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SOME NOTES FROM THE RHINE VALLEY.

STERNBERG.

SPECTACULARLY the Rhine is a disappointment. A broad and turbid stream, surging slowly along in a fertile plain, with the horizon line utterly unrelieved, or, even in the famous gorge, with the height of the surrounding hills discounted by the great width of the river—is not the equal in the qualities of mysticism and romance of a rushing mountain torrent, such as is common in Scotland or in Wales. But it possesses more of grandeur and of majesty, qualities which are not perceptible at first, but which gradually reveal themselves and eventually overwhelm.

The architecture, too, is disappointing, and more permanently so. Everyone has heard of the Rhenish Castles, and everyone in consequence expects to find much beautiful Gothic building of the sterner sort. The remains of the castles are there, sure enough, in heaps of crumbling ruins on every point of vantage along the gorge, picturesque in their decay, but so utterly decayed that there is nothing architectural left. It might be possible, with great pains to reconstruct the plans of some, but of their details and ornamental features nothing tangible is to be found—for one cannot sketch and measure mouldings and enrichments from rumors and vague legend.

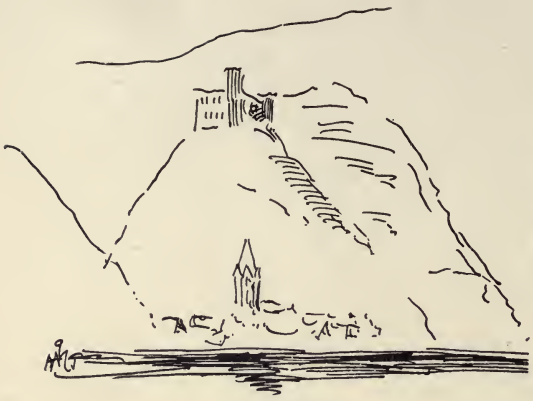
Vol. IX. No. 4.—Sig. 1.

ALTER BURG, BOFFARD.

GATE TOWER, ANDERNACH.

REMAINS OF ROMAN GATE AT ANDERNACH.

WATCH TOWER, ANDERNACH.



THURMBERG.

In the riverside towns, however, architectural and archæological interest are alike awakened. Each one has a history, and though the history of one is very much the history of all, yet the evidences vary in each case. Upon two occasions at least the Rhine has formed the principal route along which civilization has marched northwards from Italy. Almost all the towns were founded by Drusus as carefully selected military posts along the great waterway which formed the line of communication for the Roman legions, and evidences of Roman occupation are tolerably frequent, though naturally ruinous, from the heaps of stones which were once the supporting piers of the Aqueduct at Mainz (Mayence), to the archways at Bofford and Andernach. Then, again, in the early days of the Romanesque, there was activity along the Rhine, and towns were revived and buildings erected, based upon those of that period in Italy but with a strong local individuality, caused by the comparatively small size of the available building stone, and by the high-pitched roof which the climate necessitated; and it is quite doubtful whether the lofty towers and spires of the churches which were built at that time were not demanded for the sake of the towns beneath to serve as watch towers in troublous times. These churches are numerous, and most of them are large out of all proportion, as we should think, to the population which they had to serve; yet even now, on Sundays frequently, and

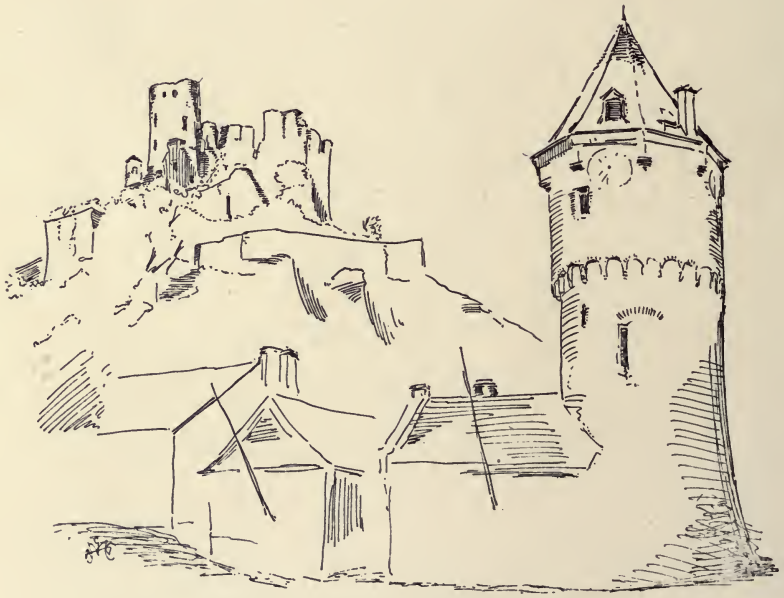
GATE AND GATE HOUSE, BOFFARD.

on high festivals always, they are crowded to overflowing. Most of them have suffered grievously of late at the hands of the restorer, and the German restorer is worse than any other, in the hard, scientific, and mechanical way in which he goes to work; but yet if the detail has been rendered precise and hard, the old general outline remains, with the lofty nave arcade of semi-circular work, the apsis east and west (and sometimes north and south as well), the doors in the aisle walls as a rule, and almost always minor features, the flat buttresses and the external arcading at triforium level, and often under the eaves as well, at least around the apsis if not round the whole church. The detail, even in its restored state, has its interest—for the restorers have faithfully striven to copy the old work scientifically if they have failed to render its original spirit and "go"—with constant evidence of Byzantine influence in the form of the common acanthus leaves, sharply pointed, and with clumsy lions both among them in the capitals and also introduced occasionally at bases. An example of this is seen in the well-known door of Mainz Cathedral, of which a sketch is given.

During the succeeding centuries the little Rhenish towns seem to have flourished well, though subject to constant attacks from neighboring towns and from the castles. They were trading centres, the traffic between the sea and mid-Europe passing by them, almost to the exclusion of any other route. As a result of these circumstances they were strongly fortified against attacks both from land and river, but particularly from the water side; and in most cases the walls still remain, if not complete at least in a sufficiently perfect state for reconstruction to be easy to the imagination. Upon the land side are irregular walls provided with bastions and towers at the corners, so that all could be protected by archers stationed at these points; with, of course, the deep moat outside, which could be flooded at will from the Rhine. On the river side there would be the wall without the moat, with strongly guarded gates opening down to the water; similar to gates guarding the entrances to the one main road which usually passed through the town from end to end. A picturesque and almost universal feature was the high watch tower, placed in such a position as to command a view of long reaches of the river. The walls of the towers were generally tapered with the upper projecting portions carried by slight corbel tables; the heavy machicobations being confined usually to the main wall and just that portion of the towers which overhung the gateways. Of the remains of all this work it is very difficult to decide the date, even though they are considerable in extent; for military architecture seems to have varied little during the middle ages. There is, as a rule, neither tracery nor moulding to assist the judgment, and even the form of the door or window is little indication of the age of the masonry in which it is

inserted; for, harassed as these towns were, attacked and taken time after time, such details necessarily were destroyed again and again, only to be rebuilt as soon as peace prevailed once more. Built originally probably for defensive purposes alone with little thought of picturesqueness, they now, at any rate, impart great charm to the little towns which no longer need them for protection; whose prosperity is passed, and whose trade is confined to the little that is done by the sailing barges the greater proportion of the traffic which still passes down the Rhine Valley hurrying past by steamboat or by railway, from great city to great city, ignoring the little towns.

G. A. T. Middleton, A. R., I. B. A.



GAUB USEN AND SCHLOSS KATZ

WOODEN HOUSES IN FRANCE DURING THE MIDDLE AGES.

SOME of our readers will perhaps remember having read an essay in this Magazine on wooden house-building in Switzerland, with a number of illustrations of old châlets which still exist.* In that article we stated that the art of working in wood had been exemplified in Switzerland in one of its most picturesque forms, and we endeavored to indicate the principal causes which have made this art so full of grace and animation, namely, a right comprehension of the qualities and properties of wood and an application of building rules appropriate to the material employed. But the Swiss châlet does not exhaust the uses to which wood can be put. It serves other purposes, and not less interesting ones. The ancient and venerable art of carpentry has taken more than one architectural shape, and those who study its various developments are charmed by beauties which, while simple, evidence great skill.

Following our examination of the Swiss châlets, we should like now to visit the old towns of France and seek out their wooden houses, those precious relics of the domestic architecture of the Middle Ages which reveal, to those who know how to question them, an abundance of curious things concerning the kind of life, and the notions of art, of the people of those distant times. Although we have said "following the Swiss châlets," the wooden houses of France date from the end of the thirteenth century, from the fourteenth, fifteenth, and (less frequently) sixteenth centuries, whereas the châlets belong, a few to the sixteenth century, but the majority to the seventeenth and eighteenth centuries. Thus the Swiss art would seem to be a continuation of the French, to which it is posterior, and that logically these studies should have taken France or Germany as their starting point, and finished with Switzerland. It is worth our while to stop to notice this apparent contradiction, for in explaining it we shall touch upon one of the essential points of our studies on wooden house-building, and accentuate the differences of construction in the various countries.

In the Middle Ages the system of building followed in France was that called pan de bois. A glance at one of the photographs here reproduced will show what is meant by this term. It is a system of framework in which the resistance of the timber, serving in turn as brace, or support, or belting-course, is greatly increased by the multiple combinations of the joinery. The spaces left between the differ-

*See Architectural Record, Vol. VI., No. 4; Vol. VII., No. 1.

ent pieces of the framework are pugged, that is to say, filled in with materials—old plaster work, bricks, etc., which do not bear, but simply stop up. The pan de bois constitutes the carcass of the house. It is, in fact, the present method of building in wood, the only one that French carpenters know; but the wooden framework is now exclusively employed for attics and upper stories, stone or brick form-

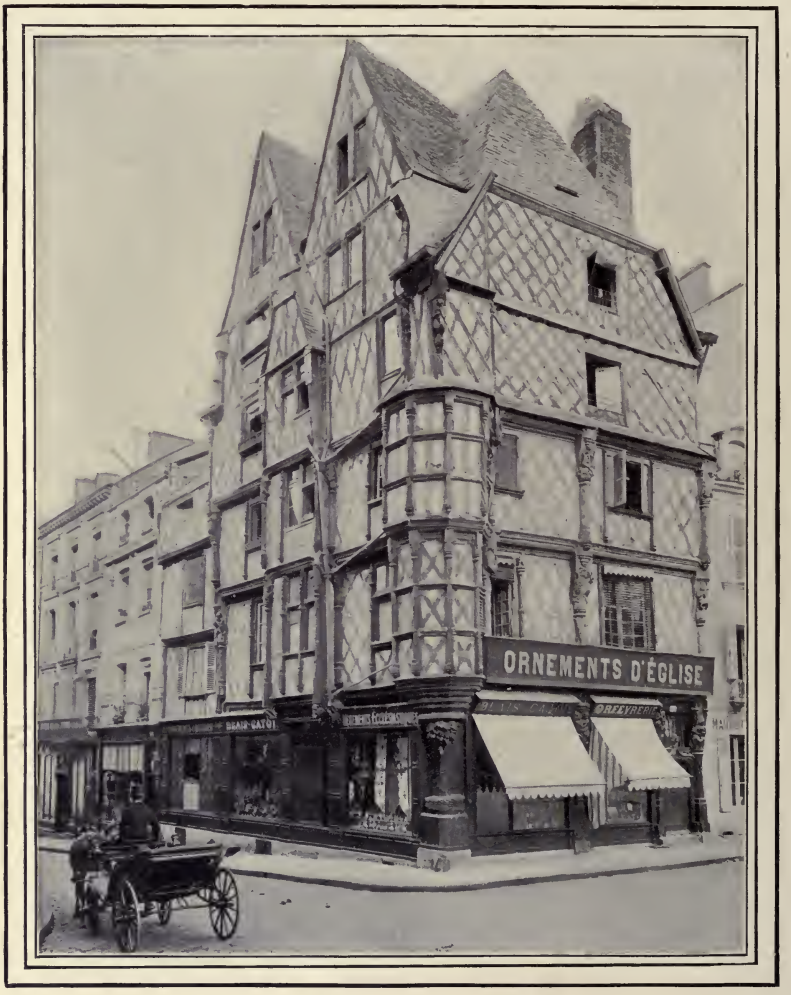


FIG. 1.—LE LOGIS ADAM, ANGERS.

ing the bearing part, whereas in the edifices of the Middle Ages the pan de bois was systematic and general.

In Switzerland, on the contrary, we find, in most cases, beams piled one on another, crossed and let into each other at the angles. The timber is massive. See, for example, the Auberge de Treib, or the Iseltwaldt châlet (Nos. 1 and 5 Architectural Record, July-Sep-

tember, 1897). All the beams bear equally; no combination of framework or any relieving arch or keyed-in support is needed. It is, in fact, the ancient blockbau, or log house, refined by decoration being added. The pan de bois, employed also in Switzerland, comes from Germany; what is peculiarly Swiss is the system of piling.

We have thus two distinctly opposite methods of construction; one consisting of clever combinations, and the other being a simple throwing together of materials. One is refined and the other primitive. Now, the stacking-up system is of ancient origin, although the examples we have are almost modern. It is even probable that it represents the earliest manner of building employed by the Indo-

FIG. 2.—OLD "MAIRIE" AND SCHOOL HOUSE, FONTAINE-EN-SOLOGNE (LOIR-ET CHER).

Germanic races. The Swiss châlets are thus connected with very ancient modes of construction, which they perpetuated at a time when, for several centuries, a more skilful manner of building had been developed in France and countries adjacent thereto.* Had we time to seek for the reasons for this we could find several. Among them would be the different species of timber. In Normandy, for instance, oak is used, a knotty wood, hard to cut up and having irregular shoots. Hence the employment of frames, the pieces composing

*"The construction of châlets (piling) is most interesting to study. It is one of the systems of building which approaches the nearest in Europe to the wooden structures of primitive times."—Viollet le Duc.

which never exceed a moderate size. In Switzerland the fir tree abounds, with its slender stems. It has few gnarls, is easily cut, and furnishes without trouble the long, regular beams required for the blockbau. We have to mention, too, the geographical reasons. It is easy to see how, in the isolated Alpine valleys, unaffected by external influences, old traditions retained their sway, traditions which carry us

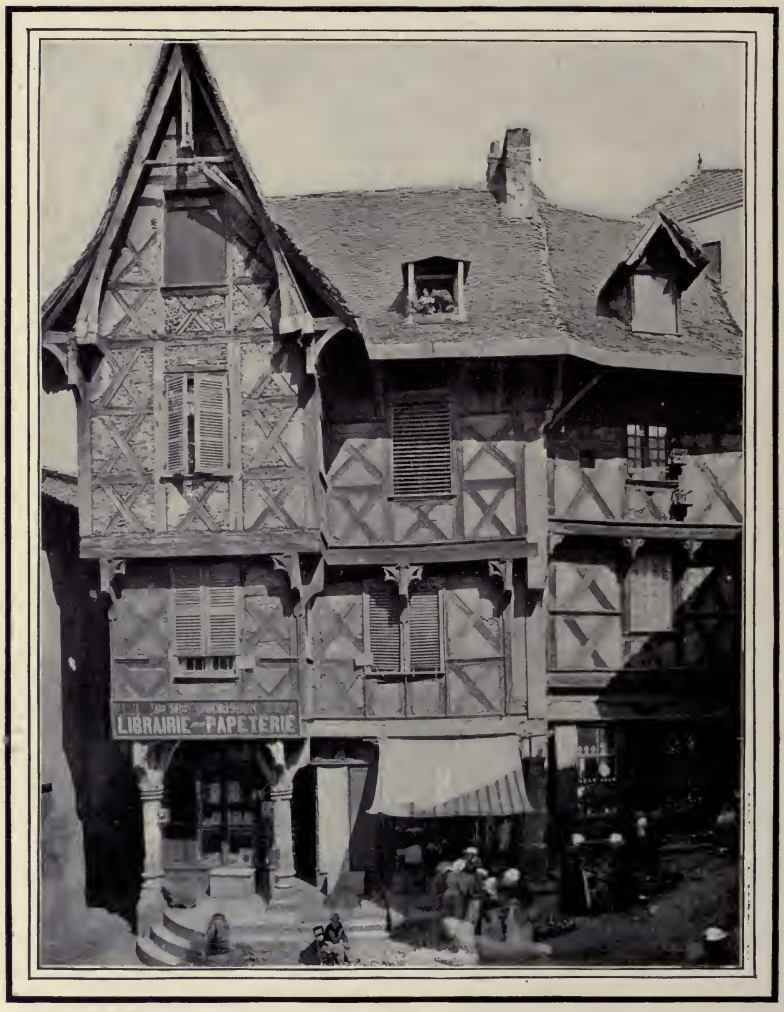


FIG. 3.—CHATEAU AT THIERS;—A XV. CENTURY HOUSE.

back to primitive ages; whereas in northern countries, near those seas on which Normans and Danes passed their adventurous existences, it is natural that the skill necessary for the building of ships should have had an influence on the development of the art of wooden house-building. These comparisons make clear the whole art of working in wood, and justify the order followed by us in beginning with the

Swiss châlets and dealing afterwards with the French houses of the Middle Ages.

One general observation is called for before we proceed with our subject. The Swiss edifices are isolated. Even in the villages each châlet is an entity, with its four sides, and the great majority of the examples given by us were country or mountain dwellings. In France,

FIG. 4.—THE FORTIFIED HOUSE AT ROUEN.

on the contrary, the wooden houses are in towns; we shall meet with scarcely a single country house. Most of them are urban habitations, and have only one face, except when they stand at a corner. The purposes to be served by these two kinds of houses are totally different, and this has given each kind a distinct aspect. In Switzerland, as we have seen, the roof projects considerably and, at the corners, shelters

FIG. 5.—A GOTHIC HOUSE, ROUEN.

the galleries and the staircase, which latter is nearly always outside the house. On the front, under the roof, one finds a balcony. In the town houses, however, the staircase is inside, while the sides, of course, could not have anything on them, being party walls. Besides, the parochial regulations prescribed a certain width of street, and this led the architects to put successive projections on every story in order to gain room. Consequently, in narrow streets the upper parts of the houses almost touched each other, and there was no place for a balcony. Furthermore, a store usually had to be set up on the ground floor. At the top we find the gable sometimes in front and sometimes at one side. Finally, the necessity of utilizing the ground to the fullest

FIG. 6.—A XVth CENTURY HOUSE, LA ROCHELLE.

extent possible led to houses of several stories being built. In Switzerland there are no châlets with more than two stories above the ground floor, whereas in French towns there are many houses with five. (See the house at Angers shown in Fig. 1).

We thus see that the conditions of existence were entirely opposite. In fact, no two things could differ more than the châlet and the French house differ from each other, both in arrangement and in decoration. Not only do they not serve the same requirements, but, their type once fixed, they develop under totally different conditions of living; here, in the calm and peace of a mountainous country, without excitements and unstirred by the shocks incidental to artistic progress; there, on the contrary, in commercial towns, where the in-

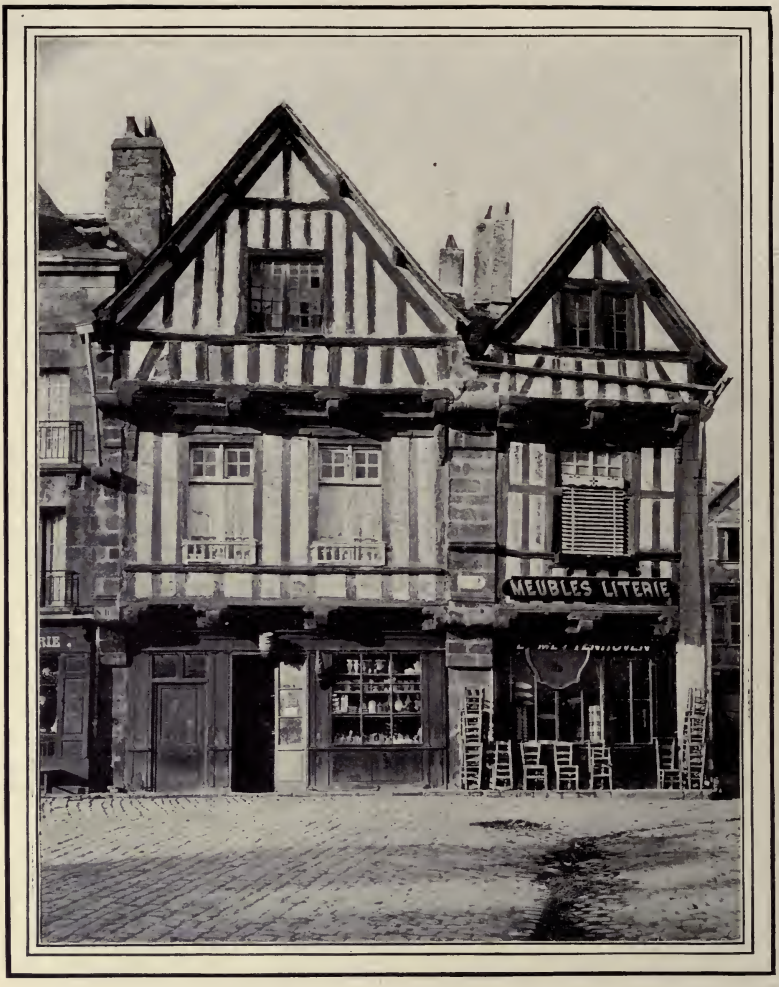


FIG. 7.—WOODEN HOUSES, PLACE DE LA MAIRIE, AURAY.

creasing demands of luxury develop resources, where the political struggles of the bourgeoisie against the bishops and the feudal lords gave formidable strength to the middle class, in centres where arose the most admirable art movement ever witnessed since that of Greece, namely, that known as the Gothic movement, but which is French; in short, in a land which has restored monumental sculpture to the world. Here, therefore, we find a purely ornamental decoration, and there a figurative one; in Switzerland, the continuation of neo-Latin traditions; in France, the influence of Gothic statuary.

* * * * * * * * * *

The building of houses in wood dates back to remotest antiquity. The Romans introduced into Gaul the art of stone-working, but stone did not take the place of wood. It served other purposes—for big

FIG. 8.—WOODEN HOUSES, LES ANDELYS.

edifices such as temples, theatres, arenas, for bridges, aqueducts, and other public works which the Romans executed in the lands colonized by them, and also, no doubt, for the villæ in which the chief officers dwelt. But although the Gauls adopted stone as a building material, they continued to use wood as well, which they knew how to manipulate and turn to the best account. The wood-working tradition retained great vitality in Gaul, as is shown by the fact that when invasions destroyed Roman rule and covered the country with a new flood of barbarians, stone fell into disuse and was replaced almost everywhere by wood, even for important buildings. In the time of the Merovingians the churches, according to Gregory of Tours, were built of wood. They were ornate and, for the period, sumptuous edi-

fices, covered with paintings. It was the same under the Carolingians. This explains the frequent fires which destroyed houses and churches. A large number of neo-Latin churches and Gothic cathedrals existed first in wood, and after having been burnt down were rebuilt in stone.* Nothing remains of the wooden constructions of those

FIG. 9.—RUE AUX FEVES, LISIEUX.
(Houses of the XVIth Century.)

distant times. Besides, stone was never altogether discarded; it certainly was employed concurrently with wood for churches and cathedrals. Under the Carolingians, with the Renaissance of learning which was promoted by Charlemagne, stone played the leading part for public edifices, but wood held its own as a material for private houses.

*There exists at Troyes, in the Cancleus quarter, a wooden church, called the Chapelle Saint-Gilles, which is the only specimen still standing of a kind of building very common in olden times.

In the twelfth century the influence of the great Cistercian and Cluniacensian Orders tended to the replacing of wood by stone nearly everywhere. This is the period when, in France, wood played the least important role in domestic architecture. Wherever the

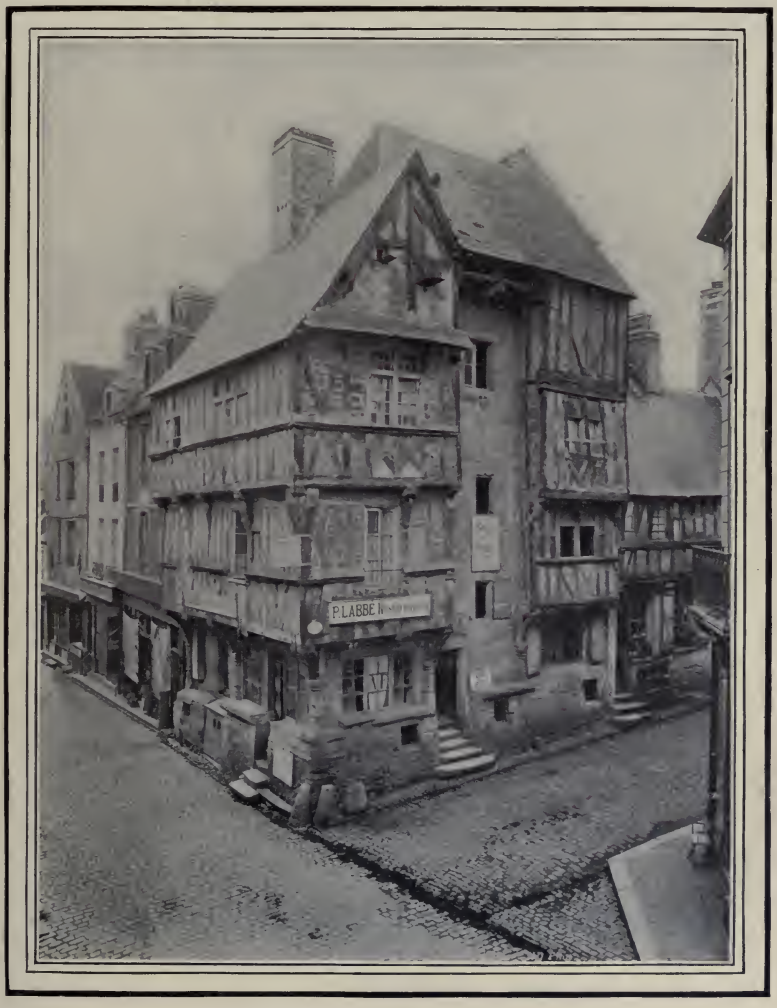


FIG. 10.—WOODEN HOUSE IN PARIS (AUBE).

monks of Cluny or of Citeaux brought their influence to bear stone was first, even in the countries most deeply impregnated with Northern and barbarian elements. In Normandy stone appeared as a competitor of wood, the result being compromises of the kind shown in the Bayeux Tapestry, namely, a ground floor in masonry with an upper story in wood. Viollet le Duc or M. Courajod would see in these buildings the affirmation, on a Roman survival, of that North-

ern and barbarian ideal which was designed to triumph on French soil with thirteenth century art.

Wood had its revenge in the middle of the thirteenth century, the way having been prepared therefor by political and social changes.

FIG. 11.—RUE DE LA MANUFACTURE, BEAUVAIS.

This was the period when the *bourgeois* class prevailed in their struggle with the lay and ecclesiastical authorities. Using sometimes lord against bishop and sometimes the king against both, they extorted charters everywhere, and when their rights had been guaranteed they were able to work with a certainty of enjoying the fruits of their labors. It was a rich and hardworking class, attached by its condition and its wealth to the cities and towns. Stone, which had been used chiefly by the nobles for their castles and by the church for its relig-

ious edifices, offered fewer advantages for the *bourgeoisie*. Wood could be worked far more rapidly and was much cheaper. Hence it was adopted by the middle class. From the end of the thirteenth

FIG. 12.—WOODEN HOUSE, LISIEUX.

century throughout the fourteenth and fifteenth, and even in the sixteenth before the neo-classic Renaissance had produced its full effects and become absolutely triumphant—a triumph destined to endure who shall say how many centuries—wood was in general use for urban constructions.

Consequently, the buildings we have to examine are town houses, erected for merchants and people in easy circumstances. They are not distributed uniformly over France. The south, where Gallo-Roman culture flourished, and where, also, timber was scarce, re-

tained the habit of using stone, even for the humblest dwellings. We cannot offer a single example of wooden house in Provence or

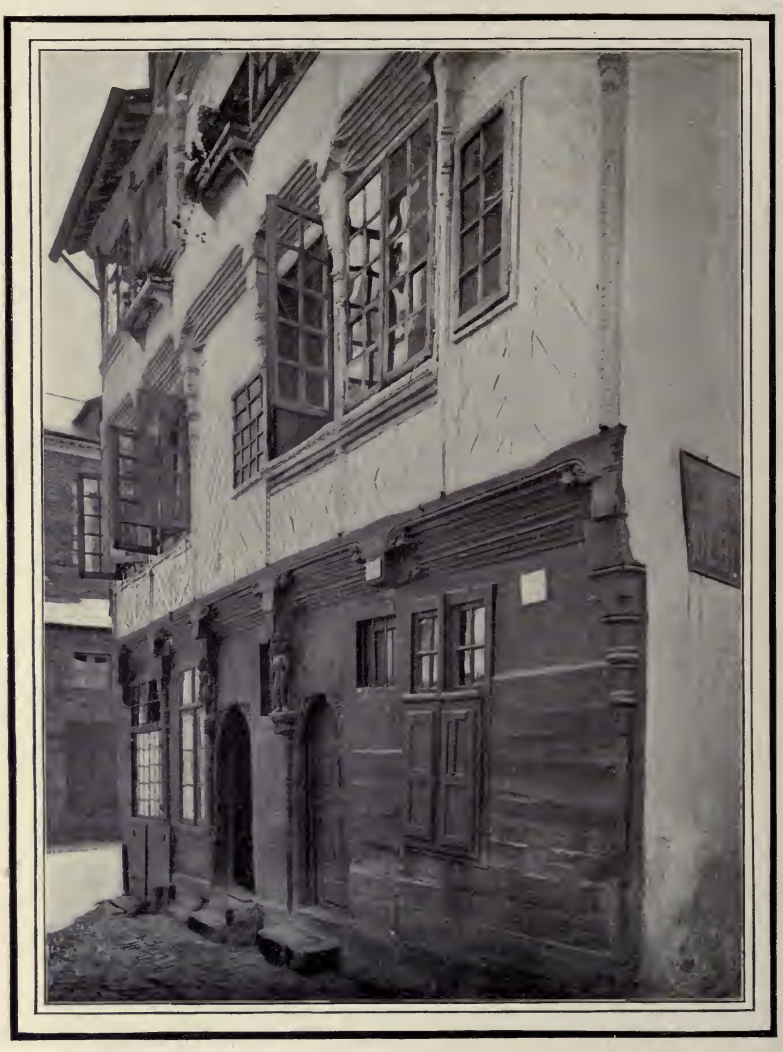


FIG. 13.—WOODEN HOUSE, RENNES.

Languedoc. As can easily be imagined, the bulk of the types are found in the West—Brittany, Vendée, Normandy—and in the North. There are a few in the Centre and in the East. In Dauphiny and in the mountainous districts there are some châlets which closely approach the type most common in Switzerland—square beams piled one on top of another. Finally, in Normandy there still existed some fifty years ago some houses surmounted by a piece of wood in the shape of a crest, which connects the Norman edifices with the Norwegian and general Northern style.

At Angers, there is a fine corner house (No. 1) which shows in a clear manner a few of the characteristics of urban wooden houses.

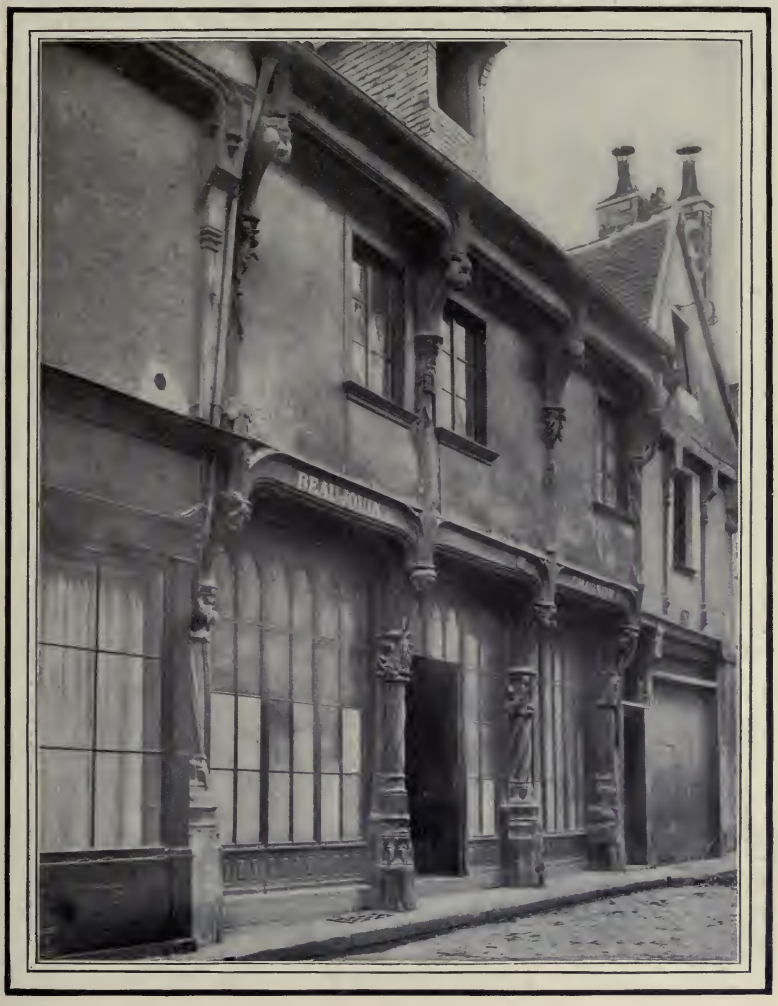


FIG. 14.—MAISON DE LA REINE BLANCHE, BOURGES.

It is called *Le Logis Adam*. The *pan de bois* is in lozenges, with the sablière beams strengthened, distinctly marking the division into stories. The corbeling is not pronounced. The walls are divided into panels by vertical beams, which are ornamented and decorated. The house has a picturesque aspect; it is symmetrical and ingenious. At the corner is a *bretèche* with five faces, built corbelwise. Very often the *bretèche* served as a staircase which, as in most houses of the Middle Ages occupied by a single family, was inside and went directly from the hall to the floor above. Sometimes, however, the *bretèche* simply enlarged the hall and formed a pleasant corner nook,

FIG. 15.—WOODEN HOUSE, LUYNES (INDRE-ET-LOIRE).

whence, through a couple of small windows, one could see far up the street. On one of the fronts is the main door (on the other was also a door, but it has now disappeared) surmounted by a projecting *pan de bois* reaching to the roof, which has two gables on one side, a piece of wall forming the coping on the other front. The roofs are covered with shingles. We see shingles again over the sablières of the second floor, to keep off the rain. We have met with the same method of protection, so necessary to wooden constructions, in more than one Swiss châlet, where it is carried out with a logic that goes to an extreme. (See the *Auberge de Treib*, in the "Architectural Record" for July-September, 1897.) The framework is in well-preserved oak. It is to be

FIG. 16.—WOODEN HOUSE, LEVROUX (INDRE).

noted that timber keeps much better when exposed to the open air than when it is covered with a coating of plaster. The plaster, by preventing the action of the air, keeps the wood in a constant state of dampness which soon eats into and deteriorates it. The woodwork constructed by those excellent carpenters of the Middle Ages has lasted several centuries, and would endure still longer if it were not that these pacific and civilized times of ours are more destructive to the ancient beauties than the most troublous periods of the past. It is to be feared that the moment is not far distant when there will not remain a single wooden house to tell us how our forefathers loved to live, what a taste they had for art (although we often call them barbarians)! and how well they displayed this taste in matters of everyday life. We have made art a thing for museums. Our houses are comfortable (not

invariably, though), but by no means artistic, and soon there will be no place, even in the remotest corners of France, for the wooden walls so dear to our ancestors. More than sixty years ago an English artist, A. Welby Pugin, drew some of the old timber houses of France, with details of their decoration.* After a series of fine old models comes the last plate, entitled "The Present." It pictures some intrepid workmen cutting up pieces of beautifully carved timber belonging to old houses. To finish as quickly as possible with the past they are throwing the fragments into an immense fire.

The carved decoration of the house at Angers is thoroughly in keeping with the spirit of the Middle Ages. How well we realize that

FIG. 17.—THE SO-CALLED HOUSE OF FRANCIS I., ABBEVILLE.

we are in a part of the world where wood carving is of all arts the most living, the best known and the most familiar! On the ground floor, under the *bretèche*, the corner is occupied by a tree, and everywhere—on the columns, the beam and window-frame supports—we see angels, old women squatting, grinning heads, beasts and battles, monsters, and, what is really exceptional, a centaur, the whole forming a series of subjects and figures which give an appearance of life and animation to the old house. We do not assert that these carvings

*"Details of ancient timber houses, XVth. and XVIth. centuries, from those existing at Rouen, Caen, Beauvais, etc." By A. Welby Pugin. London, 1836.

FIG. 18.—THE PRESBYTERY AT TREPORT.

are of great artistic merit, but they are in their place, they are not pretentious, they express what they are intended to say, and bear witness to an attention to art which was as common then as it is rare nowadays. Before leaving "*Le Logis Adam*" we must note the fine projections of the sablière beams and the strong accentuation of the window frames. These marked reliefs are quite in accordance with the best traditions of woodworking.

No. 2 is a rustic model, the only one we are able to offer. It is the old town hall of Fontaine-en-Sologne (Loir-et-Cher). The building is the simplest that could be, and the least ornamented, consisting of only one floor, on a level with the ground. The walls are schematic.

Note how ingeniously the big beams of the roof are upheld by a piece of timber resting on a middle beam. It is impossible to fix the date of this house to a couple of centuries. When there are no carvings which will guide one it is often daring to speak positively, as the traditions of a trade remain fundamentally the same for ages. The primitive framework having once been found, it continued to subsist practically unchanged. The only guide to the date of an edifice is the additions made at later periods. In regard to the old town hall of Fontaine-en-Sologne, we would draw attention to the survival of an ornament of the highest antiquity—we mean the decoration in diagonal lathes re-

FIG. 19.—AT SAINT-VALERY-EN-CAUX (SEINE INFRE).

producing the decoration applied to stone or pottery by the Gauls many centuries before the Roman conquest. See, as an example of this, the celebrated Gallic warrior in the museum at Avignon, on whose shield there is the same kind of ornament. We are not aware that it has been remarked before on any building.

Reverting now to urban dwellings, we have here (No. 3) the Château at Thiers, a fifteenth century house with a *pan de bois* of regular arrangement, the traditional corbelings, a shop on the ground floor, and a handsome roof with a shapely gable whose projection is supported by a frame the lines of which are most harmonious. The

proportions of this house are excellent, and the roof is exceptionally elegant.

The "Fortified House" at Rouen seen in No. 4 is much more massive. It has a rude aspect. The solid arris, the big horizontal beams of the first floor, protected by boards, the coping and the turret, speak

FIG. 20.—HOUSE NEAR THE CATHEDRAL, RENNES.

of a troubled period and the need of being able to defend one's house in case of an outbreak. Rouen, which is so rich in art, will furnish us with other examples more ornate and delicate. Indeed, in No. 5 we have one of the most richly decorated wooden edifices that has come to our notice.

The method followed in this case differs from what we have seen in

the preceding examples. The *pan de bois* is entirely covered with carved boards and the house has the appearance of a richly worked piece of wainscoting. It is the flaming Gothic style, and we can readily fix the fifteenth century as the one in which the house was

FIG. 21.—HOUSE ON THE GRAND PLACE, ROYE: (SOMME).

built. The carvings are most ornamental; the frieze which crowns the first floor has a fine effect, but some people may think that this decoration, rich though it be, is not properly architectural, and that the house lacks the relief which wooden constructions often present.

The houses which follow are of quite another character. The first of them (No. 6) dates from the fifteenth century and is located at La Rochelle. It is distinguished by an arrangement of parallel vertical beams going from one story to another and crossed by a single beam

placed diagonally. The intervals are filled with white plaster, from which the dark lines of the beams stand forth strongly. The general

FIG. 22.—WOODEN HOUSE, ROUEN.

decorative effect is very curious. The arrangement has been largely copied in English for modern country houses, probably without any knowledge of its origin. In the "Architectural Record (Vol. V., No. 4), there is a picture of a country house, "The Cedars," at Edgbaston, whose walls are built in this fashion. The ground floor and the entresol of the house at La Rochelle are in stone; then, on a large corbel supported by stone consoles, comes the woodwork.

We have selected a specimen in Brittany which is to a great extent similar (No. 7). These houses are situated at Auray, the celebrated

place of pilgrimage. There is the same kind of vertical arrangement of the beams, although the house is laid out in a totally different manner from the preceding one. Many other examples might be cited, but those given are sufficient to illustrate this manner of construction. We will add, however, on account of its elegant first floor and its fine crowning frieze, the "*Hotel du Grand Cerf*," at Andelys, whose walls are relieved, from day to day, by console beams which have a most happy effect (No. 8).

The succeeding illustrations (Nos. 9, 10 and 11) present a picturesque aspect of the streets of the Middle Ages. The first one shows some old houses in the. Rue aux Fèves at Lisieux, in Normandy They belong to the sixteenth century, but were it not for certain carved details they might just as well be a couple of hundred years older. We see clearly the idea the builder had of corbeling. In wood construction it is done in the simplest manner. The beams of each floor extend from a foot and a half to three feet beyond the line of the story below. On these ends is placed the sablière beam of the next story. The whole is strengthened by brackets which support the ends of the beams. Corbeling was the rule in the Middle Ages. Generally there are two stories, the upper one overhanging the ground floor to the extent of several feet. Doubtless this shut off a good deal of air from the lower part of the houses, but it was necessary to make the most of the available space, and in town houses the living rooms were always above, so that it was only the shop, which occupied the ground floor, that suffered from lack of light and air. From a picturesque point of view e old street, with its pointed gables, its large dormer windows, its successive corbelings, the door and window carvings, and, above all, the individual appearance of each house, with a style and decoration of its own, evidently presented a picture far more cheerful, varied and artistic than the modern street offers with its lines of utilitarian barracks. In the Middle Ages the house was a thing which a man constructed not only for himself but to be handed down to his descendants. For this reason it was ornamented and given a stamp of its own, for it was built for a particular family having its own style of life, its own traditions, and desiring a dwelling place in harmony with its tastes.

It will be remarked that there are also at Lisieux some specimens of the *pan de bois* of which we have spoken above. The following houses are at Beauvais and Bayeux. The brackets supporting the corbels afforded an excellent opportunity for carved decoration, and the clever *ymaigiers* of the fifteenth and sixteenth centuries profited thereby, as we shall see in detail. But before coming to the more elaborately ornamented houses let us look at a few simple types of large houses.

At Lisieux there is a house with two gables on the street. The way

in which the attics are sheltered is interesting. It has been much imitated latterly for country houses, especially in England. In this house we see the variety of effect proper to wooden edifices. The employment of crossings of different kinds of wood is in itself a decoration. The Norman roofs are always tall and picturesque.

Here again we must lay stress on that peculiarity of wood construction which we took pains to explain and illustrate in our essay on Swiss Châlets and which consists in taking advantage of the necessary and organic elements of the construction, and, instead of trying to hide them, endeavoring to turn them to account and make them express a decorative theme. What was true of the châlets is equally true with regard to the French houses of the Middle Ages. The big sablière beams, the brackets and the external and visible arrangement of the framework are at the same time a decoration, not accidental but intentional; not haphazard but desired and aimed at.

At Rennes (No. 13) there is a house of very different aspect. Note the curious manner in which the corbels are executed, and the place occupied by the carvings on either side of the door.

In the next house (No. 14), which is to be seen at Bourges, we meet with another spirit and other aims. It is called "*La Maison de la Reine Blanche.*" The timber work is reduced to a minimum; only the main lines are visible, the panels being filled in with brickwork. But what rules supreme here is the carved decoration, and being the first really complete example we have, it is worth while to pause and to look into it.

In Switzerland, where we have a standpoint from which to make a comparison, the châlets receive a very rich carved decoration; but it is pure ornamentation, not statuary. It consists of friezes with series of small arcades, and of diamond moulding, awaking in the mind recollections of Romanic decoration, of which the art of the châlets is but a survival. We have remarked how interesting is this tradition, which is seen flourishing again on the Swiss châlets so many centuries after its disappearance from Europe. In France the wooden houses slipped away from the Romanic tradition. Construction in wood was only recommended, as we have seen, at the end of the thirteenth century, when Gothic art had already reached the plentitude of its means and forms. The art of working in wood seems to have remained a stranger to the expansion of thirteenth century art, and even during the following century it furnished no contribution to the artistic work of the century. This is a curious thing, and one which cannot be explained; but it must be noted that while we know certainly that wooden houses were built at the end of the thirteenth century and during the whole of the following one, we have not a single example of wooden houses with thirteenth or fourteenth century carvings thereon. We must come to the fifteenth century to find, in the kind of

construction we are dealing with, a current of art similar to that which manifested itself in stone construction. The only houses with carvings are fifteenth and sixteenth century edifices; and we must add that statuary then occupied a far more prominent place than ornamentation.

One sees here without difficulty that one is in a place where the representation of the human face and body is a thing that has been done for a long time past, where the faculty is possessed of expressing in the plastic art the sentiments and passions, and where, too, it was known how to unite carved decoration to the architectural conception.

In the "*Maison de la Reine Blanche*," for instance, where it is found quite natural to figure on the ground floor pillars, scenes from sacred history, such as Christ in the Garden of Olives; there, a kneeling woman playing a viol and wearing the ample robe with heavy folds of which Burgundian sculpture had, at the beginning of the century, produced unforgetable models? Above, there are consoles, supporting heads; here, the large face of a monk; there, a woman's face, wearing a hood. On the brackets of the roof there is the same series of grotesque heads, many of the types of which are to be seen on the stalls of cathedral choirs. Thus, this house, although not a palace nor a grand abode, furnishes a contribution to the statuary treasures of its period.

At Luynes (Indre-et-Loire) there is, on the square of the town, a high-roofed house which has some fine carvings on the big beams of its ground floor (No. 15). On one of the doorposts there is a long-robed Virgin, and on the other a Virgin with the body of Christ on her knees; at the end, on the same side, a Saint Christopher crossing the Waters, and on the other a bearded individual of majestic mien, perhaps a wise man of the East. This splendid series of carvings now ornaments a butcher's store. To us this is not at all displeasing. This art was not a mandarin's art; it was intended to be understood and loved by all, and it is in its right place near the lowly and those who toil. More than one such house could be found in France, although many images taken from Holy Writ were destroyed during the religious wars, during which the Protestants acted with the greatest barbarity whenever they came across scenes dear to Catholic iconography. Besides, a great number of these figures were removed, and very few of them have found their way into our museums.

At Levroux there is a corner house with some curious grotesque figures carved on the capitals. (No. 16.)

The next four houses are interesting in several ways. They carry us towards the sixteenth century. The spirit of the Renaissance shows itself therein, at first in the ornamentation, as is always the case, and afterwards in the construction; and then it is the decay, and speedily the ruin, of the woodworking art.

The house at Abbeville named after François Premier is faithful to the old-fashioned style of construction. It marks the end of a Gothic epoch; statuary mingles with the ornamentation, which is still Gothic. Above the door one sees a Virgin holding the Child Jesus. (No. 17.)

The presbytery at Treport is a house in which brick and stone combine with wood in the happiest manner possible. Upon a ground floor in masonry there is an overhanging *pan de bois* with heads in medallions ornamenting the beam ends. (No. 18.) The decorative effect obtained by the crossing of the timbers and the filling-in of bricks in two colors is charming.

A large house at Saint-Valery-en-Caux shows us a fine arrangement of timberwork, and gives another example of the old habits of construction. The new spirit is manifested in the large ornamental friezes running in three lines along the front. It is the antique ornamentation—masks and garlands; balusters above the doors. The carvings are much dilapidated, but enough is left to fix the date of the work. (No. 19.)

At Rennes we have a very pretty entrance of a house dating from the same period. The crossings, the decoration, and the admirable proportion of the parts, make it an example of excellent style, and we think it will be examined with interest. (No. 20.)

The house illustrated in Figure No. 21 is situated at Roye (Somme), and is also a typical specimen of the class we are now studying. In general appearance it belongs to the Middle Ages. The shape of its roof, and its bays of joists, which strive to appear ingeniously combined, but are in reality heavy and awkward, might date the end of the fifteenth century, whereas the carvings on its brackets, and the decorative spirit of the façade, place it in the middle of the sixteenth. Note the heads, the foliage, and the brackets, covered with all the cast-off clothing of Roman antiquity, which surely has no business on this Middle Age carpentry.

We now reach the completion of the system whose first types we have here pointed out. Standing before the Renaissance house at Rouen shown in Fig. 22, we feel we have changed country. Assuredly if we wished to consider merely the manual dexterity of the sculptor who has carved this front as one would carve a chest or a coffer, there would be ground for admiration, and we would be ungrudging in our praises. The work is rich and of remarkable finish. Every part is covered with the most elaborate ornamentation. On the brackets are little genii, who come from afar and speak a foreign tongue; the wide, plain borders, the false galleries on the several stories (for the pilasters certainly suggest a gallery); the masks on the brackets, and lastly, the medallions on the upper story—everything combines to denote a common origin, not French, but antique. It is an adapta-

tion, not an original. But what is more important is that it is not an adaptation of a style of working in wood, but a transposition from one material into another. This system of decoration belongs properly to the art of working in stone; it is in stone that it was created and developed, and one cannot understand it otherwise. In wood it is void of signification. In our article on the Swiss châlets we explained the deep-rooted reasons for the art values of these constructions, namely, that châlet construction is real, not transposed; that it is based on the qualities of the substance, and that it has logically followed the rules of construction imposed by the choice of this material.

French house construction of the Middle Ages, with other needs to satisfy and other kinds of timber at its command (oak, not fir), has obeyed the same logical principles. It was timber-work, and timber-work it has remained, and it has managed to extract from its theme of construction charming decorative effects fully in harmony with this theme. Wooden house-building, as understood at that period, had a long and not unlovely existence. But the Renaissance came. The Renaissance has often been described as a setting free of minds, but it would seem that those who so judged it did not know the Middle Ages and could not trace the results of Humanism. There was more liberty for art in what are called the Dark Ages than in our French seventeenth century. We know people who prefer Rheims, Paris or Amiens to Versailles or the Jesuit churches. These truths, suspected fifty years ago by a few, are now making their way in the world. One is able to hold these ideas without calling down the scorn of those who talk of art.

In the domain we are dealing with, *Antiquity established and demonstrated*, as the erudite seventeenth century humorist said, had the effect of ruining the beautiful and savory forms in which still breathed the life of the nation's past. It subjected Europe to the uniformity of its rule. No more personal interpretation, no more racial sentiment. The antique canons were law.

The French sixteenth century defended itself well. It was robust enough to swallow the foreign food and assimilate it to its temperament. The admirable series of castles of the Loire are thoroughly French, notwithstanding the ornamentation and the evident plagiarisms. But it is the end, and that for a long time to come.

Wooden house construction was also condemned. Antiquity declared that the only art worthy of the name was that of stone, and stone began its reign of absolutism. Wood, when by chance it was employed, endeavored, in order to exalt itself, to imitate stone, as, for instance, in that house at Rouen which we have before us. Such complete forgetfulness of its origin and *raison d'etre* proclaims the end of the art, for it is evident that stone is far superior to timber for this kind of construction and this system of decoration. Wood is not

FIG. 23.—WOODEN HOUSE, BAR-SUR-SEINE, AUBE.

strong enough to struggle here, not being on its own ground. It has nothing to do but disappear. The Rouen house may create an illusion by its carved chest appearance, but look at a *pan de bois* of the seventeenth century; that, for instance, of the house shown in Fig. No. 23, situated at Bar-sur-Seine, in the Aube. There the absurdity is glaring. These fluted pilasters, those composite capitals, those heavy brackets, the ovolos and the palm leaves, the window supports, and, mingled with the whole, a *pan de bois* regularly and wisely arranged—all this makes up an architectural monstrosity, and we feel that we ought to apologize for putting it before our readers.

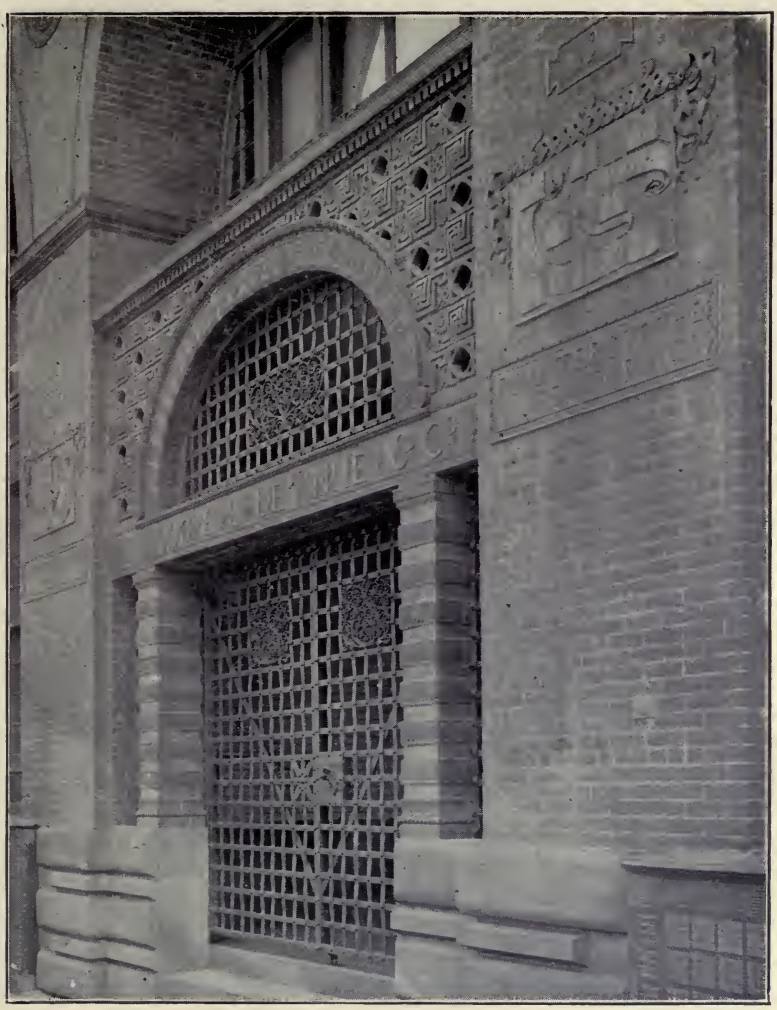
The *pan de bois*, as understood in the Middle Ages, is of no use now for urban constructions. It has, however, a fairly wide field in rustic architecture. Combined with brickwork, it is still employed with success, and we believe that architects can find in the types here submitted more than one interesting motive, more than one ingenious arrangement which deserve to be revived. As has been seen, the effect of a fine *pan de bois* is picturesque, and, owing to the variety of combinations it allows, it is capable of rendering good service in the hands of a skilful architect. In any case, the ever-powerful charm of these old houses, and the knowledge of their approaching end, are in themselves adequate reasons to justify this backward glance into the past.

Jean Schopfer.

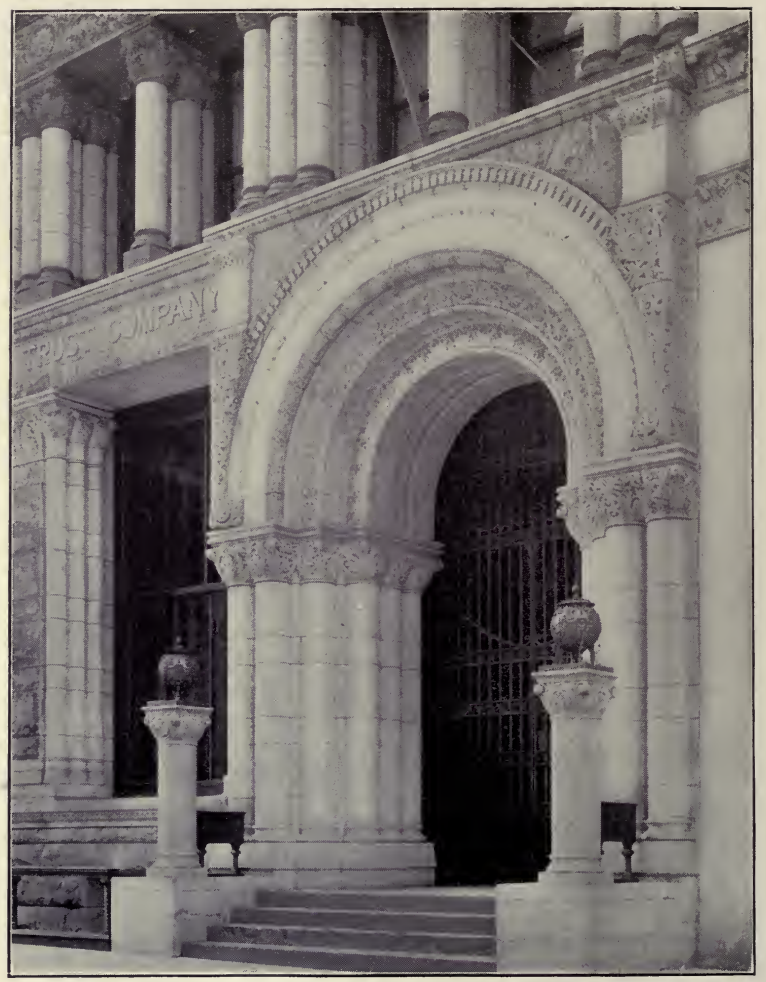
THE AMERICAN TRACT SOCIETY'S BUILDING.
Nassau and Spruce Streets, New York City. R. H. Robertson, Architect.

SOME Entrances To the Skyscraper

ENTRANCE, NEW YORK LIFE INSURANCE CO.'S BUILDING,
Broadway and Leonard Street, New York City. McKim, Mead & White, Architects.



ENTRANCE TO THE DE VINNE BUILDING,
Lafayette Place, New York City. Babb, Cook & Willard, Architects.



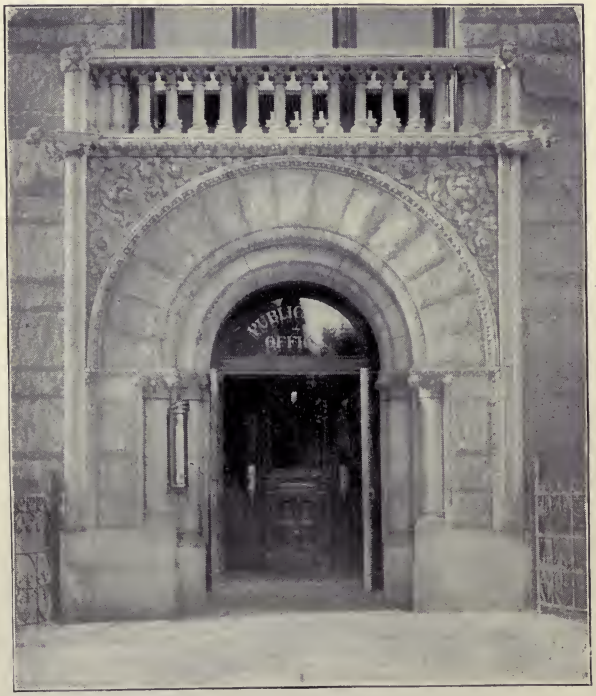
ENTRANCE TO THE UNITED STATES TRUST CO.'S BUILDING,
Wall Street, New York City. R. W. Gibson, Architect.

ENTRANCE TO THE MILLS BUILDING,
Broad Street, New York City. George B. Post, Architect.

ENTRANCE TO THE NATIONAL BANK OF COMMERCE BUILDING,
Nassau Street and Cedar Street, New York City. James B. Baker, Architect.

THE D., L. & W. R. R. CO.'S OFFICES,
Exchange Place, New York City.
L. C. Holden, Architect.

THE POSTAL TELEGRAPH CO.'S BUILDING,
Broadway and Murray Street, New York City.
Geo. Edward Harding & Gooch, Architects.



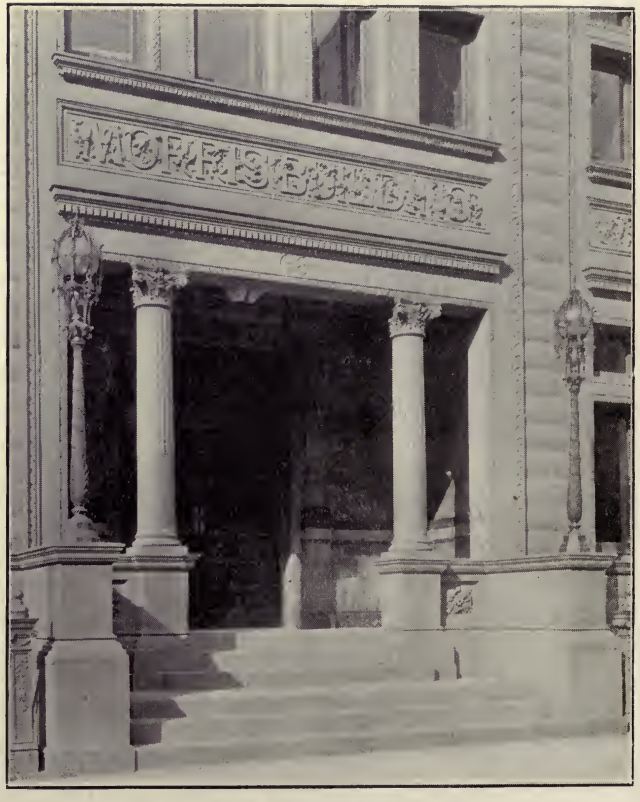
THE NEW YORK TIMES BUILDING,
Park Row, New York City.
George B. Post, Architect.

56 SOUTH WILLIAM STREET.

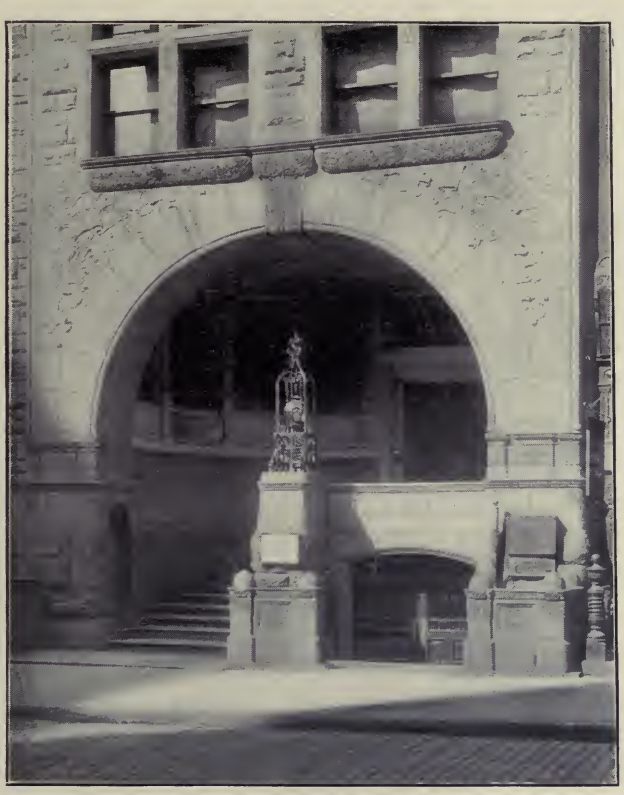
THE WOLFE BUILDING,
William Street and Maiden Lane, New York City.
H. J. Hardenbergh, Architect.

THE FARMERS' LOAN AND TRUST CO.'S BUILDING,
William Street.
Clinton & Russell, Architects.

DELMONICO'S,
Beaver Street, New York City.
R. H. Robertson, Architect.



THE MORRIS BUILDING,
Broad Street, New York City.
Youngs & Cable, Architects.



THE ENTRANCE TO ALDRICH COURT,
45 Broadway, New York City. James E. Ware, Architect.

THE GALLATIN BANK BUILDING,
Wall Street, New York City. Cady, Berg & See, Architects.

By courtesy of Harper & Bro.

Cady, Berg & See, Architects.

BIRDSEYE VIEW OF THE MUSEUM OF NATURAL HISTORY AS IT WILL BE WHEN COMPLETED.

THE MAKING OF A MUSEUM.

REFERENCE in the following pages is made only to Scientific Museums, or Museums of Natural History and Economic Exhibits, and no reference whatever is intended to Art Collections, whose arrangement is based upon different considerations, though in some forms or sections of both Art and Scientific Museums the interests and aims are identical.

In the discussion of the Installation of Museums the subject splits up at once into three groups, of equivalent importance perhaps, but of entirely divergent character. These three are Technique, System, and Effect. Technique relates to or embraces mechanical adjustments, conveniences, receptacles, buildings, and the physical constants, or material. System relates to or embraces scientific sequence, illustration, and information. Effect contains the whole subject of æsthetic presentation.

Technique.

In the widest and apposite use of the term, Technique expresses the artisan phase of installation, reaching from illumination which hints at the construction of the museum itself to the best form of pins for suspension or insertion of specimens. It covers the multivarious details of *how* to exhibit an object, without bearing upon beauty of effect or implications of science. It commends to the curator considerations of stability, of cleanliness, and efficacy. Therefore it relates to the simple elements of construction, including in that term *form* and *material*.

Under *form* it discusses size, shape, and arrangement of a Hall of Exhibition, or the Domiciliary; size, shape and relations of cases, or the Loculus; size, shape and relations of trays, supports, shelves, blocks, standards, pediments, and all accessories of the same, or the Paraphernalia.

Under *material* it discusses or compares the advantages of material entering into the Domiciliary, Loculus or Paraphernalia, as wood, stone, iron, ivory, celluloid, paper, silk, plush, cotton, cork, paint, etc. To resume in a tabular form these distinctions we have:

Form— { Domiciliary. Loculus. Paraphernalia.

Material—All useful fabrics.

System.

By System it is not implied that we are entitled to discuss classification of organisms or objects, whether minerals shall be arranged

by formulæ or bases, plants by Gray's or Britton's manual, invertebrates by Cuvierian or Huxleyan methods. But there is implied by System the discussion of such means and ways of display that lead to certain intended results with reference to a mental impression on the spectator. Such Systems are quickly comprehended under three heads—Popular, Philosophical, Scientific—separated most naturally by the simple implication of the terms. The Popular System informs the visitor what the objects are, bending on each a discriminating attention. The Philosophical System develops the relations of objects to each other and to their environment; it may be teleological, it may be evolutionary, it may be simply spectacular. The Scientific System tells of objects, their terminology, taxonomy, morphology, biology and the varied aspects of living things as deciphered by Science.

How these results shall best be attained can be a legitimate consideration under Installation.

Effect.

Effect is quickly understood. The æsthetic quality of a display is gauged upon inspection. And such effects are numerous; tasteful, impressive, sensational, sumptuous, plain; but referring always to visual impressions affecting our sense of beauty, propriety, clearness, etc.

Taking up these separate heads under which it seems possible to group all questions of Installation, we have a conservative series of topics which leads us from the basic mechanical structure to the ultimate emotional expression which, issuing from the separate factors, and from the unity of all factors, pervades the whole Museum.

Technique.

Domiciliary.

The museum building, when many storied, should be rectangular. It is evident that all curves, irregularities of surface walls, notches, cones, recesses, disturb the succession of cases, confuse the light and produce mechanical difficulties in arrangement and construction of cases. This rectangular building should be shortened in one direction and lengthened in the other in order that the lights falling in on either side should not lose their intensity by penetration, but somewhat mingle. A square building is objectionable because it is not apt to be as well illuminated as a narrow one. Such a building should be placed, in this latitude, and generally, north and south, so that morning and afternoon light could enter it. Its width should be about fifty feet, and may vary to thirty. Above fifty the illumination is reduced, and below thirty the halls fail to furnish adequate space for economical exhibition. It is impossible to extend one building indefinitely north and south; additions in some way are imperative.

Their best disposition if the ground is available is in a succession of separated houses arranged *en echelon,* so as not to interfere with each other's light, and connected by terminal halls.

Groupings (Fig. I.) of this character can be indefinitely varied, and they can be made architecturally attractive separately, and their combination distinctly imposing. But such groupings are usually impossible. They occupy too much ground, they involve an expensive duplication in structure, and they are too scattered, failing in massiveness and solidarity. They besides are more exhaustive of effort and energy to visitors. Yet to such a degree as these long meridional structures can be obtained in connection with a more reasonable disposition of material they should be desired, because their illumination meets usually the most exacting requirements.

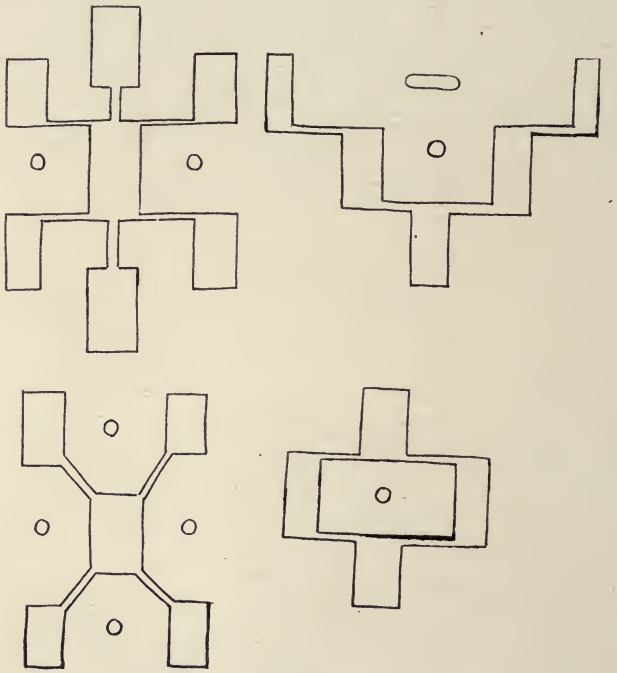


FIG. I.

In cogency of design, as involving such an arrangement, a wide elongated court, walled in by the continuous museum buildings with axes north and south can be recommended. The width of such a court, however, should scarcely be less than five hundred feet, so that the opposite sides of the court should not prove mutually obstructive of light in the mornings and afternoons. The north and south walls connecting the ends of the long side structures will offer a great deal of room, and cannot, of course, be rejected for exhibition uses, but in order to secure light their ceilings should be high and their width

greatly narrowed. In this latitude such east and west buildings, if made deep, lose light greatly along the north interior walls. A better plan as involving less east and west lines are two long buildings connected by a narrow hall of one or many stories, which is a corridor of connection and which can be devoted most attractively to the illustrative uses of maps, photographs, and pictures (Fig. 2). A still further modification which provides an almost uninterrupted series of equally lighted halls is the erection of a prow-shaped terminus to the quadrangle of buildings, formed from two inclined wings meeting in a common entrance (Fig. 2). In this case again the dimensions contemplated are rather greater than is usual, and the complete inspection demands a fatiguing journey, and the conveniences of intercommunication is reduced to a minimum. Still ideal conditions only are here regarded, and the human factor must retire into extinction.

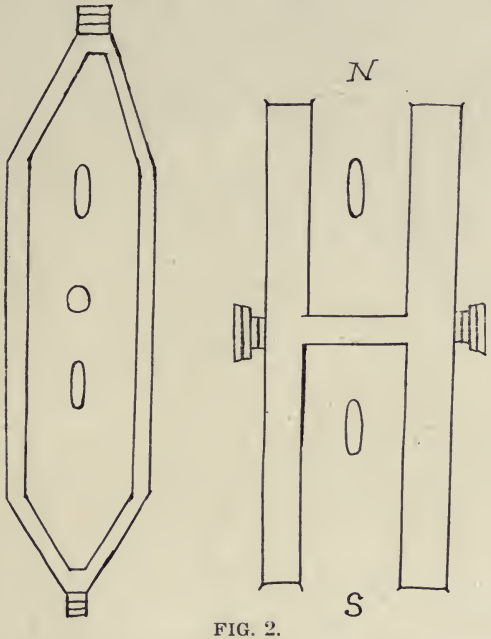
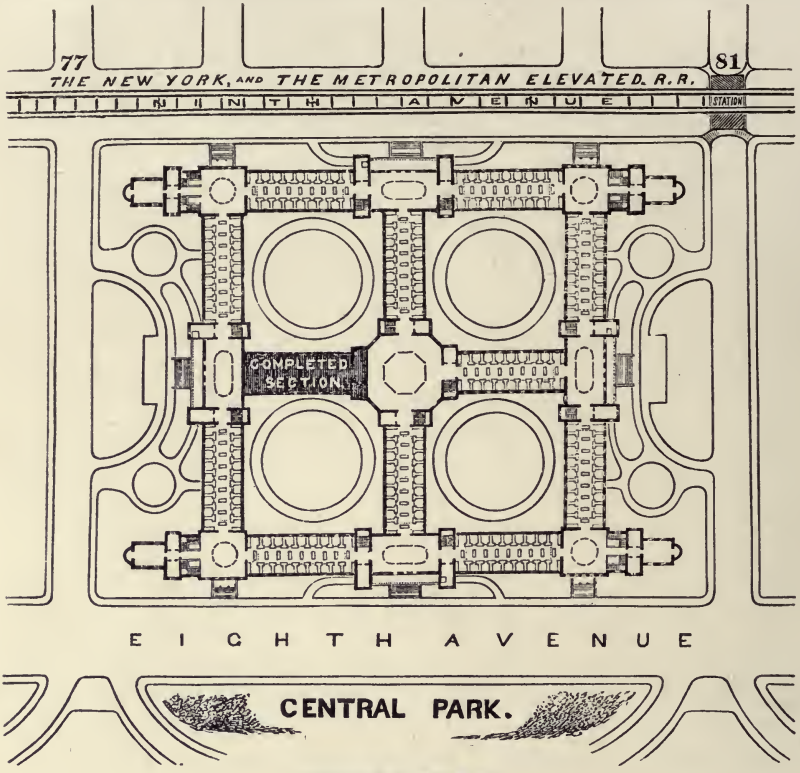


FIG. 2.

A museum building can be erected in the form of a rectangle connected by four arms from a central tower, as is the case with the projected complete structure of the American Museum of Natural History. (Fig. 3). But the criticism to be made here is the great width —500 ft.—of the wings on the south and on the north sides of the rectangle, which are not meant to be connective members simply, but form exhibition halls (the south wing of the A. M. N. H. will soon be completed, and, as the museum stands now, constitutes over three-fourths of the whole edifice) which yield defectively illuminated halls on account of their cardinal position east and west. The same length of building north and south would have been preferable. The National Museum at Washington is in the shape of a Greek cross with a central rotunda. The four main arms or "naves" around this rotunda are 101 feet in length and 62 feet wide, and the rotunda rises 108 feet. The exterior angles are filled in with the "courts," 65 feet square, and these are again flanked by the "ranges," whose

outer walls form the extension of the whole building, which is thus filled out into a complete square. This plan would be most objectionable as far as illumination is concerned, if it were not that it is



GROUND PLAN.

FIG. 3.

carried out on a single level with clear-story windows, which contribute the skylight to the general illumination.

Even under the circumstances given the illumination of the National Museum is not wholly satisfactory, in fact at points is very poor. The limits of time in which there is good lighting are shortened in all single-story roof-lighted buildings, where the walls are very high and the skylight is replaced by clear-story windows, or the skylight has insufficient slope. In regard to the unfavorable condition produced by the combination of high walls and skylights, Mr. L. C. Laudy, a most able and experienced photographer, tells me that from his own experiments he has found that a gradual increasing of the height of the wall greatly diminishes the light. There are in this connection obvious modifications of the shape of a skylight to be considered, according to the latter's length, for architectural effect, viz, a long skylight should not have too steep a slant, and a short one not too low.

The light at this latitude varies significantly in the different sea-

sons, and upon the two opposite aspects (north and south) of a building. In summer the sun reaches at the solstice the extreme northern latitude of verticality of $23\frac{1}{2}^{\circ}$; in winter it is never vertical, and the inclined rays in the morning and evening then issue from a point approaching tangentiality with our latitude. The contrast of the north and south sides of a building in illumination is very noticeable from December until April, and hence the meridional position—the flank exposure—is so much to be preferred. To secure the maximum illumination at all seasons the flat or one-storied museum with skylight, clear story, etc., has been devised. It is always best shown in the great exhibition halls of the different World's Fairs, where the possibility of the largest possible public inspection is desired. This result was very well attained in the Government Building at the Centennial in Philadelphia (1876) and at the Mines and Mining, Transportation and Horticultural Buildings at Chicago. In such buildings extreme height must be avoided.

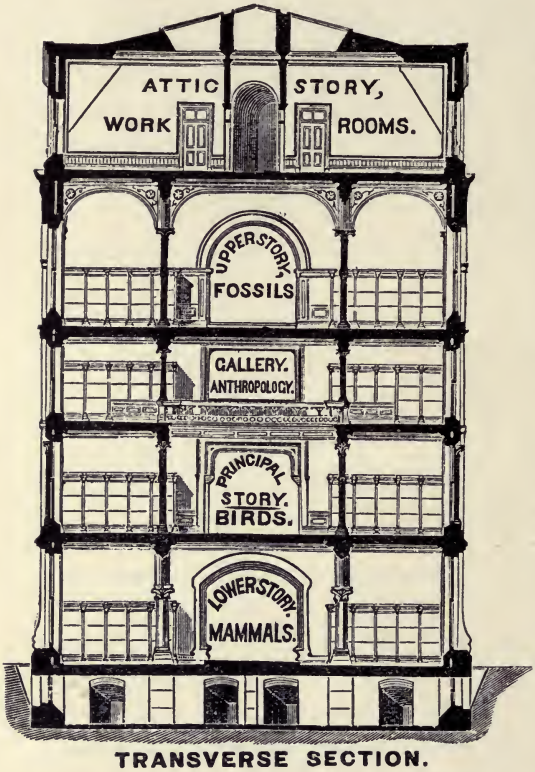
The Manufacturers' and Liberal Arts Building at Chicago was covered, in its skylight, with eleven acres of glass, but its enormous height of 210 feet precluded the full effect of its upper stories and covering of windows. One-storied canopied buildings, if low, are defective in appearance, and they are diffuse and expanded, covering a good deal of ground while they furnish insufficient wall space, unless cut up into rooms and halls, producing thereby a tangled and confusing labyrinth, and interfering with the aims we shall further consider under System and Effect.

A very tantalizing result of total reflexion occurs also with skylights, unless properly obviated, whereby the glass of flat cases, exposed beneath them, become the mirrors of the roof, and reflections of gratings or sashes are distractingly mingled with the view of shells and minerals.

Material.

The material used in the construction of the Museum building is determined, of course, by taste, resources and convenience. Thick walls form a protection against damp, and stone and fire brick are partial safeguards against fire. Such walls, however, must be provided with a hollow air space, otherwise their thickness is an insuperable obstacle to proper dryness. The most complete defense against the misfortune of fire is an isolated or detached position. Wooden floors are objectionable. They do not admit of complete cleaning, and they accumulate and form dust. The interior of a museum should be austerely plain; mouldings and decorative woodwork, even such purposive decorations in plaster as at the S. Kensington in London, should be repressed or abandoned. All niches, crevices, pits, depressions and traps for dust must be religiously excluded. Artistic effects are to be sought, but by somewhat different paths.

The museum building can be carried upward to any height, and where space cannot be easily obtained in a north and south line, rather than grow sideways let the museum structure rise upward with additional stories. This has never been tried because it interferes with architectural pretense, but it will keep the museum in the best plane for light as explained before. It is perfectly feasible and not necessarily ugly. I believe a sixteen or twenty storied bank of halls would, when the very best position had been selected, form an admirable and almost perfect museum structure. The ascensional possibilities of arrangement would permit a very philosophical development of ideas in System and classification from inorganic through organic to human subjects.



TRANSVERSE SECTION.

FIG. 4.

The material, position and size of the building being fixed, and, considering a four-storied simple rectangular structure as the form contemplated, the windows and the varying heights of the different stories is next to be determined. The proportions of the first section of the American Museum of Natural History in New York are almost ideal. They can be always safely copied. (Fig. 4.)

Whole length of building	210 ft.
Tower at north end holding stairway	20 "
Width of building	64 "
Height of building	100 "
Basement floor, above cellar, height	22 "
Main floor	25 "
Gallery floor, surrounding main floor, width	15 "
Gallery floor, surrounding main floor, height	15 "
Fourth floor, height	22 "
Fifth floor (workrooms, etc.), height	15 "

Windows on each floor, nine, opposite.
Basement—Height, 14½ ft.; width, 6½ ft.; rectangular.
Main floor—Height, 12½ ft.; width, 6½ ft.; rectangular.
Gallery floor—Height, 8 ft.; width, 6½ ft.; rectangular.
Fourth floor—Height, 14 ft. at centre; width, 6½ ft.; pointed arch.

Windows on the fifth or attic floor can be modified as desired. Such illumination as this produced was unexcelled. This original section of the New York museum might make a museum *unit*, and every museum be a juxtaposition of such units, or a multiple combination of them. The above dimensions are appropriate. All museum buildings are essentially rectangular, the towers, arms and enlargements being accessory to this initial nucleus, special features of special purposes or structural ornament. Indeed, the *box* is the ultimate museum cell element. The building, the cases, the trays, the labels—one dimension reduced to zero—are boxes, and their multitudinous sizes and ornamentation and positions do not conceal the uniform and necessary form underlying all.

The Domiciliary provided the Loculus comes next under consideration.

The Loculus.

This embraces the cases which are wall, flat, or desk cases, and special or group cases, and turnstiles, drawers, and storerooms.

Cases.—Dr. Goode has remarked that "of all the practical questions which confront the museum administration those relating to the form and construction of cases and the methods of interior fitting are among the most perplexing, and, so far as the relationships of the museum to the public are concerned, the most important. Each well-arranged case, with its display of specimens and labels, is a perpetual lecturer, and the thousands of such constantly on duty in every large museum have their effect upon a much larger number of minds than the individual efforts of the scientific staff, no matter how industrious with their pens or in the lecture room."

In the National Museum a great many forms or sizes of case are in use, and this tendency, the result of a desire to enclose in each case a separate and inter-related group of objects, seems carried too far. It is wiser, especially with reference to Effect, to limit the cases to a few comprehensive forms. There does not seem much reasonableness in forming exhibits separated in a series of differing cases. The mere exposition of an object so that it can be seen, and seen well, and appear most advantageously, does not demand a great variety in the character of cases, nor even such a wide range of dimensions, except, as in "special or group cases," the nature of the contents determines its necessary size.

To begin with, wall cases are of three kinds, though in one the designation is conventional and not literal; wall cases proper, pier cases, and double front cases, or cases with a middle partition affording shelving room on each side. These latter are upright cases, but entirely detached from the walls. Of these various forms of wall cases the pier or alcove case seems most desirable for the larger

number of uses. The pier or alcove case springs from the wall between two windows, and thus on either side exposes a surface of illumination to the window. There is always, of course, varying with the time of day and season, an area of shadow at the wall end of the case,

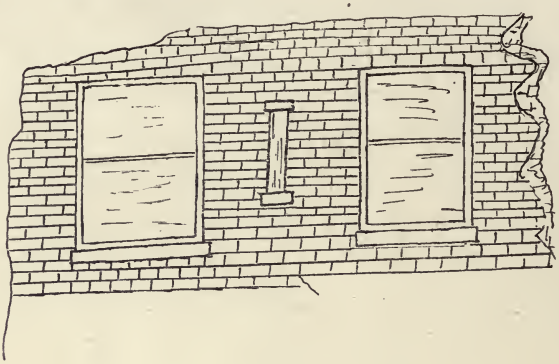
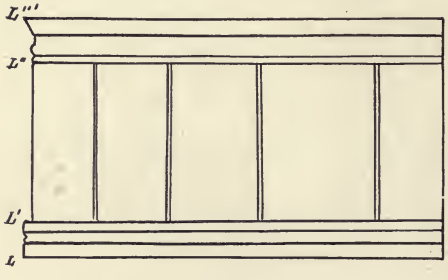


FIG. 5.

which by a device of the late Calvert Vaux can be partially or wholly overcome. Mr. Vaux had lancet windows placed in the wall through which the light entering the middle of the case at its contact with the wall dispersed the shadows formed by the angle of the window. (Fig. 5.)

The introduction of this suggestion leads us to consider a peculiar and admirable form of pier or alcove case, developed also by Mr. Vaux, in the first section of the A. M. N. H., our *Unit* museum. This is the T-shaped case designed to form a front upon three sides, those aspects against the alcove itself, and the third upon the hall face of the case. (Fig. 6.)



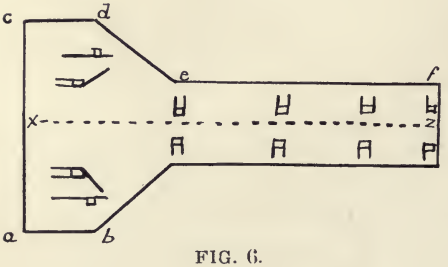


FIG. 6.

In this disposition of course the alcoves are lighted by a window, which should be almost the entire width of the alcove itself. In our unit museum this, however, is lacking. When these cases were first erected the lancet window mentioned above had an illuminating effect but it

was found that the cases became confusedly lit by cross lights, and it was necessary to place a partition through the centre of the case, forming a background and reflecting surface for the objects in front. The end or proximal window, however, still is useful. These cases are admirable. By removing the shelving large enough compartments are formed for single large figures, as mammals, while their complete illumination, increased also by the inclined ends, their great capacity, their structural interest, and the room-like effect of the alcoves produced by their approximating distal ends, all combine to give them pre-eminence. Along the main hallway their extended ends form a broad case-like effect quite superior to the narrow end of the ordinary pier cases. The ordinary pier or alcove case is carried out from the wall with two straight sides. The dimensions of these two examples of pier are as follows—compare Fig. 6:

T-shaped pier case a—b, 3 ft.; a—c, 9 ft.; d—e, 4 ft.; e—f, 12 ft.; x—z, 18 ft.; L—L′, 1 ft.; L′—L″, 7 ft.; L″—L‴, 1 ft.

The mouldings are very simple; the wood black walnut, oiled; the angles in front rounded; the depth of the frame holding the glasses two inches. There are three doors on the front, one on the sloping side and three on the shank of the case.

Box Pier Case.

This, in the instance chosen, is a rectangular case reaching out from the wall twenty-one feet, four feet wide, with a height of eight feet and a few inches (4 or 5), base ten inches, and top moulding of eight inches.

The body of the T cases in the American Museum was of wood sheathed with iron. The doors are of single panes of glass in iron frames swung on iron pins in sockets. They are locked by the bolt or Jenck's lock. The disposition of standards for shelving is seen in Fig. 6, the black squares indicating their position. These standards are of wood on each side of which are screwed racks upon which brackets are gripped. (Fig. 7.)

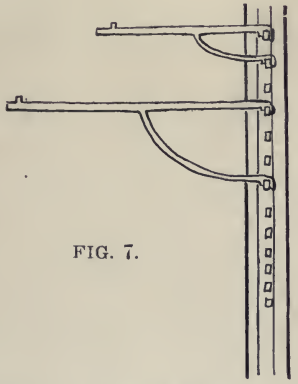


FIG. 7.

This invention of Prof. E. S. Morse, adapted, I believe, from an old fire-side crane shown him by Prof. Putnam, seems absolutely applicable in all shelved cases, and as the brackets can be inclined or blocks can be placed on the brackets so as to tip up the shelf, the

widest range of useful illumination for their inspection is feasible. Pier cases should be usually divided by a partition through the centre. Such a partition can be carried from end to end, or, at the free or distal end cross shelving can be introduced.

It is obvious that the dimensions of the pier wall cases can be much varied, dependent on the purposes they are to meet and the space, between windows, which they occupy. Such space should not be excessive. It should hardly exceed nine feet for all cases holding shelving and intended for small objects. In many instances where the wall space is greater, and wide cases can be built, they may be made into group cases which do not demand extreme illumination for their inspection. Pier cases can be carried outward from the walls into the hallways until the hall becomes a succession of alcoves or rooms with a corridor between. Or *vice versa*, as in the

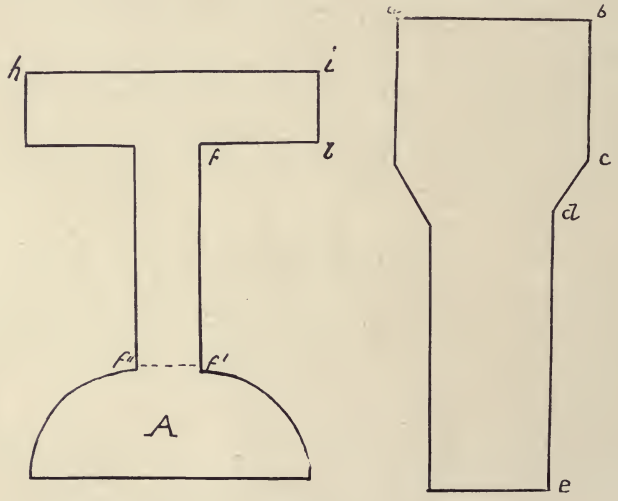


FIG. 8.

German museum, a central partition frame may divide the hall into two halves, and against this the pier cases can abut, extending out towards the windows. It is clear that in such a disposition both sides of the hall must be provided with windows, and preferably as many windows as alcoves and opposite to them. The extreme length of the alcove cases is a disagreeable feature, the hall effect is obliterated, and table cases, so invaluable for many objects, are expelled. As has been pointed out it serves the purpose of breaking up the hall into a number of compartments which can be individualized by some special contents, and so the series of alcoves become involved in a developmental or pedagogic system. Generally speaking, and re-

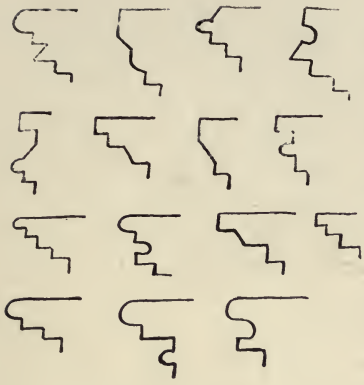


FIG. 9.

ferring again to our *unit* museum, pier cases may reach out in a hall, 60 feet wide, 18 feet.

A peculiar form of pier case has been adopted by Pt. Jesup for his wood collection in the New York Museum. (Fig. 8.)

They are the T-shaped cases mentioned above in the *unit* museum, but in different proportions, and in one instance (Fig. 8-A.) very greatly modified. These are magnificent cases. Their dimensions are as follows—compare Fig. 8: a—b, 9 ft.; b—c, 6 ft.; c—d, 4 ft.; d—e, 12 ft.; h—i, 25 ft.; i—z, 4 ft.; f—f′, 10½ ft.; f′—f″, 4 ft.

The finish and appearance of these cases are surpassingly elegant and chaste. Their bases are completed with a five-inch strip, one-half inch thick, of white marble protecting them against defacement.

Figure 9 gives a variety of bases, mouldings, cornices, etc., which may be used in pier cases, and indeed in any wall case. It seems desirable to repress too much moulding and generally not to have the base mouldings on the pediment of the case over one foot in height.

In figure 10 some working details are depicted (not in scale) of a pier or pavillion case without partition or diaphragm, for which I am indebted to A. R. Strader.

An useful alcove case for displaying cloths, blankets, tapestry, or even implements and flat objects in Natural History is practically a board framed in a sash with two glass

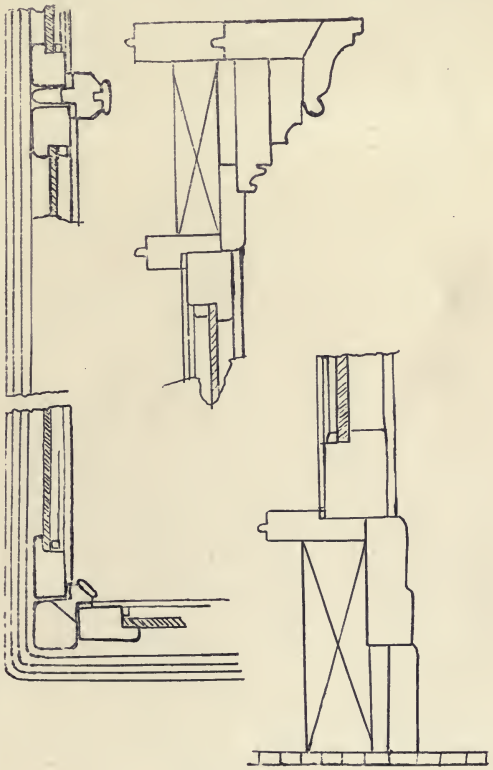


FIG. 10.

doors lifting up. These are narrow cases generally with two doors on each side. They have been used effectively in the New York Museum, and they are employed for the synoptic series in the National Museum.

Wall cases proper are those built up against walls extending considerable distances, in fact, covering all the wall surface of a room or hall as high as the case itself reaches. Such cases are variable in depth, according to uses. Wall cases are frequently poorly lighted when placed between windows. Their best position is east and west, with east or west windows pouring in light along their fronts. The north wall cases of the central south section of the A. M. N. H. are quite defective from poor illumination. In the *unit* museum (the first section of the A. M. N. H.) there are only short wall cases in the north and south alcoves of the halls, and they here receive the lateral illumination of east and west windows. Such wall cases are shelved as the pier cases. But shelving is discussed in some following paragraphs.

The practice of using glass tops to cases, as recommended by Dr. Goode, seems questionable, except in small group cases, where it improves the appearance of the case. Dust soon accumulates on the glass or it becomes otherwise dirty, and it requires frequent cleaning, while when objects are raised above the cases the glass is an obstruction to their manipulation. Dimensions of wall cases of course vary, their depth being adjudicated by the character and size of the objects they are intended to hold. A depth of three feet seems widely serviceable.

The doors of all upright cases should be swing doors, opening outward, for the one sufficient reason that they can be easily cleaned. Dr. Goode's advocacy of doors pushing upward is induced by the broad glass pane, such an arrangement allows, which of course has advantages. But the difficulty of cleaning the whole door properly seems to outweigh all advantages. Such large plates of glass are, however, also feasible in sliding doors moving past each other on tracks.

The double-front cases are rectangular cases detached from the walls, with a diaphragm or back passing from end to end through the centre. They are two wall cases back to back. Such cases are useful and might advantageously replace all wall cases where wall cases cannot be so favorably built as to receive the light from the windows. These double-fronts should be on heavy iron wheels or rollers, hidden by a marginal skirt of wood or stone. And, indeed, all cases, where it is feasible, should be movable. I have seen the most unfortunate strains given to cases, and the most unlucky injuries inflicted on men by the hardship of having them *shoved* into new positions.

The shelving in cases has two objects, provision of room for the specimens exhibited, and favorable positions for their intelligent examination. The second may be considered paramount, except in such instances, as formerly in the building of the Philadelphia Academy of Sciences with the collection of birds, where the exhibition cases become store houses. Probably the best system of shelving involves placing the widest shelf, the first above the bottom of the case, at about two and one-half feet below the level of the eye of the spectator, and carrying the shelves above that in gradually receding order so that the narrower are at the top. The smaller objects should be placed on the lower shelves, the larger above. The shadow of the upper shelves, by the method of progressive shrinkage in width, is less apt to obscure the objects below. Shelves can be slanted by putting sloping blocks on the brackets, or they can be more steeply inclined by carrying up the shelf until its front edge falls within the pin of the bracket, and rests on that, inasmuch as the pin, which fits into a socket or hole on the

FIG. 11.

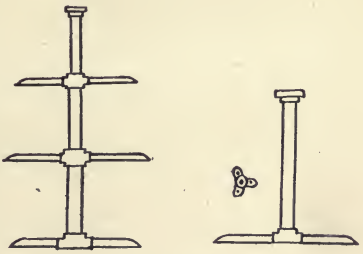


FIG. 12.

underside of the shelf, lies from two to four inches behind the front edge of the shelf. This pin can be concealed in many ways, readily suggested by inspection. With large objects the shelves may be tiered directly one above the other, of equal width. Besides tilting in the two ways suggested above, sloped brackets are made which give a less but useful inclination. Shelves brought close to the front of the case exhibit objects nearer the eye of the visitor, and hence for objects of a uniform size, as cubes of building stones, wall cases of the requisite depth with shelves of one width from top to bottom, directly superimposed at equal distances, serve an admirable purpose. The shallow and *appliquée* effect of such cases is sometimes disappointing. The case loses atmosphere, and the receding shelves in deeper cases, from the bottom upward, produce a pleasant impres-

sion. The *bay* arrangement of shelving is to alternately widen and narrow the shelving. Figure 11 presents these modes of shelving, with others.

One form of bracket and its manner of insertion in the shelf has been illustrated (Fig. 7.) Besides these bracket supports for shelves the bayonet joint has been tried by Prof. Putnam at the Peabody Museum with reasonable success, though its resistance to strain must be sensibly less. (Fig. 12.)

In regard to shelving, steps can be provided on the shelves which will give the necessary elevation to objects removed from the eye. The appearance of such steps is not always pleasing, and if made too narrow and steeply graded have an impoverished and make-shift expression.

Group or special cases belong to the classes of cases here considered. Such cases can be varied to a very large degree by their external ornamentation, but simplicity seems in all respects desirable.

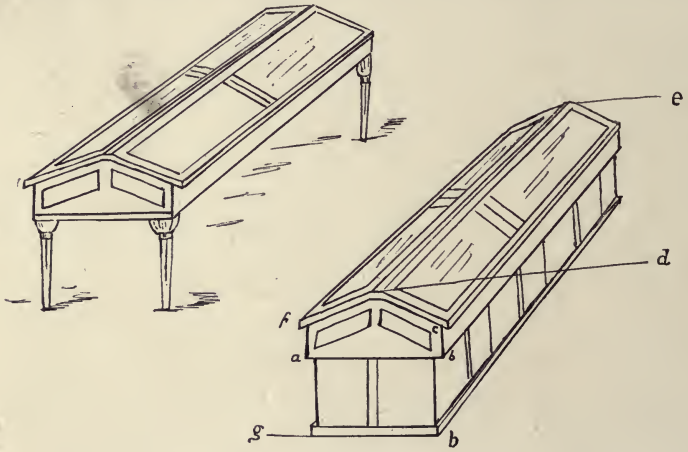


FIG. 13.

Group cases are large or small *boxes* of glass, framed, and provided with the requisite pedestals or bases. Groups not too large, as bird groups, are in the New York Museum placed on tables, which are necessary to bring them within the inspection of visitors. Large mammal groups occupy cases built from the floor, as it is hardly necessary to recall that their realism involves nearly always a life-size treatment of a large scene. The same is true with large mammals.

The table or flat cases embrace two classes, the desk, single or double, and the inverted V case on legs. Desk cases of great beauty have been prepared in numbers in the New York Museum, and it would be difficult to suggest anything more propitious for its objects than these. They are made usually with three sashes, giving them

a length of some eighteen feet, and have two sloping sides—one inch in seven—and are fitted on the bearings of the lids with green plush as a dust prevention. Some of these cases are a trifle broad, and the objects at the back of the case are indifferently seen. The best dimensions using the lettering in figure thirteen are as follows: a—b, 5 ft.; b—c, 8 ins.; d—e, 12 ft.; d—f, 2½ ft.; f—g, 3 ft. 2 ins.; g—h, 4 ft. 4 ins.; g—a, 2 ft. 5 in.

Details are given in Fig. 14, for which I am indebted to A. R. Strader.

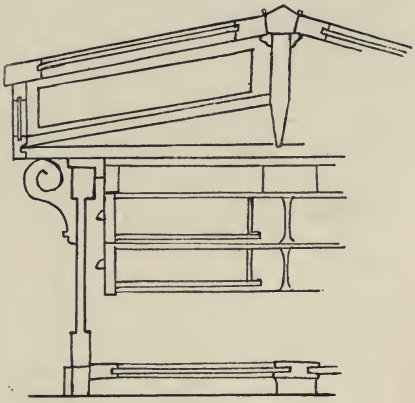


FIG. 14.

These cases, of course, can have these dimensions changed indefinitely by slight alterations, but the example given will meet all requirements. Such flat cases can be raised on legs (Fig. 13), or they can be put on bodies or stacks of drawers which are to be used for putting away duplicate or unnecessary material, or overflows, or specimens unfitted for public exhibition (Fig. 13.) As a convenience to curators they are invaluable. The artistic effect of these "bodies" is certainly unfortunate. The desk cases on legs forming no interruption to the untramelled view of the floor of the hall conduce to the effect of size, and are distinctly more elegant. The flat, or desk case, is sometimes modified by an upright addition in which larger objects

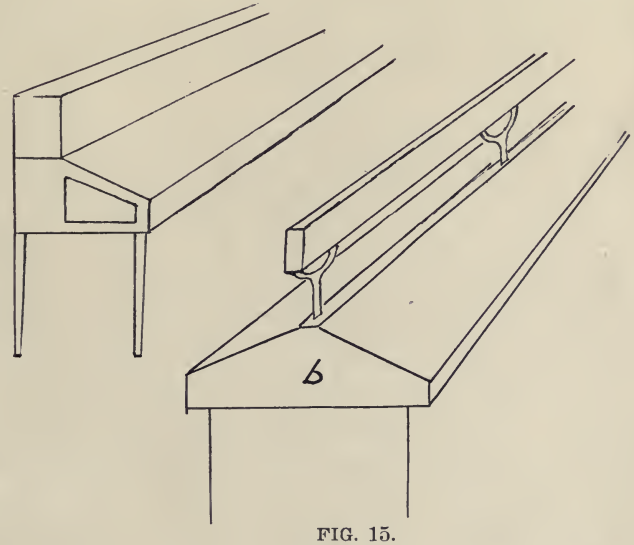


FIG. 15.

can be placed, and which may serve to break the depressed look—squattiness—of the desk cases themselves. (Fig. 15.)

These are really seldom successful. They cannot always be used appropriately, and, unless the objects are large, they serve no useful purpose. They are better replaced by a long narrow box, divided by a partition, and opening on top by lids and supported on metallic standards. (Fig. 15b.) In these receptacles, photographs, maps, sections, separate objects, dissections, etc., can be placed, and made illustrative or explanatory of the exhibit of objects in the flat case below.

The inverted V, or A case, is a useful and sometimes attractive form of case. (Fig. 16.)

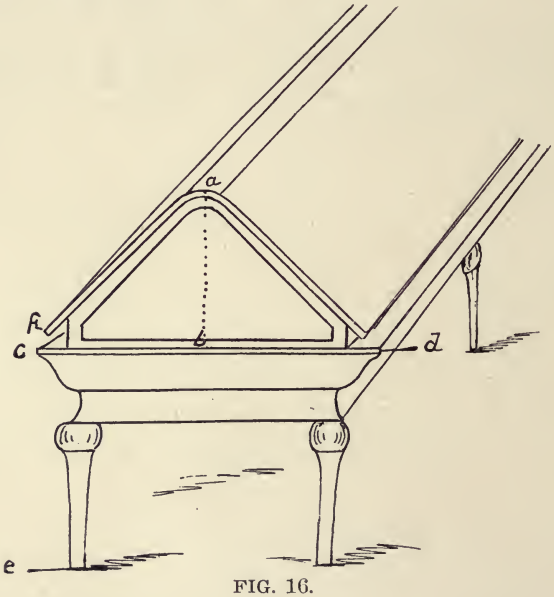


FIG. 16.

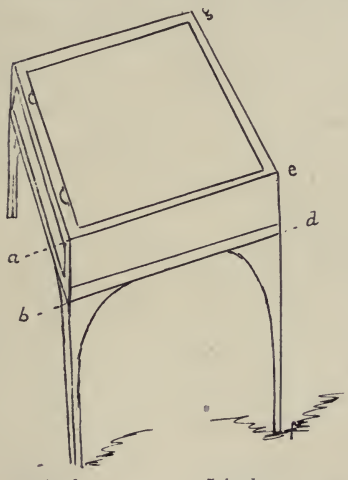
They can be filled within by a core or not. This core takes the shape of a smooth or stepped pyramid. If the latter, the series of steps form shelves, upon which the objects are placed ascending upward. If smooth, the core can be covered with baize, cloth, plush, etc., and the objects in some way attached. The white plaster cells holding lepidoptera are in this way arranged very strikingly in these cases in the A. M. N. H., by pins holding up the white blocks. Or these A cases may be used for skeletons, animals, vases, etc., without cores. In this latter case the effect is poor, and the case is evidently constrained to a purpose for which it is unadapted.

The A cases are constructed of a metal frame, stiffening a wooden sheath, the doors on the side may be one or two, they open upward, are hinged at the top, and in the top a "light" is inserted. Dimensions for a typical case are as follows: Compare Fig. 16, a—b, 2 ft.

9 ins.; c—d, 3 ft. 4 in.; c—e, 2½ ft.; f—a, 3 ft. Length, eight feet, eleven inches.

Relief maps, geological features, as mud flowage, tracks, ripple-marks, etc., can be framed in low flat cases, on legs, glass tops and sides, or simply framed, face exposed, and fastened to walls, or left on the floor on rollers.

The material for all cases should be wood in the frames, black walnut, ash, chestnut, oak, or mahogany, or in case of necessary economy pine stained, and the glass should be plate, American or French. Of all these mahogany, or the Honduras Bay wood, forms the most beautiful material, its rich and durable tint affording the most attractive color effects. Rose wood can be used with great elegance



a to b ..... = 5 inches.
b " c ..... = 2 feet 10 inches.
b " d ..... = 2 " 3½ "
e " f ..... = 3 " 8 "
e " g ..... = 5 "

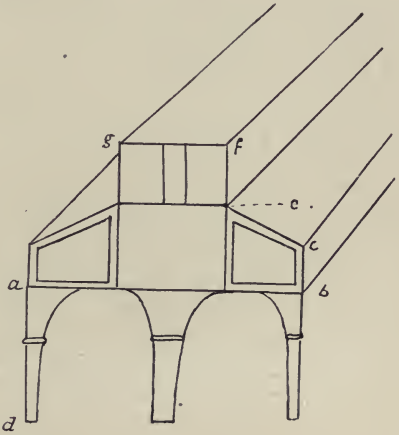


FIG. 17.

a to b ..... = 5 feet 3 inches.
b " c ..... = 10 "
a " d ..... = 2 " 5 "
c " e ..... = 1 " 8½ "
e " f ..... = 1 " 2 "
f " g ..... = 1 " 8 "

in special cases, but of course exacts some unusual concessions from the treasury. Iron should be expelled. It is hideous, and its strength and lightness can make no compensation for its intolerable ugliness. Examples of some of the best iron cases are given in Fig. 17.

Besides the cases we have enumerated, which embrace practically all the kinds really desirable in a museum, many small cases hanging on or fastened to the wall can be employed, in which single or unique groups of objects can be shown. Such cases can also be supported by brackets, and, if judiciously introduced, may form a most admirable feature in a hall. They should not be, however, interminably varied in size and treatment. Their uniformity, at least in each hall, contributes to their aggregate interest.

Glass shelves in cases have been adopted in some museums. They

are distinctly objectionable. They do not prevent shadows, for the objects on them cast shadows, the bottoms or undersides of objects discerned through them are unpleasant, and they break.

Their is, however, a need in every museum of establishing a system of convertible interchangeable drawers. This is most important, and Dr. Goode's emphasis of the "unit drawer" is fully justified. The size of the "unit drawer" being fixed, the stacks into which they are thrust consist of runways of such a height as to bring the top of the drawer on a level with the next succeeding runway. The runway may be preferably one-half the height of the drawers. Every other drawer in the stack can always be varied in a multiple proportion of the unit drawer, or can be the same as it. The dimensions of the unit drawers as designed in the National Museum is 24 by 30 inches.

This or any other size can be adopted. The manner of the stack formation is shown, with drawer, in Fig. 18.

Such stacks and drawers are used in the storage of specimens, and

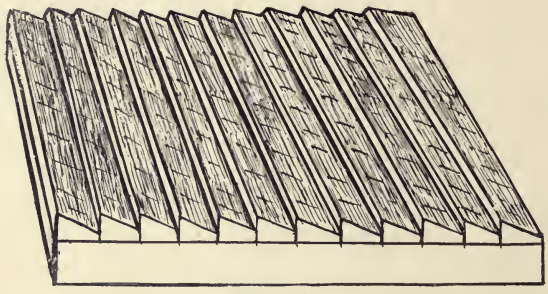


FIG. 18.

for the keeping of specimens which have been removed from the cases. Allusion to it seems warranted in a paper on installation, although it perhaps belongs more properly to questions of Museum Security, Curing and Storage of Specimens, which are not herein considered.

The dust-proofness of cases publicly exhibited is most important. The exposure of these cases to a bombardment of dust particles, continued through years, almost invariably results in an entrance of this defacing material, and a consequent deterioration of the display. It, however, in most cases effects its entrance far sooner, and the unsightly presence of dirt in the cases mars the exhibit of many museums very quickly. A necessary prevention is, of course, cleanliness, the mopping of the floors and a wiping of the glasses daily. The mechanical preventions are plush or felt strips on the bearings of the cover or sash with the case, or a tongue and groove in the cover and case. The latter is the more effective, in fact, it seems perfect.

Turnstiles (Fig. 19) are invaluable adjuncts to cases, and for some objects or exhibits are absolutely indispensable.

In the British Museum such turnstiles contain the mounted specimens of local herbaria, and Dr. Britton will put them to an identical use in the Museum of Botany in the Botanical Gardens in New York. For photographs, illustrative plates —as once employed by Pt. Jesup for his wood collection—they form the only convenient means of accomodation for a large series of planular objects. They should be simple and strong. Such monstrosities as are seen in the German museums should be shunned. The turnstile of German museums consists in a heavy iron post, around which a circular series of perpendicular wires are stretched. These wires can be released and passed through staples in the frames of pictures, etc., which are thus suspended. The general effect of these is cumbersome, ungainly and awkward. A better, because more simple and effective style, and more comely as well, is shown in Figure 20. The central post is on ball-bearings, enclosed in the box A, so that the visitor can at will revolve the post and bring the object examined into the best light. Many flat objects can be mounted in frames on walls, and a very notable effect could be produced by arranging the wall space of narrow connecting halls for the exhibition, in this way, of vertebrate fossils, slabs of crinoids, etc. The frame work should always relieve, by contrast, the color of the objects.

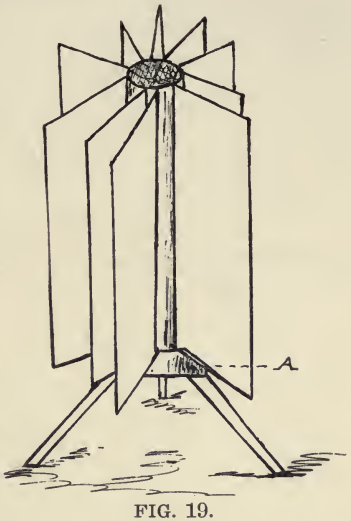


FIG. 19.

Paraphernalia.

The many contrivances by which objects of various sorts are held in position, or the numerous receptacles for them, and the manner in which they are labelled, constitute paraphernalia. Trays, labels, supports, stands, pins, blocks, plaster cells, rods, backings, covers, etc., etc., all make up paraphernalia.

Trays.

More diversity than would be considered probable, may exist in trays; their sizes, heights, colors, and attachments all offering points of difference. A form of exhibition tray has been in use in the National Museum for a long time, which receives some praise, but can hardly be recommended with enthusiasm. These are made with rather high sides and with a bevel front, upon which the label of the

specimen in the tray rests. They are black, and may have the bottom covered with paper or colored fabric. In the British Museum the minerals are laid on jewellers wool, which is packed into the edges of a rabbeted block, whose edges form a black frame. This method for the purpose has met with unqualified approval. A similar or identical effect can be attained by covering the bottoms of shallow paper trays with jewellers wool, which is fastened down by very thin black strips of black wood, fitting inside the tray. The cotton rises or puffs slightly, the frame of black gives individualism and elegance, and the effect is very attractive. In these cases the label is fastened to a sloping block placed within the tray so that the edges of the trays come in close contact. Such trays are made in an ascending series of dimensions, the longer side of one tray forming the shorter side of the tray next above it in size, as 2x3, 3x4, 4x6, 6x8, 8x12, etc., with occasional use of square trays and odd dimensions. These trays have sides three eights of an inch in height. Plaster of Paris trays with bevelled edges have been applied to the exhibition of shells, but they are very poor, their white porous surfaces absorbing dirt and dust, and soon showing a sullied and repulsive surface. Porcelain trays have also been suggested, but they are expensive, and present a cup and saucer tea-service effect which is slightly ludicrous. Dr. Schuchert, of the National Museum, has put in use a terra cotta tile for holding fossils, but its results are doubtful. The best or most attractive method of exhibiting fossils has yet to be discovered. An attempt will be made to solve this by the use of backgrounds and vertical screens for the tabular pieces, containing fossils, while the detached individual specimens can be arranged in trays or on boards of strikingly contrasted color, as ebony or ivory white.

Trays should not be too deep, simulating boxes; their sides should not exceed one-half an inch, and that usually is too high.

Labels.

Dr. Goode has drawn the attention of museum curators and authorities to the importance of labels, and in his report on the National Museum has feelingly expounded the whole subject. It really does seem that the acute and critical position of the label writer is somewhat overstated, and the extreme altitude of lexicographical excellence assumed for him rather exaggerated.

But with that we are hardly concerned. The technique of labels involves their colors and disposition; the size of type, etc., fall under System and Effect. A blue-gray has been for a long time used in the American Museum in New York. It is unsatisfactory. It fades and is soon discolored. A terra cotta seems preferable. It does not fade, and is a warmer tint. In the Mineralogical Cabinet in the

New York Museum red paint on a gray ground has a striking effect. These labels are called *Rubrics*.

Besides these colors, Royal Wooster, maroon, brown, various grays, black with gold or silver letters for large labels, have been adopted. Large outside labels of thin mahogany board with gold lettering are admirable. A label, for separate cases, of black ebonized wood, with gold letters, is excellent and effective. Dark brown leather labels, with gold letters, are also attractive, and can be used to distinguish important gifts. On the whole, in the card board labels on the inside of the cases the plain border label is to be preferred to the label with a line frame around it. It is more chaste. But, if the expense and labor can be afforded, the card board label sunk into, or attached to, a black or mahogany strip of wood, so large as to make a frame around it, is very elegant. The larger general labels in card board should all be framed in narrow bead frames of wood. The outside wood labels of black or mahogany, if on wall cases, are attached by picture moulding hooks, and if on desk cases are supported by brass rods.

Supports, Stands, Blocks, Pins.

To be clearly seen many small crystals and sometimes small shells demand a support, which lifts them into individual prominence, while large groups of crystals and coral masses, as well as all taxidermical specimens, need stands and pedestals as an artistic embellishment. Small black pedestals of wood can be bought from dealers which will serve for mounting crystals, upon which the crystals can be attached by black wax. Glass rods are also in use, and frequently shells or other flat objects are attached to them by wax in such a way as to appear unsupported. In the mounting of skulls and the large fossil remains of the mamalia from the west, Mr. Herrman has used, with splendid results, brass rods socketed in mahogany blocks. For mineral masses, stands of ebonized wood and mahogany are superior, but oak, chestnut and black walnut can be favorably used. On steeply slanting shelves the label block can be used as a support to the object, or, in the case of large shells, a V-shaped collar. Devices are innumerable for meeting such problems, and the skill and taste of the exhibitor can be indefinitely exercised. A pin is a form of support, whether it transfixes an insect, or holds up the end of a chinook blanket, or restrains a clam shell from sliding off an inclined board, or exhibits poster-like a label, or, more differentiated still, with three clamps, grasps a gem. Pin, therefore, is a generic term for metal appurtenances so modified as to meet these different uses. Rods run along the tops of cases, form a convenient rack for the suspension of pictures, maps, etc. The rods are held by staples.

Jars, Plaster and Glass Cells.

The plaster cells of Jencks for lepidoptera are probably one of the most notable inventions in museum installation proposed in the last ten years. They consist in a white plaster block, with a depressed pit holding the body of the insect, whose wings are outstretched, the whole sealed in by a glass cover. Glass cells for food products, medicines, herb preparations, etc., can be formed from five glass plates cemented together by soluble glass, and covered by a glass slide moving on vaseline. A more elaborate form consists of four glass plates socketed in wood, with a glass cover held on by metal pins, which pass through the glass, and can be unscrewed, their ends being driven in the wooden frame at the bottom of the cell.

Glass jars for alcoholics should almost invariably be flat with black painted backs, so that the bleached or diaphanous objects contained in them can be clearly seen. Flat glass jars are expensive, but it seems likely that some experiments, now in progress, will enable the less munificent managements to make their own jars from glass panes held together by a new waterproof cement, buttressed possibly at the angles by a mixture of hydraulic cement and plaster of Paris.

Backings, Covers, Etc.

Backgrounds may be made to play a most important part in the exhibition of specimens. The congruous contrast of colors between the object and the surface on which it is displayed heightens to an almost spectacular intensity a museum installation. Backgrounds can be painted surfaces or fabrics. Painted surfaces are blue grays, the color so lavishly employed in the A. M. N. H. of New York, and for most purposes very effective, or buffs, even reds, while in fabrics black for white objects, as corals, and green for shells, and an ivory white or maroon for fossils, are a good general selection.

Velvet covering cork tablets have been used for gem collections, the gem being laid on the velvet pad or fixed into the underlying cork through the velvet, by a pin. This is quite attractive, though perhaps an olive green would, as one color, better replace the patchwork of white and black. The installation of gems, so as to bring out their peculiar beauty, is not, at any rate in museums, solved. The jewellers do better, and their methods deserve study, possibly imitation.

System.

It has been pointed out that three systems of display which may "lead to certain intended results with reference to a mental impression on the spectator" are possible, the Popular, the Philosophical, and the Scientific. It is also to be inferred that these do not exclude each other, that they may be partially blended, or that they may co-

exist in the same exhibit. And it can also be insisted that these three systems are applicable distinctions in the arrangement of an entire museum, as well as of its separate parts.

The Popular system involves naturally an obvious use of striking, even sensational features, brilliant effects, simple phraseology and profuse and intelligible comments and directions. It aims to lead the visitor with continuous interest from hall to hall, to punctuate his delight with distinct and delightful impressions, and to leave on his mind a sum of recognizable recollections. Its instructions are of the dictionary type, each object is clearly defined in and for itself; its relations are less accented and less evident. The Popular system of the Scientific Museum is the system of the Dime Museum greatly elevated, dignified, and replenished with culture, but still a practical appeal to the sensory centers of the spectator. The Museum building in a Popular system appeals to the eye, and has architectural beauty; its halls are large, and form attractive vistas, prominent and beautiful objects are set off with strong features of color and mounting, and in collections the remarkable and beautiful are selected, and the obscure and homely displaced. Thus, in shells, the large and showy only would be exhibited, the rest repressed; in minerals, the fine crystallizations, rare and dull species omitted; in birds, the magnificent and sumptuous, the plain and gray and dull neglected; in fossils, perfectly preserved and entire specimens, or those in good relief, broken and shadowy things consigned to drawers. The labelling would not be comprehensive or systematic, but special. Each exhibit would be well explained, its relations ignored. You might learn much about the giant squid, you would not be shown its classification, congeners and physiology. You would see wonderful examples of quartz, you would scarcely realize its position amongst the other oxides. You would read of the habits of the bat, you would not understand the homologies of its limbs. You might admire the size of a whale's skeleton, you would not realize its position amongst the mammalia. Of course, no Museum of Natural History to-day defers entirely to a system so juvenile and fractional, although all museums are increasing their respect for its appreciation of *effect*, its evident intention to make the visitors stop and admire. The Popular system is a subdominant note in the chord struck by the whole administrative faculty of a museum.

The Philosophical system aims at unfolding an idea. It is less concerned with a multitudinous display of species than with developing the regimen those species illustrate. This treatment is well illustrated in the Main Central Hall of the British Museum of Natural History, where a series of cases present formative principles in animal life. Thus the group of pigeons, showing the variation of a species under domestication as the derived varieties from the Wild

Rock Dove (*Columba livia.*) Again the modifications of the Jungle Fowl of India, where extreme changes may be noted, as in the Japanese longtailed fowls, and the fowls of the woods of the Fiji Islands. Also the group of Ruff and Reeves, illustrating external variation, according to sex and season. Demonstrations of color adaptation, Protective Mimicry, Albinism, Melanism, etc., all present the Philosophical System; while the same, carried still further, beyond the limits of mere teleological considerations, converts the museum into an embodyment of an evolutionary thesis. In this way from the inorganic through the first phases of organic life to its crowning development in man with all the related phases of ascending civilization what a transcendent picture of cosmology the museum may become. It is perhaps realized nowhere to-day because the opportunity and the governing mind are not anywhere associated. The Philosophical System in Anthropology and Ethnology affords a field of more than surpassing dimensions. It is exhilirating to consider how a really profound and learned exhaustion of these subjects, with the extraordinary and increasing facilities for a complete compendium, afforded by this day's research and exploration, would exemplify the Philosophical System! To start from Prehistoric Man, to unfold the dawning cults, the nomadic and sedentary strains and to trace their divergences, the origin of race metropoles, and the slow emergence of metaphysical military and industrial civilizations; to take, in fact, Spencer's studies in sociology and give them an illustrated imaginal realism.

The Philosophical System has but a slender regard for systematists, and exults rather in revealing relations, sequences and operations in nature, homologies and analogies, influence of environment, problems of philogeny and those aspects of animal life which elucidate the principles of organic variation. It can, of course, be made most attractive, and has a more popular character than the Scientific System. Its instructions are for the most part quite readily apprehended, or can be made so, and in the larger subjects its demonstrations admit of a considerable pictorial effectiveness.

The Scientific System.

The Scientific System aims at an exhaustive display of species arranged, in Botany and Zoology, according to their biological affinities, and in Palæontology according to biology and position, while in inorganic life it illustrates the entire range of mineral science. This is the more common, the more generally insisted upon form of museum installation. It is well understood; cases filled with examples of all the known or obtainable specimens of species. At its best, when it takes on, more and more, a philosophical expression, the Scientific System, uses diagrams, photographs and maps, to il-

lustrate anatomy, habits and distribution, and it does not hesitate to involve popular features in its work, describing special things with clearness and interest. Indeed an enlightened Scientific treatment tries to alleviate the dryness of its terminology with popular and informing features. The curator who thinks his science is invalidated by entertaining instruction to the public is certainly deceived.

The cosmopolitan museum will make use of all these systems, building up from the Scientific, as a basic method, and introducing the Philosophical at all necessary points, while the Popular treatment would prevail like a dominant influence over each.

In this connection and before passing to effect, I beg to introduce the remarks of Dr. G. Brown Goode, concerning *Labels*. Dr. Goode has remarked that "the art of label writing is in its infancy, and there are doubtless possibilities of educational results through the agency of labels and specimens which are not as yet at all understood." He further says the label must:

"(1) Tell the name of the object; its exact and technical name always, and if there be one, its common name.

(2) It must call attention to the features which it is important for the visitor to notice.

(3) It must explain its meaning and its relations to the other objects in the series. If it accompanies a natural history specimen, it should explain its geographical distribution, which, if possible, should be plotted on a small map, forming part of the label and mentioning peculiarities of structure or habit.

(4) The exact locality, date of collection and source of the specimen exhibited should be mentioned.

(5) For the convenience of visitors it is well, in many cases, to give the dimensions or weight of the specimen."

Dr. Goode has not, however, drawn sufficient attention to the use of General Labels, or pointed out their extreme efficacy in giving useful information. A group of objects, closely related, as a family of birds or shells, can be described *en masse*, as it were, and interesting instruction imparted by such a description, while Synoptical Groups should be preceded by a manual—like diagnosis of class or phyla features.

Effect.

Impressions made upon the eye are of the utmost importance in museum installation. There may be some atrophied and stagnant temperaments to whom a beautiful or tasteful or impressive installation seems at war with the terribly serious considerations of science, but a very little attention to the facts of the case would entirely relieve them of these fears. Because a specimen looks well, it is no

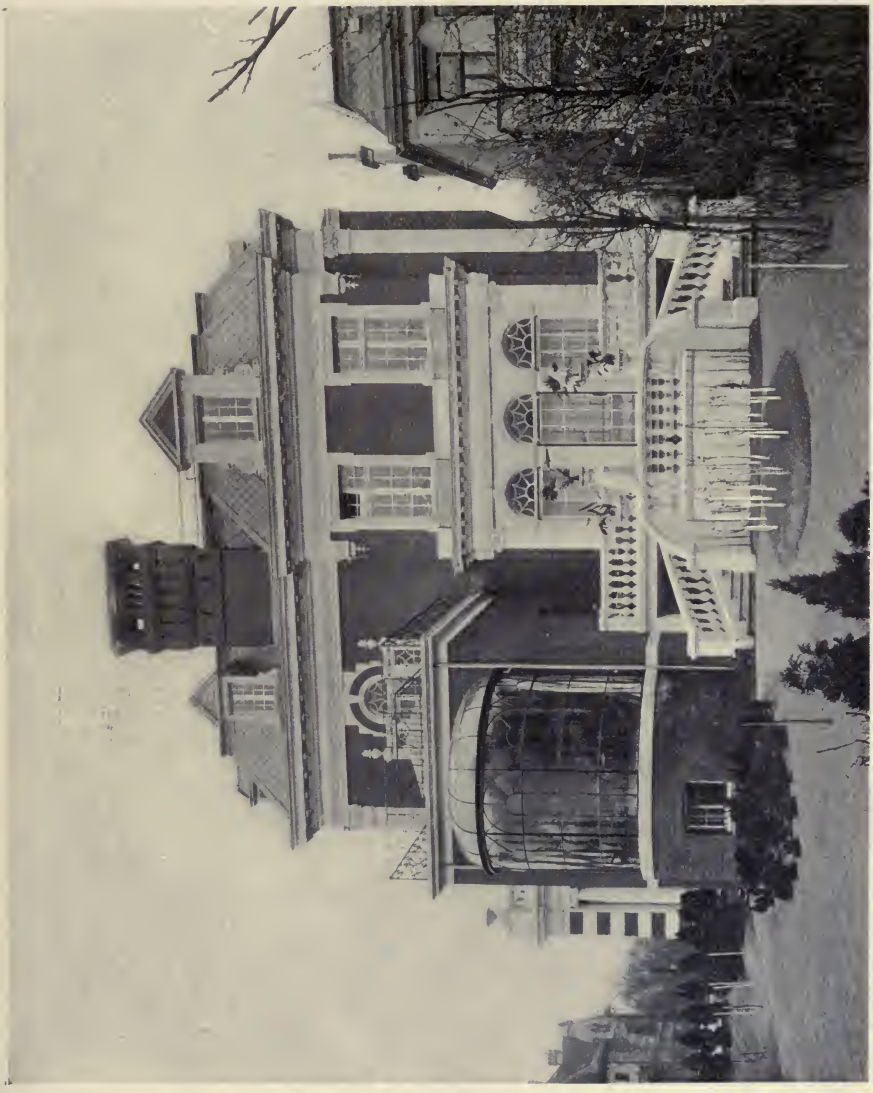
less the same specimen than when it looks poorly, and all cultivated instinct aims to achieve, in making it look well, is to make it more easily seen, make it more conspicuous. There certainly is no desire, in those who strive for effect, to surround objects with decorations which defeat their own purpose, and bring more attention to the embellishment than to the object. The most refined appreciation of effect sees that the different departments of a museum may need differing treatments and that severity of arrangement better accords with a display of Building Stones or Ores than ornament, while the lavish beauty of birds may demand foils and reliefs to their beauty to even make it more apparent.

In effect, arrangement, and color, contrasts count for everything. Proper spacing, selection of material, and backgrounds of good fortifying colors make notable improvements in the appearance of the specimens. Besides the painting of the cases and shelves, the use of cloth plush and paper can be utilized. It is certainly undesirable to attempt harlequin effects, and usually a few selected colors meet every requirement.

There is room for much conflict of opinion upon the fitness of wall decoration, wall painting in Natural History Museums. I am inclined to believe it should not be tolerated; that all pictorial illustration should be in the form of framed painting. They are invariably better done, less subject to injury and can be conveniently changed in position. There is certainly an attraction in the grandiose idea of a panorama about the walls of a room showing scenes and the objects related to them, associated together, in a great mural picture. It would be splendid if it could be realized, but can it be? To paint a mural decoration (on canvas) really colossal and appropriate would demand a master, and a small fortune. How can these requirements be met?

The public museum has entered into the life of European cities, and it is becoming apparent here how interested the public become in their development. Their installation, and the ideas governing it, cannot be too closely considered.

L. P. Gratacap.



RESIDENCE,

No. 9 Blumenstrasse, Hamburg, Germany.

F. A. de Meuron, Architect.

CENTRAL NATIONAL BANK BUILDING,

Pearl Street and Broadway, New York City. John Williams, Architect.

SOME HANDICAPS OF PROVINCIAL ARCHITECTURE.

Prefatory Note.

BY "Provincial Architecture" is meant all architecture that originates outside of Boston and New York in the East, and a few of the largest cities in other parts of the country.

In this discusion of the subject, domestic buildings are not critically considered, because such criticism would be a sort of invasion of private rights, including the right of every man who builds himself a house to make it as ugly and illogical as he pleases, and because it would be necessary to prepare a special dictionary of terms before an intelligible line could be drawn between the utilitarian art of house building and the fine art of architecture.

Concerning the illustrations ,it may be explained that they are not given as especially depraved examples of contemporary architecture, to be classed with the striking series of "Aberrations," published in this journal a few years since. It is needless to say that they are not, on the other hand, presented as examples to be followed. The most of them are the familiar, largely imitative, and drearily common-place buildings to be found everywhere. They have been achieved by the individual, or combined efforts of architects, considered "successful" in their local fields, and of enterprising business men who are able and willing to leave their "stamp" on the community which educated them, of shrewd business committees whose prominent qualification for their position is a supposed ability to buy the value of three dollars with an expenditure of two, and of public servants who for the time of their official life are called upon to decide affairs of which they are more or less ignorant, and for which, under other circumstances the training of half a lifetime would be thought necessary. Sources, from which, instead of platitudes with occasional nightmare attachments, something of permanent dignity and beauty should have enriched the time and place in which they have been produced.

Although actual and recent buildings, they are not verbally identified, in fact, that is a matter of no consequence, but the accompanying titles will indicate their relation to the text. The alternatives, labeled "What might have been," are introduced by way of contrast.

The permanent residents of each provincial city in the older portions of the country have certain characteristic social customs and manners, certain modes of speech, certain business habits, and other external peculiarities, easily perceived but not easily described, which give a local flavor and coloring to each community. These in-

clude fashions and tastes in building. But aside from such minor variations, there is no important difference in the architecture of provincial cities of a certain class, say those ranging from 50 to 250 thousand inhabitants; and in them all it is, as a whole, so poor, so devoid of the merit that entitles a work of art to respectful admiration and careful preservation, that if it were known that all the buildings in any one of them were about to be annihilated, it would be difficult to select a dozen, which any person having even a rudimentary knowledge of architecture, would care to have re-built in its present form. That is to say, apart from association and other sentimental motives, there would be found almost nothing worth saving for its architectural excellence. I believe that is true of at least nine-tenths of our provincial cities.

When we consider the liberality, not to say the extravagance of our large business blocks; the ample, not to say wasteful appropriations for school houses and other public buildings; the enormous sums given to churches, educational and philanthropical institutions; the increasing number of educated architects; and especially when we consider the almost unlimited resources in the way of instruction, investigation and imitation afforded by travel, by literature, and by the completeness with which all the best architecture of the world from the time that architecture began to be to the present time has been photographed and brought within our easy reach—when we consider all these things, the general worthlessness of the architecture by which we are surrounded, furnishes a most amazing instance of the failure of apparently adequate means to reach a desired end.

Remembering what a permanent and conspicuous influence architecture has had upon national character, how from time immemorial it has been the one art that both reveals and determines the character of its creators and contemporaries at any period, it is certain that no greater service could be rendered to the age we live in, than the cure or mitigation of this extraordinary and discreditable state of affairs.

As regards general influences, vanity is perhaps our most ponderous handicap. This appears to be of the deplorable variety which makes us unwilling to confess our ignorance, even to ourselves; unwilling to admit that what we posses, what we invent, what we preach and practice, is not the very best that has ever been done in the way of possessing, inventing, preaching and practicing. Of course this painful accusation applies only to architecture. In all other respects we are doubtless the most modest people on the face of the earth, always excepting our English cousins. This is not implying that everybody is in the darkness of ignorance and the fog of vanity. There are conspicuous exceptions even among laymen; but in the knowledge of architecture it is certainly true of the great majority. Any doubt on this point may be effectually dispelled by a few hours

of intelligent observation along the principal streets of any provincial city, the "taste" therein manifested doubtless indicating something above the average intelligence of the entire population.

Leaving ignorance and vanity out of the question as being practically incurable except by the slow processes of evolution, there are several nearer and possibly preventible causes of our architectural poverty. One of the most serious and discouraging is the attitude of the local newspapers. I have never seen or heard of a newspaper, however high its journalistic standards, however earnestly it strives to be impartial, however faithfully and without regard to profit or

FOR PRESENT PROFIT AND A JOY FOREVER.

popularity it espouses what it conceives to be the right side of questions that have a right and a wrong side, however valiantly it tells the truth in other matters of public and private concern—I have never seen or heard of a paper whose influence upon the architecture of its local field was not damaging rather than beneficial. That isn't the worst of it. For the life of me I don't see how it can be otherwise.

Nothing is more essential to the healthful development of art in all forms that intelligent public criticism; judicious commendation of the good and frank, explicit, detailed condemnation of the bad. Not dogmatic assertions, but impartial judgments, sustained by clearly stated and well-established principles. Music, the drama, landscape

architecture, painting and monumental statuary are criticised wisely and often most helpfully by the competent writers employed by the best provincial journals. But the moment they touch the architecture that lies nearest them, and of which simple but uncompromising criticism would be valuable, their pens are dipped in oil. As I have just remarked, they must be; because here questions of taste and professional ability are entangled with private personal rights and interests. It will not answer to declare in good set terms that the new bank of Mr. A. is an extravagant monstrosity; that the new church of the United States is an abortion; that the forty tenement flats on Blank street is a hodge-podge in its external design, a small Ghetto and a large fire trap within; it would be a strange piece of insolence and ingratitude to suggest that the Library, Museum, Gymnasium, or Casino that our liberal fellow citizen has presented to the city or town, is, from the architectural point of view a monument of ignorance and ugliness. On the contrary, each and all of these buildings are sure to be described as fine examples of the skill of the architect, especially if he is a new-comer in town, and of the owner's or donor's wisdom. The reporter's vocabulary is ransacked for suitable adjectives to describe them, both in the main body of his "copy" and in the still more conspicuous and misleading headlines.

Now, it is undoubtedly true, whether happily or otherwise, that the opinions of the great majority of people in all matters esthetical, are largely determined by the comments and intimations of the public journals. So it happens that in architecture whatever the newspapers approve, (and to an extent they are obliged to approve every new growth, even if it is a parasite or a mushroom, or be accused of a lack of proper public spirit), is accepted as good, and, woe the day, is sure of imitation. Even if we leave the owners and the donors out of the case, what would the young architect who is just entering upon a career of usefulness say, if the work of his budding genius, which may be truly original, should be characterized in the daily papers as both original and ridiculous? How would the old architects whose "ear marks" appear on all the streets of the city until, through long familiarity they have become agreeable, as the odor of the stable is agreeable to the hostler—how would these faithful but helpless old architects like to be told that they were never anyhing but builders of average intelligence, who learned to wield the T-square in their youth and to copy some of the mouldings that are shown in the reputable old books on the "Orders," or to appropriate the disreputable details of the "middle ages" between 1850 and 1870?

A complete lifting of this journalistic handicap seems impracticable. A partial mitigation of the evil could possibly be accomplished if the papers which maintain a fairly just and able criticism of other forms of art, a criticism that is instructive to laymen and stimulating to the

FOR THE ENCOURAGEMENT OF TAXPAYERS.

artists, would refrain from all mention of unworthy architecture, commending cordially and in detail whatever is really worthy of imitation and commendation.

The enormous preponderance of poor, or at best negative architecture (which is perhaps the same thing), and our inevitable familiarity with it is another conspicuous obstacle in the way of architectural reform. This familiarity is not of the kind that breeds contempt; it rather tends to respectful tolerance and ignorant admiration. A common instance of this is found in the prevalence of certain characteristics in dwellings of the medium class in different cities. The res-

THE "ORDERS" ARE THE ARCHITECTS' FIRST LAW.

idents of other cities find them unattractive if not positively disagreeable. Those who see them every day find them pleasant and homelike. Familiar examples of this are the flat-headed two-story-and-attic houses, with "cellar windows in the top"; the two-story buildings with the so-called French roof; the chuckle-headed gambrel roofed houses, covered from sill to ridge pole with an eruption of shingles; the rectangular red brick block with solid white shutters, of Philadelphian suburbs. All these and many more are types of what may be called local fashions. (If Philadelphia is not strictly provincial at present, it has a traditional reputation to that effect).

Now, a house or anything else may be interesting and pleasing to

THE PUBLIC SPIRIT OF ITS CITIZENS DETERMINES THE DEVELOPMENT OF A CITY.

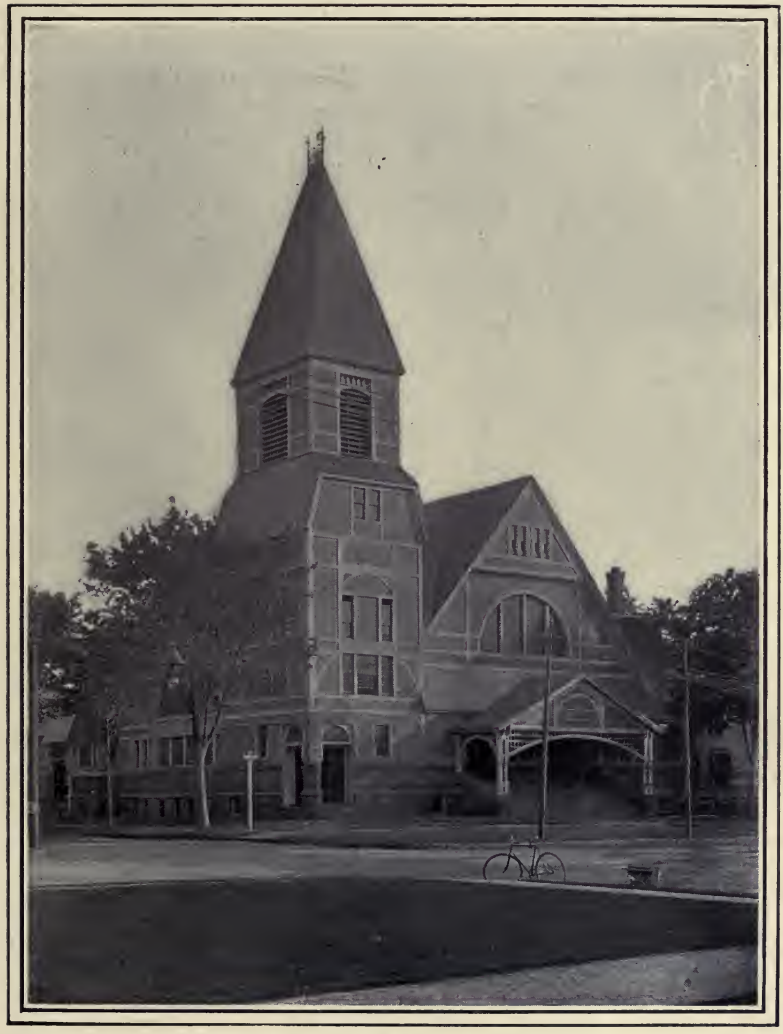
a great number of people simply because it conforms to a prevailing and familiar mode; but art has no more concern with custom and fashion, than it has with politics and sanitation. In minor matters fashions change quickly and their influence for good or bad is of short duration. But in architecture the eccentricities and vagaries which result from the prevalence of some passing vogue, are obtrusively permanent above ground long after the only reason for their existence has been dead and buried. The effect of this is as though all the women who ever wore poke bonnets, hoop skirts or "mutton-leg" sleeves, must continue to wear them to the end of the chapter

EVERY MAN'S INALIENABLE RIGHT.

and only the rising generation be permitted to invent and follow new fashions. This might lead to a picturesque assortment of costumes, but it would not be more incongruous, variegated and uncouth than the domestic architecture of a modern city and its suburbs.

(Having disclaimed any intention of criticising domestic architecture, I ought to say that the above is introduced simply as the most convenient illustration of the influence of fashion in building, an influence that prevails in all classes of buildings but is the most conspicuous in dwellings.)

The effect of this thoughtless and more or less unconscious preference for what is familiar, is distinctly obstructive to such advance



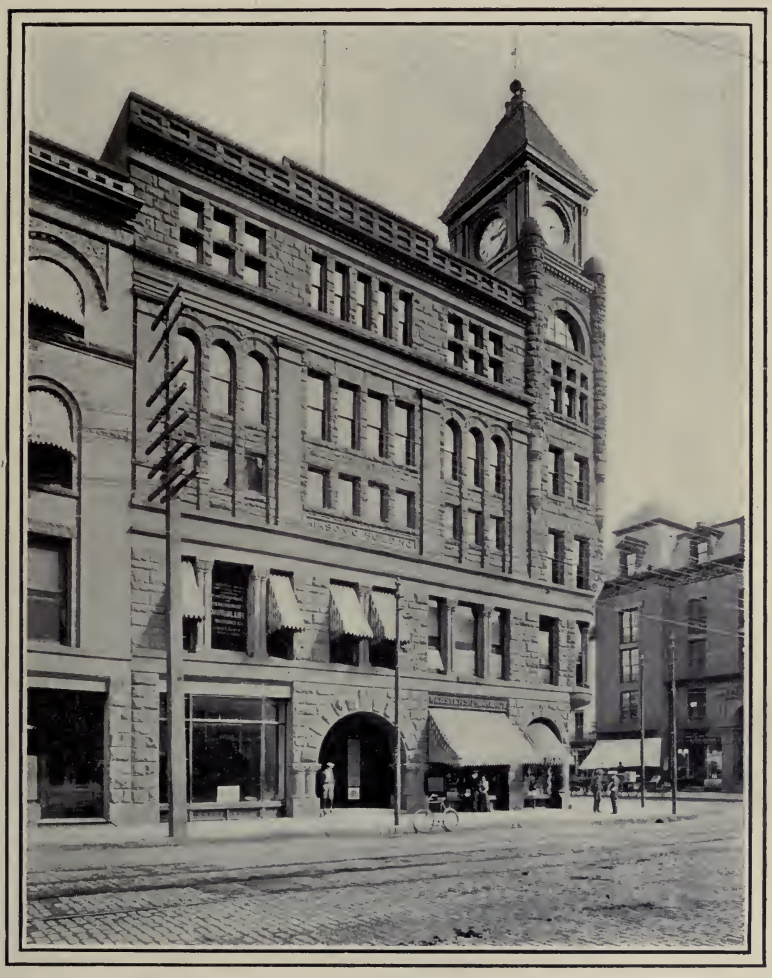
ART IS THE HANDMAID OF RELIGION.

in architecture as ought to follow the vast resources and still vaster ambitions of the time in which we live. It throws into popular disfavor everything, however excellent, that is not actually commonplace. It is obvious that any general and substantial improvement in architecture must depend on the right cultivation and direction of popular taste, and this is always guided by what is conspicuously displayed rather than by a knowledge of what is really good. The improvement in architecture that has followed great conflagrations in the last half century shows how much more rapid this popular education would be if this load of vicious example and precedent could be lifted, even if it has to go up in smoke. Now, this form of handi-

FOR THE STUDY OF LITERATURE, SCIENCE AND—ART.

cap is relatively far more serious in the cities which I have classed as "provincial" than in those of more cosmopolitan character, because in the former, individual instances of departure from established precedent stand out more conspicuously. This is also illustrated in matters of dress, equipages, and in all minor social customs and conventions.

Undoubtedly, the best architecture the world has known in the past has been devoted to the service of religion, either of the kind known to us as Christian or pagan. At the present time the most important, if not the most admirable architectural monuments that can claim any originality are probably found, not among ecclesiastical



THE COMMITTEE WANTED "SOMETHING RICHARDSONESQUE."

buildings, which, when not absolutely bad are mainly imitative in spirit if not in actual form, but among those intended for municipal, or other public and corporate purposes. It is for such public buildings that the most logical plea for thoroughness, dignity and elegance can be made; upon these the most lavish outlay is expected. We say with great propriety that it is fitting for a rich and intelligent people—I put the short adjective first advisedly—to manifest its wealth and intelligence in the character of its public buildings, whether they are for local or national use.

Far be it from me to depreciate the wisdom of our public ser-

THE FINE ROMAN HAND.

vants. There is no reason to suppose that the members of city governments, the common councilmen and the boards of aldermen from among whom the city property committees, or whatever their official titles may be, are chosen, are either more or less ignorant of good architecture and of art, than other average laymen although their ignorance may be more damaging, because more stubborn and aggressive, a generous conceit of his own wisdom and a pachydermatous insensibility to criticism being essential to political success. But the fountain must not be asked to rise higher than its source, and it is futile to expect the best in municipal architecture until its selection is determined by some more trained judgment, by some more special

education in the most complex and difficult of all the arts, than the accidental knowledge and "taste" of the ordinary "public servant." Even when "experts" are invited to assist in making a decision between rival designs, their recommendations are seldom regarded unless they happen to agree with the opinions already formed by the officials who "know what they like" even when they can give no intelligent reason for their preferences, and who are not apt to be altogether pleased by the implied doubt of their wisdom.

It is one of the unsolved puzzles why an otherwise intelligent community should entrust one of its most important functions, one requiring for its wise administration the highest degree of technical skill and special training, to men who know no more of architecture than an unlettered boor knows of astronomy; they have seen buildings ever since they were born, and he has seen the stars. It would hardly be more absurb to appoint from the members of a city government, a committee to write medical prescriptions for the patients at the city hospital.

Nearly related to this obstacle is the fact that in small cities there is no proper inducement for the most competent architects to give their services to public work. I am well aware of the ignorance, the vanity, the jealousy, the fantastic notions, the often stupidity and occasional vulgarity of architects; they are mortal men and I may speak of this form of handicap later; but it is also true that there never was a time in the history of the world when there were such ample opportunities for invention, such vast facilities in the way of construction and materials, such a high degree of cultivation among so large a number of architects and such disinterested devotion to lofty ideals as at present. Artistically our country may be behind certain nations of Europe for the moment, but there is no excuse for our remaining so, since everything from the tops of the highest mountains to the innermost recesses of the art schools is accessible to us. But, as I have said, there is no proper inducement in provincial cities for the best architects to undertake public commissions, for the simple reason that architects are rarely selected for public work on account of the excellence of their plans or of their established reputation for rectitude and ability. The city in which it is my happy lot to reside is not more culpable, less righteously governed, or more indifferent to good architecture than other cities of its class; but I am confident that there has not been a public building of any sort erected by this municipality since it became the custom to employ architects, the plans for which have been adopted solely for their architectural merit. Various degrees of personal and political influence have been exerted. It is undoubtedly true in cases of competition that the best plans have sometimes been selected, but when that has occurred it has not been on account of their excellence alone; the verdict has been

ASPIRATION.

affected by some other motive, not, perhaps, of sufficient weight to have led to the adoption of the least meritorious among several plans, but quite sufficient to have brought in the second or third best if the same influence had happened to go towards them.

It would seem possible to mitigate if not entirely to remove this difficulty by the adoption of such competitive conditions as would make sinister influence impossible, but who shall insure the faithful observance of the conditions? So, after all, the matter comes back to the old, old story of upright men in public places.

An apparent cause of the poverty of provincial architecture is the incapacity of provincial architects. This is not as serious as it seems for the reason that there are few cities in which there is not at least one thoroughly trained architect, who only needs the opportunity afforded by the larger wealth and enterprise of the great cities to do as good work as can be found where those favorable conditions exist. But there does also appear to be in the smaller cities a larger proportion of nondescript "Practical Architects and Builders" who, for personal and supposed economical reasons are liable to be employed as architects by men who care little and know less of what might be done in the way of excellent design even for the most simple and inexpensive structures. Especially do personal motives enter into the question of selecting the architect. A man who would not think of employing a friend or relative to paint his portrait for the edification of his posterity, or even to take his photograph, still less

PLAINNESS AND DIGNITY ARE NOT INCOMPATIBLE.

ROMANESQUE AS SHE IS SPOKE.

to set a broken bone on account of his friendship or relationship, does not hesitate to give him a "job" in architecture in order to help him in business. The consequence of this kind of personal favor is conspicuous and abundant. It is common enough in great cities, but in them it is less marked and has less influence upon public taste.

Another marked condition in the subject under discussion is the prevalent custom of entrusting important work to some architect away from home. Instead of improving the local architecture by exciting a healthy emulation, this is more likely to have an opposite effect. Fifty, or perhaps in some sections thirty, years ago, there were few but "Home-made" architects, evolved from lazy or ambi-

A CORNER IDEA.

tious carpenters, in the small cities. Then it was inevitable that really good work must be obtained out of town. At the present time, as I have said, there is scarcely a city even among the smaller ones in which at least one architect with as good training as the best schools in this country and Europe can give, has not hung out his shingle. If the work that really calls for superior professional skill is sent away from such a competent resident architect he soon decides that there is neither honor nor reward for the prophet who stays at home. Naturally he abandons the field to the second and third rate men who always stand ready to rush in, and who never rise above the dead level of mediocrity. Owing to this same sort of prejudice, if local architects are liable to compete with those from outside there is likely to be a decided bias in favor of the outsiders. This is commonly dis-

avowed, especially by public officials who have political ambitions, but not always. In a recent competition for an important public building in a New England city one of the building commissioners who was to assist in the selection of the plans that were to be submitted openly declared before his appointment was confirmed that he should surely oppose the acceptance of any plan presented by any local architect, regardless of its merit. It is difficult to say which was the most amazing; the fact that local architects should have been willing to compete under such circumstances, or that the man should have been appointed to serve on a commission whose members would be gravely compromised by any deviation from strict impartiality. But then his official position was not obtained by popular

THE "BROWNIES" IN ARCHITECTURE.

franchise, and he was himself a local architect. I mention this as a clear and, I believe, a by no means unusual instance of the lack of high ethical standards in the business relations of architects and their possible clients, as well as one of the forms of handicap to which provincial architecture is peculiarly subject.

On the other hand, a more serious blight sometimes comes from the small politicians who endeavor to increase their own chances of popular favor by a pretence of public spirit in the employment of so-called "home talent." This handicap prevails most disastrously in the large towns and small cities whose local business is not sufficient to tempt men of more than mediocre ability. This is all the more deplorable because the best sites for the display of good architecture are

found where land is abundant and inexpensive, and where there is an opportunity for the skillful adaptation of the architectural design to natural surroundings, which, though not always grand, may at least be striking, picturesque and generous.

To give one more instance in a list that might be considerably extended, I think it is true that in provincial cities of the middle and larger class there is, in comparison with the great cosmopolitan cities (perhaps on account of the lower cost of living) an

A "SUCCESSFUL" TREATMENT OF ROOFS.

increased proportion of untrained, incompetent and unprincipled architects, men who try to obtain work by dishonest means, who seek and accept illicit commissions, and, alas for poor humanity, who fancy it is possible to exalt their own work by disparaging their contemporaries. And it is not alone the local irregularities and rascalities that must be encountered, but work that might be expected to be done by the resident architects of the smaller cities seems to be considered fair plunder by the dishonorable practitioners and professional drummers of the big ones. Men whose reputation at home is still comparatively undamaged, and who would shrink from unprofessional practice where they are well known, appear to feel that any means of thrusting their hands into the public crib of the smaller

cities is permissible. That is to say, the line that separates honorable business enterprise from unprincipled wire-pulling and sinister scheming seems to be more easily crossed among strangers.

It is hardly necessary to say that some of these obstacles in the way of good architecture exist everywhere. The only reason for including them in this category is that in "provincial" regions they are greatly exaggerated.

E C. Gardner.

THE INTERNATIONAL BANKING AND TRUST CO.'S BUILDING.
Cedar Street and Broadway. Bruce Price, Architect.

CRITIQUES ON CURRENT BUILDINGS.—No. 1.

137 BROADWAY.

THE architect of a new and just externally completed tall building at the northwest corner of Cedar street and Broadway, has been trying some experiments in design, with results that are of some interest. The employment, the particular employment, of color is one of these. The relation between the parts is another, though the novelty of this pertains entirely to the treatment of the crown and its relation to the shaft, the relation between base and shaft being quite conventional. But the experiments are at any rate numerous and striking enough to arrest attention, and to challenge inquiry how far they repay it.

The building is some forty feet on Broadway by 150 on the side street, and the total height is of fourteen stories. With these dimensions, a tower-like treatment of the narrower front would seem to "impose itself," although the designer does not fully admit that, as will be seen. A circumstance, too, of which it seems that he had to take notice was the proximity of the Washington Life. The two of them occupy the whole block front on Broadway, excepting a melancholy relic in the shape of a cast-iron front, of five stories and twenty-five or thirty feet of frontage, dated 1863, which is absurdly left between them. Evidently, it is not left for long, but only till a meeting of minds occurs between the owner and some purchaser, or the owner concludes to "improve" on his own account. A conformity of design in the present building to its larger predecessor would have put a constraint upon the owner of the interval to conform also, and we might have a block front at unity with itself, which would, or might, be an impressive piece of street architecture with a frontage greater than that of any but a very few of the skyscrapers. But here comes in the curse of commercial architecture, which almost compels the architect of an office building of which the owner is a commercial corporation and also one of the tenants, to signalize it by singularizing it, to make it assert itself by difference, instead of conforming in the interest of the total effect. Very likely, in such a case, the architect cannot help himself, and prays, like the judicious spectator, for a prefect or aedile to make him behave himself in spite of his employer. We seem to be making some progress in New York towards this pitch of civilization; but we have not reached it yet by a long way. And, indeed, in the present case conformity would have been difficult with ever so good a will. The new building is not only distinctly narrower than the older, but it is four stories lower, not to count the

steep roof which is the chief ornament and distinction of the older. At the back, the two join, and occupy between them the whole block front, but there is no view to be had, Temple street being more properly describable as an alley.

Conformity would, therefore, have been a puzzling problem. At any rate, there is no conformity, except in the material of the basement, which is in each case a light limestone. In the work under notice, this is of two stories and in front of it is placed the most conspicuous, architectural feature of the building. This is the portico that marks the entrance. It is a tetrastyle of Roman Doric, Roman Doric of the Renaissance, be it understood, and not of the empire, for the columns are banded with vermiculated stripes. As this banding was used by the architects of the French Renaissance, it was connected with the masonry of the wall with which the columns were engaged, and had the effect of modelled projections of the mass. When it is applied, as here and as in the basement of the Post Office, to columns standing entirely free, it loses most of its effectiveness in losing all its meaning. And, indeed, the effect of a portico detached like this and not incorporated is apt to be of a feature irrelevant and separable, and that is the effect it has in this instance. The flank of the basement is a series of quite plain piers, running through the two stories, with plain transoms marking the floor line, the whole as unpretentious, and, indeed, as unnoticeable, as possible.

The decoration of the front of the basement is carried above it into the superstructure. At the centre of this, and running through the two lower stories, the third and fourth of the building, is a monumentally treated opening, flanked by a pair of pilasters carrying a broken pediment, all in white terra cotta, with the enclosed windows, respectively, flat arched and pedimented. And the central window of the story above, the fifth, is also signalized by the decoration which here dies into the shaft. But for this, the five stories from the fifth to the ninth, inclusive, would be quite identical.

The material of the shaft is white brick, red brick and white terra cotta, the red brick used in the alternate voussoirs, if bunches of bricks may be called so, and in the quoins of the flat-arched windows. These are three in number in each story. The uppermost story of the shaft, the tenth of the building, shows round arches. Above this is a not very emphatic string course, a string course distinctly not emphatic enough, which serves as a necking, and divides the shaft from the capital. This is of three stories, the openings aligned over those below, but running through the three and closed above by round arches.

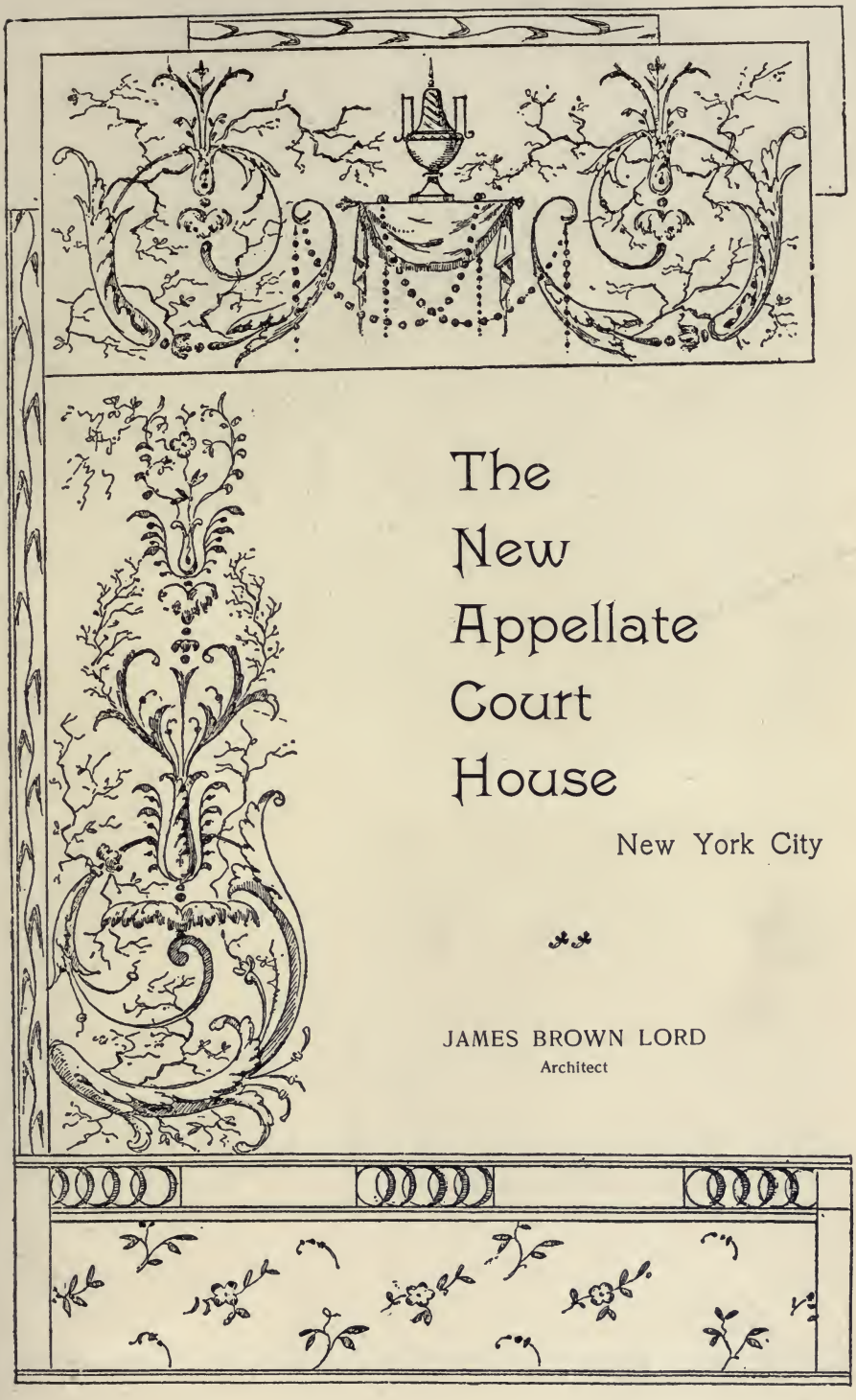
The abacus is a single story of square holes, made noteworthy or noticeable only by the roof treatment. The roof is flat, but umbrageous eaves are boldly projected from it to a distance of several feet

in sheet copper. Of the same material are the pairs of corbels that seem to carry this curious cornice. There is no disguise of the material, but the forms are imitated from a corbelled construction in masonry, even to the reproduction of projecting courses which have a structural significance in stonework. This is, of course, quite lost, and the whole arrangement is meaningless with a flat roof which cannot pretend to shed water by eaves dropping. But it gives occasion for a rather picturesque treatment of the return of the wall on the north side, with crowsteps descending and projecting to the cornice line, a treatment which one can imagine to be very effective in rural surroundings, or in a building in which the character of quaintness was persistently aimed at throughout, as, of course, is not at all the case here.

The longer but less conspicuous front on Cedar street shows an entirely different motive and arrangement, with a general conformity of detail. Each end is occupied by a pavilion, distinguished not by projection, but by a separateness of treatment, marked by comparative plainness and conveying as much sense of solidity as the conditions will allow. The treatment of the openings in these corresponds to that of the Broadway front. Between them, the curtain wall is divided into bays by pilasters running from the basement to the capital and terminating in heavy corbels, which in turn support what might for its projection be almost a "practical balcony," although no signs of such a use appear. But the horizontal feature thus formed is at all events much more adequate and appropriate, as a division between shaft and capital, than the evidently inadequate string course of the narrower front. The stories in each of the included bays alternate pairs of flat arches, with voussoirs and quoins of white and red, as before, with fully developed round arches, the top of the actual opening being horizontal, and the tympana solid, giving rise to speculation about the occurrence of the floor lines which are not marked, and which apparently come in the space occupied by the arch heads. The panels are decorated with a circle inscribed in a parallelogram of red brick on a field of white brick, and the tympana filled with red brick. The capital of this flank continues the division into bays, but each bay is here occupied by a single arch running through the three stories and including two sets of openings over the pairs below. The division is maintained by the emergence of the pilasters which cease at the spring of the arches.

There are undoubtedly "evidences of design" in the variations here attempted upon the conventional type of skyscraper. But upon the whole one has to own that they are ineffectual. The employment of color is logical enough. The stronger tint is used to accentuate the stress of structure and the weaker for the unemphatic intervals. But the logic does not vindicate itself. A pupil in composition at a Ger-

man music school submitted an essay which he undertook to defend against the condemnation of his professor by showing how he had observed the rules. "But it doesn't kling," replied the unsympathetic critic. Decidedly this color treatment does not "kling." And so with the other variations. The relation of the shaft to the capital, with the identity of material and the similarity of treatment, is entirely unrhythmical. There is no felicity in it. The umbrageous cornice is a novelty which, as has been pointed out, quite fails to justify itself even on logical grounds. Given the general division, which is the postulate of all the designers, and the eye demands a clearer and more emphatic differentiation of the parts, above all a more harmonious proportion than is to be found in this building. There are suggestions in it, especially about the use of color which its author, or some other designer, may yet work out into an effective and attractive result. But decidedly they are not worked out to such a result in this unsuccessful experiment.



The New Appellate Court House

New York City

JAMES BROWN LORD

Architect

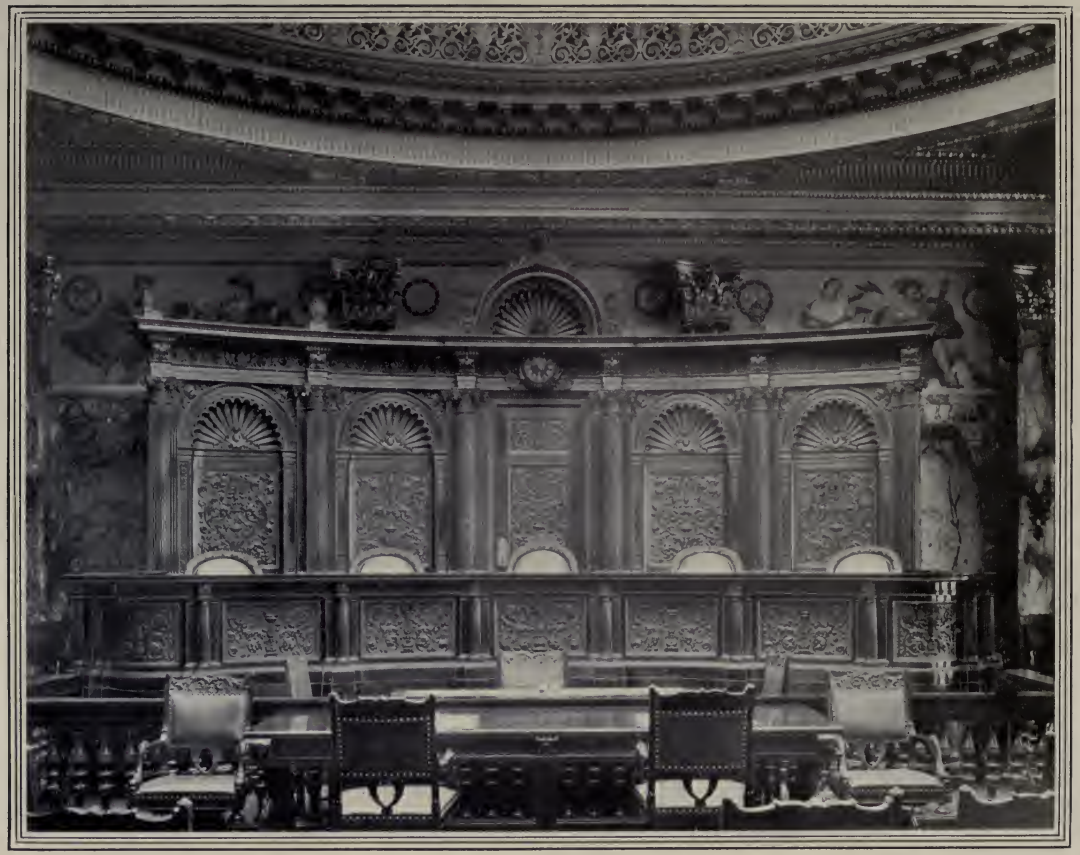
MAIN HALL—LOOKING TOWARD ELEVATOR.

MAIN HALL—LOOKING NORTH AND WEST.

MAIN HALL—LOOKING NORTH AND EAST.

COURT ROOM—LOOKING EAST.

COURT ROOM—LOOKING TOWARD JUSTICES' BENCH.



COURT ROOM—JUSTICES' BENCH.

CONSULTATION ROOM AND LIBRARY.

CLERK'S OFFICE.

COAT ROOM.

COURT ROOM—LOOKING TOWARD ENTRANCE FROM MAIN HALL.

BETZ BUILDING.
Will H. Decker, Architect.

GIRARD TRUST BUILDING.
Addison Hutton, Architect.

PHILADELPHIA, PA.

NATURE
AS AN
ORNAMENTALIST.

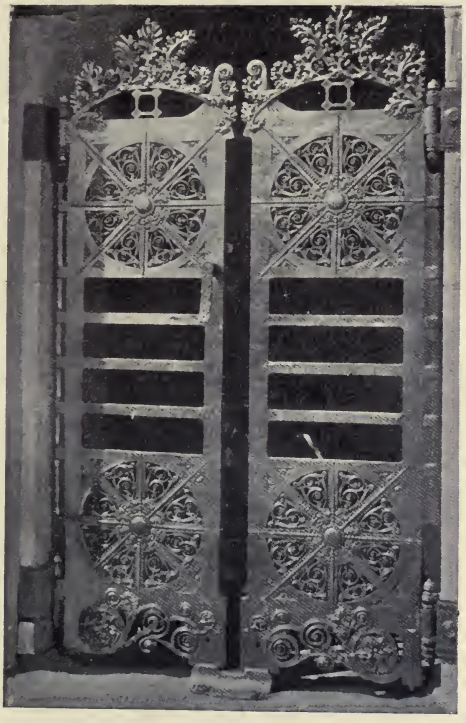
SUGGESTIONS FROM VARIOUS SOURCES
WITH EXAMPLES OF PRACTICAL
APPLICATION

SNOW CRYSTALS.

The fitness of these natural forms to iron and other metallic work hardly needs to be pointed out. A comparison of these figures with Mr. Louis Sullivan's famous gates of the Getty Tomb, represented on the page opposite, is both interesting and instructive. See also the page following that.

TERRA COTTA FRIEZE.

Louis Sullivan, Architect.

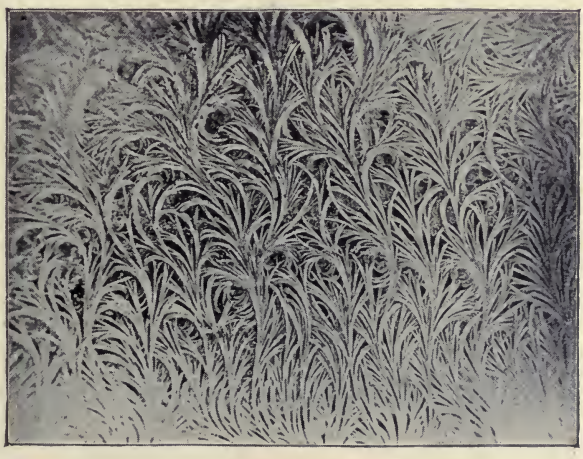


THE GATES OF THE GETTY TOMB.

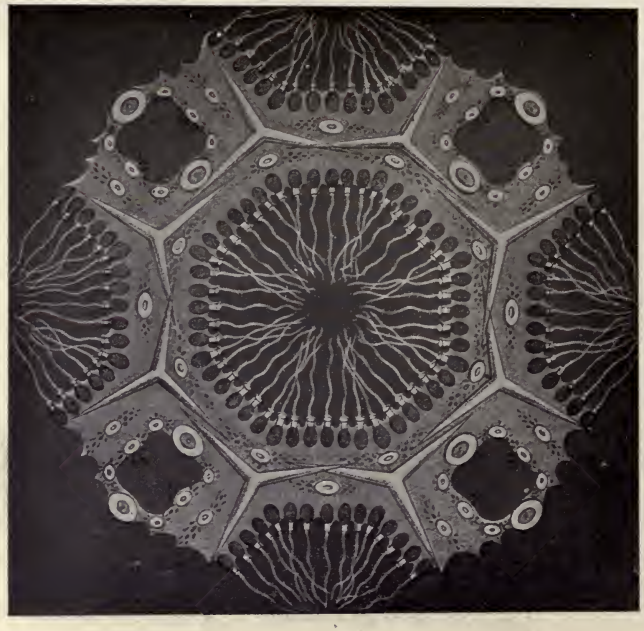
Louis Sullivan, Architect.

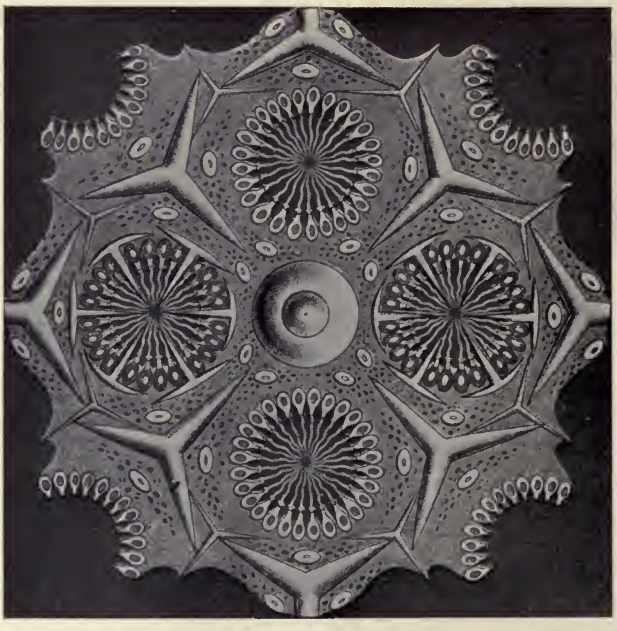
The lower of these two figures is given not as an implication that Mr. Sullivan was indebted to nature for his motif, but to show how closely a great designer may approximate to nature's work without copying.

SNOW CRYSTALS.

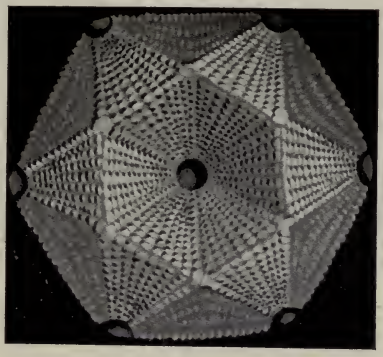


FROST.

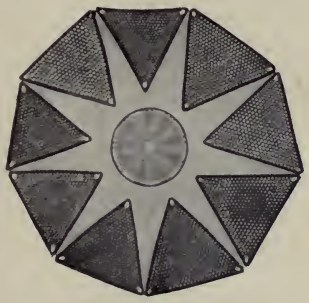




CALCISPONGIAE.

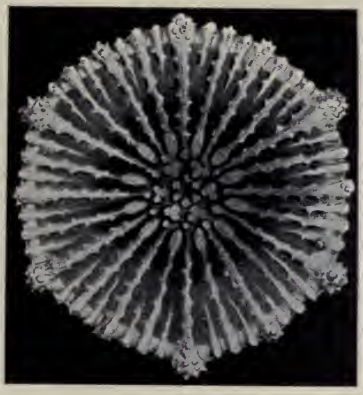


HEXACORRALLA.

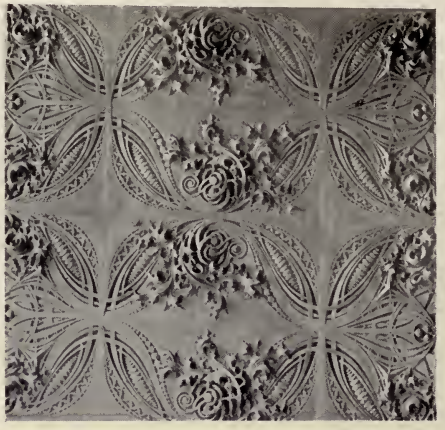


DIATOM, MAGNIFIED.

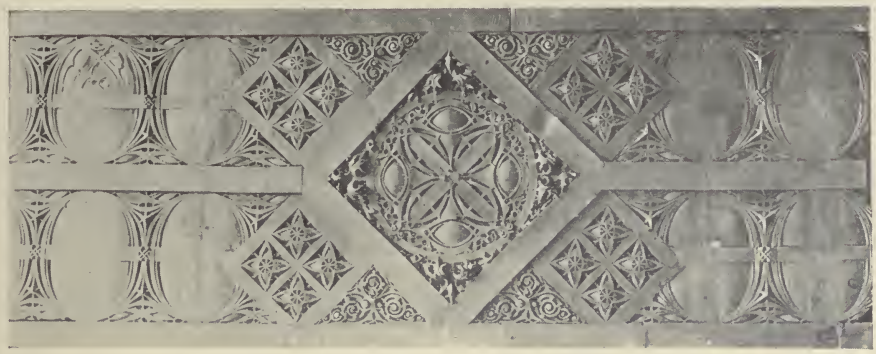
HEXACORRALLA.



HEXACORRALLA.



DESIGNS BY LOUIS SULLIVAN.



DESIGNS BY LOUIS SULLIVAN.

BOOK REVIEWS.

SCIENCE AND ART DRAWING (Britannia Series).—J. Humphrey Spanton. New York: The Macmillan Co.

MANUALA DI ARCHITETURA ITALIANA: Antica e Moderna. Alfredo Melani. 3d Edition. Milan: U Hoepli.

MANUALE DI SCULTURA ITALIANA; Antica e Moderna. Alfredo Melani. Milan: U. Hoepli.

MODERN AMERICAN SCHOOL BUILDINGS. Warren Richard Briggs, F. A. I. A. New York: John Wiley & Sons.

TOLEDO (Mediaeval Town Series). Hannah Lynch. Illustrated by Helen M. James. London: J. M. Dent & Co.

DEVELOPMENT AND CHARACTER OF GOTHIC ARCHITECTURE. Charles Herbert Moore. 2d Edition, Rewritten and Enlarged. New York: The Macmillan Co. $4.50.

SANITARY ENGINEERING OF BUILDINGS. William Paul Gerhard, C. E. New York: William T. Comstock.

CHIMNEY DESIGN AND THEORY. William Wallace Christie. New York: D. Van Nostrand Co. $3.00.

PLASTER CASTS AND HOW THEY ARE MADE. Frank Forrest Frederick. New York: William T. Comstock.

VOYAGE IDEAL EN ITALIE; L'Art Ancien et l'Art Moderne. Jean Schopfer. Paris Libraire Academique Didier: Perrin et Cie.

OBSERVATIONAL GEOMETRY. William T. Campbell, A. M. New York: Harper & Bros.

PEN DRAWING.—An Illustrated Treatise. By Charles D. Maginnis. Boston: Bates & Guild. 1900.

OLD COLONIAL HOUSES OF THE CAPE OF GOOD HOPE. Illustrated and described by Alys Fane Trotter, with a chapter on the origin of old Cape architecture by Herbert Baker, A. R. I. B. A. New York: Chas. Scribner's Sons (imported). 1900. $4.50.

A MANUAL OF HISTORIC ORNAMENT, treating upon the evolution, tradition and development of architecture and other applied arts. Prepared for the use of students and craftsmen by Richard Glazier. 470 illustrations. New York: Chas. Scribner's Sons (imported). 1900. $2.50.

ESTIMATING FRAME AND BRICK HOUSES, by F. T. Hodgson (David Williams Co., publishers), is a useful and comprehensive little volume, which will be found of great value not only by students and laymen generally, but by architects and builders who desire to have in mind some quick, ready rules and methods for estimating costs and quantities in building. The author shows a thorough comprehension of the problem he has taken in hand, and both by the illustrations he has used and the arrangement he has adopted greatly facilitates the reader's task. The book is up-to-date and advocates sound construction.

THE LOGGIA DEI LANZI.

There has been sent to The Architectural Record by Signor Ginevri, the proposer and probably the designer, a pamphlet concerning a great library building which it is desired to erect in Florence. The pamphlet contains a site-plan and elevations showing two alternative schemes for the front on the Piazza della Signoria and the Via Vacchereccia. According to these drawings the building in either of its proposed forms would be backed close against the westernmost wall of the Uffizi building where the archives are and where the post-office used to be, and would extend westward, including within itself the location of several narrow streets and across to the Via Porta S. Maria which leads straight to the Ponte Vecchio. According to the complete scheme this building would be carried to the quay on the river, the Lungarno Archibusieri, but at present the purpose is to build but half of this. The question of more or less is, however, of the least importance, because we do not learn that the design is positively adopted, or even that the project of putting a library building in this place is definitely approved. This is not the important matter; foreign lovers of Florence need not begrudge the city a fine library building, nor should the proposed destruction of the church of S. Stefano seem to them a great sacrilege, considering the difficulty of obtaining an adequate site for a probably needed public building in the heart of Florence. Foreign lovers of Florence and her treasures of art may indeed fear that any protest on their part would be as badly received as were the appeals of the English lovers of St. Mark's Church at Venice when the cruel restorations of that church were carried out seventeen years ago. Such appeals were called interference then and would be called interference now. Still, everyone who loves the Loggia dei Lanzi, that most unique building, that gem of original Italian architecture, that embodiment of the pure Italian spirit free from domination by the

pointed Gothic of the north or by the Graeco-Roman orders and all that was to come with them a century later, that building which more than any other structure shows what Italian building might have been had the Italians been gifted with that building instinct which at a few epochs in the world's history a single nation has displayed, that building which, except that it had no consequences, one might call the most important decorative construction in all Italy, the Loggia dei Lanzi is threatened with the complete destruction of its value as a work of art.

One of the two schemes shows a triple arcade to the west of it and on the same line and at a distance so slight that only a single archway with heavier abutments is interposed between the newer and older structure. A second archway, similar to the last named, is erected at the western extremity. In other words, there would be attached to the western face of the Loggia dei Lanzi a new structure containing five great arches, of which three, with their piers and spandrels, would be exactly copied from the three of the Loggia dei Lanzi and the two others flanking the triplet would be enclosed between more massive piers, so that these divisions of the library-front, each 50 feet wide or thereabouts, may probably be intended to advance t little into the Piazza or the street. The whole new front, then, of about 220 feet, facing nearly northward, would consist of five great arches on the lower story and upon these would be reared a wall with a single row of windows so immense in scale as to have between the stone jambs a width of about 21 feet. The great wall which is pierced with these five giant windows and by no other openings whatever, is shown as crowned by exactly the same cornice and parapet as those which belong to the present Loggia dei Lanzi. In the absence of an illustration before him, the reader must really look into his memory and use his imagination, and try to realize the ruinous effect upon the beautiful monument which now stands in the Piazza Signoria of having attached to it a prolongation of its own arcade used to carry a superstructure of great size and mass. The hoisting of the cornice, which is now nearly 80 feet above the street, to a point 140 feet above the street, is only a small part of the violation of all good taste which this design implies. What would become of the perfect proportion, scale, fitness—exactly repeating the Loggia dei Lanzi erected therefore, what would become of the charm—of the Loggia dei Lanzi if it were parodied by the juxtaposition of its own arcade repeated and used as the substructure of such a building as the one we have tried to describe?

The alternative design is less incongruous, but is, perhaps, equally objectionable. In this the Loggia dei Lanzi is copied by a precisely similar building further to the west, while between the existing and the proposed structure a sort of tower is carried up with one great archway in its lower story. This tower and the copy of the Loggia dei Lanzi are to serve as mere facings or masks for a very plain library building which shows behind and beyond them. To this design the objection would be twofold. First, the mockery of the old and valued building by an exact copy of it erected close at hand; and, second, a vice which this design shares with the other—the hiding of the western face of the Loggia dei Lanzi. Enough has been said to show the extreme impropriety of each of the proposed designs.

THE NEW DICTIONARY OF ARCHITECTURE.

The Dictionary of Architecture which has been in preparation for some time is so near to completion that definite information about it can be obtained. The first volume will be issued by the Macmillan Company, of 66 Fifth Avenue, New York, within a short time, and the remainder of the work is complete so far as the more important contributions are concerned.

These contributions are all likely to prove very remarkable in their character, and unique in their value. Sixty persons selected by the editor as especially expert in the subjects proposed to them have furnished these articles, varying in length from 500 to 10,000 words, and, in the case of this or that continued article, divided into several parts, reaching perhaps 20,000 words. Thus, the remarkable series of papers on the architecture of Italy, divided geographically into its more important divisions, will reach a total sum of more than 20,000 words. This is the work of John S. Fiske, of Alassio on the Rivierra, so far as concerns Lombardy, Piedmont, and Liguria; while, for the rest of Italy, Professor Arthur L. Frothingham, Jr., of Princeton, has contributed unique and thorough studies, as of Umbria, of Tuscany, and especially of Lazio (Latium) and Rome itself. These geographical articles are like guide-books, in that they tell the would-be student of a country's art what he should look for especially. If he would buy photographs and books, or if he would travel, alike he needs to know those buildings, if he neglects all others. Among these geographical

articles is the remarkable study of England, by R. Clipston Sturgis, of Boston. Germany is the work of H. W. Brewer, of London. R. Phené Spiers, editor of the newest and best edition of Fergusson's books, is the author of the studies of Asia Minor and Syria, of which ancient lands he has a special knowledge. In like manner, Alexander Graham, of London, the author of "Travels in Tunisia," writes on a geographical district which few know as well as he, the north African states, the Roman remains in which lands have of late formed the subject of special archaeological research. Mr. Spiers has also furnished the article on the ancient architecture of Persia, including the Parthian dominion, and the article on Roman Imperial architecture considered as the pervading style throughout the Mediterranean lands. Portugal, Spain, and Belgium have been treated by Mr. C. H. Blackall, of Boston. Japan has been treated by Mr. R. A. Cram, of Boston, who has made a special study of her ancient architecture; Scotland, by Professor A. D. F. Hamlin, of Columbia University; Greece, by Edward Tilton, now of New York, but for several years of Athens; but this latter article is not to be confounded with that on Grecian Architecture as a general study, which is by Professor Allan Marquand, of Princeton. France and some of the smaller lands of Europe have been handled by the editor himself. The article on the United States is by Montgomery Schuyler, of New York; that on the ancient ruins of Mexico, by F. S. Dellenbaugh, of New York, and that on modern Mexico by T. F. Turner, of New York.

Space does not allow of describing the other branches of the work so fully; but it should be stated that the engineering expert is W. Rich Hutton, of New York, he who built the Washington Bridge across the Harlem River; that plumbing and drainage and sanitation are the province of W. P. Gerhard, of New York, and that the extraordinary paper on Acoustics, perhaps the first explicit and intelligently scientific examination of the subject which has been printed, is by Professor W. C. Sabine, of Harvard University. Drafting, Perspective, Shades and Shadows, and such like preparatory arts, have been treated by the managers of the School of Architecture at Columbia University, Professor W. R. Ware, Mr. F. D. Sherman and Mr. W. T. Partridge. Refinements in Design, such as have been the study of Professor Goodyear in this country, and of Penrose in England, have been treated for the Dictionary by George L. Heins, one of the architects of the Cathedral of St. John the Divine; for Mr. Heins has always made a practical study of these little noted possibilities in the way of delicate modifications of line and mass.

As for the great styles of architecture, that of Egypt conterminous with the country has been treated by Professor A. D. F. Hamlin, as has been the Mohammedan architecture in all its varieties. Roman Imperial and Grecian architecture have been named above; Romanesque is by W. P. P. Longfellow, of Boston, who has also treated the revised classical styles, and their relation to antiquity, under the terms Greco-Roman, Neo-Classic and Pseudo-Classic. Gothic architecture is by the editor, and there is an additional chapter on the special subject of English Gothic by R. Clipston Sturgis, of Boston.

These, and many such longer articles, are in a way the natural outgrowth of the definition which each term receives. The business of the technical dictionary is mainly to define, and accordingly the term Antefix and the term Annunciator, the very ancient and the very modern device, are defined each under its own caption, and so are palace, palais, palazzo, with distinction between the proper and the popular use of those terms. Such definitions may be 25 words long or may require several hundred words to express them properly, and it is evident from this how a definition swells into an encyclopaedic article when the necessary statements cannot be given in a smaller space. In connection with this we should speak of the sub-titles, for under the term Arch there are some 75 special varieties of arch defined and described, and these are arranged alphabetically under the general head. There are many instances such as this, though none quite as remarkable.

Finally, it should be stated that biographical notices have been written of architects ancient and modern, well known and little known, and of some important architectural writers as well. All of this biographical work has been done by Mr. Edward R. Smith, Custodian of the Avery Architectural Library.