been an extremely attractive and individual front. It is such a front, though its merits are somewhat obscured by the superincumbent offices,

a harmonious, dignified and expressive composition.

An extreme example of free classic in ecclesiastical work is St. Paul's (Methodist) Church, not yet completed, in West End avenue, built in buff brick and terra cotta of a fortunate irregularity of tint. The architecture of this bears something the same relation to the more common classicity of classic churches as the "Jesuit style" to the more formal Renaissance. It



Irvington, N. Y.

WARNER TOMB (1895).



THE NEW YORK SAVINGS BANK.

Fourteenth Street and Eighth Avenue.

(Now Building.)

R. H. Robertson, Architect.



ST. PAUL M. E. CHURCH (1896).
86th Street and West End Avenue, New York City.

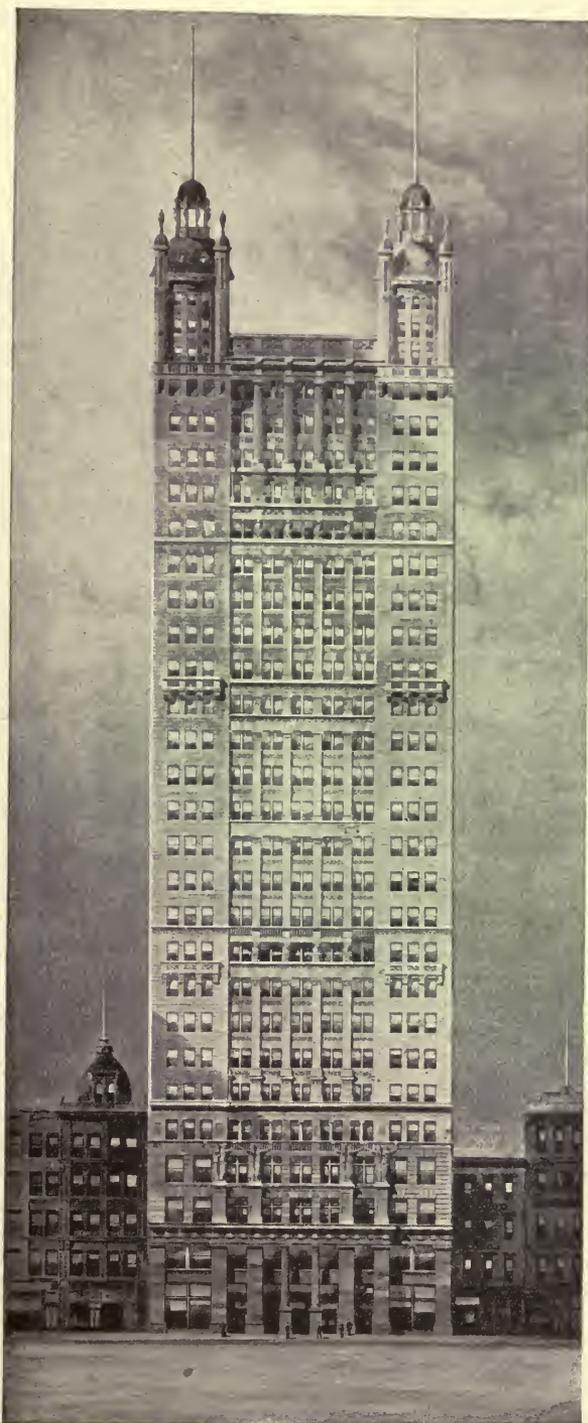
R. H. Robertson, Architect.



RUTGERS RIVERSIDE CHURCH (1889).

Yonkers, N. Y.

R. H. Robertson, Architect



PARK ROW BUILDING.
(Now Building.)

New York City.

R. H. Robertson, Architect.



LINCOLN BUILDING (1885).

Fourteenth Street and Broadway, New York City.

R. H. Robertson, Architect.

is, if I may so say, unscrupulously picturesque, and not unsuccessfully so, although in fact the plain and powerful flying buttresses of the clerestory give a much greater sense of structure and stability than in the illustration, a sense which is by no means increased by the treatment of the outer buttresses, not as lateral supports, but as upright pilasters. The porch shows the same motive of four crowned pilasters as the front of the Rutgers Riverside church, but here it is successfully developed as it was there only intimated. The result is an imposing feature of its

kind, which gives the front a rich, festal, even "jolly" aspect. Whether that aspect is appropriate is quite another question.

Mr. Robertson has done quite his share of "skyscrapers," from the comparatively modest altitude of eight stories to the unquestionably immodest altitude of twenty, and even, in a project now in course of execution, to the "record" of twenty-seven. Of this latter, the Park Row building, it doth not yet appear what it shall be, and the drawing of one face of what will be a very conspicuous solid does not



CORN EXCHANGE BANK BUILDING (1892).
Corner Beaver and William Streets New York City.

R. H. Robertson, Architect.



ENTRANCE CORN EXCHANGE BANK (1892).

New York City.

R. H. Robertson, Architect.

afford a basis for criticism. But every New Yorker knows by sight the Lincoln, the Mohawk, the McIntyre, the Corn Exchange Bank and the building of the Tract Society. Upon all these it seems to me a fair general criticism that Mr. Robertson does not, artistically speaking, take his skyscrapers seriously enough. That he takes them seriously, practically speaking, may safely be inferred from the fact that he has had so many of them to do. Of course the skyscraper is still *feræ naturæ*, but a good many earnest designers have devoted themselves to bringing it within the reign of law. One of the things that they seem to have established is that the universal maxim that a work of art must have a beginning, a middle and an end, is in this case best observed by dividing the skyscraper into base, shaft and capital, confining the conspicuous ornament to the terminal member, and leaving the shaft unadorned, and undivided except by the necessary divis-

ion of the stories. Mr. Robertson declines to recognize even this convention. In the Lincoln building, the subordinate division is carried so far as to confuse the principal division. In the McIntyre, the primary division is maintained, but the base seems excessive, though the main drawback to the effect of this is that the basement is the lightest and most open division and that the corner of the building has no visible means of support. Of course this is the architect's misfortune and not his fault, but its effect is none the less disastrous. The Corn Exchange Bank has an extremely satisfactory basement, an adequate substructure for the pile, and the colonnade that forms the capital is effective. But here the shaft is divided into two nearly equal parts by a horizontal member as important as any in the building, except the crowning cornice. The architect must I think agree, in view of the completed work, that the omission of this member and an identical treat-



AMERICAN TRACT SOCIETY BUILDING (1894).

Nassau Street, New York City.

R. H. Robertson, Architect.

ment of the seven stories between basement and attic would have resulted in a more harmonious and effective building. In the Tract Society the basement is itself divided into two parts, and the superstructure under the cornice into three, consisting each of three stories, of which the openings are recessed, while the walls of the single stories that mark the divisions and belt the building are brought forward to the plane of the piers. The steel-frame construction has, indeed, a unit greater than a single story. If the architectural division corresponded to this and expressed it, the masonry might be arranged in the successive layers, dependent on the framing, of which the construction is composed, and so treated as to explain their dependence. Such a treatment would undoubtedly be an advance in expres-

siveness. But the triple division of the shaft here seems to be as arbitrary as that of the twofold division of the base, and not to correspond to any actual requirement, mechanical or aesthetic, although it is no doubt both more reasonable and more rhythmical than the division of the shaft in the Corn Exchange Bank.

Upon the whole, none of these tall buildings contributes very distinctly to the solution of the specific problem of the tall building, and none can be called successful in its entirety. The architect's power of design is shown in the parts, rather than in the whole, in the picturesque features in which his other work abounds. The basement of the Corn Exchange Bank, with the decorative treatment of the angle and the main entrance; the top of the McIntyre building, with the long colon-



TOP OF AMERICAN TRACT SOCIETY BUILDING (1896).

R. H. Robertson, Architect.

naded attic and the picturesque corner tower; these are among the effective bits in our street architecture. A much more effective feature, indeed the most effective feature in the sky line of the lower city, as seen from either river is the crown of the Tract Society building. This does not pretend to "belong" to the building, or to answer any utilitarian requirement. In fact, it

is emphatically detached by the withdrawal of the building behind it. It is confessedly an extraneous and picturesque crowning member. It has been so carefully designed in scale that it is effective and telling as far as it can be seen, and it would be rather petty to insist upon the illogicality of a feature which so completely justifies itself to the sensitive beholder.

Montgomery Schuyler.





By John La Farge.

“MUSIC.”
In residence of Hon. Whitelaw Reid,
New York City.

Photo. Copyright,
Curtis & Cameron, Boston.

CONSIDERATIONS ON PAINTING.*

THIS fascinating book has received some part of the success that it deserves. Our review of it comes so late that the second edition is out, and that the reviewer has the great and somewhat unusual pleasure of feeling sure in advance of the public sympathy when he tries to praise the book as it ought to be praised. The occasions are so very rare when an artist of real force and originality—who has also gained so much of the popular favor that he has had important work to do—has allowed himself to speak his full mind to the public as to his art, its conditions, its nature, its peculiarities, and the way in which different masters of that art have understood it, that even a much less delightful book than this would appeal to us strongly and make a demand, not to be ignored, on our attention. The book, however, is of absorbing interest once the reader has attuned his mind to the process of thought. This is not so easy a matter as at first sight might appear. Most persons who have tried to read this book will have found themselves baffled at first in the attempt to carry the full sense of one page over leaf, and,

when they are reading the conclusions reached by the author, to retain in mind the exact character of the premises. The style is singularly varied, personal, forcible; it is chromatic in a sense, as being brilliant and yet warm and sympathetic, just as we call Macaulay's style brilliant, but hard and cold. And yet this poetical style is so loaded with significance and matter that while we think we are reading poetry, we find we are reading a philosophy a little too deep for us. Robert Browning has tried a life-long experiment of loading verse with complex thought; and the verse staggers and limps and goes with jerks and starts until one who is a lover of Milton, let us say, or Shelley, finds that he cannot read Robert Browning, as he is not prepared to face such ungainly and discordant verse for the sake of any philosophical profundity which he can expect to find there. La Farge's philosophy is, on the other hand, contained in a prose so poetical that the mind is apt to be taken away from pursuit of the meaning by the charm of the verbal composition:—at least it is so that we try to explain the unquestioned difficulty there is in keeping the mind fully informed as to just what the author is trying to tell us.

John La Farge is an artist in a self-conscious way, and he is also an ar-

*Considerations on Painting.—Lectures given in the year 1893, at the Metropolitan Museum of New York, by John La Farge. New York: Macmillan and Company, and London. 1895.

tist in an extremely childlike and unconscious way, and the two artists co-exist and form one in a very inexplicable and puzzling manner. Those who know the man, as his associates in America and in France know him, are aware of the profound learning he has gained in the history, properly so called, of painting. He has not seen so many of the great works of the past as many of his contemporaries, but those that he has seen, he knows as a reading man knows his favorite bits of prose or verse, and learning is not so much a knowledge of separate facts, as the knowledge of what a certain number of facts mean, especially when they are taken together. On modern art, he has, let us say, his peculiar opinions, which would amount to prejudice in a mind of a less philosophical or of a less artistic man, but even what might be called a prejudice, when it arises in such a mind, is worthy of any one's careful consideration, and, in fact, commands the deferential acceptance of every student, as being a proposition which is true just so far as any human truth is true. Whatever is called true is true only for a certain person in certain circumstances. No scientific, philosophical, or poetical truth is immutably true, and in like manner La Farge's opinions are open to the question as to whether they will be binding upon his successors of another generation: but for us—for the men who have grown up during the years of La Farge's own life—they may be taken as true without any such attempts to explain them away. He admires Rembrandt as the executive master and as the artistic creator, with what seems to some people an excess of comparative admiration. One of us would rather be taken to Michelangelo's frescoes, perhaps, and another to Paul Veronese's mighty paintings on stretched canvas. It is, indeed, easy to feel that we should like more explanation from La Farge as to just why he admires Rembrandt so profoundly. When, however, the work admired is in itself so admirable by the universal consent of art lovers, and

when the man who expresses his, perhaps, excessive admiration, is himself so easily our master in executive art, and in its analysis and criticism, then we have the satisfaction of knowing that even this prejudice in favor of Rembrandt is as near to final and immutable truth as any human opinion is likely to be. So La Farge said once in the hearing of many persons, that in his belief, the opinion of a very great artist as to a point in fine art could not be wrong—could not be erroneous, and those inclined to dispute that startling dictum began to ask, How about such an opinion of such or such an artist? The answer to this was, readily, that those were not very great artists, or else that those opinions were true although they might not seem so. In other words it may easily appear that here La Farge was able to maintain the truth of his dictum by denying or ascribing greatness as he pleased and by denying or ascribing truthfulness as he pleased. And yet, here again was an instance of an exactness of statement as near to perfect truthfulness as we shall ever get. It is probably true that, as we estimate human knowledge of fine art in a theoretical way, the highest attainment, the deliberately framed, deliberately expressed opinion of a great painter as to a painting is final. Even if another deliberately framed and deliberately expressed opinion of another painter or even of the same painter should appear to us to be contradictory to the first, it is still quite within our duty to accept both, and to wait awhile in the firm belief that that which now appears to us contradictory will seem to us perfectly harmonious, and that both statements are true, and, in fact, may readily be found to consist of the same statement differently expressed.

Now, the art produced by a man as subtle and as well informed as La Farge would hardly seem to any one unconscious, and yet there are aspects of it concerning which unconsciousness may be predicated. For instance, though he is not a landscape



By John La Farge.

"PARADISE VALLEY."

Newport, R. I.
(Oil painting owned by Thornton K. Lathrop.)

painter in his general practice, and although he is a French taught artist, so far as he is not entirely self-taught—he has yet produced at long intervals certain landscape pictures which are as different from anything which the modern French school recognizes as normal art as it is possible to imagine. Thus, the well-known "Paradise Valley"—the broad, green landscape painted twenty years ago at Newport, owned in Boston, and turning up now and then at an exhibition, is an attempt which no modern Frenchman would be apt to make. A broad stretch of flat, green meadow between rocky hills is viewed from a considerable height. The green uniformity fills the greater part of the canvas and stretches away toward the horizon, which, of course, is high in the picture, and between the green expanse and the horizon is the dim, misty gray of the summer sea. There is no foliage, nor any massing of distant trees; there is no very serious effort to paint a varied and expressive firmament of clouds—there is really nothing in the picture but the expression of the artist's delight in a great stretch of summer green. The idea of painting so large a stretch of landscape may almost be called English; it is certainly not French. The idea of painting the summer green so frankly, and of trying to do what few colorists dare undertake, namely, to make a piece of color out of summer green, may also be called rather English than French. The picture seems to the loving student who knows it well, as simple a piece of unconscious creation as any picture of the fourteenth century Florentine. During his visit to Japan, five years ago, La Farge made four drawings of what he saw in and around the valley of Nikko, on four separate occasions—at dawn, at sunset, and at noon, with cloudy and with brilliant skies. These small studies were made of what the artist saw, but, let us hasten to say, of what another person standing beside him would not have seen altogether. These four pictures, for pictures they are, though small

and on leaves of a sketch book, are like Turner's work in their reverent love of mist and cloud, and of brilliant colored lighting of mist and cloud. They are like Rembrandt's work for their unity and intensity. They are vast in appearance and take the mind over imaginary miles of mist-filled or sun-lighted valley, and yet they are small, brilliantly colored, highly decorative panels about sixteen inches long. Now, that may be said to be unconscious art. No reasoning up from the traditional doctrines of any school would have led in that direction. No modification of the doctrine of any school, even in a mind as varied and forceful as we think our artist's mind to be, would have given the material for the compositions. These are instinctive work if there ever was any—or if the reader would rather take a similar and more obviously simple design, let him take one of those little four-inch studies such as the Japanese boat with blue effects of sea and sky around it and setting it off like a curious little Della Robbia bas-relief. There are scores of small water-color drawings of flowers, and of these, the drawings representing roses and camellias are, perhaps, our readers' favorites. It was of one of these drawings that La Farge was asked why there was nothing in his roses of the translucency of petal and the delicate, thin, membranous quality which he enjoys who blows into a rose and gradually pulls it to pieces by his caresses. "Why," said the painter, "is that what you see in a rose? What I see is its solidity, its massiveness, like that of a little turnip." There is the expression of the unconscious artist doing his work in a way in which it seems to him natural to do his work. The thought "camellia" is as different to him from the thought "rose" as it is to the non-artistic young woman who goes no further than to see that one is fragrant and the other not, and that their surfaces are more or less shiny; but the differences are different, if an awkward expression may be used. People have been heard to ask whether such



By John La Farge.

“GUITAR-PLAYER.”
(Lower Figure in the McKim Memorial Window,
Trinity Church, Boston, Mass.)

Photo. Copyright,
Curtis & Cameron, Boston.



By John La Farge.

THE WOLF CHARMER.
(Water color painting.)

Photo. Copyright,
Curtis & Cameron, Boston.



MADONNA,

Part of a triptych, owned by Wm. C. Whitney, Esq. By John La Farge. Photo. Copyright, Curtis & Cameron, Boston.

and such a flower in a La Farge drawing was a rose or a camellia. And why did they ask? Because what the artist had to express about the rose or camellia was not the characteristic which was uppermost in the beholder's mind. What the artist wished to express was something which he intimately saw, but which, perhaps, the non-artistic lover of flowers might be excused for not seeing.

The same intimate relation between the artist and the subject to which he devotes himself, is characteristic of all of La Farge's work. In his very recent studies, made in the Pacific Islands, there are the visible evidences of what we all know of his life there—of the intimate way in which he entered into the life of the natives, became accepted as one of themselves, became a member of a great Polynesian family, and took the shark as his peculiar totem. He set himself to find out what it was that the natives were about, and how they were living. It need hardly be said that it is not in his art that the reasons why are to be found—graphic art has nothing to do with reasons why, but the facts as to what is being done are extremely intelligible. The leisurely labor, the serious and semi-religious dances, the more stately ceremonies, the semi-aquatic existence between sun and sea and palm-grove, the costume of every day, the ceremonial costume, even the chosen ornaments themselves, have been themes of the artist's close and minute observation. La Farge tells a story against himself, which is worth recording, of how one of his most characteristic drawings, which represents girls carrying a canoe, was objected to by the relatives of one of the girls in question on the ground that she would never be seen carrying a canoe with "those other girls." "But," said the artist, "I have seen her engaged in ball play, or what not, with the other girls in question." The answer was not less final and conclusive than the first statement was positive, namely, that the young lady might, perhaps, play ball, or go fishing with the other girls un-

der consideration, but as for carrying a canoe with them, that would never be allowed to one of her caste. The artist had made a mistake that time, but that only shows that he was not concerned with recording an incident which he had happened to see. What he had tried to represent was the general daily business of carrying canoes and he had overlooked the necessary ceremonial distinction as to who should work in company with whom.

This character of intimacy, of personality, is, we say, characteristic of La Farge's work. It is seen in the realistic treatment of even his sacred themes. In his very last important work in glass, the action of the Savior as he talks to the disciples on the way to Emmaus as "he expounded unto them in all the Scriptures the things concerning himself" is conceived as in every day life. He turns away from one disciple and with both hands raised, with a friendly and natural gesture, impresses the argument upon him to whom he directly appeals. In like manner in the great Ascension in the Church of the Ascension, in New York, each one of the angels taken up separately, is human and real in gesture and pose. The figure of an apostle as an individual conception is recognizable as the man that he would have been in life as distinguished from other men. By which it is not meant that these figures are in any sense portraits of models. That is surely just what they are not. It would be absurd to maintain that La Farge copies his models; nowhere in his work can we pick out the models, even when well known, and say that this or that figure is a portrait of this or that living person. Indeed, La Farge's work, so far as it can be known, is never done by drawing from a model. He draws the figure abstractly and without reference to other than his already attained knowledge; and he uses the model afterwards to correct, to organize, to make supple and living the figure which he may have made too academic in the first place. All his figure drawing is personal and peculiar to him-



S. JOHN.

Part of a triptych owned by Wm. C. Whitney, Esq. By John La Farge. Photo. Copyright, Curtis & Cameron, Boston.



By John La Farge.

"VATEA IN A SEATED DANCE, SAMOA."
(Pencil drawing.)



By John La Farge.

"SIVA IN A SEATED DANCE, SAMOA."
(Pencil drawing.)



By John La Farge.

"CHRIST MEETING HIS MOTHER AT THE TEMPLE."

(Stained Glass Memorial Window; executed in 1896.)

self: it is his own: it is design and not copying. His few book illustrations show this, indeed, but they are few, relatively unimportant and belong to an earlier period in his artistic life than it is now worth while to take up. Like most men who devote themselves with singleness of purpose and steadiness of well considered aim to a great pursuit, he has improved in it steadily, and the work of his sixtieth year is as much better than the work of his thirtieth year as great art is

better than steady promise and earnest effort.

Character and color are the two secrets of La Farge's work. We have said a word or two, very inadequately, about the former of these two motives, and of the other, every person who knows La Farge's work at all is ready to speak. It glows in his studies of travel; it expands over the great wall paintings, too few in number, which mark the later stages of his career: it invests his large landscapes as well as

his studies, and his small water-colors as well as his wall paintings. Even his studies in monochrome are the studies of a colorist. That beautiful drawing of the dry river bed in Japan, which has been engraved in a monthly magazine, is in sepia, and the drawing of the avenue of cryptomerias is in chalk, but it is impossible to conceive that either of these was made by any man who was not a colorist in the very essence of his being. To be able to compose greatly in color is to reach the highest achievement of graphic art, perhaps; and we have no colorist in this second half of the nineteenth century who is, on the whole, superior to La Farge. It is, therefore, of little moment that his monumental wall painting should lack something of the ultimate dignity of great draughtsmanship, as it was understood by the Florentine of the cinque-cento, or, if you please, by Ingres. It is quite easy to see that he looks at a wall which is to be invested with religious or historical subject from a different point of view from that which Elihu Vedder assumes. The wall is to glow with color and the color is to be so associated with graceful and subtle form that it shall appeal to that human sense of association which makes us all, even the most devoted art student among us, long for human subject amid the most splendid triumphs of pure artistical conception. It may be the conviction of the well instructed beholder that the nude figures in some one of his greatest paintings, if drawn in upon the drapery, would show that something was wrong with the pose, which is only the same as saying that his work sometimes falls short of perfection in the same way that Delacroix's work falls short of perfection, but not so badly. Andrea Del Sarto and not Correggio was the painter without fault (*Andrea senza errore*), and yet it is Correggio's domes and vaults at Parma which are the high seventh heaven of mural decoration with which nothing of Andrea's can for a moment compare.

It is because he is so great a color-

ist that his achievements in stained glass are so very notable. To have an excellent claim to the credit of having invented, or at least introduced our American way in glass, with its careful consideration of the leads as a valuable basis of the design, and with the free use of lining or "plating" with glass to replace enamel painting, is in itself not an artistic achievement; but when this was done in the service of superb color design, it does tend to make a man immortal. Translucent color is a different thing from opaque color, and it is from La Farge chiefly that the modern world has learned the truth that is conveyed in that axiomatic utterance, but the colorist is the man who shows that more plainly than another can, and who designs in translucent color not at all as he would design in fresco or in painting upon canvas. There is no room here to dwell upon the great works of the artist in glass, although they are known than they should be—as becomes inevitable from their relegation to churches widely separated each from the other, and many of them in remote towns. These windows taken together, constitute probably the most important piece of purely decorative work which the nineteenth century has seen, and go far to reveal to us the possibilities of the decorative art of the future—an art which must be, however, in the hands of the highly trained artist; the day of the inventive and intelligent minor workman having gone, as it appears, except as such inferior artistic intelligence can work in subordination and harmony with a great designer and executant.

And so we come back to the book, whose title heads this paper, with the conviction that the man is as natural, unconscious, and executive an artist as he is a philosophical thinker about questions concerning fine art. If then, we could gather the true thought—the whole thought—of this mature mind, we should have as much as any one student can hope to assimilate during his lifetime, and we should need no other teachers. This may not

be: even careful reading and re-reading of the book before us will fail to get out of it all that the artist put into it. Is it possible to express in words all your meaning about fine art? Probably not, if you have much meaning, and yet, by the comparison of one statement with another, and by reading in connection with each statement the portion which has led up to it, and the inferences which are drawn from it, by disregarding the division into lectures, and by marking your margin with cross-references, by slowly meditating the meanings of some such phrases as we shall quote in a moment, more of the true essence can be got than can be extracted from any other book of our time. Read this, beginning on page 201: " * * * do not think I mean (by touch) only the actual contact of a fraction of a second. The long processes of a Dutch painter (or a Venetian) are all one thing: the firm foundation of drawing; the graduated underneaths, as painters call them; the vailings of their washes, or half-opaque coverings of paint; the glazings; the retouchings; the scumbings; the draggings of colored substances are all one thing, * * * if you think that the Japanese manner of running a brush full of ink, on paper or silk, is a short way, try it. * * * So-and-So of a couple of hundred years ago can no more be copied. The last man is dead who had the secret transmitted to him through all this time, and cultivated by him all his life.

So that it is not to be hoped that any one will begin it all over again in Japan." Or on page 225-6, read this, and consider it: " * * * Why do we use all these things haphazard to-day? One man likes this, another that, as if he were some little lady anxious about being in the fashion, and willing to go even against her complexion, provided she do nothing that others do not do. And at length architecture, the means of largest importance that we can use, takes on a dress of triviality; like the madonnas of southern countries, dressed in paper and satin, with real costly diamonds, perhaps. * * * I was thinking * * * of the extreme dignity of architecture as illustrated by a saying of Delacroix—that a great architect was rarer than rare, and consequently held the very highest rank as an artist; because he had to find beauty in what is most irrelevant—usefulness." Or on page 227; " * * * the pyramidal composition of the books and of the schoolboy in art. But Raphael did it—and so did Homer, write in hexameters. Which is the important thing, the hexameter or the Homer? It is just Raphael's beautiful way of escaping the suggestion of grammar which is his charm." But this statement leads on into pages of delicate ratiocination into which we cannot follow our illustrious author, and the real profundity of the thought on page 229-30 is beyond any attempt that we can make here to analyze the meaning.

Russell Sturgis.

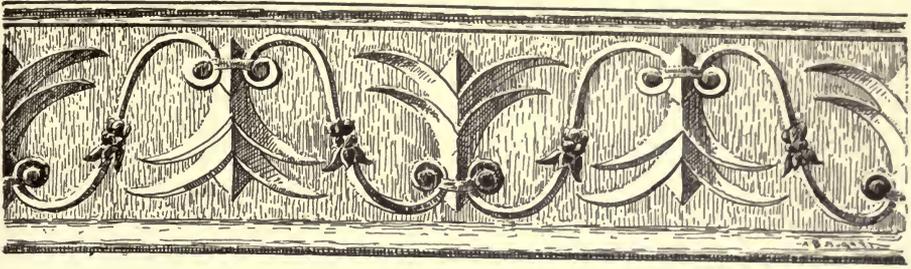


By John La Farge.

"DANCE."

In residence of Hon. Whitelaw Reid,
New York City.

Photo. Copyright,
Curtis & Cameron, Boston



NEW BOOKS.

THE HISTORY OF MODERN PAINTING. By Richard Muther, Professor of Art History at the University of Breslau, late Keeper of the Prints at the Munich Pinakothek. In three volumes. Vol. I.; pp. XI.; 604. Vol. II.; pp. XI., 836; Vol. III.; pp. XII., 871. Macmillan Company, New York, 1896.

It appears from a brief note on the back of the title page that the first volume of this work was translated by Mr. Ernest Dowson, Mr. George Arthur Greene, and Mr. Arthur Cecil Hillier, and the second and the third, by Mr. Arthur Cecil Hillier alone. The English text is smooth and but rarely gives any suggestion of having been an offset from the German. It might even be said that the text is fluent and somewhat diffuse, and yet this is clearly not the result of an attempt to give in one language and in too many words that which is more brief and compact in the original, but is, to all appearance, at least, characteristic of the original composition. It is only now and then that a complete mistake in the use of a noun or adjective suggests that the German original has not been perfectly rendered. It seems better to take the book as if it had been written originally in English. The question is, whether this work, as it now stands, is worthy of careful study, and how far it contains the essential, the most important facts concerning the painting of the last one hundred years.

It is extremely difficult to state in a few words the system upon which the book is built up. One would hesitate, after reading the titles of the five books and of the fifty chapters, to decide just where he had better look for any given artist. Is such or such a painter to be considered as a German colorist or a German romanticist? Shall we look for Gericault under "The Generation of 1830" or under "Juste-Milieu?" Shall we inquire for J. M. W. Turner in the chapter headed "English Painting in 1850" or under "Landscape from 1830?" An index of the names of painters at the end of each volume may keep one from falling into error in this matter and, no doubt, after a time, the evolution which

the author has tried to describe will be understood, and his reasons for the choice of this or that order of sequence will be appreciated. The five books, indeed, are entitled, respectively, "The Legacy of the Eighteenth Century;" "The Escape into the Past;" "The Victory of the Moderns;" "The Painters of Life;" "The New Idealists." It is plain, however, that if each painter is to be treated at length in one place only, it must often be hard to fix upon that place. Nearly every artist is to be looked at and his life work judged, from several different standpoints, and nothing but an elaborate system of cross-reference can make the continuous and interesting narrative fully available as a work of reference.

Book II, "The Escape into the Past," is, of course, intended to explain the way in which the early years of the nineteenth century were marked by a study of the classics and an attempt to get classical severity into painting. This tendency is not confined to the first few years of the century; it comes up again at a later time, as is shown in Chapter XI, "The Generation of 1830," where the Classical Reaction is especially set down in the contents as one of the important parts of the discussion in this chapter. The fact of the existence side by side of tendencies as different as are those which we call classicism and the romanticism of the years following 1830, is, of course, a central fact, and one which the text of our author explains fully and dwells upon with patient and even with delighted attention to detail. It is, however, as nearly as anything can be, impossible to carry on the history of art in at least three great nations and during an epoch of constant change and constantly arising contrary and hostile tendencies and yet keep the narrative logical and consistent in its arrangement. As has been said above, nothing but a very elaborate system of reference and cross-reference would enable the author to maintain the organization of his unrolling narrative in any way complete. Indeed, these absent cross-references an attentive reader finds himself longing for. To take a copy of this book with

its broad margins, and annotate it with innumerable memoranda of where this or that particular subject is considered farther in these volumes, or where a painter, briefly mentioned, is discussed more at length, is to double the value of the work for reference. Its value as a book to be read consecutively will be considered in the course of this paper.

The first page of the Introduction states truly that "no book, hitherto, has embraced the history of European painting in the nineteenth century," and also that "modern art, like modern culture, is to be considered as a whole." This is the key-note of the work. The first book, which occupies 150 pages of Vol. I., deals with Hogarth, Gainsborough, and Richard Wilson; with Watteau, Greuze, Gesner, and Hubert Robert; with the reactionists of the latest years, and with the inevitable tendency toward the romantic and realistic in art, which, though it was not plainly seen in the nineteenth century, was there and ready to express itself in the new era. From page 209 of Vol. I. to the close of Vol. III., the whole field of European painting is kept in view together, and a semi-historical sequence is maintained, while at the same time, the tendencies of schools to express themselves strongly, contemporaneously with the vigorous action of other and, perhaps, hostile schools, prevents a strictly chronological order. Chapter VI., which is the first chapter of Book II., deals with the "Nazarenes," or the painters like Overbeck, Fuehrich, Schnorr of Carolsfeld, their piety and their ecclesiology; Chapter VII. deals with the Munich art under Ludwig I., Cornelius and Kaulbach, "their importance and their limitations." And here we begin to see that fearless and large-hearted criticism which marks this book from beginning to end, and makes it an important document for the art history of the century. The analysis of Kaulbach's art is so thorough and satisfactory, and the boldness of disapproval is so surprising in a German professor and museum employee, that it must startle the reader who expects to find that most valueless art of Kaulbach's ranked high in the way of modern achievement. Chapter VIII. is devoted to the "Dusseldorfers" and to the interesting question "why their pictures, despite technical merits, have become antiquated;" a question which old New Yorkers who know what was exhibited in this town before 1860 may, perhaps, be able to answer, at least, in part: while disputing the too bold ascription to the Dusseldorfers in a body of any remarkable "technical merits," Chapter IX. deals with Alfred Rethel and Moritz Schwind; and here we have to note

in connection with that extraordinary tragical designer, Rethel, that our author is as much interested in a cheap little wood-cut as he is in a wall painting forty feet long, provided always it has style in it and looks large, as good designs are apt to look. It is necessary to state here that the illustrations of the pages we are now considering have been taken from engravings, and the reader will hardly need a hint as to the extremely lifeless and formal character of very many German engravings of important works. Here, in the pages devoted to Rethel, are two reproductions of his own wood-cuts, that is, of wood-cuts for which he made drawings especially, and which were probably carried out under his eye, and two others from large engravings by Brendamour, which assuredly caricature the important frescoes which they pretend to represent. The remarkable frescoes at Aix-la-Chapelle have been engraved in this way, and a photograph of one of the originals, compared with one of these reproductions, casts discredit upon all the illustration of this book which has engravings for its basis. But, indeed, the illustration of these volumes generally is not of first-rate quality; the half-tones are not clear and are too small to do justice to the originals, and one longs for, what would unfortunately be a great and costly book, an edition of this treatise with adequate illustration.

It is impossible to go on citing here the chief subjects of each successive chapter. Instead of doing so, let us ask the reader to consider the account of Gustave Courbet, to whom are devoted thirty-seven pages in Vol. II., which pages are illustrated by sixteen figures—not fine, of course, but intelligible—and also by the remarkable verses written in dispraise of the realists, those verses from which we take the well-known words:

"Or, monsieur, s'il vous plait,
Tout ce qu'il dessine est horriblement laid!"

This biography and critical examination in one, is really a most valuable treatise. The ardent friend or the strenuous antagonist of realism in painting may find it inadequate or unfair, but it is hard to see how one who is writing on the whole subject of the painting of the nineteenth century in Europe, could present the man and his work in its relation to that great art more fairly or more intelligently. In like manner, one is struck by the extraordinary insight, the simple thoroughness and the level-headedness, to use a very modern expression, of nearly all that is written about painting in England. Continental writers seldom see English art except through false spectacles, rose-colored or of pessimistic gray. To understand the force and the failure of

pre-Raphaelite pictures, the effect of that strange art upon the realists who were to follow the pre-Raphaelites, the inherent value of such work as Madox Brown's, and such work as Rossetti's, the relation to the whole English school of the caricaturists like Rowlandson, Gillray, and Cruikshank and of the illustrators of "Punch," to have the good sense to cut Mulready down to ten lines, to see in Albert Moore "the solitary 'painter' in the group" of his contemporaries and to explain his beautiful and perfect art as it is explained here, to see the value of George Mason and Fred Walker without in any way seeing it too strongly, is to be an art critic indeed.

It may be said that the whole book suffers somewhat from a tone of laudation a little too warm. That is to say, the praise which is given with a little too free a hand; and yet, with what enjoyment could one read a history of painting in which every artist should be compared, each in his turn, with the very highest standard of excellence? No such book could be read for a long time together because the necessity of fair treatment combined with severe criticism would involve too elaborate a system of hair-splitting refinements. Everything that was said would have to be qualified and explained away, every assertion would have to be made with painful effort to be accurate and that at the risk of much involved ratiocination. The author is right, we think, in raising the standard of his praise a little above what he would, perhaps, more willingly adopt if he were writing of one artist or one group of artists only.

Finally, there is another statement to make which modifies unfavorably the very high estimate in which this book is to be held. The works which the author criticises are those which he has seen; that is obvious and natural. The works which he alludes to are those which he knows by reproduction, if not in the originals; that also is easy to understand. He takes "Punch" pictures from the "Gazette des Beaux-Arts" instead of from "Punch" itself, and pictures by Englishmen and Americans from European journals in which they have been reproduced; "L'Art" or the "Magazine of Art," or even from a publication of the Munich Photographic Union, or of Braun of Dornach. It follows from this that there are great and damaging omissions; not many, but enough to injure the book. It is, however, chiefly in the American school that we find these omissions to exist. In dealing with the Americans, the author has taken, as is natural and has been his custom, the works of art which he has seen in the exhibition galleries, or has learned of from their repro-

duction in Europe, and, therefore, it is, one supposes, that there is no mention in the index of any of the volumes, of Homer Martin, Elihu Vedder, or John La Farge. These may be mentioned as three of the older men who are not recognized; three men whose work has been before the public for thirty years. As for the painters of a somewhat younger generation, it is with them as it is with their seniors, that some are mentioned and some are left unnamed. It is clear that a volume on American painting has to be made which will make up for the shortcomings of the three volumes before us in this matter of the art which was trans-Atlantic to Richard Muther, and will complete and make a final authority of one of the most valuable books of our time.

EGYPTIAN DECORATIVE ART. A Course of Lectures delivered at The Royal Institution by W. M. Flinders Petrie, D. C. L., Edwards Professor of Egyptology, University College, London. New York: G. P. Putnam's Sons. London: Methuen & Co. 1895.

In No. 21 of this periodical there was occasion to speak of the attempt to write the history of primeval decorative art. Reason was found to conclude that one of the difficulties in the way of such history-writing was this, namely, that the scientific-minded man seldom knows anything about the artist's way of work. There is an assumption, which may almost be called general, in these scientific works on the art of savage life and of early civilization, namely, that nothing is designed for its own sake as an ornamental pattern or unit of pattern, but that every figure which seems to be such a purely ornamental conception, is the result of copying of some natural form which has gradually lost its character as the portrait has become a conventional figure handed down from master to pupil through the ages. It is probable that no one who himself feels the instinct of decorative design, and knows how others who feel that instinct work under its influence, will ever give in to this theory as heartily as its propagators would desire. The savage who cuts a notch out of a slip of wood is as much a reality in the unwritten history of the past as the other savage who has represented a head, in his savage way, or his successor who copies his copy of the head and makes it into something almost unrecognizable.

Professor Flinders Petrie is not to be charged with the fault we have dared to urge against many writers on these matters. His page 1 contains the statement that it is proposed in the little book under consideration "to limit our view to the historical develop-

ment of the various motives or elements of decoration," and on page 2 there is this sentence: "As I have said, all Egyptian design was strongly decorative." On page 5 the other question which seems so interesting is fairly met and the discussion initiated of what is the real origination of patterns. The uncertainties attending any present answer to this question are hinted at in a very suggestive manner on pages 7 and 8. The arguments in favor of the origination of all designs in copying and of the constant repetition of these designs to the exclusion, almost, of any invented pattern, are compared with those doubts which arise in the mind of every person who understands art in a practical way; and if the author does not give a final answer to his own question, he sets an example of moderation which we may all be glad to follow. Page 10 hints at the "structural ornament which results from the structural necessities of building and of manufacture." It is shown that defects and failures are sometimes perpetuated in ornament of this kind, and an instance is given which will serve to remind us how puzzling in the future will be the origin of patterns of our own time. Whence come "the circles stamped in the plain end of meat-tins?" These tins, which we call cans, in the United States, have a circular patch soldered on to one end, and our author tells us that a circle is stamped in the other end, imitating the effect produced by the necessary closing of the top. It may, indeed, seem so very natural to us to stamp a circle concentric with the outer rim upon the circular end of a cylindrical vessel of any sort, that it will not seem to us probable that any future inquirer will ask whence it originated, and yet it has been in that way that patterns of ornament have originated in the past.

Chapter II. is devoted to geometric decoration and the zig-zags and diamond patterns, the wave lines and spots. The "spirals" and "coils" of the earlier Egyptian decoration are shown to have been copied and recopied, modified and altered during the centuries of Egyptian art. Basket work patterns and chequers are also a part of this traditional art, and here arises one of those questions which can never be answered in a final way, the question, namely, how far a chequer may be created as a natural way of decorating a surface by a man who takes a rudely squared stone and uses it to stamp with. The assumption of the scientific investigators is generally that all these patterns are copied from basket work. The interlacings and interweavings may, indeed, be so copied. It is certain, however, that a chequer may have come of paving

a floor space as with bricks or tiles, and it would not require a very original workman to alternate a square of about 6 inches on each side with another square, maybe of nine small pieces 2 inches on each side, while yet a pattern so composed would be extremely spirited and vigorous. Now, whether a man who had once made such a pavement, or had even seen such a pavement, could go on and imagine others and scratch the patterns on a yielding surface without having a pavement itself before him, is a question which, apparently, the decorative designer would answer in one way and the scientific investigator in another way. Professor Flinders Petrie is cautious here, also. No one will find in this book an ex-cathedra statement of any of these questions, but its pages are filled with an analytical account of Egyptian ornament and the thought is made clearer by 220 illustrations.

All persons whose studies have taken them so far afield as to ancient Egyptian decoration, are aware how rich it is, how varied, how suggestive, and how tasteful and beautiful. Such a book as that of *Prise d'Avennes* offers page after page of surface ornament which can hardly be matched in any collection of ornament of another epoch. Much of this beauty is indicated or suggested by the little wood-cuts of Professor Flinders Petrie's pages; thus, the cuts on pages 65-72, with their analysis of the *Anthemion* and 20 little pictures, would keep any designer busy for awhile. These little pictures are valuable as suggestions to modern designers, valuable historically, and valuable in this archaeological study, which, as we have said, is now coming forward, demanding so much attention. On pages 89 and 90 is an interesting suggestion of the Egyptian workman's way of looking at fine natural materials; his habit of painting, and even of plastering and painting his hard stone statues, while he enjoyed indicating the grain of alabaster and agate and such precious materials in painting upon common pottery vases. "Our abstract standpoint of an artistic effect which must never involve falsity, but which may have little or nothing to do with nature, was altogether outside of his aesthetic." This "abstract standpoint" is largely a modern one, derived from study of mediæval art, and, therefore, it is better known and more generally recognized in England, where the study of mediæval art has been so serious and consistent, than elsewhere in Europe. The attempt to try ancient decoration by it involves some curious considerations. In this, as in other matters, this little volume seems like a set of notes for a much longer and more detailed discussion.

Russell Sturgis.