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DECORATION

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THE AMERICAN ARCHITECT AND BUILDING NEWS.

VOL. XLII.

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OCTOBER 28, 1893.



SUMMARY:—

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WE have received other intimations, besides the letter from Mr. Howard Fleming, published last Saturday, that the comparison which we made between English and German Portland cements, in our comments on a certain article in the *Builder*, was unfair toward the English cements. We should be very sorry to disparage the good English Portland cements, which we know to be very good, and perhaps our haste to correct the assertion of the *Builder*, that German cements were preferred here because they were cheaper, led us to overlook the sterling qualities of the best English brands. This is, however, just what most architects do, so that we were, perhaps, not far wrong in our description of the attitude of American architects and engineers toward English cements in general, as compared with the German brands. It should be remembered that the latter have not been very long introduced, and that the brands first put on the market here, the Alsen, Stern and Dyckerhoff, were probably at that time, even according to English expert authority, the best cements in the world. These cements came to us fresh, uniform, carefully packed, and of extraordinarily good quality, at a time when our market was flooded with English Portland cements, of a great number of different brands, some, undoubtedly, good, but many others bad, and rendered worse by the condition in which they were furnished. It was then the habit of the average dealer, a habit which average dealers have not yet forgotten, to pay no attention to the clause in the specification demanding a particular brand, but to deliver at the building a miscellaneous assortment of barrels, most of which bore traces of a long and arduous experience. A large part of the barrels, when opened, were lined with a crust, two or three inches thick, or more, within which was a bushel or two of undamaged material. Other barrels exhibited traces of cement of a certain color adhering to the inside, while the mass of their contents was of a different color, indicating that the barrels had been emptied of their original contents, and refilled with something else, the properties of which were unknown; and, with all, the suspicion was ever present that their contents might swell and spoil the work, as had often happened. The consequence of this was that architects, who, notwithstanding their injunctions, found that the crusts of damaged cement were pounded up in their absence, and used in the work, who waited in vain for the setting of cements of a good brand, which had become so air-slaked by age and improper packing as to be worthless, and who saw their carved brick-

work, laid in such cement as the dealer had furnished, peeling away from the backing, conceived a dislike of the material, which has lasted until this day. At that time, engineers and architects of important buildings, if they had occasion to use large quantities of English Portland cement, felt it necessary to test a sample from every barrel, an operation which, if properly done, required a great deal of time, and expensive apparatus, and the introduction of the excellent German brands, delivered by the agent directly from the steamer, in barrels with waterproof lining, so that the cement was always in good condition, was a relief which brought these brands rapidly into use, not so much, perhaps, for their absolute merit, as through the certainty which the architect could feel that, in specifying them, he would get what he wanted. Now, as we are happy to acknowledge, just the same advantage can be enjoyed by specifying certain English brands, which are sold here by responsible agents, and the manufacture of cement in England is probably carried on as skilfully as anywhere in the world; but the prejudices derived from experience are slowly removed, and, even yet, the indescribable stuff that builders use to comply with a specification which calls for "Portland cement," without mentioning any particular brand, usually comes out of a barrel with an English name on it.

IT is a little curious that, with the increase and improvement of the Portland cement manufacture in this country, no attempt, so far as we know, has been made to produce a cement from the slag of blast furnaces. It is well known that, with ordinary iron ores, where lime is used for a flux, the slag drawn off from the surface of the melted iron, which is here generally thrown away, contains almost exactly the same elements as Portland cement, in nearly the same proportions. Many attempts have been made abroad to grind the slag, and use it as cement, but it is only recently that very promising results have been secured. In this case, however, either by grinding in a particular way, or, more probably, by adding something to the slag, the ground material is said to have shown all the qualities of a first-class Portland cement. As this country is now, we believe, the largest producer of iron in the world, and as cement is here in great demand, and comparatively high in price, it seems as if there was every inducement for trying to utilize the worthless and cumbersome slag from the furnaces in this way, and it is much to be hoped that suitable experiments may be made.

LA SEMAINE DES CONSTRUCTEURS quotes from a report of Mr. Foulger, the Chief Engineer of the London Gas Company, some rather startling information about the condition of the London streets. Many of the streets are paved with wood blocks, laid on a stratum of concrete, which forms a sort of arch across the street. This concrete has become very hard, so that it is quite capable of sustaining the traffic without the support of the earth beneath it; and it seems that, in course of years, the soil, which is loose and soft, has settled away from beneath it, so that, for example, in Oxford Street, it was found, in making some repairs, that a man could crawl in between the underside of the concrete arch forming the sub-stratum of the pavement, and the surface of the soil under it. Except for the danger of a sudden collapse of the arch, this subsidence of the soil would not be a serious matter, were it not for the fact that the space between the concrete and the soil is found to be filled with a mixture of gas, which has escaped from the street mains, and air; and if the mixture should attain explosive proportions, which might easily happen, a short-circuit of an electric current, or an incautious excavation, might result in blowing the street into the air.

M. L. LANGLOIS, a well-known French engineer, delivered an address before the recent Congress of French Architects, on some new types of framed structures, differing from the ordinary sort in having the supports firmly fixed in the ground. It is hardly necessary to say that the average large building of the present day consists of framed roof-trusses, often very skilfully designed, supported either on high walls of masonry, which could hardly hold themselves upright if they were not tied by the trusses, or on slender

posts or columns, even less stable than walls. When a severe strain of any sort comes on such a structure, the walls or posts usually suffer. The trusses, it is true, often give way first, but any accident to them commonly brings down the wall or line of posts on which they rest. M. Langlois, observing that the vertical portions of ordinary buildings add nothing to the strength of the structure considered as a whole, but, instead of that, depend upon another portion to keep them in place, suggests that there is no difficulty in making the uprights an integral part of the structure, in such a way that, instead of being a burden, they add materially to the ability of the roof-trussing to resist either vertical or lateral strains.

EVERY one has seen the "arched girder" lattice roofs of our great railway-stations, and these will, by modification, illustrate the Langlois system of construction. Instead of lattice panels, forming a uniform curve, his structure is polygonal, consisting of latticed verticals, sustaining, and strongly connected with, roof-trusses of lattice or other design. The uprights are strongly bolted to concrete blocks, set in the ground, so that they present a strong resistance to horizontal strains; and, being of substantial lattice-work, they cannot buckle or bend under a vertical load; while, being braced and riveted to the roof-trusses, they form with them a frame of great strength, resembling much more the "bents" of a railway trestle-work than the usual combination of two tottering supports with a roof laid loosely on top. It is evident that a truss firmly braced at the ends to rigid uprights is under conditions of resistance much superior to those applicable to one simply supported at each end, but also very different, and the calculation of trusses so fortified is by no means easy. M. Langlois says that for a time he calculated the entire structure of this type as a polygonal arch, but the fact that the bases of the uprights are firmly secured in the ground complicates even this calculation, as no theory has yet been devised for elastic arches fixed at the springing; and he thinks that a new mathematical process must be worked out for such cases, but as all the unknown factors are on the side of safety, the principle may be followed without hesitation. M. Langlois has already built some important structures after his method, which is well worth keeping in mind by architects. Strictly speaking, it cannot be called a new construction, as the latticed uprights and overhead cross-pieces of a great railroad bridge, particularly of a draw-span, present almost exactly the same combination; but the application of this familiar engineering example to building design is, we think, new.

THE prospect seems to be that our great-grandchildren will know about the remains of the period known as Druidical, or megalithic, only through books, for the actual monuments of the period are fast disappearing. The estates containing the principal collections of Druidic stones in Brittany have been bought by the Government, but no provision is made for guarding them, and the ignorant and mischievous picnickers who visit them are allowed to do as they please with them. In England, the great monument of Stonehenge, which, if not so extensive as that of Carnac, is more perfect, is said to be now totally neglected by its owner. A few years ago, a man was detailed to keep order among the visitors, but this guardian is said to have been withdrawn of late, and there is nothing to prevent people from building fires under the granite colonnade if they wish.

IF Stonehenge and Carnac are fated to disappear from the earth, at least let some effort be made, before they vanish, to find out something of their real history. It is generally agreed that, far from having been built by the Druids, they existed ages before the rise of the Druidic system, but this conclusion only makes their origin still more obscure. It is said that the huge monoliths of the inner ring at Stonehenge are of a peculiar granite, no quarry of which exists nearer than Africa. If this is true, as we suppose it is, the transportation of these great blocks indicates not only a considerable development of the arts of navigation and mechanics among the people who brought them to England, and set them up many miles from the shore, but a connection, either religious or commercial, between Africa and England, to which recorded history gives no clue whatever. It has been said that monu-

ments of the characteristic megalithic pattern are found not only in England and northern France, the Lyonesse of the legendary period, but in the Southern Lyonesse, of which the city of Lyons was the capital, and from there westward, along the Mediterranean shore, through Spain. It is said, also, that in Spain and western France these monuments, instead of being scattered thickly over an extensive tract, as in the two Lyonesse countries, are found at intervals along a certain route, but not elsewhere, as if the people who built them were, in Spain and Provence, foreigners, passing frequently along an established route, as caravans pass through Africa or Tartary, and erecting the symbols of their religion only along the road which they frequented. No mention is, however, made in history of any race trading over such a route, or of any connection between what seems to have been two great Celtic communities, and still less is any clue given to the connection between these communities and Africa. In fact, there is internal evidence that the trilitha of Stonehenge were placed in position before the pyramids of Egypt were built, and if this evidence can be relied upon, the megalithic monuments belong to a period at least two thousand years anterior to that at which the first glimmerings of European history appear. What manner of men lived in England and France two thousand years before the Trojan war we may well be curious to know, and every indication that can be compared with other indications to throw light upon the question should be studied and recorded without delay.

A CATASTROPHE of an exasperating kind has deprived Mr. Burne-Jones and the public of one of the most notable of modern English pictures. The masterpiece of that eccentric painter is commonly considered to be his "Love among the Ruins," a mildly tragic composition, which has often been exhibited. A firm of picture-publishers in London applied for permission to make a photographic reproduction of the painting, for publication, and the application was granted. The picture was sent to the publishers, who put it into the hands of their workmen, and one of these coolly began operations by daubing it all over with white-of-egg. Mr. Jones is as peculiar in his technical methods as in his artistic style, and, as it happened, the picture in question had been painted with thick water-colors, instead of oil. A card, giving notice of that fact, had been pasted on the back of the picture, but the workman paid no attention to the warning, and proceeded with his treatment until he had washed off the more delicate touches, and smeared the faces and hands into an unintelligible blur. What depths of sentiment have been lost to the world by this untimely barbarity, probably no one but the artist could ever comprehend, but it is to be hoped that the public lamentation over the occurrence may be loud enough to deter photographers in future from amateur experiments with pictures entrusted to their care.

FOR some mysterious reason, it is the fashion now among ink manufacturers to make their ink extremely acid, so that a steel pen dipped in it immediately begins to dissolve, with effervescence, like the old nails dissolving in sulphuric acid, with which we produced hydrogen in our boyish days. What the effect of this corrosive acidity may be upon the paper of manuscripts, we will not undertake to say, but its well-known effect upon steel pens is to render them quickly useless. Long before they reach this stage, they become scratchy and unpleasant to write with, so that a method by which either the ink could be neutralized, or the pens preserved from its action, would save the nerves, as well as the pockets, of many a clerk or book-keeper. In regard to the ink, it is doubtful whether the chemical knowledge of the average clerk would be sufficient to enable him to experiment with advantage, but a writer in *La Nature* suggests that the pens may be to a considerable extent protected against corrosion by keeping them, when not in use, in a tumbler, in which is a damp sponge, resting on a substratum of carbonate of soda. The moisture in the sponge takes up a little of the alkali, so that, when a steel pen, wet with acid ink, is placed in contact with it, the acid of the ink is neutralized, and corrosion stopped. Of course, when the pen is dipped in the ink again, corrosion recommences, but the frequent interruption greatly prolongs the process, and lengthens the period during which the pen is serviceable.

OFFICE-HELP FOR ARCHITECTS.¹—XXI.

SECTION VI.—DAMP AND WATER PROOFING:

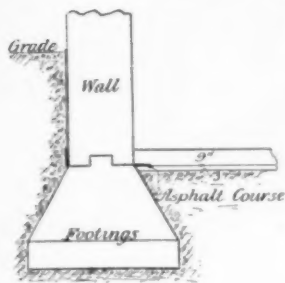


Fig. 100.

dering of Portland cement one part, sand three parts, mixed stiff, and applied $\frac{1}{2}$ " thick to the outside of walls built on a sandy soil, will exclude dampness, but in a clayey soil, or wherever the drainage is poor, it will not be satisfactory. If sand or gravel is used for back-filling and drains are laid around outside, it will be all right.

§ 284. **Paint:**—Use three heavy coats of linseed oil and white or red lead, on exterior walls.

§ 285. **Asphaltic Felt:**—Wherever it is desired to make horizontal surfaces, such as cellar and vault bottoms waterproof, or wherever the soil has become foul from leaching cess-pools, privy vaults and the like, it should be covered to the outside line, after the footings are in, with 3" of concrete. One course of the footings at the level of the cellar bottom should have a break put in it, and should be laid with three thicknesses of tarred felt in hot asphalt, the felt being permitted to project not less than 6" on each side.

Just before the completion of the building the entire cellar bottom should be completely covered with three thicknesses of tarred felt laid in hot asphalt, breaking joints, overlapping and making a tight joint with the felt projecting from the footings on the inside, and the outside of the foundation wall and footings should be similarly treated up to the grade line on the outside (Fig. 101). On the top of the tarred felt on the inside, there should be laid concrete 1" thick for each three inches in depth of the water above the level of the cellar bottom, with 6" as a minimum. The thickening of the concrete when it becomes excessive, may be dispensed with, if I-beams are bedded therein so as to stiffen the floor against the upward action of the water on the assumption that the pressure on the floor is at the rate of 60 pounds per square foot, per foot of the depth of the water.

For damp-proofing, two thick coats of hot asphalt may be used between the layers of the concrete. This affords an efficient means.

§ 286. **Asphaltic Mastic:**—Is the natural asphaltic rock,

calced, pulverized, melted and run into blocks and cakes. When used, it is melted in large kettles, mixed with a small proportion of coal-tar, and applied hot. It should always be applied by a company making a specialty of it.

It may be applied in two ways:

(a) Put between the courses of masonry or between two courses of concrete in the cellar bottom, and carried up the outside walls to grade; put on in two courses, and as long after the masonry has been set as possible, in order to let the mortar thoroughly set, as damp-proofing.

(b) Put on one coat, then while the mastic is still hot, lay one layer of tarred felt, making butt longitudinal joints, and lap transverse joints. Then put on another coat of mastic, then a layer of tarred felt, breaking joints over the layer below; then finish with a coat of mastic, as waterproofing.

§ 287. **Other Materials:**—Coal-tar, Portland cement and paints of various makes are all fairly efficient as damp-proofing, but do not give the satisfaction that asphalt does.

Caution:—Every damp-proofing material should be placed as near the outside of the wall, or other construction intended to be damp-proofed, as possible.

SECTION VII.—MACHINERY FOUNDATIONS:

§ 288. **General:**—Vibrations, no matter how slight, if long continued, will almost certainly result in the disintegration of masonry, it is, therefore, necessary in putting in foundations for machinery, to provide against it as far as possible.

§ 289. **Materials:**—Foundations proper should be made of concrete, as giving greater weight per cubic foot than brick-work.

Deadening to absorb the vibrations, should be sand, creosoted yellow-pine, hair-felt, mineral-wool, or asphaltic concrete.

§ 290. **Uses: General:**—Sand, gravel, soft earth or silt, will transmit vibrations very poorly. Firm earths will transmit quite well and rock perfectly.

It is necessary then that in sand or other soils of poor transmission, to be assured only that the foundations of the machinery shall be at least 2' 0" away from all other foundations, unless the vibration be very marked. In firm earth, it is well to excavate a pit at least 4' 0" wider and 2' 0" deeper than the foundations are intended to be, fill-in with 2' of sand, build foundations, and then fill the balance with sand. When this cannot be done, start foundations on a crib of 2" x 12" yellow-pine plank (one course thick) and make the capping of the foundation yellow-pine timber bolted together; fill-in around foundations with sand. If founding on rock, or if the vibration bids fair to be excessive, use one of the following methods:

(a) Make lower 12" of foundation of asphaltic-mastic concrete, having the work done by some reputable company. Finish with concrete and cap with bluestone cap.

Surround the asphaltic concrete with a non-conducting covering of either porous terra-cotta slabs, mineral-wool, or 4" hollow blocks or sand, as the foundation will soften and run at a temperature of 130°.

(b) Excavate a pit into the rock about 6" deep and fill the same with hair-felt or mineral-wool. Build foundation on that.

(c) Excavate pit 2' in depth, fill with sand and start foundations, the pit being protected against the inflow of any water.

(d) Found on 12" yellow-pine timber creosoted.

§ 291. **Remarks:**—High-speed engines, if in the least unbalanced, will set up a vibration that, if synchronous with the fundamental note of the building, will cause it to rattle dreadfully; to remedy: make the foundations so as to absorb the vibration as far as possible, and change the speed. Pumps when working irregularly may often set up a very bad knocking. To cure this, the pipes should be supported from the foundations as far as possible, making the foundations as above described, and a springy packing of asbestos-felt, rubber, leather, etc., placed between the hanger and pipe wherever necessary to put hangers.

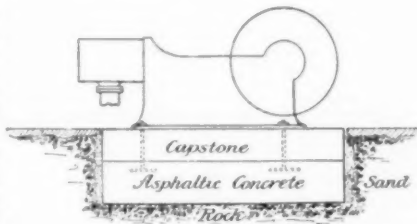


Fig. 101.

ABBREVIATIONS AND SYMBOLS.

= equal to.	∴ therefore.
parallel to.	□ square feet.
÷ divided by.	□ square inches.
× multiplied by.	8 read 8 pounds per lineal foot.
+ added to.	C channel bar.
a ² a multiplied by itself	I I-beam.
a > b: — a greater than b.	T T-iron.
a < b: — a less than b.	L angle iron.
a ÷ b: — a divided by b.	D deck beam.
	● round section.
1 ton = 2,000 pounds as this is the conventional ton, the legal ton is 2,240 pounds, but is rarely used.	
l = the length between supports of any beam or girder or height of any column, always in feet.	
b = breadth of any beam or girder, always in inches.	
d = depth of any beam or girder, or the least transverse dimension of any column, always in inches.	
L = total load uniformly distributed coming on any piece in pounds.	
L' = " " " " per square foot in pounds.	
W = concentrated load on any piece in pounds.	
s = span of any arch or truss between centres of end pins in feet, or spread of footing courses.	
A = area of any section in square inches.	
M = maximum bending-moment in inch pounds.	
n = distance of centre of gravity of section from either top or bottom edge in inches.	
I = moment of inertia, neutral axis through centre of gravity.	
R = moment of resistance of section.	
r = radius of gyration, in inches.	
Sc = safe compressive strain in pounds per square inch.	
St = " tensile " " " " " " " " "	
Ss = " shearing " " " " " " " " "	
S = strain per square inch in extreme fibre.	
P _u = upward reaction of support at left-hand end of beam.	
P _r = " " " " " " " " " " " " " "	
c = distance of centre of gravity of load from left hand of beam.	
f = " " " " " " " " " " " " " "	

¹ By George Hill, Consulting Engineer. Continued from No. 929, page 29.

The pump foundations should also be built to take up the vibrations as much as possible.

The location of all machinery having reciprocating or rotating parts, should be carefully studied, and any possible vibrations guarded against.

Foundations, generally, should be capped with planed or rubbed bluestone caps of thickness $= \frac{1}{4}$ width. The location of all necessary bolt holes and the proper size of foundations can be obtained from the contractor furnishing the machinery. In size, the two vital things are, the weight and the spread; the sections making but very little difference.

In building, always provide gas-pipes 2" larger in diameter than the foundation bolts, and slip them in over the bolts before concreting. When the stone is ready to set, fill the hole with grout.

Insist on the machinery contractor furnishing wooden templates of sufficient strength to carry the foundation bolts and have him set them in place so securely that nothing short of the destruction of the template can disturb them.

Before finally deciding on a foundation lay-out, have the machinery contractor examine it, and give a guaranty against any vibration. He may tell you that you have gone to unnecessary lengths; but do not change, unless you know by experience that he is conservative and well informed.

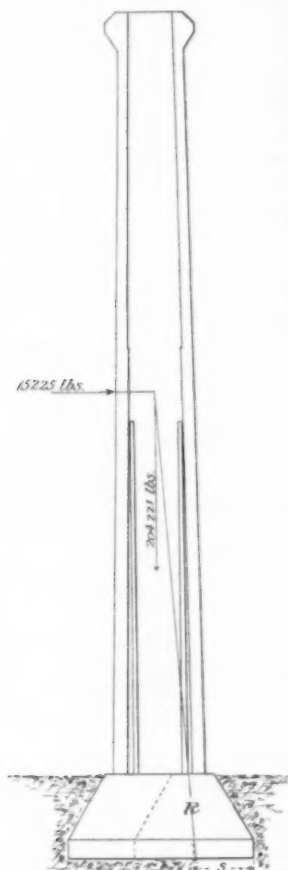


Fig. 102.

SECTION VIII.—CHIMNEY FOUNDATIONS:

§ 292. **Material:**—Concrete in mass or brick in cement.

§ 293. **Design:**—For ordinary stacks in houses, the same spread that is given to the walls, will do for the chimneys.

For large heavy stacks in houses, the weight of the chimney should be computed, and the footings proportioned accordingly. In computing weight, take

$$\frac{\text{Length} \times \text{Breadth} \times \text{Height}}{20}$$

as the total weight in tons.

For the bearing value of the soil, use $\frac{3}{4}$ the value given in Table XXIX.

For boiler chimneys a new factor comes in, in the wind-pressure, which at times concentrates the load of the entire chimney practically on the inside edge of the outer chimney wall.

The foundations must, therefore, be proportioned to resist the entire pressure at one point, and then be made symmetrical on all sides. That is, if R = the resultant pressure due to wind and weight in tons, the projection S must be equal to

$$S = \left(\frac{R}{3B} \right)^{\frac{1}{2}} \quad (78)$$

Great care must be exercised in laying up the masonry, as very severe strains will at times come upon it. (Fig. 102.)

SECTION IX.—SHORING:

§ 294. **General:**—Shoring will only be treated generally, since each town or city usually has some men or firm who confine themselves to this class of work, and whose method of work will generally be found satisfactory.

§ 295. **Shoring:**—Is supporting a wall while its foundations are being carried down or strengthened in sections by

means of inclined posts (See Fig. 103) which rest in sockets cut into the wall at their upper ends, and rest on a timber crib at their lower ends.

The shores should be put in so as to support the walls as low down as possible, and another row as high up as possible. The inclination from the vertical should not exceed 20° . Shores should not be more than thirty times longer than least dimensions. Should be placed for the support of all piers, chimneys, etc., and generally about 10' 0" apart.

Area of shore in square inches, (L in tons)

$$= 2.5 L c \quad (79)$$

Area of crib under shore

$$= \frac{1.33 W}{B} \quad (80)$$

Shoring should be used when the soil is quite firm, and will stand vertically three or four days; when it is undesirable to go through the wall and occupy the adjoining cellar with temporary works; when the depths to which the foundations are to be carried down, does not exceed 6' 0". Make the recesses such that the bearing area at the top equals $\frac{1}{2}$ area of shore.

Build the cribs, put shore in place, and bring it to a bearing with hard-wood wedges. As soon as three pairs are in place, excavate a section of the new footings as described under § 298 "Underpinning." As fast as the underpinning goes in, move the first pair of shores along, always having two pairs supporting the wall and working under or with one pair.

§ 296. **Needling:**—Is supporting a wall on transverse timbers, the ends of the timbers supported on cribs, and with screws between the crib and the timber supports, so as to bring the timbers to a firm bearing under the wall. (Fig. 104.)

Used:—When the depth of the new footings is greater than 6' 0" below the old; in soft soil; when the weights of

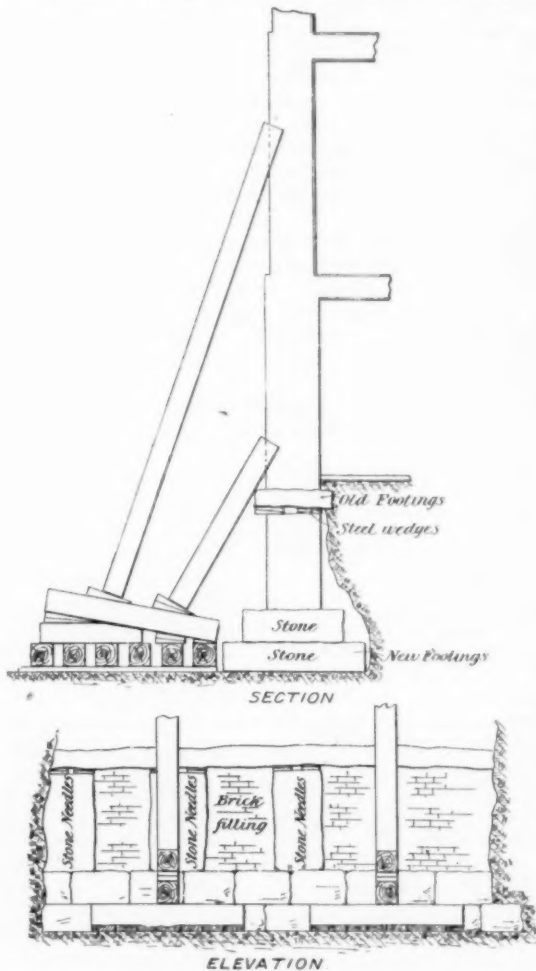


Fig. 103.

floors and walls exceed 15 tons per lineal foot; when it is practicable to occupy the adjoining cellar.

Procedure:—Calculate W carefully. Dig pits for the cribs to the depth of the new footings, of area required to carry the

computed load; cut holes in walls through which to pass the timbers; calculate necessary size of timbers considering them as beams loaded in the middle, and supported at both ends. Timbers should not exceed 10' 0" distance apart, *c* to *c*, and should go under all piers and chimneys.

Then build up crib of 12" x 12" timbers, put in a pair of jack-screws at either end of a transverse piece to support beam; put in transverse pieces, put in beam and screws, screw up the jack-screws until the wall is supported entirely by the timbers. Then excavate and underpin, and when all is set, remove the needling and fill-up the holes.

§ 297. Bracing:—Whenever a building is torn down, so as to leave the neighboring walls unsupported, they must be braced against falling-in by means of spreading braces, or long shores inclined at about 45°.

Procedure:—When there are walls on both sides, put in 8" x 8" spreading braces 15', *c* to *c*, at the height of every other tier of beams.

Braces must be put in with wedges to secure a bearing, and must be supported at one end by means of posts coming down to the foundations, and put in at a slight inclination, so as to secure them more firmly in place, in the event of shrinkage. They should also be slightly stayed together with shingle lath horizontally. If the spans exceed 25' the timbers must be made correspondingly heavier.

When the walls step back, the lower end of the brace may rest on a step, and so dispense with a vertical brace.

Fronts should be braced with heavy spreading-braces, say 8" x 10" at each story, and if there are arches in the adjoining buildings, the braces must be proportioned to take their thrust.

§ 298. Underpinning:—Two methods: (a) Granite posts. (b) Brickwork in cement.

(a) **Granite Posts:**—Used where distance from bottom of old footings to top of new does not exceed 5' 0". Build new footings as before described. Then provide a number of granite posts of length sufficient to reach from old to new footings, square and of thickness = thickness of walls, top and bottom surfaces dressed truly.

Insert under old wall with top and bottom in full bed of Portland-cement mortar.

Bring to a bearing with steel wedges.

These granite posts should occupy one-third the area of the underpinning; the space between them should be filled with brickwork in cement mortar. If bottom of old footings is rough, or soft brickwork, make the posts 6" short, put in a 5" bluestone slab, square and of width of old footings, with plenty of mortar on top, and then wedge up between the slab and granite post.

(b) When the height exceeds 6' 0" build up the underpinning with hard brick in cement-mortar, getting a bearing on the old work, by means of two 5" bluestone caps, square, and made of width of old footings, wedging between them

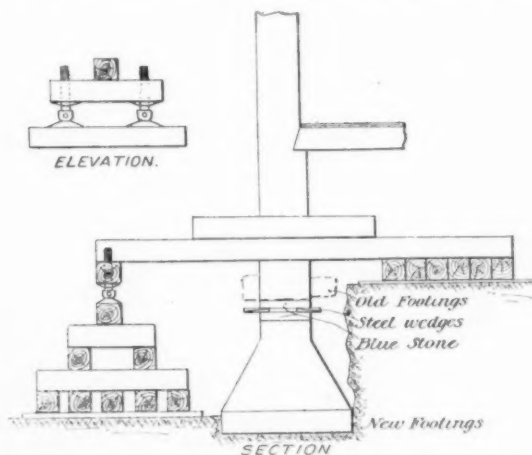


Fig. 104.

with steel wedges. These caps should be placed a distance apart in the clear longitudinally = their own width.

Then build-up between in similar manner, wedging up the last joint with slate. After the work is completed, grout the space between the caps with Portland cement well rammed

in. The underpinning should closely follow the work of excavating and building footings, so as to require the support of the needles or shores the shortest possible time consistent with having the cement set before weight comes on it.

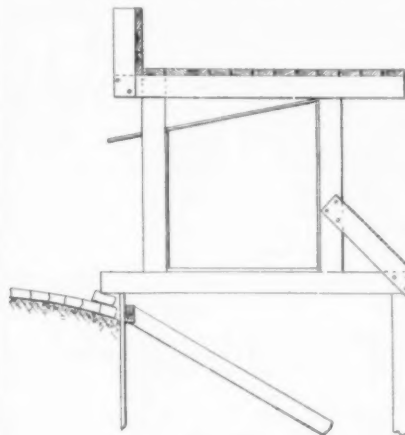


Fig. 105.

(Fig. 105.) A dust-chute should be made of tongued-and-grooved boards and provision made on each floor for sprinkling continually.

All pipes should be cut off at the entrance to cellar, gas-pipes cut and plugged. Electric wires, etc., removed. Tearing-down should be so conducted as not to jar adjoining buildings. Rubbish should be passed down the chute and loaded directly into tight carts, or else lowered in baskets into carts, sprinkled before lowering, and as soon as deposited in the carts. All timber, stone, brick, and iron should be removed as soon as a truck-load is collected, so as to leave the site clear as soon as the tearing-down is completed. Rubbish should not be permitted to collect on a floor, and then shovelled off into the cellar through a well-hole.

[To be continued.]

ON THE USE OF COLOR IN ARCHITECTURAL DESIGN.¹

IT is hardly beyond the truth to say that, so far as the exterior of buildings is concerned, there has been until recently no use of color in architectural design since the close of the sixteenth century in Italy. And even now, though some attention has of late been given to this subject, both here and in Europe, which has produced some successful color design, the most striking fact with regard to our use of color in architecture is probably our timidity. This modest caution in the first unwonted essays at color treatment after so long disuse is certainly wise and right, since too great boldness in this matter is more likely to lead to failure than success. But the possibilities of the use of color in architectural exteriors and the right treatment of it certainly demand more serious consideration than they have generally received. To treat the exterior of a building in a single material and in absolute monotone, is doubtless the safest procedure, and is vastly preferable to an ambitious but faulty color-scheme. But it is clearly to give up one important source of beauty in architectural design.

Ruskin in a characteristic passage in his "*Seven Lamps of Architecture*" thus expresses his opinion on the subject: "I do not," he says, "feel able to speak with any confidence respecting the touching of sculpture with color. I would only note one point, that sculpture is the representation of an idea, while architecture is itself a real thing. The idea may, as I think be left colorless, and colored by the beholder's mind; but a reality ought to have reality in all its attributes; its color should be as fixed as its form. I cannot, therefore, consider architecture as in any wise perfect without color."

In this opinion most architects nowadays will probably concur, though monotone is still largely the rule in the exteriors of our buildings, and there are not wanting those who maintain that it is the ideal and the only dignified treatment. Such a view, however, receives but little support from the authority of the past. Most ancient buildings, it is true, are of one color in their present condition, and our architectural ideals are doubtless largely formed by the noble buildings of the past as we have seen them; yet we know that when their builders left them most of them were glowing with color.

To recall briefly the history of the color-treatment of buildings will show the extent to which color has been employed in architecture.

The columns and walls of the Egyptian temples were covered with rich color-decoration which in most instances still remains to this day. The capitals, which borrowed their form from the lotus

¹ A paper by H. Langford Warren, architect, prepared for the Annual Convention, A. I. A., but read before the World's Congress of Architects at Chicago.

flower or bud, were painted in red and green and white, with ornaments closely imitated from the same plant. The shafts were similarly decorated in color or with hieroglyphs incised and painted. If most of this color is to be found in the interior of the temples, it is because the architecture itself was mainly internal. But little external architectural effect was sought in Egyptian temples until a comparatively late date, except about the entrances, and these were always decorated with color.

In Greece, the marble of the temples (or the fine stucco which covered walls and columns where a coarser stone was all that could be obtained) was regarded as a field for ornamental color-treatment. Indeed, the marble seems to have been chiefly prized for its excellent surface for color-decoration. The Greek temple did not stand out entirely white against the blue sky, as we are apt to picture it to ourselves, but was a glowing mass of color. Since the days of Hittorf's color-restorations this is no longer matter for conjecture, but has been clearly proved by the numerous colored fragments and traces of color which have been found. Mr. Edward Robinson has recently fully shown, both by literary evidence and by traces of color which he has found, that even the statues were fully colored in a somewhat conventional manner. The Romans, heirs to the arts of Greece, followed the same methods. The well-known statue of Augustus, for instance, retains such complete traces of color as not only to show that it was entirely painted, but to make an accurate restoration of the color possible. But in the decoration of their buildings the Romans seem to have used applied color much less than the Greeks. Instead of this they obtained their color-effect by the use of variegated marbles and precious stones, though applied color was used, especially when expense precluded the use of the more precious materials. The use of applied color in the provincial towns has been made familiar to us by the discovery of Pompeii and Herculaneum. And similar treatment was employed in many buildings of Rome itself; though here in the more important public buildings, columns were made of porphyry, verde antique, and rich marbles from the East, and variegated marble was used in slabs as a covering for the walls. Gilding was also lavishly employed in capitals and other members. This method of obtaining color-effect by the natural color of rich materials continued in the Byzantine empire, which added to it the use of mosaic. (The marvellous church of St. Mark at Venice is the most familiar and the most beautiful example of this style). And it continued in Italy through the various styles that followed until the later Renaissance.

The mediæval architects of the northwest of Europe did not have these richly-colored materials at their command, but they were far from giving up on that account the use of color. The very fact of the fairly complete preservation in which the great cathedrals have for the most part come down to us, so far as their general form is concerned, makes especially difficult to us the realization of what their appearance must have been when they still had all their color-decoration. But enough traces of color are still clearly visible to show their original condition with tolerable certainty. In a general view, these venerable buildings seem to have no color but the natural gray of the weather-beaten stone, — no more variety of tint than can be found in some old cliff of which their walls so much remind us, stained and worn as they are by time and with weeds and brambles growing in their crannies. But if we carefully scrutinize the hollows and protected portions of the carvings, especially in the porches, we shall almost certainly find unmistakable remains of applied pigment. Especially is this the case, for instance — or was before the restorations — in the porches of the Cathedral of Amiens, where the pigment used on the moulding of carved roses and of the hawthorne in its natural colors could still be plainly seen in places. The most striking and complete example of mediæval color-decoration on the exterior of a building I have seen and noted is to be found at the Church of St. Martin at Laon, in the central porch of the west front — which dates from the fourteenth century. Enough remains to show that this porch was completely covered with color. The columns and arch-mouldings were painted in red and yellow chevron stripes and similar patterns, which can be clearly traced. In the tympanum are carved two angels swinging censers on each side of a figure (probably of Christ or of the Virgin) which has disappeared and which stood on top of the centre mullion of the door. The angels' wings were gilded and their robes were tinted. The background was filled-in with other painted angels, and the under side of the tabernacle roofs over the figures in the porch was painted blue. These colors and other similar remains are quite crude. What the general effect of this treatment must have been in an interior, one gets a clear and undoubtedly substantially correct idea from the restoration of the Sainte Chapelle at Paris, especially in the upper chapel. In the interiors the remains of color are more frequent and in better preservation, as would be expected, and are especially to be noted in the chapels and on tombs and rood-screens. A very interesting and complete example of color applied to interior architecture is to be found in the rich late Romanesque porch now walled-up, on the north side of the Cathedral of Rheims.

It is clear that one should picture to himself the completed cathedral of mediæval France as richly decorated with color inside, besides the stained-glass windows; the color overflowing, as it were, and covering the porches, which were probably entirely covered with rich coloring. Color was, it seems likely, also, more sparingly applied to other portions of the exteriors.

The interiors of the cathedrals of Italy at this time were also fully

decorated by applied color; for mosaic, which had been introduced from Byzantium, fell more and more into disuse as fresco painting developed. But in the exteriors, in connection with colored marbles, which as we have seen were principally relied on for color, mosaic continued to be used as in the gorgeous fronts of the cathedrals of Siena and Orvieto. With the coming of the Renaissance, mosaic becomes still more unusual. But colored marbles were never used with more delicate taste or more beautiful effect than they were by the architects of the early Renaissance in Italy, and there are few classes of buildings so fruitful of lessons in the right principles of the application of color to buildings. The little Monte di Pietà and the Palazzo Publico at Brescia, or Fra Giocondo's loggia at Verona, (in which sgraffito is also employed,) or the Ca' d'Oro, or Ca' Trevisan at Venice, may be named as examples of these.

With the further advance of the Renaissance, color gradually disappeared from the exteriors of buildings, first in Rome and Florence, later in Venice, whose delight in color led her, while other cities were already contenting themselves with monotone, to cover even the exteriors of her buildings with paintings by Giorgione, Veronese or Sebastiano del Piombo, the faded remnants of which may still be dimly seen on her walls.

In this rapid survey, no mention has been made of the styles of the East or of the Moors in Europe, styles essentially dependent upon color for their beauty. Attention has been purposely confined to those styles which have been developed in, or have directly influenced western Europe.

What has been said recalls enough of the history of color in architecture to show clearly, that the later and especially the debased Renaissance is the only style which until modern times, has attempted to dispense altogether with color as a means of architectural effect and that in most styles color has been regarded as of essential importance, the apparent exceptions being due, until the time of the central Renaissance, to lack of means rather than to preference.

In the face of this unanimity of opinion and of precedent, it would be difficult to argue in favor of a general use of monotone in the exteriors of buildings. The strength of argument lies however altogether in favor of the employment of color. But it must be confessed, that many of the recent attempts at external color-treatment are far from successful. Such use of color is as yet new to us and it is not matter for surprise that there should be some bungling. Especially to be regretted, for instance, is the placing of color emphasis on the quoins at angles and on window and door jambs. This treatment was first, I believe, brought into prominent use by the late H. H. Richardson and has since been much imitated; but like most great men it has been Mr. Richardson's fate to find more imitators of his faults than of his good qualities.

In view of the growing desire for color-treatment and its difficulty, a statement of the principles which should govern color-design in architecture is often asked for.

In the first place, it must be said that there is perhaps no subject more difficult to consider by means of words, inasmuch as almost any color-scheme which it is possible to describe in words, can be made harmonious and perhaps beautiful in the hands of a true artist, or may be discordant and ugly, arranged by a person without color-sense. The delicate variations and the proportioning of one color to another which make the difference between beautiful and unpleasant, are too subtle to be described in words. In the next place, while the color-sense may undoubtedly be trained and strengthened by proper instruction and by observation and practice, yet it is useless for any one without that inborn color-sense to undertake to have anything to do with it. So that of color more than of any other object of study, the paradox is true that instruction is unnecessary for those that are gifted and useless for those that are not. Finally, while for the reasons above given dogmatism with regard to color is especially out of place (for a master will upset all rules), yet there is perhaps no subject more difficult to treat without dogmatism, since it is too subtle for argument, and conclusions with regard to it are necessarily based on observation and experience, guided by taste and feeling — not by reasoning. So much premised, a few general principles may be stated as marks to shoot at.

The first principle I feel inclined to lay down is that any theory of color-design, taken as a guiding rule for practical work, is certain to be fatal to the result. What horrors have not been perpetrated in the name of the old theory of the primary colors, red, blue and yellow, with their secondaries, tertiaries, complementary colors, and what not; a theory which to be consistent would have us refuse to see any beauty in the colors of a peacock's tail or a forget-me-not. But this theory has been exploded. Very true; but as a guide to color design the Jung-Helmholtz theory is not much better. It can to some extent analyze and explain, but it cannot construct, and an artist is not concerned with analysis and explanation, but with creation and enjoyment. Ruskin's theory that the principles upon which nature applies her color must be right, and that therefore color as applied to architecture must not follow constructive lines, because in nature it does not (as in the tiger-skin), would, logically followed, lead to absurd conclusions.

Furthermore, the different styles demand different color-treatment, so that general principles are the more difficult to lay down.

In approaching the study of color, let us then clear the ground by getting rid of all theory at the outset, and let us follow our sense of what is beautiful.

In what has been said above it is not meant to imply that nothing

is to be learned from nature for our color treatment of architecture. A few broad principles we may perhaps glean from her, but our lessons will be for the most part in learning what is beautiful, rather than by opportunity for deducing receipts or theories. The English architect, E. L. Garbett, in his little book on design, mentions one of the few general principles it may be safe to deduce. "In nature" he says "sameness of coloring is the rule, variety the exception; the former being found in all large or grand objects and broad surfaces, and the latter only in small and scattered organisms." A general law is no doubt here pointed out—by "sameness of coloring" Garbett cannot of course mean absolute sameness, but the sameness of a green tree where the whole is green, but there is great variety of green in the individual leaves; or of a gray cliff, where the whole is of one prevailing color, but with much variety of shade and tint within certain limits. But the principles here indicated in so far as valuable as guides in color-design, are so not because we find them in nature, but because we see by observation that they apply also to art. A small building may, if you please, be a glowing mass of color; but a large one, all of vivid and varied color would be tiresome: to have dignity and impressiveness it must have one dominant prevailing tone. This may be seen by comparing two such buildings as the duomos of Florence and of Pisa. The Pisan color is much pleasanter and gives greater dignity of effect on account of its broader massing. The building is mainly of one color (white marble, now a rich gold with age) with mosaic patterns of various marbles in tympana and spandrels, while the Cathedral of Florence is checkered all over with colored marbles—dark green, white and reddish brown. The dominant color must be selected with the greatest care with regard to the surroundings of the building and the colors of adjacent objects of whatever kind with which it will come in contrast. This is a point too often not enough considered in the choice of building material. But this dominant color will not be of absolutely uniform tint. If there is to be any beauty of color there must be some variety, as in the leaves of a green tree where light and shade add to the variety of local color, or in a cliff, or mountain-side, or pebbly beach. If stone is used, the different blocks will not be accurately matched in shade, but will be so placed as to make slight contrasts in tint between the different blocks. If the structure is brick, the brick will not be culled, but used with all the accidental variety the kiln affords. No surface could well be uglier than the respectable brownstone front, or the wall of culled red pressed brick. Indeed it is strange how when travelling in Europe, we can admire the variety of color in old brick and stone walls, and tile roofs, and then when we return home, continue to build with the utmost monotony of tone our great mechanical skill can attain, and proceed to wonder why our wall-surfaces are lacking in beauty. The dominant shade may be further varied by delicate contrasts of other material in friezes, or spandrels, as is so beautifully done in the Cathedral of Pisa or the Palazzo Municipale at Brescia already referred to.

If vivid color is to form a part of the scheme, it should be mainly confined to the recesses of loggias and porches, and should be focussed at some one point—for instance about the entrance—which should form the key and climax of the whole design. But the mistake is often made of supposing when color treatment is mentioned that vivid color is necessarily intended. Every building necessarily has its color, whether vivid or subdued, greatly varied or largely in monotone, and this color should receive careful study and consideration, and should not be left to be decided by accident, or by the whimsies of inconsiderate building-committees. Indeed, the whole design should from the outset be made with a certain material and a certain color-treatment in view. The fact that the color-scheme may seriously affect the apparent proportions of the building is often overlooked.

Whether the color of a building should be natural or applied, will necessarily depend largely on circumstance and on climatic consideration. The climate indeed, and the kind of light it brings with it, is of the utmost importance as a determining influence in the color-scheme. In our climate there can be no doubt that we should depend for our color largely on the natural colors of materials, applied color and rich decoration being confined to porches and loggias, as has been so effectively and, for the most part, so beautifully done in the World's Fair Buildings.

Another principle too often overlooked is that, as Ruskin has pointed out, a certain mystery is necessary to perfect beauty and delightfulness of color. There must be constant change. The eye must be continually confused. Anything like mechanical regularity inevitably injures the effect. Thus in using stones of different colors in the decoration of a building in bands or patterns, one color should be allowed to run over somewhat into another. Thus in decorating a wall with bands of color—say red and white marble, for instance—let occasional white stones find their way into the red bands and occasional red stones into the white. In the same way in using diaper patterns, let the pattern be broken by allowing the ground color to run into the bands, that is, let the bands occasionally disappear. This treatment will often be noticed in old English and Dutch brick diapers and can be seen in the front of the Ducal Palace at Venice. Or if bright-colored stones are used between the brackets of a cornice over a dull-colored wall, as at the Palazzo Pubblico at Perugia, let some of the spaces between the brackets be filled with the wall color. In all these cases care must be taken not to lose the pattern; the eye must always unconsciously complete it.

Another principle seems to be that the contrast between two colors, used in anything like equal quantities, and either in large masses or pervading a whole design, must never be great. They must harmonize, as dull red and brown, greenish or purplish blue and gray. The vivid and strongly contrasting colors must only be used in small points to give value to the whole composition, and on the judicious use of these small points of bright color will depend the brilliancy and beauty of the whole. A single point of color may change a whole color-scheme, may ruin it or may give it just what it lacked. Thus a point of light red may make a gray wall look blue by contrast, or it may make a brownish-gray look red by sympathy. The effect of the stronger colors in changing the apparent color of duller hues placed near them is a matter always to be carefully considered, and is one of the things which makes color-composition so difficult if not guided by that unerring instinct we speak of as "a strong color-sense."

The marking of jamb-stones and quoins has already been spoken of as a thing to be avoided. Jambs and corners are essentially part of the wall, and should not receive a different color-treatment. In general, the common practice with us of making the trimmings uniformly of one color and the rest of the work uniformly another is rarely effective and is generally a thoughtless or indolent subterfuge to avoid the serious study of color-treatment, or to disguise inability to handle it. There can be no such rule-of-thumb for arranging the color of a building. It must always be a matter of feeling and of separate feeling in each case. But feeling always, rather than thought. Good color can never be worked out like a mathematical problem.

Of late the perfecting of enamelling of terra-cotta and the richness of color obtainable in blocks of all sizes in this material, opens a new and rich field for color design. But it comes with danger in one hand, though with promise in the other, and its rich possibilities will need to be used with reserve and caution if they are to lead to success.

The safe rule is, if you are a colorist, use color freely—indeed you cannot help doing so when opportunity occurs. If you are not, have as little to do with it as may be.

THE GREAT EXHIBITION REVIEWED.¹—IV.

THE FUTURE OF JACKSON PARK.

THE World's Fair of 1893 has made the name of Jackson Park to be known throughout the civilized globe. On January 1, 1894, by contract with the World's Columbian Exposition it will again be thrown open to the public. But the people of Chicago, who own it will find it something very different from what it was when it was given for the use of the greatest of World's Fairs in 1891. Then it was one of their pleasure-grounds and their favorite picnic-ground. It is not generally known outside of Chicago by the millions who have visited it during the present year, what it was before the Great Fair. Neither do they know what is meant by a Chicago picnic. Many have been led to believe that the whole area was a barren waste which has been reclaimed by the experts in science and art of the World's Fair to prepare it for the erection of a temporary city. It comprises an acreage of about 600 acres, or nearly a square mile, of which, however, eighty acres at the north and narrowest end had been completely improved as a public park for many years. The east frontage on Lake Michigan was finished with a beach paved with block stone, which had been found to be the only material that could resist the incursions of the lake in stormy weather. Inside of this was a broad concrete paved promenade, and inside of the latter a broad macadamized driveway. Previous to turning over the park to the Exhibition it had been decided by the Commissioners to continue this beach, promenade and driveway to the south end of the grounds more than a mile in length with such inlets to the water-ways of the park as the general plans indicated. It was part of the agreement between the Park Commissioners and the Exhibition that this water-front treatment should be carried out without interruption, and the Commissioners completed the improvement in ample time for the erection of the Exhibition buildings. So when these are removed the people will find a new and magnificent promenade on the lake front, which they have only known as part of the exhibition. But they will find their favorite picnic-ground almost ruined; whether to be used as before or not remains to be seen; for custom regulates these things. During several years before the World's Fair period the urban picnic had grown to be a prominent feature of city life during summer months. The parks gave the people facilities for this sort of amusement wherein the expense and annoyances of rides to any distance by car or boat were avoided. The Commissioners of all the parks encouraged them, and it has been to the credit of the liberal management of all the parks that the public have always had the freedom of the lawns, a freedom they have not abused. In fact the Chicago parks have always had the best lawns of any parks in this country notwithstanding their liberal use. The picnic has been one of the features of city life in summer-time and has always taken on an *al fresco* character, and has become so common as to be unnoticeable—for frequently a dozen picnics have been seen on the same green, ranging from the family affair of father, mother and children,

¹ Continued from No. 930, page 34.

to the more elaborate festival of some Sunday-school or charitable society.

It has been noticeable that during the past summer the usual number of picnics in Washington and the other parks has diminished, and it is fair to presume that the greater attraction of the Fair for those who have had leisure hours has been the cause of this. Whether or not, as a consequence, the people being now accustomed to more exciting recreations, those of a more quiet nature will fall into decline, remains to be seen. It would be a result to be deplored if they should. It is, therefore, desirable that the Park Commissioners should do all that is possible to restore to the people their playgrounds which have always been most in favor at Jackson Park, where they could enjoy the breezes of the great lake that they like so much to look at, even though they have little affection for it as a field for sailing. The coolness of the lake-shore in summer in contrast with the heat of the interior country will always be an inducement to Chicago people to stay at home as well as to others to visit it, while those of other cities fly to the hills or sea-shore. Our park-system, especially as shown in Lincoln and Jackson Parks is calculated to encourage this; and Jackson Park will hereafter be the objective point of every visitor to Chicago, if not to find some visible trace of the great Exhibition, at least to see the spot where its glories were unfolded. It is, therefore, desirable that it should retain such reminiscences of the great event as will not curtail the use for which it was always intended. To make clear how this may be done, a brief description of what it was may be appropriate.

Jackson Park is the terminal point for all who drive through the South Park System, and is now reached also by the best methods of transportation in the world. The Midway Plaisance has always been one of the routes to it, and the favorite one for those who drive. After going the rounds of Washington Park, those who ride used to go east on 60th Street along the north side of the Midway to Woodlawn Avenue, then by a road with four curves across the Midway to 59th Street and east on 59th Street to Jackson Park. This was the only way to reach it from Washington Park. But hereafter the driveway between the two parks will be the broad road built by the Exposition through the centre of the Midway. According to the plans adopted by the Commissioners twenty years ago, this was to have been a water-way; but it is hardly likely that they will throw away such a valuable improvement when no other connecting park road now exists. The Midway will be as now a street, and some means of improving the frontages must be devised. Lawns, paths, trees and flower-beds will cover the ground now occupied by many buildings which are hideous by themselves. It will be a continuous park, between two streets. The centre road will be devoted only to pleasure driving, while the street roadways will be relegated to business purposes. With the Midway buildings removed, and the fences torn down it will be found that already many fine buildings have frontages on this new park boulevard, where none were before. Some permanent hotels and many fine apartment-houses have come into existence on these streets while the Fair has been in a formative condition. The new Chicago University which will eventually occupy two blocks on the north side has begun its existence contemporaneously with the Fair, and already has several buildings of dignified and artistic design completed.

Two years ago the Midway was unused ground, half covered with a native grove of dwarf oaks, half with an abandoned nursery, and only crossed at one place by a primitive road. It will come out from the Fair with more improvements within and without than any other part of it and will always be as it was named twenty-five years ago by Mr. Olmsted, the true and permanent "Midway Plaisance," for the free enjoyment of the people who own it. The only structures of a permanent nature that have been erected on it during the Fair are the buildings of the German Village. Some of these are worthy to be retained as examples of old German architecture.

When on January 1, 1894, the World's Columbian Exposition will no longer be able to exclude the public from the main park, and the fence shall have been taken down the people will still find very much there. By the terms of the contract the north eighty acres, comprising all of the former improved part with its woods and lawns, must be cleared of buildings and the grounds restored to their original condition by May 1, 1894. Many buildings will still be standing by January 1, and some will probably remain until close to May 1, if the winter should be severe. The surface of the ground on this part has been very little changed from the old plan, and most of the roads are the same that they were before. The principal change has been the opening of a straight avenue to the lake on the prolongation of 57th Street, sometimes called the mall, which is not in harmony with the serpentine arrangement of the roads generally. But it has been planted with very good shade trees which have had two years' growth, and forms a short cut to the lake shore, which is one of the park's greatest attractions. If any part of the Fine Arts Building is preserved this road will have to remain.

With regard to the disposition or future use of the buildings on these eighty acres, nothing has been decided between the parties in interest up to the present time, except that a few of the State Building have been sold for removal. As the Exposition is held responsible for having all removed before May 1, it cannot be said to have any interest in having any of them remain. The only interested parties are the people who own the park and the Commissioners

who are their trustees. What is there then that may be worth retaining as park improvements for the use of the people? It does not matter now by what means or on what conditions they may be retained; that is a business matter to be decided by the people's trustees. But if there is anything of a permanent character of artistic value, appropriate to a public park and properly located to harmonize with the design of the park, in this or any part of the grounds, it ought to be retained, if possible. If not retained it must necessarily be destroyed, and its value almost if not totally sacrificed.

The largest number of the buildings are frame covered with staff and plaster; and it is safe to assume that not being of a permanent character they must go. Of this class are the New York State Building and the California State Building, which are architecturally and structurally the best in the northern section. The former has been offered as a gift to a commission of women to aid in preserving the record of woman's work at the exhibition—a very worthy object. But no consent of the Park Commissioners has been asked or given for its remaining where it is. Before this is done it will be well to consider how it will look if isolated from surrounding structures. It does not range with the centre of the Art Palace or group with it in any way. It is too high for a park building and would look much higher than it now does when the surrounding buildings are removed. It could never assimilate with the park scenery under any circumstances and only looks well as part of a long street frontage.

The California Building has been offered to the Columbian Museum for its anthropological and ethnological collections. It would be less injurious to the rest of the park should it remain for a time, if all other buildings were removed. Running along the west boundary 435 feet, it is very much as if outside of its limits, for it terminates and forms a background to the landscape on that side. It is itself part of an historical and archaeological exhibit, being a correct illustration of early Hispano-American architecture. For practical purposes its main entrance would be from Stony Island Avenue after the fence is removed. It would stand as long as its underground work is free from decay, and as the first coat of plaster on it is cement, it can easily be kept in repair.

There are some buildings which are apparently of permanent materials, but are really veneered on a wooden frame. Such are those of Wisconsin, Pennsylvania, Maine and New Hampshire. They are therefore to be classed with the rest and cannot remain as permanent buildings.

There remain the buildings of Idaho, Ceylon, Norway, Germany and England. All of these are constructed of permanent materials and are as substantial in their character as buildings of their class erected anywhere for permanence. If it is supposed that all others have been removed from the north end these will be found to be located just where they might be placed as park adornments. All are harmonious in color with the natural landscape and all are architectural exhibits that would pass critical judgment. That of Idaho may be too elaborate for a frontier cabin, but it shows how architectural effect can be obtained from crude materials, artistically used. It is also located in a naturally wooded part of the park. The Ceylon Building both in workmanship and design is such as we may never have an opportunity to see again and should be part of a Museum of Architecture. It is not only an exquisite example of the decorative work of old Ceylon by native workmen but a complete forestry exhibit from that island. It is little known that satinwood is the principal material for the outer weathering and that teak and ebony enter into its construction. The building is low and is well covered by trees on the west side, while its east side gives diversity to the water frontage. The interior is without parallel for richness and elaboration.

The building of Norway is one of the most interesting wooden structures on the ground. The workmanship and woods are all from that country and it is not only a complete illustration of the old wooden architecture of Scandinavia, but a fair specimen of workmanship and design. It is one of those objects that are generally passed without notice except by those who are especially interested in them as it is almost concealed from points of view by trees.

The German Building has been described in this journal and it is too well known to require detailed comment. It is, in brief, an epitome of German Architecture of the fifteenth and sixteenth centuries by one of its greatest modern masters, and was designed and built for the place it occupies. If not presented to the people of Chicago by the German Government it ought to be purchased for what is fair to give for it under the circumstances. It is due to the part taken in the settling and development of Chicago by its citizens of German birth that this building should remain as long as it will stand as a reminder to them of the good old days of their Fatherland. It could be devoted to the purposes of a restaurant, which has always been greatly needed in Jackson Park. The chapel part, which was erected for the display of church furnishings would be an appropriate place to hold such souvenirs as are appropriate to express the friendly relations existing between Germany and the United States, under the care of the Columbian Museum.

The British Building stands in the same category as that of Germany and might be used for a similar purpose. These two are both appropriate souvenirs of the exhibition, and may be monuments of our fraternal relations with those countries. It is unfortunate that France did not also erect a permanent structure. That which it has built would be too near to Ceylon to form a park improvement,

even if it were substantially built. It is only from the beach that it seems to assimilate with the landscape. From this point only the beauty of its willow court can be seen. Its unsubstantial construction is of course an insuperable objection to its being saved.

There remains to consider only the Fine Arts Palace, which is the only exhibition building in the improved part. As under the contract it must be removed before May next its fate will soon have to be decided. There are strong æsthetic reasons why it should not remain as a whole. Its great length is such that it almost cuts the park in two and destroys some of its best vistas. Should the Columbian Museum secure control of it the whole building would doubtless be needed; but this would be at too great a sacrifice of the people's park. The main building is a complete design without the wings and its appearance would be improved by their removal. Considered as a work of art the remaining part would be the main exhibit of an architectural museum and in its details, carefully studied from the best remains of Greek architecture, it would be a reference-book for all architectural students. One white building would not do violence but, by contrast with its surroundings, would heighten the effect of the landscape. This building is seen at its best from the south side where, supplemented by architectural terraces, it rises from the water of the North Pond. If retained a certain expense would be entailed in preserving its exterior from decay. But the result would well warrant the cost, which would not be great for many years to come. In course of time the exterior could be renewed gradually in more permanent materials attached to the brick walls.

The Columbian Museum, if located in Jackson Park at all, can only be placed in the north end where it is immediately accessible to the people by reason of the nearness of public conveyances. For the south end will soon be deprived of all transportation facilities, and for a year to come will only be a scene of destruction.

Should the Commissioners have no use for such buildings as those of Ceylon, Germany and Great Britain they could all form part of the Museum, as there will be collections for which they would be more appropriate than the Art Palace. With these and the California Building—the shelter-house on the lake shore, that was designed by Mr. Root being restored to its original use—the park can revert to the people with the opening of the buds in May, rejuvenated and adorned as it never was before. In such condition it will be the best memorial of the Great Exhibition.

At the south end the destruction will go on until there remains a much larger area only improved by engineering works. The lagoon and the Wooded Island will be the only addition to the present landscape improvements. If the Park Commissioners desire the Horticultural Building or any part of it they can have it. No others in this section are of such a permanent nature that any one could wish to retain them.

The Convent of La Rabida might be retained as an historical and archeological curiosity. The Administration Building will probably stand until the others are removed so that it can be seen from all points of view. The architectural revetments of the Grand Basin and Canal will soon fall into decay and will not be worth keeping in repair. The iron bridges built on wooden piles may be stripped of their plaster mask and kept for useful purposes until they can be permanently decorated. The Statue of the Republic is well covered with gold leaf and will endure the elements for many years to come.

There only remain two monumental structures which with propriety can stand for a time as memorials of the Exposition. These are the Columbus Arch at the entrance to the Grand Basin and the Obelisk supported by lions at the south end of the Canal. Both of these monuments are worthy of being re-built in permanent stone and should stand as temporary models and be kept in repair until this can be done. Then the history that has been made can be recorded in unfaceable letters on the four sides of the Obelisk, when the World's Columbian Exposition of 1893 will be only a memory and Jackson Park will be mainly known as its former abiding place.

P. B. WIGHT.

[To be continued.]



NINTH ANNUAL EXHIBITION OF THE ARCHITECTURAL LEAGUE OF NEW YORK.

THE Ninth Annual Exhibition of the Architectural League of New York, will be held at the American Fine Arts Society's Building, 215 West 57th Street, New York City; from Monday, December 18, 1893 to Tuesday, January 9, 1894, inclusive.

The Exhibition will include:—Architectural Designs embodied in Plans, Elevations and Sections and shown in Perspective; Finished Detailed Working-drawings; Designs for Decoration, Furniture and allied work; Cartoons for Stained-glass; Full-size Working-drawings for Ornament, Models of executed or proposed work; Completed work such as Carvings in Stone or Wood, Bronze, Wrought-iron, Mosaic, Glass, Textile Fabrics and Furniture; Sketches, Drawings and Paintings of Architectural or Decorative Subjects.

Photographs will be admitted only when they serve to elucidate an accepted exhibit.

It is especially requested, that all perspective drawings of architectural subjects shall be accompanied by plans drawn to a small scale.

Exhibits will be received at the Fine Arts Society's Building on and after Wednesday, December 6; none can be received after Tuesday, December 12.

The League will collect and return, free of charge to exhibitors, in New York City, Philadelphia and Boston, all exhibits that have been properly entered; all others must be delivered at the Fine Arts Society's Building, carriage prepaid and ready for exhibition.

The private views for exhibitors, the press and members of the Architectural League will be given on Friday, December 15, from 10 A. M., to 4 P. M.

Collections will be made as follows:—In New York City on Thursday, Friday and Saturday, December 7, 8 and 9, by W. S. Budworth & Son, No. 1 West 14th Street.

In Boston, on Wednesday and Thursday, December 6 and 7, by Williams & Everett, No. 190 Boylston Street.

In Philadelphia, on Wednesday and Thursday, December 6 and 7, by Isaiah Price, No. 10 South 18th Street.

No work will be sent for unless the entry for it has been received by the Secretary, Mr. Charles I. Berg, No. 10 West 23d Street.

All exhibits must be properly labelled.

Drawings must be either framed or mounted.

Exhibits of non-resident members are to be sent to a consignee in New York, who will deliver them at the Fine Arts Society's Buildings, and return them to the exhibitor at the close of the Exhibition.

The names of such consignees are:—William S. Budworth & Son, No. 1 West 14th Street; Thomas A. Wilmurt, 54 East 13th Street; J. Harrison Mills, 147 East 23d Street.

The Committee on Exhibitions will be the jury for the selection and arrangement of all exhibits.

For the Committee on Exhibitions,

WILLIAM B. TUTHILL,

Chairman Sub-Committee on Architecture.

COMMITTEE ON EXHIBITIONS.

GEORGE B. POST, *Chairman Ex-Officio.*

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F. S. LAMB, *Chairman.*

} Sub-Committee
on
Decoration.

SEVENTH ANNUAL COMPETITION FOR THE GOLD AND SILVER MEDALS OF THE ARCHITECTURAL LEAGUE, IN CONNECTION WITH NINTH ANNUAL EXHIBITION OF THE ARCHITECTURAL LEAGUE OF NEW YORK.

Conditions.—1. The competitors must be residents of the United States, and under the age of twenty-five.

2. The drawings shall be made in conformity with the following programme, and entirely by the hands of the competitor.

The awards will be made under the direction of the Committee on Competition and Awards.

The successful drawings, and such others as may be thought worthy, will be hung at the Exhibition, the first and second prize drawings being so indicated, and these latter shall become the property of the League.

PROGRAMME.

"A Village Church in the Colonial Style."

The church is supposed to stand some distance back from a village street, with terrace approaches. A belfry is to be a feature of the design.

The interior of the church is to have a gallery across the front wall with vestibules beneath.

Only the front of the church with the necessary entrance and vestibule is to be shown. In a general way the materials of construction are to be noted on the elevation.

The drawings will be placed on two sheets, each 24" x 36", one sheet containing a section and elevation to scale of one-eighth inch to foot, and a plan to scale of one-sixteenth inch to foot; the other sheet a perspective view.

Each sheet must be distinguished by a motto or cipher. A sealed envelope bearing the same motto or cipher must contain the name, full address, place and date of birth of the author, and must be mailed to the Committee on Competition and Awards of the Architectural League, No. 215 West 57th Street, New York, on or before December 5, 1893.

Drawings are to be delivered flat, carriage paid, at the same place. They will be returned at the close of the Exhibition at the expense of the contributor.

GEORGE L. HEINS, *Chairman,*

ERRICK K. ROSSITER,

EDWARD H. KENDALL,

JOHN DU FAIS,

FRANCIS C. JONES,

} The Committee
on
Competitions
and Awards.



[Contributors of drawings are requested to send also plans and a full and adequate description of the buildings, including a statement of cost.]

DINING-ROOM OF THE UNIVERSITY CLUB, SAN FRANCISCO, CAL.
MR. A. PAGE BROWN, ARCHITECT, SAN FRANCISCO, CAL.

[Heliochrome, issued with the International and Imperial Editions only.]

THE PERISTYLE AND COLUMBUS ARCH, JACKSON PARK, CHICAGO, ILL.
MR. CHARLES B. ATWOOD, ARCHITECT.

APARTMENT-HOUSE FOR MESSRS. MCGREENERY BROS., BOSTON, MASS.
MR. PATRICK A. TRACY, ARCHITECT, BOSTON, MASS.

CUPOLA ON THE OLD SOUTH STREET MARKET, PHILADELPHIA, PA.

TANK AND GREENHOUSE FOR B. S. BARNES, ESQ., ST. LOUIS, MO.
MR. A. BLAIR RIDINGTON, ARCHITECT, ST. LOUIS, MO.

TWO PAVILIONS IN FOREST PARK, ST. LOUIS, MO. MESSRS.
KAMES & YOUNG, ARCHITECTS, ST. LOUIS, MO.

[Additional Illustrations in the International Edition.]

HOTEL DE LA PREFECTURE, LYONS, FRANCE

THIS important structure lies between the Cour de la Liberté and the Rues Pierre Corneille, Bonnell and Servient, occupying a total area of about 22,000 square metres for the site, while the building itself, including the interior court-yards, measures about 6,000 square metres. The building was begun under the direction of M. Antonin Louvier, the late architect-in-chief of the Department of the Rhone, and corresponding member of the Institute. At his death, which took place in June, 1892, M. Louis Rognat, his assistant and son-in-law, succeeded to the charge of the work.

This plate is copied from *La Semaine des Constructeurs*.

THE CHÂTEAU DE MARTINVILLE, EPREVILLE, FRANCE.

ANOTHER view of this château, which is here copied from *L'Art*, was published in the *American Architect* for May 14, 1892.

THE KAUFHAUS, FREIBURG IN BREISGAU.

This plate, copied from *Zeitschrift für Baugesen*, represents a building used for a market on the lower floor while the upper story contained a hall devoted to municipal festival occasions. It dates in part from 1432. The exterior is decorated in color and low relief memorial escutcheons, etc. The four statues, also colored, represent the Emperor Maximilian I, his son Philip I, of Spain and his grandson the Emperor Charles V and Ferdinand I.

TWO INTERIORS OF A TYROLESE CASTLE. HERREN ZAAR & VAHL, ARCHITECTS.

This plate is copied from *Architektonische Rundschau*.

PULPIT IN HOLY TRINITY, CHELSEA, ENG. J. D. SEDDING, ARCHITECT.

This plate is copied from the *British Architect*.

THE HOSPITAL OF ST. ELIZABETH, AMSTERDAM, HOLLAND.

This hospital, intended for incurables, is divided into four classes, corresponding to four categories of patients, varying between those who can contribute a considerable sum toward their own support and those unfortunates who are admitted without charge. The institution is under the charge of the regents of the Catholic orphan asylum for young girls, called *Maison des Vierges*. It is to contain 450 beds eventually, although only one-third of this number are at present placed at the disposal of the sick, but a sisterhood of thirty-two nuns is already in charge. The building contains only a basement, a ground floor and first story, and the whole central portion is devoted to the general service of administration, kitchen, chapel and the common rooms. The first two classes of sick are lodged in the buildings at the right; those upon the left are reserved for patients of the fourth class, while in the first story over the entrance are placed those belonging to the third class. In the basement, which is of considerable importance, are the cellars, the store-rooms, the arrangements for disinfection and the steam-heating apparatus. On the ground floor, which is raised about four feet above the sidewalk, is (at O) a ward for twenty patients, with bath-room (P), between the water-closets and the nurse's room, and at (N) is the consulting-

room of the regents, while the other rooms are those for waiting and for the various administration services; while in other portions of the building are the refectories, the laundries, store-rooms of various kinds, the dwellings of the sisters, with cloister, chapel, mortuary, etc. The first story is particularly devoted to dormitories and private chambers. Two large courts and a central garden isolate the buildings, and give them abundance of air and light.

One of the merits of this group of buildings is that it is executed in the Dutch Renaissance style of the 17th century, and the severe character of the façade is slightly enlivened by alternation of white stones in the midst of masses of red brick. One arrangement should be noted, although not uncommon in many countries of the north, and especially in buildings of this nature. The outer windows are double, and the exterior walls between their outer and inner courses enclose an air-space, which enables them to resist extreme cold as well as too great humidity. The construction of the floors is in great part on masonry arches between iron beams, while the wards are floored with wood, though the corridors, kitchen and dependencies are flagged. American white pine, which can be had so cheaply in Holland, has been employed for all the fixed and movable furniture, while the roof is covered with Dutch tiles. Nearly 600,000 florins, or \$260,000 have been spent up to the present time in the erection of the greater portion of the building, which, with the pavilions to be erected hereafter, will call for a total outlay of about \$400,000. This plate is copied from *La Construction Moderne*.

AN ANCIENT HARBOR IMAGINED AND DRAWN BY MR. H. W. BREWER.

At the present time there does not exist, as far as I am aware, any mediæval harbor which retains all its ancient characteristics. It is true that at Lubeck, La Rochelle, St. Malo, etc., portions, or indications of the ancient arrangement may be traced; but, owing to the greatly increased size and importance of vessels of every description, the necessities of modern commerce have swept away most of the erections which rendered the mediæval ports so highly picturesque.

From ancient drawings and pictures, however, those in the "*Nuremberg Chronicle*," for instance, Aitzinger's "*De Leone Belgico*," Somern and Ravesstein's "*Brabantia*," we are enabled to restore on paper some of the picturesque arrangements of an ancient harbor.

One of the most striking features must have been the single or double archway upon which the ramparts of the town were carried across the mouth of the harbor. As a rule there would appear to have been two arches with a projecting turret between them; its outer face and that of the ramparts themselves were defended by battlements and loopholes, but the inner face presented the appearance of an open gallery of timber, covered with a slate or tile roof. The object of this treatment is obvious. If by any chance this important defensive work fell into the hands of the enemy, it was impossible for him to use it against citizens of the harbor itself.

In close proximity to this fortified entrance, and generally within it, were the water-gate and the great lifting-crane. Good examples of the former structure exist in some of our English towns, notably Norwich and Sandwich, and at Andernach on the Rhine is a fine example of a mediæval crane mounted upon its round tower. A very striking and picturesque one was destroyed a few years ago at Bamberg, which was of post-and-pan work.

The great warehouses and bonding warehouses which surrounded the harbor were themselves fortified, loop-holed and machicolated. The great tower of the principal church generally overlooked the harbor, and was, as a rule, so solidly constructed, that it was capable of serving as a kind of castle, or a place that could be defended as a last resource. Probably also these great lofty church towers, such as we see in Holland and Belgium and round the English coast, were used for purposes of signalling. The people in the Middle Ages were eminently practical in their ideas, and knew well how to make their buildings serve two, and sometimes three, different purposes; the covered galleries which form such interesting features attached to the ramparts of old German towns are, where they still exist, now used as rope-walks, and I should think it is extremely probable that this was frequently their ancient use in times of peace. I should mention, in conclusion, that the drawing which accompanies this article does not represent any particular place, but is purely a composition.

This plate is copied from the *Builder*.

WILBY HALL, NORFOLK, ENG.

This historic house, the property of Sir Hugh Reeve Beevor, Bart., is not many miles east of Thetford, and is somewhat nearer the post town of Attleborough, while the closest station is that of Eccles Road. It has for many years been let to the same family, and the present occupier is Mr. Samuel Colman, to whom we are indebted for a few notes concerning the building and its original owners. Wilby was visited during the last excursion of the London Architectural Association, and thus a tention has been drawn to this most picturesque and interesting old house, which, comparatively speaking, is one of the less-known halls of the county of Norfolk. Who the exact builder of the house was seems entirely open to question, but it is known that Colonel Robert Wilton lived there in the days of Charles I, and the hall probably belongs to the

reign of James I. Wilton's lifetime, 1599 to 1657, embraced stirring times. It is not recorded, however, whether he sided with the Cavaliers or the Roundheads, though it is inscribed on his tombstone in Wilby Church that he was a "faithful patriot and true lover of his country." He had three wives. Hannah, his first wife, died in 1635, aged 31; Susanna, his second wife, died in 1643, aged 34, and Bridget, his last wife, died in 1652, aged 32. On one of the attic windows of Wilby Hall is the name of "Elizabeth —, 1649," the year of the execution of King Charles I, and on another quarry pane appears a Latin inscription scratched with a diamond on the glass, which seems to read: "Alas! how can I tune my lute to a broken heart?" The lettering is almost illegible. The arms given with the title scroll on the accompanying plate are those of Robert Wilton, associated with those of his three wives, as copied from his tombstone. Mr. Colman writes: "As to what date Wilby Hall was built, I have no information. I have heard Sir Hugh Beevor's grandfather (Sir Thomas B. Beevor) say it was built by the Wilton family." The Rev. C. R. Manning, Rector of Diss and Secretary of the Norfolk and Norwich Archaeological Society, in a communication respecting the house, states that very little information is to be ascertained from printed sources, and no MS. records have yet been found relating to its history. It does not appear to be much older than the beginning of the seventeenth century. Wilby Manor is stated by Blomefield to have been in the possession of the Curson family in the fifteenth and sixteenth centuries, and in 1565 William Curson sold it to Sir Thomas Lovell, in whose family it remained till 1627, when Edward Hobart of Langley bought the property in trust. It then passed, as already stated, to the Wiltons, and was joined to the Manor of Beckhall. Doubts remain as to when the possession of the Wiltons commenced. Over the entrance doorway are the arms of the second and third wives of Robert Wilton, above referred to; but this enrichment appears to be of somewhat later date than the house itself, and, indeed, must have been so, as Susanna died in 1643. The work corresponds very closely in design with Barningham Hall, near Bickling, and Thelveton Hall, near Diss, the general design being thoroughly typical of East Anglian architecture. Sir Hugh Reeve Beevor says that the present chimneys were designed and erected when the slate roof was added by Sir T. B. Beevor in 1830. The main beam of the hall had to be braced up in 1885. The foundations are only about eighteen inches below the surface, but the structure is substantially built. The small addition to the left dates from the last century, and it is supposed that the porch originally formed the central feature in the composition of the entrance façade. The building is most charmingly located away from the road in a pretty garden surrounded by a wall, as indicated in the drawing. To the left of the Hall is a considerable group of farm buildings, and the residence is unrestored and well cared for. Our view is based upon a sketch recently taken on the spot, aided by a photograph produced for Sir Hugh Beevor, and lent us by Mr. Codman.

This plate is after a drawing by Mr. Maurice B. Adams published in *Building News*.

VICTORIA ASSIZE COURTS, BIRMINGHAM, ENG. MESSRS. ASTON WEBB & E. INGRESS BELL, ARCHITECTS.

ST. PETER'S CHURCH, STAINES, ENG. MR. GEO. H. FELLOWES PRYNNE, F. R. I. B. A.

THE above-named new church is the generous gift of Sir Edward Clarke, Q. C., late Solicitor-General. After some delay the tender for 6,000*l.* was accepted, this sum being exclusive of tower and spire. The style chosen in design is a free treatment of Perpendicular in red brick and stone. The plan shows a nave of four bays 26 feet wide by 80 feet in length, having a height of 40 feet to the apex of the wagon roof. The chancel, which is 38 feet 6 inches in length, is of the same width and height as the nave. Aisles 10 feet 6 inches wide are thrown out on north and south side of nave. A narthex is placed at the west end with western entrance. The tower, which is placed at the southwest end of south aisle, is designed in three stages, and capped with a copper-covered spire. In the lower stage on the nave-floor level a baptistery is formed. In the upper stages, which are ornamented externally with panelled work in brick and stone, are arranged the belfry and bell-ringers' floor respectively. A southern transept with separate entrance forms the nave of a small chapel on the south side of chancel. Clergy and choir-vestries and organ-chamber are placed on the north side of chancel, and passages are left on the north and south of chancel. The altar is elevated by steps from the nave-floor level, and ample space and height are left above and behind the altar for a baldachin or reredos. One of the main features of the church is the constructional rood-screen, which is carried right up into the chancel arch, the upper portion enriched with tracery. The central figure and cross are designed to be cut out of the solid stonework of the tracery, and the side figures placed on corbels formed in the panels of the tracery. The site of the church, facing as it does directly upon the River Thames, is most picturesque, but owing to the prevalence of floods the nave floor has been kept higher than the level of any known flood.

The illustration of the interior is from a drawing which was exhibited in the Royal Academy this year.

PRAGUE. AFTER A DRAWING BY SAMUEL PROUT.

OFFICIAL PRAISE OF THE WORLD'S FAIR BUILDINGS.

THE great, one might almost say the absolute, meritoriousness of the work accomplished by American architects in the architectural treatment of the World's Fair buildings, and the cordiality and unanimity with which foreign and native critics of rank have expressed themselves on this head—certain reservations of course being understood—have deprived official speeches and utterances of various kinds of that purely perfunctory character which under ordinary circumstances one would naturally assume to be the true one.

We believe that praise has never been more honestly won by artists or more cheerfully and truthfully accorded to them than in the case of the artists of the World's Fair, and, coming from the quarter it does, few words of praise can have given more satisfaction than those which Herr Kyllmann, member of the International Jury on Architecture, has recently addressed to Mr. Burnham.

MR. BURNHAM:—

My international colleagues, members of the Board which has been appointed to pass judgment upon the merits of the architectural works exhibited at the World's Columbian Exposition, have honored me by offering me the chair of their worthy body—the greatest honor, perhaps, that has ever been allotted me during my entire lifetime. For it is my firm belief that there is hardly a branch of this Jury of Awards, the importance of which is equal to that of the Department which has had the distinction of being entrusted with examining the products which to the World's Columbian Exposition of 1893 have given its peculiar stamp, whereby it is distinguished from all former World's Expositions—I refer to its grand, noble, magnificent, majestic architecture, so characteristic and typical of American art at the close of this present century. We European architects came here with high expectations, expectations which, nevertheless, are vastly surpassed and outdone by what has presented itself here before our very eyes. Neither the days of antiquity, nor modern times have witnessed a work of such architectural grandeur. The mighty rulers of Assyria or Egypt, the emperors of Byzantium or Rome, Charlemagne or Emperor Napoleon have in vain endeavored to enhance their fame by architectural monuments of such beauty, boldness and dimensions, grouped in the most wonderful combinations, as those that are here to-day liberally offered to the American people and its hosts of guests. Permit me, dear Mr. Burnham, to tender you, as well as your colleagues, to whose genius, admirable endurance and enviable cooperation we are indebted for this triumph of architecture, our most sincere and collegial congratulations. Aside from the medals we have adjudicated to the various buildings and their talented authors hailing from all the civilized countries of the world, we beg to be permitted to confer the same distinction upon the artist who has been at the head of the entire work at Jackson Park, and to whom is due such an eminent share in the success of the glorious enterprise.

(Signed) W. KYLLMANN, Kgl. Baurath, Berlin.



[The editors cannot pay attention to demands of correspondents who forget to give their names and addresses as guaranty of good faith; nor do they hold themselves responsible for opinions expressed by their correspondents.]

A DISPUTE WITH A CHURCH BUILDING-COMMITTEE.

TO THE EDITORS OF THE AMERICAN ARCHITECT:—

Dear Sirs,—I have been forced to consult you in order that I might know the proper course to pursue under the following circumstances, and sincerely trust that I shall receive your valuable opinion thereon at the earliest possible moment.

Several months ago I was consulted by a building-committee, appointed from the board of directors of a certain church congregation in Philadelphia. Their idea at that time was to erect upon their lately purchased lot a chapel, to be used at the same time for Sunday-school purposes, at a cost not exceeding twelve thousand (\$12,000) dollars.

At a second meeting of the board at which time this matter was discussed, the president presented the suggestions of another architect. As this was the first intimation I had that there was any indication of a competition, I inquired of the chairman of the building-committee what I might understand by this, and was assured that, although it was the desire of the president to have a friend of his employed for this work, yet it was by the unanimous desire of the building-committee that I had been selected as their architect (although no formal contract was signed), and they assured the board in my presence that, although the suggestions that I had up to that time presented did not entirely fulfil their requirements or ideas, yet they felt satisfied that they could get by a sufficient study what was needed.

I should here state that instead of erecting a chapel on the rear of the lot with the intention of building their church proper in front at some future period, as is frequently done in city work, some suggested,

myself among the number, the advisability of building this same edifice possibly more decorative externally, but on the front of their lot, and upon these suggestions we began our working-drawings.

After several meetings of the board for the purpose of discussing these drawings in detail, it became apparent to all concerned that it was almost impossible to erect a building in this position, that would adapt itself successfully to a chapel and a Sunday-school at the same time, so that it was fortunately decided to abandon any consideration of the portion to be built as adaptable to a Sunday-school, but to consider the possibility of building the front of the church proper, although they were aware it would cost much more money than they originally intended spending. We then took our drawings at this stage and remodelled them, at the same time designing at eighth-scale the floor-plan of the entire structure with front and side elevations.

After considerable estimating, which determined the necessity of some changes in materials to be used, thereby reducing the cost, our drawings were formally approved and a contract authorized with a firm (one of whom happened to be a member of the Board of Trustees, and up to that time a member of the building-committee) for a portion of this building upon which we had received estimates; the contract price being twenty-one thousand and sixty-one (\$21,061) dollars. The contract stating that all work was to be erected in accordance with our drawings and specifications and under our superintendence, and particularly that any changes, whether additions or deductions, were not to be made without the architect's regular order and his computation or approval of the amount of money involved.

After this contract was authorized, I was asked at a meeting of the board, by the president, (although the chairman of the building-committee knew before I was consulted), what my commission would be on the work under contract; it being their object at that time to compute the amount necessary to pay all additional charges in connection with the operation and the cost of memorial windows, furnishings, etc. At this same meeting the builder absolutely refused to execute the contract if I superintended the work and I advised a member of the building-committee to relieve me of this portion of my duties (having explained that the superintendence would represent 1½ per cent of the commission). After some discussion however, it was the unanimous desire of the board that I should superintend their work, the result of which has been a great amount of ill feeling and controversy.

The owners of their own accord have made many changes in the work; two of which (that is, the color of the brick and terra-cotta) seriously affect the building architecturally, and in many other ways have ignored my opinion and advice. At this stage they not only assured me I have no claim on them as to the ultimate completion of the entire structure, but cannot expect remuneration over and above the five per cent on the contract.

Of my own accord a perspective of the building has been made for the purpose of studying the composition, and was finally rendered in water-color for reproduction, at the same time I furnished them with plans showing not only the portion under contract at this time, but the entire structure as it will appear when completed, in order solely to aid them in securing subscriptions. Now, because of this apparent disregard of my advice, the fact that they have not only violated methods provided by their contract (which they seem disposed to continue) that the builder has not only charged that our drawings are so incomplete and incorrect that he must stop work, but has asked for numerous full-sized details without which the work cannot be properly constructed; (it has been made clear to the building-committee that these charges are false and I have refused to make these further drawings because the various sub-contractors have assured me that they have all they require) I have been forced to tender them my resignation as their architect; have been asked by the chairman of the building-committee to withdraw it, but because of the continued abuse have demanded its acceptance, but without avail and because of the assurance that I have no claim as their architect for the balance of this structure, have added on my bill to date a charge of one per cent on the approximate cost of the balance of the building. For some reason they do not care to accept my resignation, nor to pay any commissions beyond the five per cent on the contract.

The above is as concise and clear a statement of the case as I can possibly make and I trust you can advise me:

1. How I can force them to accept my resignation.
2. If they are liable for the one per cent on balance of building shown by my design.
3. If the builder is liable for his false statements and gross misrepresentations.

Very truly yours, TRANSEPT.

[To give a satisfactory answer to these questions would, we fear, require a knowledge of many points which could not be made clear in a letter, but we will try to state general principles, in the order in which the questions are asked.

1. We do not see how the committee can be forced to accept the resignation of the architect. The contract of employment involves two parties, and neither can retreat from this engagement without the consent of the other.
2. Whether the committee is liable for the value of the work done in designing the possible future building depends entirely upon whether this work was done in pursuance of the committee's request. If not, the committee is not liable.
3. If the architect has done his duty skillfully and conscientiously, and

the builder has maliciously slandered him, so that the architect has thereby suffered loss of money, employment or reputation, damages to the value that a jury may set upon this loss can be recovered.

We hope that, having answered these questions, we may be excused for adding that, in our opinion, in such cases an architect would do well to spend a little time in trying to put himself, mentally, in the place of those persons whom he considers to have ill-treated him. This exercise would show him that he had no right whatever to complain of the changes in material, or even in design, made by the owners. However displeasing the result may be to him, the right of the owners to have the color of the building to suit themselves, whether it suits the architect or not, is absolute. In the same way, we think, a more just appreciation of a builder's position in such a matter might be reached. That a builder should absolutely refuse to execute a contract if a certain architect were to superintend the work indicates a prejudice on the builder's part too strong to be entirely assumed, and it would be only prudent for an architect to try to discover the grounds of this prejudice, and have them removed. In the present case the committee seems to have stood loyally by the architect, and with this support, and a little courage and good temper, the misunderstanding ought to have been readily explained. Probably it would not be too late for this even now.—EDS. AMERICAN ARCHITECT.]

ENGLISH VS. GERMAN PORTLAND CEMENT.

October 25, 1893.

TO THE EDITORS OF THE AMERICAN ARCHITECT:—

Dear Sirs,—Do you happen to know "*Cements et Chaux Hydrauliques*" par E. Candlot, 1891?

In corroboration of what you say about English cement, Candlot says: "The manufacture of cement in England has remained about the same as twenty years ago . . . These raw materials are of very good quality, and their regularity of composition explains how with their imperfect processes, the manufacturers of English cement can, however, deliver products which give satisfactory results." (Page 61.)

"An English engineer, M. Redgrave, said in 1880 in speaking of the superiority of German cement '*Stern*' over the best English cement, 'This result is due simply to the care and exactitude taken in the mixing of the carbonate of lime and clay, and the extreme fineness of the cement. If it were useful to prove the lamentable carelessness which reigns in the manufacture of English cement,' etc., etc." (Page 62.)

In comparing English with German manufactures, Candlot adds: "The great and rapid development of the manufacture of Portland cement in Germany is not due as in England to the exceptionally favorable quality of the raw materials, for in many of the German works the raw material is very difficult to treat. But German manufacturers have made the greatest efforts to produce a material of good quality, and to introduce in their work skillful and economical processes. They have made such a profound study of the properties and uses of cement, that it has resulted in giving to the manufacturer precise rules and to the consumer a great confidence in a product of which he knows how to appreciate all the advantages. German manufacturers have formed an association open also to foreigners. They meet at stated intervals to discuss the questions which concern the manufacture, quality of cement, etc., etc. The experiments and researches made in one manufactory equally profits all the others." (Page 64.)

I should prefer to accept the authority of Candlot than that of the *Builder*, and if the matter should be followed up further you would have a strong support to fall back on.

Yours, F. W. CHANDLER.

THE SILVER STATUES AT THE WORLD'S FAIR.

PROVIDENCE, R. I., October 23, 1893.

TO THE EDITORS OF THE AMERICAN ARCHITECT:—

Dear Sirs,—The *American Architect*, issue of 21st inst. is received this morning and we thank you for the complimentary notice of the Silver Columbus. The article, appearing as it does in comparison with the Ada Rehan Statue, the estimated value of which is so fearfully exaggerated, does us an injustice in that respect. For instance, you say the Rehan Statue weighs 1,631 pounds Troy, cost \$61,800. You can readily see that 1,631 pounds Troy is equivalent to 19,572 ounces which could not have cost over 85 cents per ounce = \$16,636.20.

Again you say the plinth is gold. You should have said "had the plinth been of pure gold it would have been of great value," but as it is gilded to represent gold, the actual value of the plinth is comparatively trifling. It is simply ridiculous to place the value of that statue at \$307,675 and the Columbus at \$40,000 or \$50,000.

The replica of the Columbus Statue in bronze is not to be presented by Mr. Clark but by the citizens.

A statue of Ebenezer Knight Dexter is to be given by Mr. Clark. It is being modelled and the model has been accepted.

Yours truly, GORHAM MFG. CO.,
J. F. P. LAWTON, Sec'y.

[We took the statements as to the Montana silver figure from the *Chicago Graphic* without analyzing them, as ought to have been done. That authority, if it can be called such, said that the plinth was of solid gold, a statement which as it concerned the exhibit of a mining State seemed not unreasonable and in a degree accounted for the great alleged total cost.—EDS. AMERICAN ARCHITECT.]





MEMORIAL ARCH OF PERISTYLE

CHARLES B. ATW



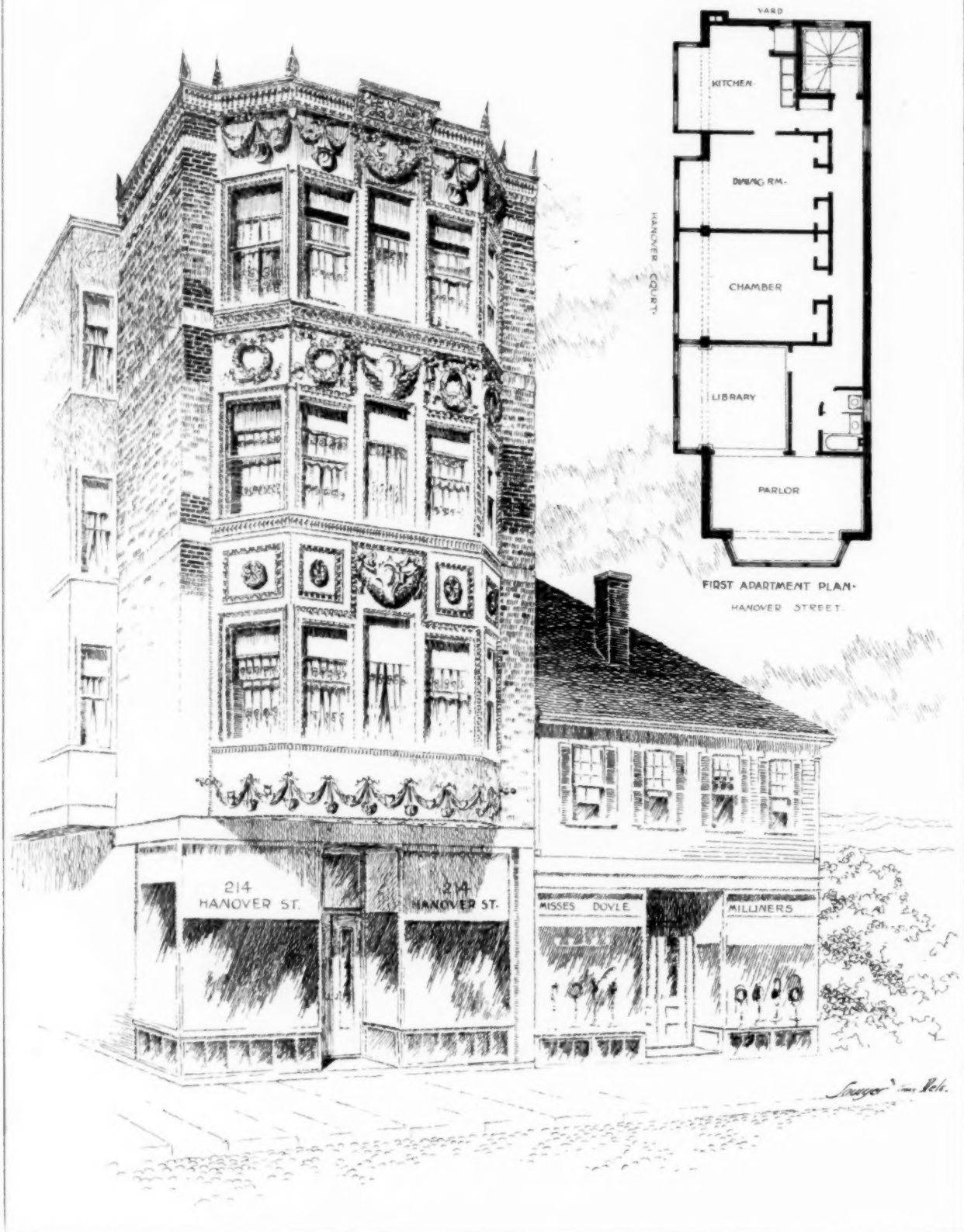
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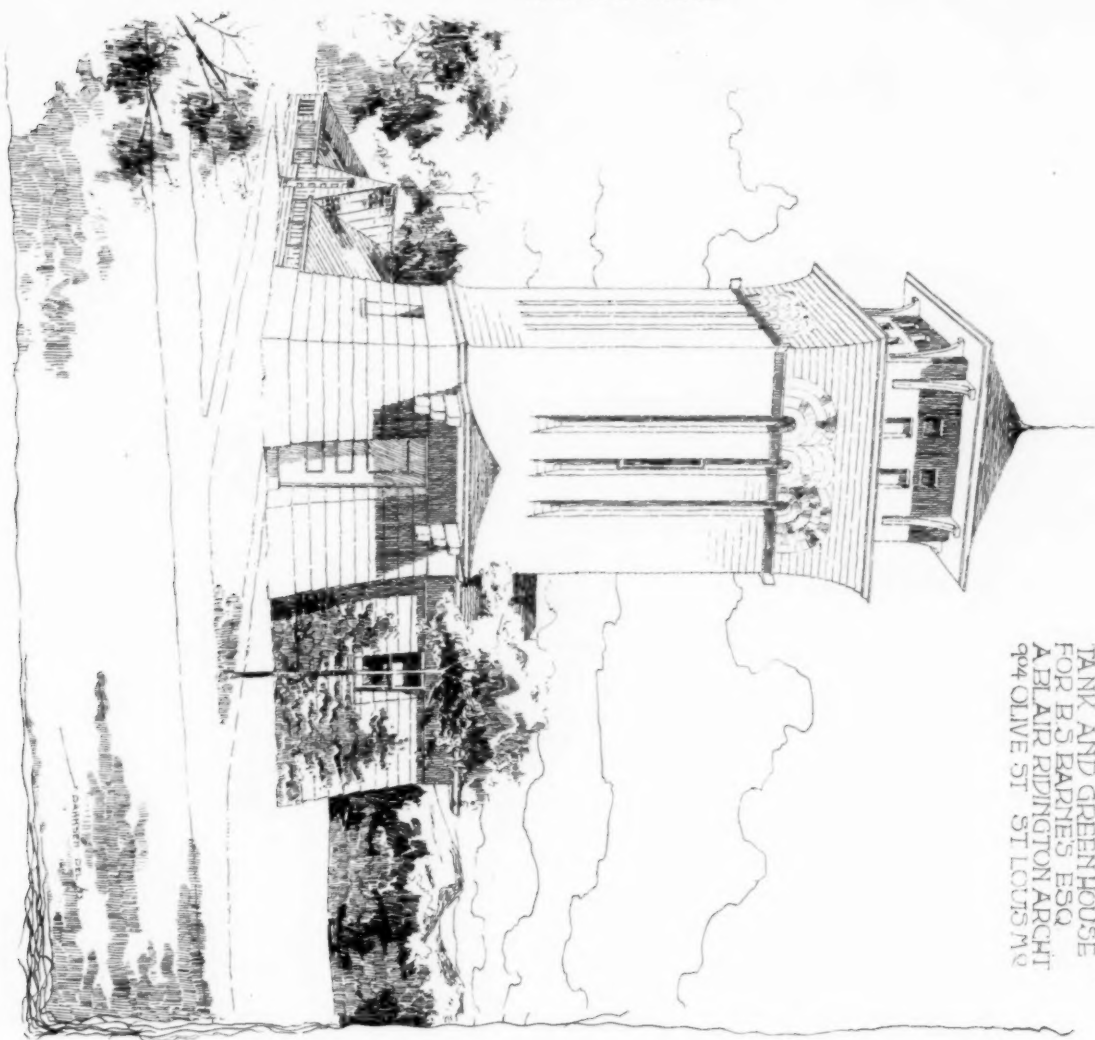
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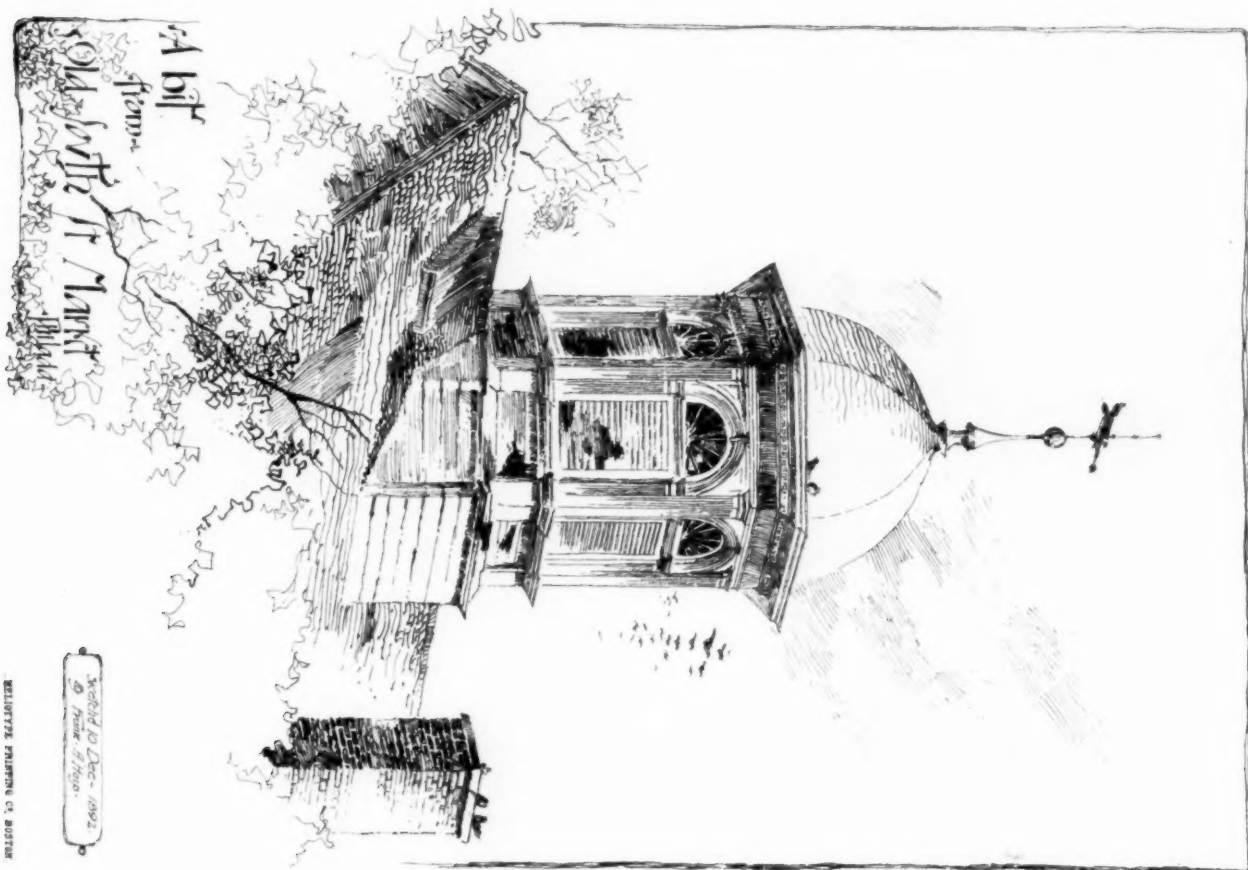
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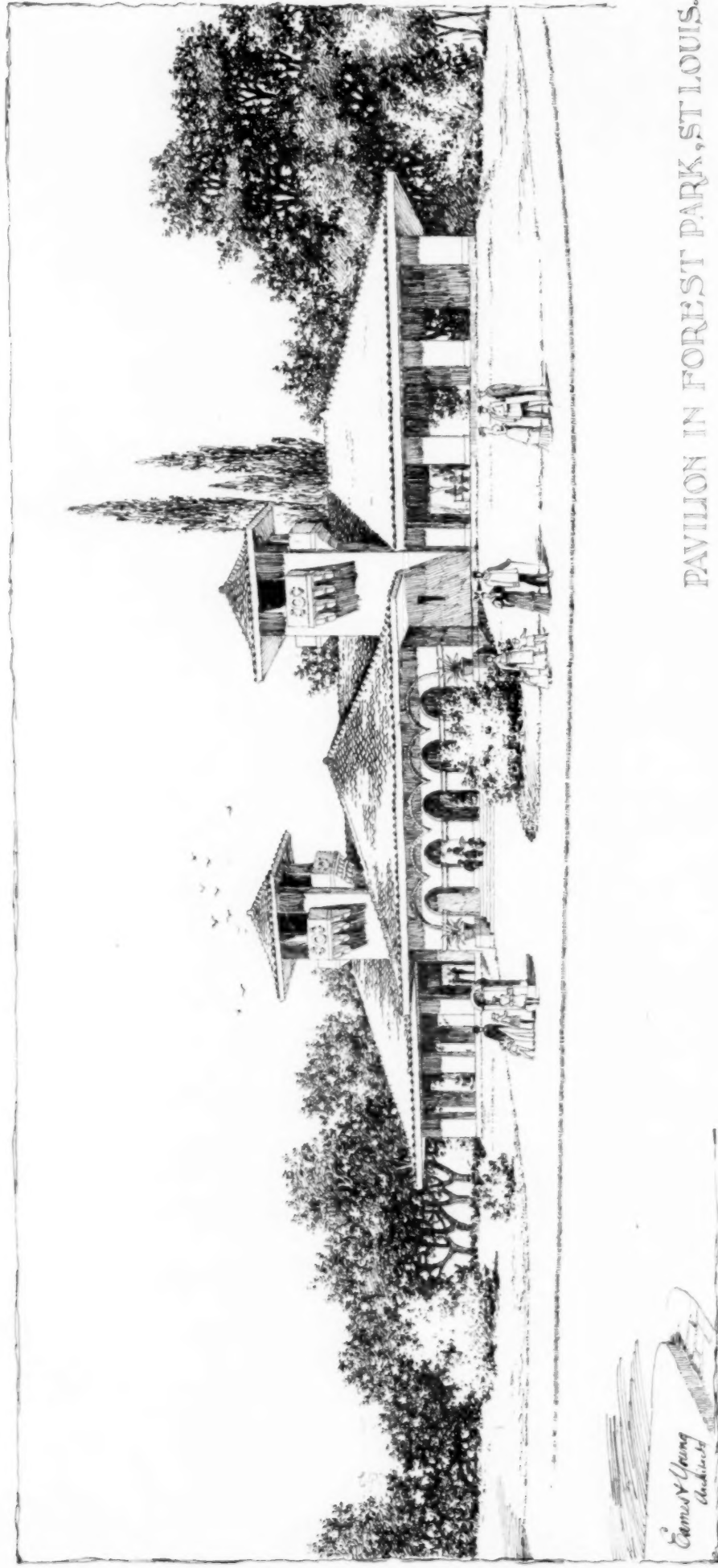


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