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MR. F. C. MOORE, the distinguished president of the Continental Insurance Company of New York, whose useful little pamphlet of suggestions for improved building, from the underwriters' point-of-view, is probably familiar to our readers, sends us, as a sort of answer to our comments on the recent great fire in Boston, a copy of the new Mercantile Schedule, for the rating of buildings for insurance in reasonable accordance with the risk, which has been prepared by a committee of underwriters, mainly, we imagine, under the lead and direction of Mr. Moore himself. It need hardly be said that the schedule is an excellent one. The idea is the same as that in accordance with which the New York insurance companies, several years ago, agreed upon a standard premium rate, and a schedule of deductions which should be made in cases where certain safeguards were provided, but it is carried, in the present case, into far greater detail. The New York agreement, as we know, had a very great influence upon the construction of mercantile buildings while it remained in operation, and there is no question that the present schedule would exert a similar influence if it should be generally adopted. It is, however, one thing to lay down judicious principles of insurance, and another to have them carried out by the companies, and, unless they are faithfully carried out, they might as well not exist, so far as effect on building is concerned. In the case of the agreement of the New York underwriters, an officer was appointed by the companies, whose business it was to examine plans of new buildings, fix the rates which would be charged, and offer suggestions, by following which the rates might be reduced, and our experience, like that, we presume, of other architects, was that the owners of the intended structure, on hearing his suggestions, immediately calculated whether the saving in insurance would be equal to interest on the cost of the proposed improvements, and, if they found that it would be, promptly ordered the change to be made.

AFTER a time, however, the Underwriters' Association fell to pieces, from causes which the insurance companies do not care to discuss, but which the outside world imagines to have consisted principally in secret underselling of each other by the members. With the collapse of the Association, the rating schedule disappeared, and owners, finding that rates were determined by the energy of brokers, and not by con-

siderations of construction, naturally left out every expense, in the way of precaution against fire, on which they could not save a fair interest in premium rates. In the case of the present schedule, if it should be generally adopted by the insurance companies, which does not appear to be yet the case, it would have to be maintained for several years before it could exercise any appreciable effect on the habits of construction of an entire city, and such maintenance we believe to be impossible. Until the insurance business is carried on under very different methods from those now prevalent, a man who has a million dollars of insurance to place, say on a stock of dry-goods, will inevitably have favors shown him, in the shape of relaxation of the rules, which will not be accorded under exactly similar circumstances to a man who wants policies for only five or ten thousand dollars; yet every one knows that the risk is proportionately much greater on the larger stock; and as the large dealer is sure to boast of the favorable rate given him, the other companies hear of it, and on the next occasion “meet” it with a still better one, until the schedule is totally neglected, and the underwriters, when the buildings, cheaply built, and still more cheaply insured, begin to burn down, are reduced to belaboring the architects as the cause of all their woes.

HOWEVER, we will not continue these gloomy prophecies, but will turn for a moment to the Standard Schedule itself. Excellent as it is, we cannot help thinking that the advice of an architect would have been of use to the committee which prepared it, not only for making new suggestions, but for criticising those made by others. For example, we find that two per cent is deducted from the standard rates where waterproof paper is laid between the upper and under flooring, while only five per cent is deducted for a floor really waterproof, inclined so as to throw off water, and provided with scuppers and waste-pipes to carry water falling on the floor immediately to the sewer. To this description should have been added a stipulation that the walls should be flashed eight or ten inches high, but this is virtually included in the idea of a waterproof floor. Now, it is, we believe, found that in city fires the damage done to stock by water is at least twice as great as that done by fire and smoke, so that a really waterproof floor is of immense value in saving goods from injury, while a floor simply laid with waterproof paper is almost valueless, for the reason that in such a floor the paper is pierced with from six to twelve nail-holes in every square foot, or twelve to twenty-four thousand in each floor of an ordinary building. As the water from the engines often stands several inches deep on the floor of a building at a fire, it would, of course, pour in showers through such “waterproofing,” while a properly constructed waterproof floor, with a sufficiency of pipes and scuppers, would not let a single drop through; yet, on a premium rate of a thousand dollars a year, the deduction for such construction would be only fifty dollars, which would not be anything like the interest on its cost, while the deduction of twenty dollars for the mere sham of waterproof paper would be sufficient to secure its use in all new constructions where the building-laws would permit it.

SOON after the death of the late President Arthur an association was formed among his friends in New York to raise funds for erecting a statue of him in the city. The money was raised and an Executive Committee of the subscribers appointed to take charge of the work. Mr. Ephraim Keyser, whose name is probably familiar to our readers, and who was the sculptor of the colossal bronze angel on President Arthur's monument at Albany, and of the De Kalb statue at Annapolis, was selected by the Executive Committee as the sculptor of the new statue, and made several sketches, one of which was approved, and a model made, nine feet high, which was cast in bronze at the Henry Bonnard foundry. It was intended by the subscribers that the statue should be erected in the Plaza Circle, at the crossing of Fifth Avenue and Fifty-ninth Street, and the monument was designed with reference to this conspicuous situation, the statue being intended to stand over the centre of a sort of semicircular *exedre*, at the ends of which were to be life-size female figures carrying lamps in their hands. On the completion of the statue, application was made to the Park Commissioners for permission to erect it in

the place intended. The Park Commissioners referred the matter to their Art Committee, which consists of Messrs. Henry G. Marquand, Thomas W. Woods, the president of the National Academy of Design, and Napoleon Le Brun, the president of the New York Chapter of the American Institute of Architects. This committee went to see the statue at the foundry, and reported to the Park Commissioners that it was, in their opinion, "not equal to the average of the sculpture in the Park"; and they declined to recommend it to the Commissioners for acceptance. In consequence of this report, the Park Commissioners refused to accept the statue; or, according to one account, suspended definite action until the parties interested had been notified of the opinion of the Art Committee.

NATURALLY, the Executive Committee of the Monument Association, and their sculptor, were somewhat disagreeably surprised at this result of their labors. Mr. Keyser seems to have received the intelligence philosophically, observing that if his statue was worse than the average of the Park sculpture, it must be pretty bad, which is certainly true; while the Executive Committee, acknowledging that they were not experts in such matters, thought that the figure was an excellent likeness, and had approved it on that account. What will be the end of the affair no one has ventured to predict. It is said that the Park Commissioners have seriously considered the advisability of collecting the worst of the rubbish among the Park sculpture, and sending it to adorn the Mott-Haven pleasure-grounds, and, while we fully agree with the care which would reserve the Plaza Circle, which will soon be the most conspicuous site for a monument in the whole city, for something worthy of it, there appears to be no reason why the Arthur monument might not be for many years the ornament and pride of a square in the annexed wards. In fact, it seems to us that it might be possible to raise the standard of sculpture in the city effectively, as well as considerably, by dividing the sites suitable for monuments into several different grades, and assigning, under the advice of the Art Committee, a position of a certain grade to any decent statue offered to the municipality. The emulation of sculptors and committees would then be excited to win assignments to the higher grades, and there would be no need of absolute rejection, with its inevitable accompaniment of a long list of disappointed subscribers with a couple of tons of old junk left on their hands, and a sculptor, deprived at a blow of his reputation and his living, "*pour encourager les autres.*"

THE marble-workers of Tennessee, Georgia and Vermont are rather indignant over the selection of Italian and other foreign marbles for the interior decoration of the new Congressional Library Building at Washington. Vermont marble to the value of about thirty thousand dollars has been contracted for, with about three thousand dollars' worth from Tennessee and five thousand dollars' worth from Georgia; but three hundred and twenty-five thousand dollars' worth has been ordered from Italy, and two hundred and seventy-five thousand dollars' worth from other foreign countries, and the Tennessee and Georgia and Vermont men claim that they could have furnished marble just as good as the foreign, and at a lower price, and they and certain newspapers protest that an unjust discrimination has been used against them.

AS this is a matter about which architects know a good deal more than the newspapers, we may say at once that if Vermont, Tennessee and Georgia can produce marbles which will compare favorably for architectural decoration with those from Italy, France, Belgium, Greece and Northern Africa, and at as low a price, architects have not yet learned the fact. That there is plenty of marble in Georgia and elsewhere which is persistently asserted to be equal or superior to the foreign stone is perfectly true; but if there is really any marble in any State in the Union which is as beautiful in color, as smooth, close-grained and even in texture, and as easily worked into large, thin sheets, as many of the foreign marbles, we have yet to see it,—and we have been looking out for a really first-class American marble for a good many years. There is a pink Georgia marble in the market, which is of a pretty color, but has a sandy, disagreeable effect in large surfaces. We have also specimens of a blue-veined Georgia

marble with the same defect, and there are various white marbles from Georgia, coarsely crystallized for the most part, and therefore undesirable for interior finish, whatever the dealers in them may say. Vermont has a most beautiful white marble, with a peculiar waxy translucency, but it is soft, and is soon ruined by stains, where the white Italian would retain its purity; and it has another grave defect, in the shape of hard particles, which do not polish down like the rest, and spoil the appearance of the surface; and there is another Vermont veined white marble, sometimes palmed off by country plumbers in place of the Italian, which has a dingy, greenish effect. So far as we know, the best American marble yet brought into the market for interior decoration is the Knoxville "dove-colored" variety, and although its color is not particularly attractive, the immense demand for it shows that a really good American stone, which can be furnished as it is wanted, is sure to make for itself a good market. We have no desire to disparage American marbles; on the contrary, we have seen many small samples of great promise, which, however, have never really come into the market, and there may be others of merit which we do not know; but, in general, the producers of American finishing marbles seem to prefer to spend their time and money in advertising, and in trying to persuade architects that their stone is what it is not, to using it really to develop their quarries. As a rule, the stone in quarries improves in quality with the depth, and, unless our country is extraordinarily favored, a great deal of money must be spent in the marble States before their quarries are likely to compete with those which were hunted out two thousand years ago by the best judges of marble that ever lived, and have been worked ever since in the most skilful and thorough manner known to science.

THE Tarsney bill, providing that the public building work shall be intrusted to private architects, under certain restrictions, which has already passed the House of Representatives, has passed the Senate, but with an amendment, providing that, in case of competition for designs, only the successful architect shall be paid for his drawings. In consequence of this amendment, which does not seem to have been extremely necessary, the bill must go back to a conference committee, in order that a compromise measure may be drawn up which will pass both Houses in the same form. After this is done the bill as so passed will be ready for the President's signature. The passage of the bill, in nearly the same form, by both Houses, shows conclusively that the temper of Congress is favorable to the excellent measure proposed, and it is much to be hoped that the matter may be adjusted, and the law definitely placed on the statute-book before the final adjournment of the present Congress, which would earn for itself the lasting gratitude of every one interested in the artistic advancement of the United States by being the first to take the public architecture out of the Government plan-factory and commit it to the best professional men in the country.

IT is very satisfactory to learn that a "Memorial Association of the District of Columbia" has been formed, which has for its object the preservation of objects of historical interest in and about the city of Washington, and the proper marking of them, together with the dissemination of information in regard to them. The anomalous political condition of the District of Columbia, with the very shifting character of its population, have worked together to check civic feeling in what seems to strangers historically the most interesting city in the United States. To the New Englander, or the Southern or Western man, to say nothing of the English cousins whose admiration for some of our great men quite equals our own, Ford's Theatre,—so long as it existed,—the waiting-room in the Baltimore and Potomac station, the Tenth Street house where Lincoln died, the Arlington mansion, the Soldiers' Home, the Blaine house, and, of course, Mount Vernon, have always been objects of great attraction, and there are many more which would be so if they were properly designated, as is proposed by the Association. Chief Justice Fuller is the president of the Association, and Mr. Myron M. Parker is secretary. Congress, which is usually liberal to the District, will be asked to provide what funds are necessary, and the officers of the Association furnish gratuitously the care and study required for carrying out its objects.

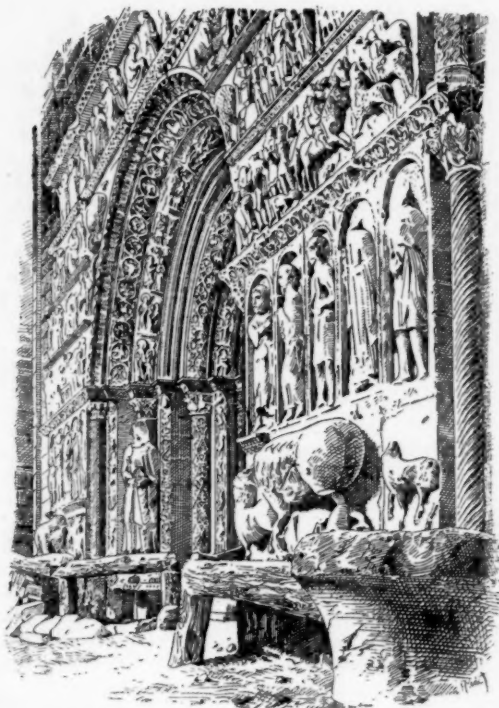
THE LANUEDOCIAN SCHOOL OF ARCHITECTURE.¹—II.

Fig. 4. Portal at Ripoll (Catalonia), after a photograph by Franz Schrader.

THOUGH the Languedocian Romanesque school may be the poorest in belfries, it is, on the other hand, one of the richest as regards sculptures; the school of sculpture cradled at Toulouse was indeed the most powerful in the Occident prior to the Pointed period. M. Benezet, in his history of the art of Toulouse, published in 1887 in the beautiful work entitled "*Toulouse*" (pp. 493-596), gives an excellent summary of its peculiar characteristics:

"The vast number of monuments that sprang up suddenly and as though spontaneously on southern soil, at the time of the Crusades, bear witness in their statuary to the simultaneous existence and activity of local schools, distinct in principle and manner, but united, as it were, in the common determination to resist Byzantine influence. National and individual rivalry animates the artists.

"The school of ancient traditions is recognizable by the somewhat superannuated and conventional majesty of its creations. The figures, with square heads, shaven hair and beatific expression, of the Twelve Apostles in the cloister of Moissac and the porch of Beaulieu (Corrèze) belong to it.

"Features of an opposite cast, curiously restless, feverish and anxious in expression, distinguish the productions of the Visigothic school. This school is perhaps best represented, with all its movement and passion, in the bas-reliefs of the figures of St. Peter and St. Paul at the entrance of the church of Moissac, and in those of the Zodiac coming from Saint-Servin, at Toulouse.



Fig. 5. Geminat Capital, at Saint-Lizier.

"Dreamy and pretentious at the same time, elegant and melancholy, the Frankish school, in its turn, produced in the twelfth century works of exceptional merit, in which an attempt to copy nature may be noted; as examples, we call

¹ From the French of Anthyme Saint-Paul, in Planat's *Encyclopédie de l'Architecture et de la Construction*. Continued from No. 895, page 100.

attention to the mild-eyed, long-haired figures adorning the porches of the cloisters of St. Stephen and of Notre-Dame-de-la-Daurade, at Toulouse."

The Languedocian architects early began to decorate their doorways with statues; at first these were mere effigies in round-



Fig. 6. Portal at Valcabrère.

relief, cut in shallow niches on the flat surface of the mass out of which the door was, as it were, hollowed. The doorway of the church of Ripoll (Fig. 4), in Catalonia, is sumptuously ornamented with several rows of these figures, which, gradually becoming disengaged, took their places in the embrasures against the columns, performing the functions of caryatides. The capital above is nearly always storied and depicts scenes in the life of the person represented by the statue.

The storied capital was the favorite type for portals and cloisters; in the windows and interior arcades it was often replaced by a capital embellished with plaited or interlacing patterns or with foliage; or by a mixed capital with figures of persons and animals framed-in by beaded cordons (Fig. 5), palmettes or scrollwork. The first two have a rather graceless curve; the one with foliage enrichments is more elegant, but is sometimes chiselled with a certain stiffness, as, for example, at St. Servin and in two other churches of the same school, those of Saint-Gaudens and Unac. The abacus is generally decorated with palmettes and foliage.

Round mouldings predominate, from the close of the eleventh century, in the archivols, which are ornamented besides with checker-board, billet and cable mouldings, with projecting heads, and in the framing arches more especially, as in the impost and cornices, with palmettes and foliage.

The portals are remarkable, though possessing no peculiar characteristics of beauty, aside from those with statues (Fig. 6). The Languedocian architects did not succeed in giving their sculpture a masterly and monumental setting; they allowed their neighbors of Limousin and Provence to win this honor away from them. The celebrated portal of St. Peter's at Moissac, although within the limits of the Languedocian school, belongs to Limousin. The cloister at Moissac, one of the most beautiful in France, is, however, Languedocian: it was erected in 1100, under Abbot Anquetil (Fig. 7).

The Languedocian school is one of the richest in France in mediæval cloisters. After the cloister of Moissac should also be noted, the Romanesque cloisters of Elne, of Saint-Lizier, of Saint-Bertrand-de-Comminges, of Saint-Salvi at Albi (in part) and of Saint-Michel at Grandmont, near Lodève. The arches are not geminate, but are all uniform and supported by colonnettes grouped in twos, ranged

depthwise, with capitals united by a single abacus; in case of rather long galleries the colonnettes are disposed at intervals in groups of four, or they are replaced by a square pier or pillar. At Moissac, the arcades are in broken arches. This form, which was adopted at about the same time for the huge tunnel-vault of Saint-Nazaire at Carcassonne, had made some slight progress before the end of the twelfth century; but there-

after it was in general use,

while the storied capital maintained its place until the fifteenth century (portals of the churches of Rabastens-sur-Tarn and of Montjoie, fourteenth century; cloisters of Marciac and of Saint-Sever-de-Rustan, fifteenth century; there are also interesting

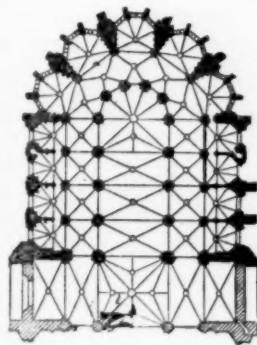


Fig. 8. Cathedral of Narbonne.

specimens in the museums of Toulouse, Tarbes and Carcassonne); the foliage enrichments continued to be employed until the middle of the fourteenth century at least (the same church of Rabastens, house in the Rue Croix-Baragnon, at Toulouse, etc.). Nevertheless, Romanesque traditions had a hard life; they appear at the height of the Renaissance period, in certain doorways in regions about the Pyrenees which at a distance look like rough imitations of semicircular doorways with eleventh-century tympanums.

The nave of the abbey-church of Bonnefont (Haute-Garonne), erected about 1150, which the author of this sketch saw in 1856, before its huge vaults were destroyed, is probably the oldest edifice in which ribbing was systematically applied; it is true that the Cistercian monks who built it were from the diocese of Langres.

A more finished and more imposing application of the system is exhibited in the nave of the cathedral of St. Stephen, at

tury; the cathedrals of Narbonne (Fig. 8) and of Toulouse, the choirs of which were begun in 1272; the cathedral of Rodez, built between 1277 and the middle of the sixteenth century; Saint-Martin at Limoux, belonging to the fourteenth and fifteenth centuries; the cathedral of Mende, of the fourteenth century, which is a sort of compromise between the architecture of the south and that of the north; the cathedral of Auch, begun in 1483; to these must be added the choir of Sainte-Marie-d'Oloron, a squat construction of the fourteenth century, which unquestionably was not completed in accordance with the original plan. In the cathedrals of Elne and Alet, the foundations of choirs with radiating chapels were laid, in the fifteenth century, behind the Romanesque apses; but in view of the rudimentary state in which the work was left, it is impossible to determine whether there were to have been side-aisles or not. The choir and the transept of Saint-Nazaire at Carcassonne, built in the first quarter of the four-

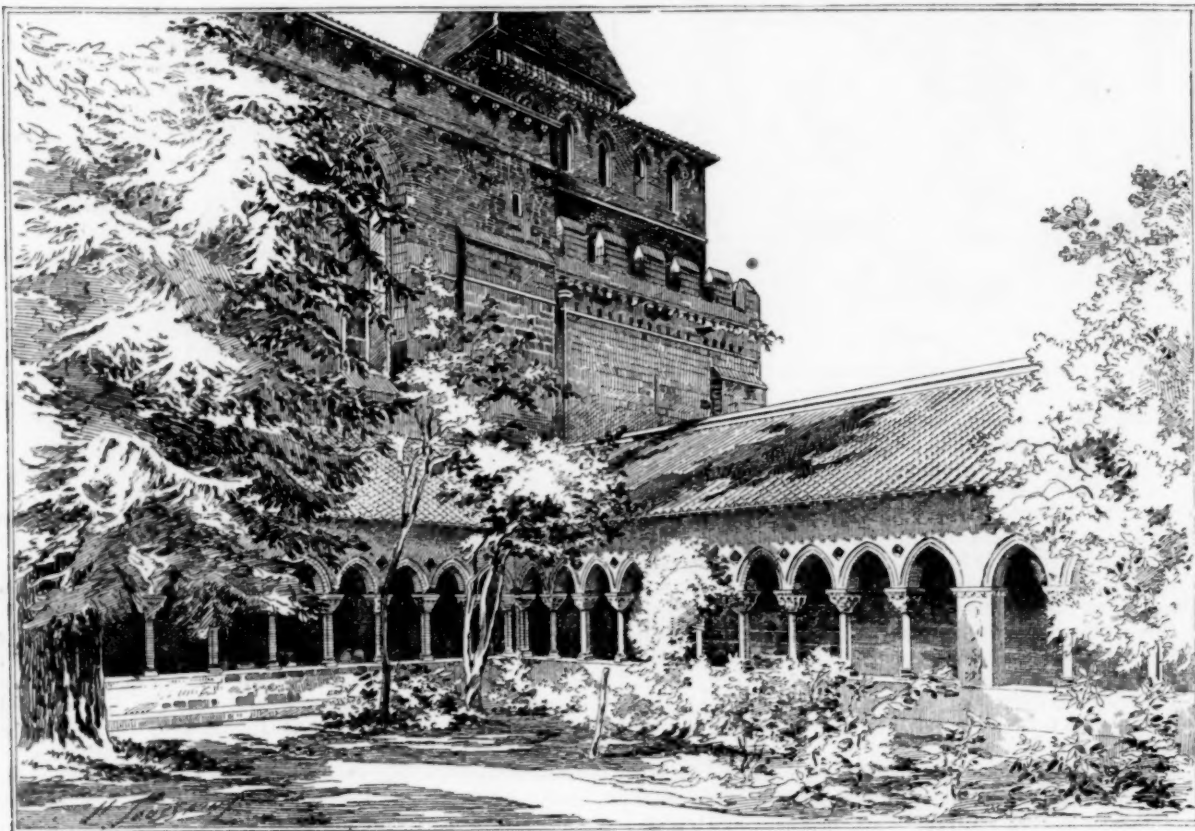


Fig. 7. Cloisters at Moissac.

Toulouse; this nave is more than sixty feet broad in the clear, and is covered with three enormous ribbed vaults borne on clusters of four columns in strong projection on the walls. This prominence is in no way due to an imitation of Provençal churches with interior buttresses, but results from the necessity of diminishing the unusual bearing of the vaults, while at the same time preserving the lateral walls of the original three-aisled cathedral. St. Stephen's was probably not the first large edifice to be constructed without side-aisles. In addition to the three churches cited above for their machicolations, we find single naves in the cathedral of Saint-Lizier and at the abbey of Saint-Savin at Lavedan, both of which are about a quarter of a century older than the vaults of St. Stephen; the latter were executed in 1211, at the time of the first siege of the city by Simon de Montfort.

Broad and lofty single naves without transepts, together with the strategical features of the belfry and of certain other dispositions, constitute the special characteristics of Languedocian architecture during the Pointed period.

All of the churches with side-aisles come from a direct importation of northern architecture; for example: Saint-Paul-Serge at Narbonne, whose choir with *chevet*, built about 1230, bears evidence of Norman influences, awkwardly interpreted; the abbey-church of Valmagne, middle of the thirteenth cen-

teenth century, are unique constructions, the plan of which belongs neither to the north or the south; but the exceptional grace of the style is northern.

[To be continued.]

THE DESTRUCTIVE WHITE ANTS.—A fortune lies in store for the man who will discover some process for cheaply making wood proof against white ants. These pests are the curse of existence in Amoy and every other tropical or sub-tropical city. Their voracity is incredible. They ate the framework of a new door in my consulate in three weeks. In the same period they almost consumed a large and handsome cabinet in the court-room, and a heavy pine settee in the ante-room. Their work is invisible. They attack the wood from a mere point, through which they bore to the interior, and there eat everything until only a shell or film remains. Wood which will successfully resist these insect pests must be thoroughly charged with some powerful chemical, both poisonous and non-evaporable. A solution of corrosive sublimate, chloride of zinc, arsenic, or antimony would seem to meet the want; but how to force these into the fibres until the latter are saturated, and to do so at a merely fractional cost of the wood itself, is the problem that confronts the inventor. The American genius is so prolific in invention and discovery that I feel assured the problem will be satisfactorily solved before the end of this decade. — *Puget Sound Lumberman.*

of the abutment. For the joint between *C* and *D* we pass down from *c* to *d* on the load-line; then we have from *d* to draw a line $\parallel$ to *D F* until it meets *cf* in *f*, then go up *fc* to *c*; *fd* will be compression, *fc* will also be compression, as already found.

Wind-Left Diagram:—Load-line:—Wind-effect is always taken as at right angles to the rafter, and will therefore be in

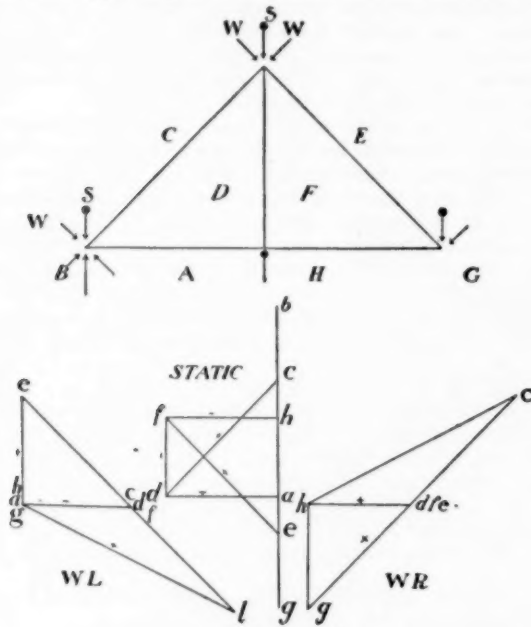


Fig. 25.

direction $\parallel$ to the dotted line. Load-line is $\parallel$ to direction of wind-pressure; draw *db* $\parallel$ to the dotted line, lay off *dc* = wind-pressure on $\frac{1}{2}$ of rafter *C F*, and *cb* = wind-pressure on the other half.

The dotted line passes through centre of rafter and is therefore the resultant of the wind-pressure. Its intersection with *F A* divides *F A* into two parts proportional to the reactions of the abutments. In the figure these are equal $\therefore$ *f* falls at *c*. Truss is free to slide at *E*, therefore reaction at *E* must be vertical. Draw *de* vertical until it meets a horizontal line through *f*; then *de* is the vertical component of that part of the wind-pressure resisted at *E*, and *eb*, which closes the polygon, is the reaction of the abutment *B*.

Now take joint *B*:—*bc*, *cf* (points coincident, since the reaction of the abutment is found, and the line *fa* must pass through the end of it, and we know already that this line passes through *c*), *fa* $\parallel$ to *F A* tension in tie, *ae* the reaction.

Joint *C D*, *dc*, *cf* (coincident), *fd*.

Wind-Right Diagram:—Direction of wind changed. Amount will be the same. Reaction found as before, for abutment *B* = *ac*, abutment *E* = *ae*, take joint *D E*, *de*, *e a* (reaction), *af* = to *A F* (compression), *fd* (coincident points).

Note the reversal of strain in the tie *fa*. This illustrates the necessity of the three diagrams. All trusses should have the three made and the results tabulated with their proper signs, so that the pieces and joints may be properly proportioned to resist the strains. Examples of tabulation will be given in the chapter on "Computations."

§ 179. Truss Ia: (Fig. 25) **Static-Load Diagram:**—Load-line:—*b c*, *c e*, *e g*, *gh* = $\frac{1}{2}$ of total load, *ha*, *ab* = $\frac{1}{2}$ of total load, and *ab* are the reactions at the abutments. Note the order in which the load-line is plotted, beginning with the load on the half rafter at the abutment and going around the entire frame to the beginning. Note also the over-lapping of the diagram.

Joint *B*:—*bc*, *cd* $\parallel$ to *CD*; *da* $\parallel$ to *DA*; *ab* to beginning.

Joint *C E*:—*c e*, *ef* $\parallel$ to *E F*; *fd* $\parallel$ to *F D*; to *d* already determined; *dc* to beginning.

Joint *E G*:—*eg*, *gh*, *hf*, $\parallel$ to *H F*; to *f* already found; *fe* to beginning.

Joint *H A*:—*ha*, *ad*, *df* = to *D F*; to *fh*, to beginning.

Wind-Left Diagram:—Resultant of wind on one side passes through centre of tie, as shown by dotted lines. Load-line $\parallel$ to direction of wind:—Lay off *bc*, *ce*, then draw *eg* vertically until it meets the horizontal line through the point which divides the load-line into the abutment reactions, then

eg is the vertical component of the wind and is the reaction at *G* and *gb* is the reaction at *B*.

Balance of diagram is the same as for § 178.

Wind-Right Diagram:—Same as for § 178.

§ 180. Truss II:—(Fig. 26,) **Static-Load Diagram.**

Load-line:—*bc*, *cd*, *de*, *ef*, *fg*, *ga*, *ab*.

Joint *B C*:—*bc*, *cl* $\parallel$ to *C L*, *la* $\parallel$ to *L A*, and to *a*; *a b* (the reaction) to beginning.

Joint *C D*:—*cd*, *dk* $\parallel$ to *D K*; *kl* $\parallel$ to *K L*; to *l* already found; *lc* to beginning.

Joint *D E*:—*de*, *ei* $\parallel$ to *E I*; *ik* $\parallel$ to *k* already found; *kd* to beginning.

Joint *E F*:—*ef*, *fh* $\parallel$ to *F H*; *hi* $\parallel$ to *H I*; *ie* $\parallel$ to *I E*, to beginning.

Joint *F G*:—*fg*, *ga*, *ah* $\parallel$ to *A H*; *hf* to beginning.

Joint *H L*, needs no analysis, as we have the strains for all of the pieces.

Wind-Left Diagram:—Resultant of wind falls as shown by dotted line, which passes through centre of rafter and is normal to it. This line divides the tie into two parts, which are proportioned to the reaction.

Plot load-line $\parallel$ to dotted line, *bc*, *cd*, *de*, then *e a'*, which has the same relation to *a' b* that the two parts into which the tie is divided by the prolongation of the resultant of the wind-pressure have to one another. Note that the reaction of the abutment on the windward side is the larger. Now the end *G* of the truss has a vertical reaction $\therefore$ draw a horizontal line through *a'* and a vertical line from *e*. *ea* will be one abutment reaction and *a b* the other.

Joint *B*:—*bc*, *cl* $\parallel$ to *C L*; *la* $\parallel$ to *L A*; *a b* to beginning.

Joint *C D*:—*cd*, *dk* $\parallel$ to *D K*; *kl* $\parallel$ to *K L*, to *l* already found; *lc* to beginning.

Joint *D E*:—*de*, *ei* $\parallel$ to *E I*; *ik* $\parallel$ to *I K*, to *k* already found; *kd* to beginning.

Joint *E F*:—*ef*, *fh*, *hi*, *ie* to beginning.

Note that *e* and *f*, and *h* and *i* must be coincident points in order to close right, and are coincident because there is no force at joint *ef*, to separate *e* and *f* and strain *hi*.

Wind-Right Diagram:—Load-line and reactions obtained in manner similar to Wind-Left except that the reaction at *G* is now greater.

Joint *G*:—*fg*, *ga*, *ah* $\parallel$ to *A H*; *hf* $\parallel$ to *H F*, to beginning.

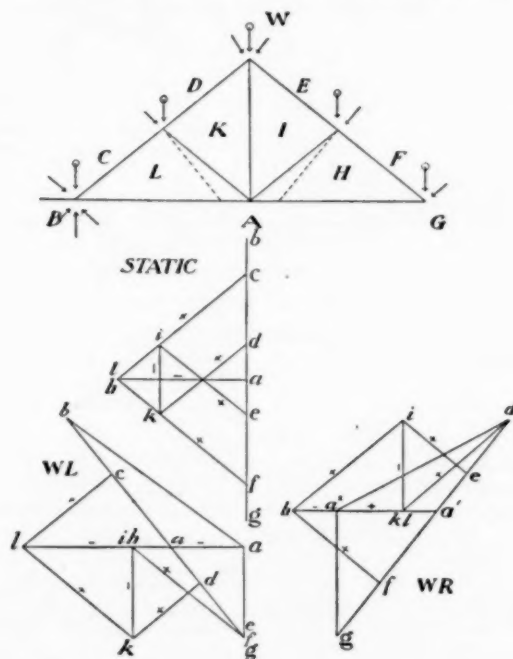


Fig. 26.

Joint *E F*:—*ef*, *fh*, *hi* $\parallel$ to *H I*; *ie* $\parallel$ to *I E*, to beginning.

Joint *D E*:—*de*, *ei*, *i k* (*k* must fall on *ha'*) $\parallel$ to *I K*; *kd* $\parallel$ to *K D*, to beginning.

Joint *D C*:—*cd* (coincident as there is no load). *dk*, *kl*, *lc* (*k* and *l* coincident).

Joint *C B*:—*bc*, *cl*, *la*, *a b* (*d*, *c*, *b* are coincident points).

§ 181. Truss IIa:—(Fig. 27,) **Static-Load Diagram.**

Load-Line:—Begin b ; bc , $c \parallel e$, eg , gi , il , $l \parallel m = \frac{1}{2}$ total load (when symmetrical); ma , down, $ab = \frac{1}{2}$ total load (when symmetrical); lm and ab = reactions.

Joint B:— bc , $cd \parallel$ to CD ; $da \parallel$ to DA , $a \parallel b$.

Joint C E:— ce , ef , fd , dc .

Joint E G:— eg , gh , hf , fe .

Joint G I:— gi , ik , kh , hg .

Joint L:— il , lm , mk , kl .

Joint M A:— ma , ad , df , fh , hk , km .

Wind-Left Diagram:—Same as Truss II.

Wind-Right Diagram:—Same as Truss II.

§ 182. **Truss III:**—(Fig. 28.) **Static-Load Diagram.**

Load-Line:—Start at A and go around frame, remembering that at M after plotting all the forces against the rafter, the reaction = $\frac{1}{2}$ the total load under symmetrical loading, and then plot downward the loads on the tie and upwards for the reaction at A .

Joint A:— ab , bc , cr , ra .

Joint R P:— pr , rc , ce , ep .

Joint B D:— bd , df , fe , ec , cb .

Joint D G:— dg , gh , hf , fd .

Joint P O:— op , pe , ef , fh , hi , io .

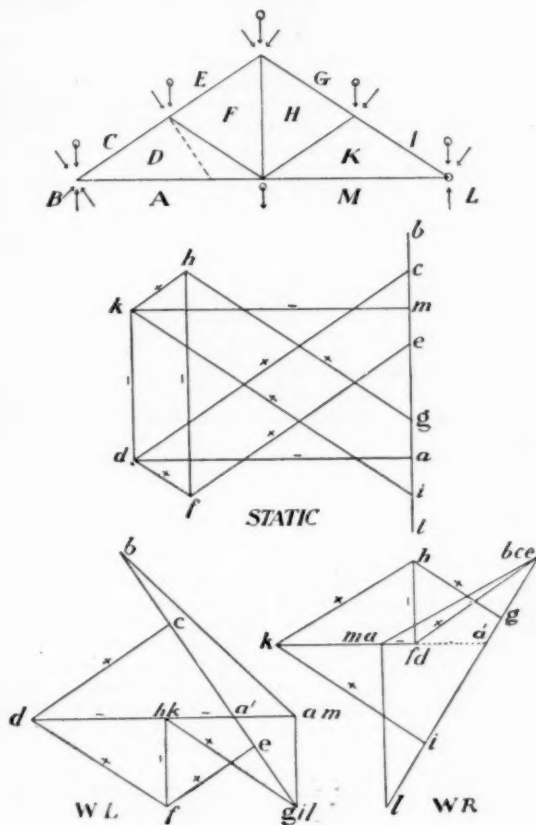


Fig. 27.

Joint G K:— gk , kl , li , ih , hg .

Joint K M:— km , mn , nl , lk .

Wind-Left Diagram:—Load-line; ab , bd , dg , line normal to rafter at centre cuts tie into two equal parts $\therefore$ reactions at two abutments are equal. Find vertical component at M , the roller end, by drawing go vertically and ho horizontally to an intersection, h being the centre point of the load-line, then go is the reaction at M , and oa at A .

Joint A B:— ab , bc , cr (or co , or cp , or ca) ra .

Joint P R:— pr (coincident, as there is no load), rc , ce , ep (c and e coincident points); this might have been expected, as this part of the truss was triangular without CE and there would be no strain in it, in consequence.

Joint B D:— bd , df , $f \parallel e$, ec , $c \parallel b$.

Joint D G:— dg , gh , hf , fd .

Joint G K:— gk , kl , li (coincident); ih (coincident), since the pressure is transmitted directly down GL , and the space HL is triangular, $n \parallel g$.

Joint K M:— km , mn , no , ol , lk .

Joint O P:— op , $p \parallel e$, ef , fh , hi , io .

Wind-Right Diagram:—Load-line dg , gk , km , get reactions as before mo , od .

Joint M:— km , mn , nl , lk . (Note that in this case n and l are coincident; this is not always so.)

Joint N O:— no , oi , il , ln , all coincident.

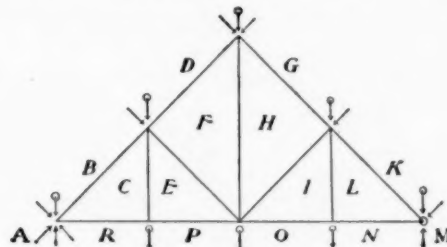


Fig. 28.

Joint G K:— gk , kl , li , ih , hg .

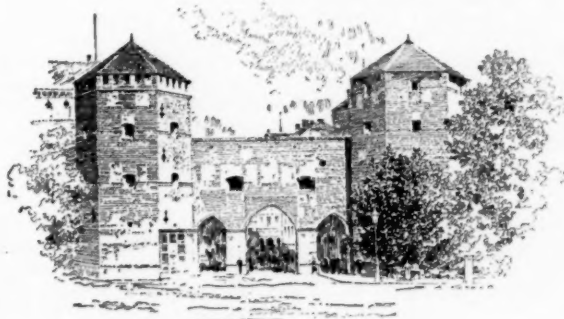
Joint D G:— dg , gh , hf , fd .

Joint B D:—no force at joint and as pieces fh , ep , cr , and $b \parallel f$ complete the triangle, it only remains to find the strains in them. df and fh are already found, find ep by

Joint O P:— fh , hi , $i \parallel o$, op , $p \parallel e$, ef .

[To be continued.]

TOWN-GATES IN SOUTHERN GERMANY.



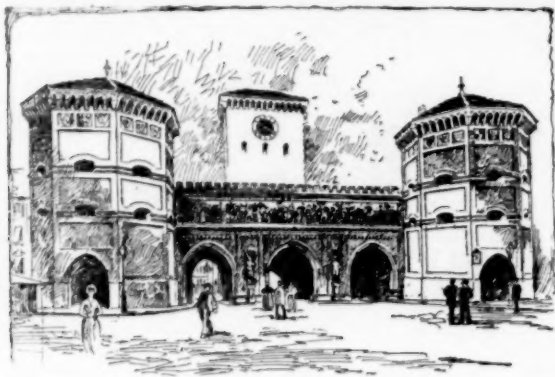
Sendlinger Thor.

SOME specimens were given in a former article¹ of town-gates in Northern Germany. These were selected from among the Gothic tower-gates of the town of New Brandenburg, that belong to the fourteenth and fifteenth centuries. Burned brick compose the material of the masonry, good building-stone being wanting in the alluvial plain of the north, and this material caused a modification of the Gothic style of decoration. In the north, also, where few sites were on natural elevations, the construction of gates likewise remained peculiar and different in two or three particulars from that of town-gates elsewhere, all of them being flanked by towers of great height.

In hill towns of the south, on the contrary, such towers were unnecessary. Height in towers had once been of use, and it remained

¹ See the American Architect for May 2, 1891.

of use so long as stone missiles were a means of warfare, such missiles receiving the greater destructive impetus and force the higher the point was from which they were hurled down upon the enemy below. But elevation lost its importance as a means of defence so soon as gunpowder began to be employed, and a horizontal line of



Isar Thor.

attack took the place of the old vertical method. Towers, in consequence, were built lower, with low stories and few of them. Naturally, some examples of the early feudal high tower-gates, like the famous gate-tower of Basle, are still found here and there in the south, but the general rule is low gates.

Munich in Bavaria, a town which occupies a site upon a high plateau, may serve as an example of a typical South German town. The gates are all of the low sort. They are five in number, three of which date from feudal times: the so-called Sendlinger Thor, that opens upon the highway leading northward to the village of Sendling; the Isar Thor, in the Isar Vale, on the eastern side of the city, and Karl's Thor, in the western quarter of the town. An ancient southern gateway that opened upon the highway to Schwabing, and went by the name of the Schwabinger Thor, was levelled with the town-wall, and a modern gateway occupies its place. This latter composes the fourth gate of the city, and is known as the Sieges Thor, or the Arch of Triumph. The fifth gate, finally, is the Propyläen, and is found in the aristocratic northwestern portion of the town, where Briener Street crosses Theresien Street. Both these latter named structures are new, while the old feudal gateways are as old as the town itself; that is, as old as the incorporation of Munich.

The name "Munich" occurs for the first time in the annals of the monastery of Lake Tegern in 1102, and the figure of a little monk (*Mönchen*), used to distinguish the settlement, was taken up in time into its coat-of-arms, and historians feel themselves warranted in supposing that this figure gave rise to the town's name of München. In this early century (the twelfth) the importance of the place, which is now derived from its production of beer and paintings, was then derived from its storehouses of salt from Reichenhall and Hallein—an interesting bit of history, inasmuch as it was perhaps the ancestral consumption of salt that accounts for the insatiable thirst of latter-day Münchener. The town remained a mere dépôt during two centuries. But in those stormy days of incessant fighting and industrial interruptions, a good dépôt of salt was a treasure worth taking precautions to protect, salt being an essential of life, and Duke Ludwig the Lion had the town provided with defensive walls.

His successors then saw to it that the walls were kept in good condition, and Ludwig the Severe built a castle for himself within their enclosure and fortified them, in 1254, with a moat and the walls' four gateways with towers. A great conflagration destroyed these towers in 1327, but the gateways were rebuilt again by Emperor Ludwig, called "The Bavarian."

Such in brief is the history of the origin of Munich's old gates. The Sendlinger gate, in those early times the outermost gate, but now close to the busiest part of the city, remains in a condition of shabby semi-demolition, and I select it for the first number of my illustrations; it is not older in date than the Isar or Karl Thor, but it is the oldest-looking gate in the city.

Its plan has not remained intact, and what is seen in the illustration—a portion of wall between two towers—is all that there is of the structure. The wall is a mere piece of the ring-wall that once encircled the town. Three openings pierce it. These openings have Gothic, or pointed, arches, and the middle one is high and wide in order to admit of the passage of calvacades and wagons, while the side openings are lower and narrower, being designed for foot-passengers. The pulleys and chains, by means of which the draw-bridges of these passages were lowered and raised, were protected by a shelf-roof against the rain, the holes for the rafters of which roof are still visible, whereas the chain-slits have been filled-in with mortar. The gates of this Thor, as of all the other gateways to be described, have been lifted off their hinges and split into pieces, only a single pair of gates being left in all the city that are daily opened and closed, this exception being the gates across Pranner Strasse near the Parliament building. Above the archways of the Sendlinger Thor, the interior of the wall, which is six feet in width, is

hollow, and room is thus afforded for a gang or passage. Two windows open into it. These are small and square, with arched lintels, and with sides that contract towards the interior in Gothic fashion, so that their size outside is larger than within. During the Thirty Years' War, when Munich was beleaguered and taken (1632) by Gustavus Adolphus, these two apertures of the Thor were occupied by the nozzles of guns, similar to those still to be seen in the first story of the tower of the old castle in Darmstadt. Whether the apertures were the same in number previous to this date, it is now impossible to decide. But it is held by several historical critics to be probable that they were not the same, but more numerous; that this closed gallery, in fact, was originally the roof of the structure, the coping of the wall, and that the apertures were two of a row of loop-holes; that this gate, in other words, resembled the Isar and Karl gates. It is chronicled that the gateway toward Sendling was "strengthened" in preparation of the attack of Gustavus Adolphus, and this "strengthening" may have consisted of the carrying-up of the walls to a second story and making on this second story a new battlement, while the old was enclosed within the walls in the shape of a passage for the men who had charge of the guns there.

Nevertheless the present form of the gate is wholly and purely feudal in style. If it has no likeness of itself in Munich, it has in other places. The enclosed gallery near the top of the wall is found in the authentic fourteenth-century shield-wall of Berneck Castle, and can be traced in German gate-walls down to the sixteenth century. The close-lying, scanty roof, with the line of small apertures huddled under it, is, moreover, almost precisely like the roof-wall of the otherwise pompous outer gate of Tübingen, an illustration of which was given in No. 832 of the *American Architect*.

As for the two towers united at the right and left with the gate-wall, they attain to a height of four stories, being thus one story higher only than the latter. Their two middle floors connect inside with the two passages within the wall,—the gallery, just described, for cannon, and the garret-passage close under the roof of the gate-wall. Both towers are octagonal and are pierced at every story by one aperture in each of their eight sides. They terminate in a battlemented platform, which is covered by a low eight-sided roof. The outer walls of the ground-floor, which were originally massive, have been broken into, as modern wants have required, for the construction of doorways. All traces of the gate court-yard are lacking; so also are all traces of the inner-gateway wall and its tower.

In Karl's Thor, at the west, the middle archway has been widened to near the same width with the pavement of the street that it spans. Its battlement and towers have been repaired, moreover, and the whole structure, the masonry of which is of brick like that of Sendlinger Thor, has been covered neatly with a fresh coating of cement (*putz*).

Isar Thor, however, conveys best an idea of how the gates of Munich looked in the days of their young and middle-aged glory. Here the constructive divisions of gate-wall and towers are sharply and perfectly marked, and every essential portion is at hand. The pointed archways of the restored building have Gothic mouldings; the Gothic wall-spaces have their figures, and the figures, their pedestals and canopies; the frieze has color, and the battlement is a true parapet. The student sees at a glance that the style is not the academical, authoritative, "pure" style of the *Hütter*; but none the less is it interesting, for it is the military-Gothic style of Albert Dürer. The Renaissance-like marking of the horizontal division between stories, the octagonal barbacan towers—these are details that Dürer, the Leonardo da Vinci of Germany, favored and wrote about, and the innovation of the horizontal mouldings, as applied here, lends a suitable expression to the whole structure of being bound together by firm chains.

Beneath the eaves of the towers' roofs there are fresco-paintings in the form of shields, each shield representing one of the coats-of-arms of counties and towns belonging to the dukes of Bavaria. In



Sieges Thor.

like manner is the forehead of the gate-wall decorated by a fresco-painted frieze, the subject of which is the very appropriate one of the entrance of Emperor Ludwig into Munich after the battle of Ampfing. The designer of the painting was Cornelius, while the

painter of it was Neuhers, who finished the work in 1833. Such coloring on such a structure is found almost nowhere in the north; but fresco-painting was a decorative means of Gothic art in Germany, and the Gothic towers of Prague, Vienna and Innsbruck display shields sculptured, and gilded with gold, or painted *al fresco*, as on the Isar Thor.

The court or cage of the gateway is equilateral in shape. The inner gate-wall is provided with a square tower rising over the middle portion to a height one story greater than the outer flanking towers. Of late years the tower has been furnished with a town-clock, and serves as an outlook station for fire-wardens. Traffic goes on uninterruptedly beneath its archways. The three portals of the gate-walls have all been given over to the passage of street-cars and wagons, pedestrians continuing their way under the arched passages which have been cut through the gate-towers.

As a bit of architecture representative of the feudal portion of the town where it stands, and of its gay and boisterous life, the Isar Thor is both a characteristic and an appropriate monument. In style it is in harmony with all the public buildings in its neighborhood: the Gothic churches of St. Paul and of the Holy Trinity, the Town-hall, the Column of Our Lady Mary, and numerous fine old burgher houses of the Vale.

In strong contrast with the Isar Thor, but altogether in keeping with the new portions of the city where they are situated, appear the other two great gates of the town, the Grecian Propylæen and the Roman Sieges Thor. Both of these are modern structures composed of grayish-white Isar limestone, and are kept isolated from contact with other buildings. As the old gateways appear part and substance of old Munich, and as representative of the animal life of its beer-drinking, hard-fighting burghers, so do these modern gates, in their classic dignity, speak of new Munich—the Munich of King Max and King Ludwig I, the Munich of Schwanthaler, Cornelius and Kaulbach, the Munich of the Pinakothek, of the Glyptothek, and of the yearly great Exposition of Fine Arts. The two classes of gates are embodiments, in short, of the twofold nature of



Propylæen.

the city's inhabitants, and aid greatly in stamping upon the town a character completely original.

The Arch of Triumph (Sieges Thor) rises in the middle of a long, wide thoroughfare, the beginning of which is a street, headed by a portico called the "Hall of Generals," and the close of which is a broad, long avenue, planted on both of its spacious sides with tall, pillar-like French-poplar trees. In its neighborhood are the University, the Royal Library, the Art Academy, the Polytechnicum, the Basilica of Ludwig, and the palaces of Prince Ludwig and Prince Anulf of Bavaria—all structures of imposing, vast dimensions, without a single humble or unfinished building within their view. If the spot is not classic, it yet has the essential traits of classicism, being simple, grand and vast. A Roman archway does not seem out of place on it, there being such evidence on all hands of an ambitious, Roman-like and splendid energy having been here at work creating. The faults of detail that one observes in the construction and decorations of the buildings that compose the long vista of Ludwig Street, as well as in the arch itself, diminish in importance when both the street and the Thor are considered as one complete, immense work of art. Both are the general conception of King Ludwig I, Thorwaldsen's friend and pupil, his architect being Friedrich von Gärtner, and his sculptors Johann Martin Wagner and Johann Halbig; Gärtner's work being the plan of the Thor, Wagner's the low reliefs representing scenes from the history of Bavarian arms, and Halbig's the famous lions that draw the chariot of Bavaria Victrix on top. The gateway was begun in 1844 and was completed in 1850.

A mile distant rises the colossal structure of the Propylæen. Ludwig I, who had known Lord Byron in Italy, and had taken the liveliest interest in the struggle of Greece for liberty, caused its erection in commemoration of the Grecian war for independence. The gateway, at the same time, was made to serve, by the choice of the site for it, as the entrance to the temples of art in which the royal collections of sculpture were housed, the Art-hall standing off in the rear of a roomy grass-plot, at the right, and the Glyptothek at the left of it.

The architect of the Propylæen was Leo von Klenze, the sculptor

of the figures in the pediments and on the friezes being Schwanthaler: the gateway was begun in 1846 and finished fourteen years later, in 1860. Here the passageway for pedestrians is in the middle, being in this particular unlike all the other gateways of the city.

Taken together, the fine gates of Munich compose a feature of it, and the modern ones being conceived and built as the introduction to special groups of building, they conform to an artistic ideal. In a future paper I will offer illustrations of gateways of other South German towns. I bring the present paper to a close by suggesting the question to our American architects, whether gateways, those oft-quoted portions of ancient cities and the picturesque adornment of the feudal quarters of Continental towns, cannot be made appropriate monuments of American cities also?

FREDRICH VON GÄRTNER, who was born at Coblenz, in 1792, came of a race of builders and architects, and after studying at the Munich Academy of Fine Arts, was sent to Paris, Rome, Naples and Sicily and thence to England, in order to complete his education. Returning to Munich in 1819, he became a professor in the Academy of Fine Arts, and in the course of his extremely busy life, which ended in 1847, he designed the following important architectural works: the Ludwig Church, the Royal Library, the Asylum for the Blind, the University, the St. Ann Seminary, Max-Joseph Academy, the Hall of Fame, Wittelsbach Palace, the Arch of Triumph and the Cemetery, at Munich; the Royal Palace in Athens; the Kurhaus in Brückenaue; the Kursaal and Protestant Church in Kissingen; the Town-hall in Zwickau; the restoration of the Cathedral in Bamberg; and the Pompeian House in Aschaffenburg.

JOHN MARTIN VON WAGNER came likewise from a race of artists, and was a painter, a sculptor and a distinguished writer on archaeology. Ludwig I met him in the studio of Thorwaldsen in Rome, in 1805, when Wagner was thirty-two years old. The prince engaged him to go to Greece to buy antiques, and Wagner secured, among other sculptures, the famous *Agina* marbles, now in the Glyptothek. The chief productions of his own hands are the "Eleusinian Fête," the frieze of the Walhalla, near Regensburg, ninety-two metres in length, the metopes of the Glyptothek in Munich, and the sculptured reliefs of the Arch of Triumph. Wagner, who was born in Würzburg, died in Rome, on the 8th of August, 1858.

JOHANN HALBIG, a young friend of Wagner and a favorite of Ludwig I, grew up in the stern, classical traditions of these two devotees of art, but emancipated himself so far in the course of time as to give a touch of realism and *genre* to nearly all his designs. Among his early decorative sculptures are the Lions of the Pinakothek, the colossal Atlantes of the vestibule of the St. Petersburg Museum, and the figures of Raphael, Titian and other portrait statues in the same building, the Lions on the Arch of Triumph, the Lions of the Wittelsbach Palace, and the colossal Lions of the Harbor of Lindau. His chief later works include the portrait statues of Count Platen, in Ansbach; of Fraunhofer, in Munich; of the Palatine Joseph, in Pesth; the ideal statue of a Nymph, in New York; a group in the same city personifying "Emancipation," and finally, a colossal "Passion," in Oberammergau. Halbig was born in 1814.

LEO VON KLENZE had the happy and unusual fate among architects of being born and bred in luxury, and of becoming celebrated before he had built anything but models. His father was a landed proprietor, who sent him to the University of Berlin. Here Leo met Schinkel, and in Paris, subsequently, he enjoyed the instructions of Durand, Percier and Bourgeois. From Paris he went to England, and from England to Italy, where he studied the architectural remains of Pæstum, Agrigento and Selinus. An Italian nobleman recommended him to King Jerome, who gave him the title of Court Architect, a title that at least enabled him to make a sketch of a "Peace Memorial," and, what is of more importance, to get the members of the Congress of Vienna to look at it. The members instantly decided Klenze to be a genius, and this characterization was spread from Vienna, at that time (1810) the centre of Europe, to all Continental courts. The ambitious Court of Munich invited him thither, and, one after the other, gave him orders for the following buildings: the Glyptothek, Leuchtenburg Palace, the Royal Riding-school, the Bazaar, the Department-of-War Building, the gateway to the Royal Palace Gardens, the Post-office, the old Pinakothek, the east and west façades of the Royal Palace (known as the Königsbau and Festsaalbau), the Church of All Saints, the Hall of Fame, the Odeon, the Walhalla, near Regensburg, the Temple of Emancipation, near Kelheim, and the Propylæen. In 1832, Otto, the second son of King Ludwig I, was made King of Greece, and Klenze was called upon to rebuild Athens. He consequently journeyed thither, reformed the governmental plans for the new city, made designs for restoring the monuments on the Acropolis, and built the Pantheon. Meanwhile the Russian Court became ambitious of securing the services of Klenze, and the architect journeyed seven times, between the years 1839 and 1852, to St. Petersburg. The chief of his buildings in this capital are the Museum, the Palace, and the Church of St. Isaac. No man of his time designed more monumental buildings in so many capitals. He was an enthusiast of Hellenic art, and was wont to declare: "There is but one architecture, and that is the Hellenic; all other architectures are architectural styles." Leo von Klenze was born in 1784, near Hildesheim, and died in Munich in 1864.

SCHWANTHALER, again, is an example of genius descending from father to son, the elder Schwanthaler being a sculptor, and established in Munich when Ludwig was born there, in 1802. In Munich Schwanthaler was educated; here, also, he worked, and near Munich he built for himself Castle Schwaneck (now owned by an American lady). Munich, in return, has named a museum and a street after Schwanthaler. Any lexicon of art will furnish a full list of his extremely numerous works. The best of them embody the spirit of Romanticism, which was the true spirit of his times. In Munich, Schwanthaler's principal groups in marble or bronze are, the frieze representing the Argonauts; the reliefs representing scenes from Hesiod, Pindar and other Greek poets in the Königsbau; the frieze of the Saalbau; the pediments of the Glyptothek and of the Propylæen, the reliefs of the *Agina*, Niobe, Roman and Trojan halls of the Glyptothek, and the Bacchus frieze of the dining-hall of the Palace of Duke Max of Bavaria. Other notable works of Schwanthaler's in Munich are: the twelve colossal statues in the Palace (Coronation or Throne Hall) of Wittelsbach princes, numerous portrait-statues in the Hall of Fame, and the "Bavaria," a colossal female figure nineteen metres in height, placed on the knoll of Therese Meadow, in front of the Hall of Fame. Schwanthaler died in 1848.

L. VON KROCKOW.

COMPARATIVE MUNICIPAL BUILDING LAWS.—XXII.

[Note:—In these tables bracketed letters invariably refer to preceding passages in the same column.]

Limitations to Use of Wood.

Boston:—*a.* In First and Second Class Buildings, all party and bearing partition walls above foundation shall be built of brick, and no such party or partition wall shall be furred with wood, but plastered on masonry or metal lathing.

b. In Second-Class Buildings, all exterior parts more than 45' above sidewalk, except window-frames, sashes, and blinds, shall be of metal, stone, brick, or other equally incombustible material.

Baltimore:—*c.* Exterior gutters and cornices to be of fireproof material. No timber shall be used in wall where stone, brick, or iron is commonly used.

d. Except bond-timbers and lintels, as provided by law or approved by Inspector.

e. No exposed bond-timber in wall shall exceed in width and thickness that of course of brick.

Brooklyn:—*f.* No timber shall be used in front or rear walls where stone, brick, or iron is commonly used.

h. No wall-strips in any wall shall exceed 1/2" thickness nor 2 1/2" width.

i. No bond-timber in wall shall exceed 4' in length; such timbers 18" apart longitudinally on either side of wall, and continuous line thereof shall be broken by inserting bricks of not less than 12".

j. No wall shall be supported in any manner on wood, but wholly on brick, stone, or iron, and no wood shall be used between such wall and such supports.

Charleston:—(See "Supports over Openings.")

Chicago:—(See "Cornices.") (See "Columns.") (See "Partitions.")

k. Wooden ceilings in shops, stores, and storehouses are prohibited. Stairways shall not be enclosed with partitions made of plank, boards, flooring or scantling unless plastered on both sides. Factories, mills or warehouses more than three stories high, and with area more than 3,000 square feet, shall have all stairways of incombustible material.

l. Piazzas or open porches shall not be inclosed, except to form vestibules to entrance-doors or to protect stairways. Wooden flag-poles permitted, but braces and other parts shall be of iron.

m. On business buildings above first story, and on other buildings when more than 30' above sidewalk grade, appendages, if not wholly of incombustible material, shall be enveloped in metal. Dormers, cornices, mouldings, balconies, bay-windows, towers, spires, ventilators, etc., shall be considered as appendages.

Cincinnati:—*n.* Appendages such as skylights, dormers, cornices, gutters, mouldings, eaves, parapets, balconies, bay-windows, towers, spires, ventilators, erections over elevators, turrets, lantern-light, or other erections on roofs, if not wholly fireproof, shall be enveloped in incombustible material. Stairways shall not be inclosed with partitions made of plank, boards, flooring, or scantling unless plastered on both sides or covered with metal, except in private residences. Stairways shall not be enclosed with partitions made of plank, boards, flooring or scantling unless plastered on both sides or covered with metal.

Cleveland:—(a).

Denver:—*a.* No timber shall be used in wall of brick building except arch-forms for interior arch-openings. (c); (d).

Exterior parts of brick buildings in inner fire-limits, and, outside said limits, all exterior parts of brick buildings over 35' high, shall be made of or covered with incombustible material.

Detroit:—*p.* No wall or part of wall shall be built upon any wooden beam, girder, or support. Stairways enclosed in wooden partitions must have such partitions plastered on both sides.

District of Columbia:—Structures or projections above or outside roof (such as domes, cupolas, pavilions, towers, spires, pinnacles, buttresses, lanterns, louvers, dormers, skylights, scuttles, ventilators, cornices, gutters) shall be made of or covered with cast or wrought iron, other metal, stone, mortar, or other incombustible material.

Bay and oriel windows and tower projections may be constructed upon brick or stone buildings with frame of wood, if covered with incombustible material and approved by Inspector.

Kansas City:—*q.* External parts of brick buildings within fire-limits more than 45' above level of sidewalk shall be made of or covered with incombustible material. (e).

r. Ceilings of buildings used for store purposes exclusively, and not more than 50' in height above sidewalk (exclusive of chimneys and party-walls above roofs), may be covered with wood, provided they are backed with asbestos paper or other incombustible material throughout their extent.

Ceilings of stores having tenement rooms or offices above first story shall be covered with wire-lath or tile as provided in Sec. 22.

s. All ventilating ducts shall be of incombustible material.

Louisville:—*u.* Scantling partitions shall not be employed as supports of roof or floors except in dwelling-houses.

Memphis:—(c), except lintels as provided in law.

Milwaukee:—

Minneapolis:—(m); (u).

v. No wall shall be supported upon wooden supports. Such supports shall be of iron, brick, or stone, and rest on sufficient stone or metal templates.

(e), arched forms not to rest on wall exceeding 2".

Nashville:—Appendages such as skylights, dormers, cornices, gutters, mouldings, eaves, parapets, balconies, bay-windows, towers, spires, and ventilators over elevators, if not wholly fireproof, shall be enveloped with incombustible material, provided where elevator roof projects above roof, wall above roof of building shall be inclosed with glass.

Newark:—No wall shall be cut off or altered below, or be supported by wood, but shall be supported by brick, stone, or iron.

New Orleans:—No wall of stone or brick building shall be supported on wood, but on brick, stone, or iron. No wood or timber shall be used between such wall and supports, nor shall any wood or timber be used or imbedded in wall.

New York:—(e), except lintels as specially provided by law.

Bulkheads of dwellings (except as specified in Sec. 492) may be built of wood, and then covered with not less than 2" of fireproof material, or filled-in thickness of studding with such material, and covered on all sides with metal, including sides and edges of doors.

Omaha:—Plank or board partitions in brick buildings in any one story shall not aggregate more than 400 square feet, measured on one side. (s); (u).

Exterior parts of brick buildings more than 45' above sidewalk level shall be made of and covered with incombustible material.

Philadelphia:—*av.* No rear, party or division wall shall be supported on any wooden girder or other wooden support, except that under party alley wall where alley does not exceed 4' in width, and over piazza on other openings not exceeding 6', wooden girders may be used.

Pittsburgh:—(w).

Providence:—No rear, front, party, or division wall of brick or stone shall be supported by wooden girders, rafters, lintels, or other wooden support, but upon iron, brick, or stone of sufficient strength. (e).

Exterior parts of buildings more than 40' above level of finished grade shall be made of or covered with non-combustible material.

St. Louis:—It is unlawful to support any wall more than one story high upon wood; but all such supports shall be of iron, brick, or stone, and of sufficient strength and size.

In business houses, use of ceiling-boards on ceiling and walls is prohibited, except in porches or for wainscoting not exceeding 6' high.

San Francisco:—No brick or stone wall supported on wooden stringers.

No stone or iron steps set upon wooden carriages.

No timber used where stone, brick, or iron is commonly used, except wall-plates for roof, bond-timbers, and lintels; such bond-timbers not to exceed 4" wide and 2' long. They shall be laid horizontal, and have 18" masonry between them.

Furring against brick walls shall not exceed 1" in thickness.

Wilmington:—

Protection for Elevator and Similar Shafts.

Boston:—*a.* Entrance opening in shaft or hoistway within 2' above floor shall be protected by sufficient rails, gates, trap-doors or other equivalent device.

b. Every elevator shall be provided with sufficient arrangement to prevent falling of car in case of accident.

c. Overhead elevator machinery shall have beneath it a grille to protect car from falling material.

d. Openings in elevator shaft or hoistway, and through floor other than a stairway, shall be closed when not in use.

e. Inside elevator-shaft openings (except for passenger elevators) shall be furnished with metal-covered doors hung to rabbetted iron frames, with iron thresholds, said doors kept closed when not in use.

f. Outside windows and openings of elevator-shafts shall have three vertical iron bars painted red, equally dividing openings.

g. Every part of elevator not enclosed in shaft shall be protected by wire grille.

Baltimore:—Hoistway, elevator or well-hole shall have opening on each floor provided with substantial railing.

Brooklyn:—Openings through any floor, except usual stairway, shall be surrounded by a substantial and permanent railing at least 3' high, or securely closed and fastened at close of each day.

Charleston:—Duty of occupant of building to close and fasten at night all trap-door or other openings, unless substantial and permanent railings enclose openings.

Chicago:—*h.* Doors in elevator-shafts to be of metal, and fastenings upon such door so placed as to be opened only from inside of shaft, and entirely under control of elevator operator. The latches so contrived as to open from outside by means of key. No wood on inside of shafts.

i. All openings without doors shall have metal frames filled with prismatic lights.

j. Elevators may dispense with any shaft whatever where automatic trap-doors are used at each floor, the doors lined with metal on under side, and to close immediately after passage of elevator through that floor, the opening and closing of doors being operated by passage of elevator.

k. Hoistway openings shall have trap-doors covered with metal on under side on all floors, except where elevators are used, with sufficient guards for protection during business hours, and doors kept closed at all other times.

Cincinnati:—*l.* Elevator openings through floors shall be protected by proper rails or gates, or shall be closed by trap-door covered with metal on under side.

Cleveland:—(l).

Denver:—*m.* Openings through or upon each floor in which there is hoist or elevator-car not running in shaft shall be protected by sufficient rails, gates, trap-doors or equivalent devices.

(b). Outside and (e) by springs of sufficient strength.

Detroit:—

District of Columbia:—Lessee, owner or occupant of building in which there are hoistways or other openings besides the ordinary stairways shall have same securely protected by railing or other appliances deemed necessary by Inspector.

Kansas City:—(f); (k); (b).

Every opening into shaft or hoistway shall be protected by sufficient rails, gates or doors, or other equivalent mechanical device.

Every opening other than stairway through floor, or into shaft or hoistway, shall be securely closed at close of each day by occupant or by lessee or owner.

Builders of elevators shall construct same so that all parts shall be easy of access to those in charge, to be approved by Elevator Inspector.

Louisville:—Elevators to be provided with suitable doors at each landing. Doors to be fitted with most approved fastenings. If automatic trap-doors are used, they shall be properly fireproofed on under side at each floor where elevator passes and the elevator-shafts may be dispensed with.

Memphis:—All elevators automatically trapped at each floor, and hoistways shall have close trapped doors.

Milwaukee:—

Minneapolis:—

Nashville:—All elevators shall be provided with automatic shutters at each story, and all "dimensions provided with railing enclosing same."

Newark:—Hoistway on each floor shall be provided with sufficient trap-door, and owner or occupant shall securely close same at completion of each business day.

New Orleans:—Lessee, owner or occupant of building shall have all openings other than usual stairway at each floor closed or protected by railing at least 3' high, and only opened for passage of merchandise, and closed and fastened at close of each day.

New York:—(e), the screen of iron, and immediately below machinery, and of construction approved by Superintendent.

Elevator-shafts shall have suitable openings closed with fireproof doors.

Any hoistway or freight-elevator or well-hole not enclosed in walls of fireproof material, and provided with fireproof doors, shall have openings thereof through and upon each floor protected by substantial railing or sufficient trap-doors to close same, or both, as directed and approved by Superintendent.

Such railings and trap-doors shall be kept closed at all times when not in actual use by occupant having use or control of building.

Omaha:—(m); (b).

Philadelphia:—

Pittsburgh:—

Providence:—Any hoistway or elevator not enclosed by fireproof partitions and doors, nor placed in well-hole of stairs, the openings thereof through and upon each floor shall be protected by substantial railings or sufficient trap-doors to close same. Such trap-doors kept closed during night, except when in actual use.

St. Louis:—Hatchways or well-holes shall be effectually barred or enclosed by railings, gates or other contrivance approved by Commissioner of Public Buildings, for prevention of accidents.

San Francisco:—Openings upon and through each floor in which there is elevator or hoist not running in shaft shall be protected by sufficient automatic gates or trap-doors, which shall be opened and closed by passage of car. (b).

Doors in shafts to be covered with metal on inside, so placed that they can only be opened or closed from inside, and entirely under control of elevator operator.

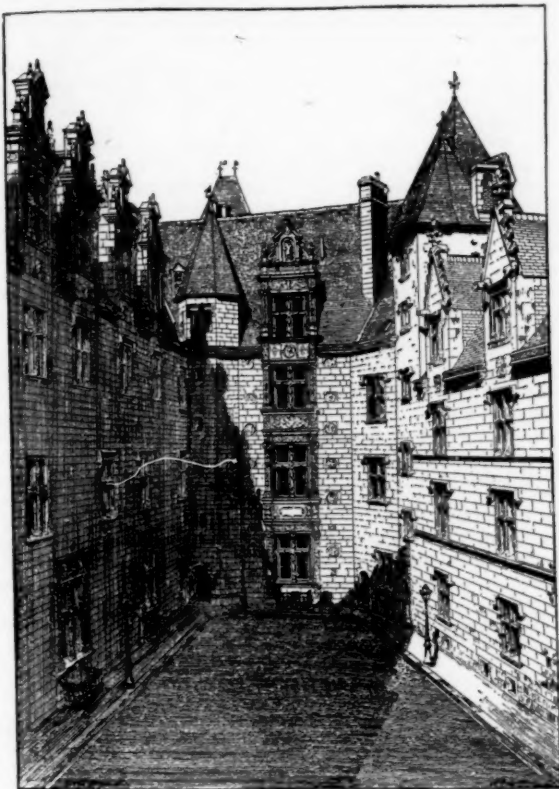
Openings for windows in shafts shall not exceed 3' by 6', one window allowed for each story. Frames and sash metal, and glazed with prismatic glass.

Frames and sashes in light walls to be of metal, and glazed with thick glass.

Wilmington:—

Compiled by HENRY A. PHILLIPS.

THE MARCH OF ANCONA.



Cour d'Honneur, Chateau de Pau, France. From "La France Artistique et Monumentale."

THE March of Ancona, one of the most fascinating parts of all Italy, is nowadays an unknown land to the tourist. It was not always so. In the days of the stage-coach the road from Bologna to Rome passed through the heart of this district, and many a leisurely "mildred" stopped to amuse himself and rest his horses in towns where now the sight of an English face is as sure a "draw" to the children as a dancing bear or a travelling circus would be. The tourist now, after "doing" Bologna in a day, jumps into his express and hurries down to Rome by way of Florence and Perugia, leaving the Marches to the East an unconsidered stretch of land, only to be passed over when necessary with all possible speed in the Indian mail to Brindisi. Aesthetic fashion, too, has followed the track of the most convenient trains, and Perugino and Botticelli receive all the spare enthusiasm of travellers in search of impressions; while Lotto's great masterpieces in the March of Ancona are unknown, and his name, even, is almost forgotten. The oblivion into which this great Venetian painter fell during what may be called the Jesuit period of taste, when the cheap sentimentality of Guido Reni and Guercino was the only thing cared for, can be understood and forgiven. But the man of culture who is "dumb before a Botticelli," or enraptured before a Titian, has no excuse for passing Lotto by, except that Lotto is not yet fashionable.

Lorenzo Lotto was a contemporary and friend of Titian. Already in 1505, the local chroniclers of Treviso, where he lived for a time, spoke of him as "*celeberrimus*." Browningites know him from his splendid altar-piece in the little village of Asolo. Tourists who are not "personally conducted" have a chance to know him from his portraits in the National Gallery of London, in Berlin, and in Milan, from two exquisite altar-pieces in Venice, and from other pictures in Dresden and Vienna and Rome. But it is only in the March of Ancona that his genius can be really appreciated. Here he came again and again during the active part of his life, leaving beautiful pictures as memorials of his visits; and here, in the middle of the sixteenth century, he retired to pass the end of his life among the monks at Loreto. Thus it happens that Loreto and the little towns in the neighborhood contain his very latest pictures, of which it is not too much to say that their technique is as strong and bold as that of Velasquez or Frans Hals, and their sentiment almost as modern as if they had been in last spring's *Salon*. Sight-seers who grow weary of continual hierarchic Madonnas and saints would, if they knew his pictures, welcome Lotto's originality and humor in interpretation. At a little village called Cingoli, a twenty-mile uphill drive from any railway, there is a splendidly preserved altar-piece by him. The Madonna, as usual, sits enthroned among adoring saints, but Lotto has added, with a touch of his characteristic humor, two little naked angels, who laughingly pelt the worshipping saints with showers of rose-leaves. In spite of the Gothic inset crowns which the priests, with their habitual taste, have seen

fit to nail on the heads of the Mother and Child, the sight of this picture is one of the rare artistic experiences of a lifetime. It is absolutely untouched by re-paint, and the colors are as clear and fresh as when the artist put them on, 350 years ago — "*herrlich wie am ersten Tag*."

The town itself, when once you have climbed up to it, turns out to be worth all the trouble taken to reach it. From the old walls you look out over the hills and valleys to the Adriatic, where more than a quarter of the whole coast-line stretches before you. Urbino lies to the left, the snowy peaks of the Counter-Apennines to the right. In front rises an endless succession of sharp hills, each crowned with its town — so picturesque and so inconvenient — where the Gothic invasions drove the Romans to take refuge from their earlier settlements in the river valleys. No town in Umbria or Tuscany has a view to compare to this; nowhere is landscape more magical. Turning back to the little town, after a first glimpse of the view, it seemed to be positively deserted. I came at last upon one inhabitant who indicated the way to the Piazza, where a man who seemed to be the other inhabitant conducted me to a *locanda* for luncheon. And here I must say, in parenthesis, that in the Marches, more than in any other parts of Italy, you feel yourself in the land where, as Thackeray said, "the *contadino* dances with the *Trasteveriana* in front of a *locanda* to the music of a *pifferaro*." The luncheon itself deserves mention — eggs, a "beefsteak of veal," fruit and coffee, costing exactly sixteen cents!

The Piazza of Cingoli is no less interesting than many which Baedeker stars in his guides. Here in 1531 a bishop of Viterbo built for himself one of those superb and stately palaces which the Renaissance has left as its richest legacy. Laying aside the Christian humility with which he was supposed to edify his flock, he had his name, and arms, and all his titles, such as Bishop and Patriarch of Constantinople, carved conspicuously over the front of his beautiful palace, that no one might mistake his greatness. There was some love of beauty for itself, no doubt, in the minds of these worldly prelates who have left us so rich a heritage of fine architecture and beautiful pictures (wherein their likenesses as donors are never omitted), but one cannot help suspecting that they knew right well, too, that beautiful things would best perpetuate their memory. Cingoli is by no means the only example in this part of Italy of the advantage of pride in high places. If it were not for Bishop Nicholas Bonafides, Monte San Guisto would be merely a remote wayside village, perched on a steep hill, utterly unknown to the rest of the world. But Lotto's masterpiece is there, — with the bishop's portrait, of course, — and in the Piazza is the magnificent Bonafides Palace, carved all over with the cardinal's hat and the other titles of the bishop, and these two works of art are worth a whole day's drive to see.

Most of the towns of the March, in fact, have more than the usual combination of natural scenery, architecture, and painting, which is the charm and glory of Italy. The palace at Urbino of Duke Federigo Montefeltre — for laymen were not behind bishops — became the model for all Italian courts of the latter part of the fifteenth century, and it is still one of the most beautiful, and by far one of the best preserved, of them all. In the library there is a large Flemish altar-piece, in which an obliging saint is politely introducing the Duke and his son to the Trinity. But more interesting, from an artistic point of view, is the collection, also in the ducal library, of the pictures of Timoteo Viti, Raphael's elder fellow-townsmen and first master. Here you see that it was from Timoteo and not from Perugino that Raphael took the sweet oval of the faces of his early Madonnas, and that from Timoteo, too, came that fresh purity and health that is so fascinating in Raphael's young work. Giovanni Santi, Raphael's father, can also be seen at Urbino, and elsewhere in the Marches, — to the disadvantage of his fame. Even his son's greatness cannot make a respectable painter of him!

Another of the towns where art and nature vie with one another in beauty is the village which has grown up at Loreto around the Casa Santa, — the Holy House, — believed by Catholics to have been carried here from Nazareth by angels when it was threatened by the Saracens. About this small one-story house there sprang up an immense church, whose fortified battlements make it look from a distance like a cluster of war towers. The Florentine architect Giuliano di Sangallo crowned it with a mighty dome, which harmonizes with the great hills about it. Within the church, Bramante encased the house in a rich shrine, and the piazza outside is half surrounded by a splendid arcade which he planned. Inside are two cupolas frescoed, towards the end of the fifteenth century, by two of the greater artists of the time, Signorelli and Melozzo da Forlì. The works of Melozzo are very rare. In the National Gallery he is represented, as an Irishman would say, by two pictures he did not paint. Outside of his native town there are only some detached frescoes, now preserved in the sacristy of St. Peter's, and this glorious cupola, which in majesty and grandeur can only be compared to Michelangelo's frescoes on the ceiling of the Sistine Chapel. Under this cupola sits, all day long, the active little friar, who, so to speak, "runs the establishment." Around the sides of the wall stretch rows of money-boxes, marked with the names of the different nations, and on his table I noticed, among moneys of many kinds, a number of familiar greenbacks. When he found that I was not prepared to spread his propaganda in the United States he insisted at least upon my accepting a little English book, which, he said, gave scientific proof that the Casa Santa is none other than

the veritable original home of Christ. But rash is the man who calls in science to prove a miracle! I cannot recommend the book as a means of convincing the doubtful. Signorelli's frescos in the adjoining sacristy are almost as wonderful as Melozzo's—mighty figures of prophets and apostles, with a circle of beautiful angels above. They will soon be practically invisible, alas! for the priests have decided to fill with stained-glass the one small window which now lights the room. Even more interesting is the collection close by, in the Palazzo Apostolico, of Lotto's latest works. Here he can be seen as nowhere else, in pictures as harmonious in tone as Whistler's "symphonies," and as strong and free in drawing and brush-work as Degas or Monet.

At Recanati, a six miles' drive from Loreto, there are more Lottos still to be seen. But the visit of a stranger was so unexpected an event that the first time I drove there I was unable to see the pictures. The librarian had gone away for the day, taking the keys of the *pinacotheca* in his pocket. A considerable part of the population gathered about to express unavailing sympathy with my indignation and to try to beguile the time by showing me memorials of Leopardi, their poet, and of Mr. Gladstone, who wrote an essay on Leopardi (in his "*Gleanings from Past Years*") and sent them several autograph letters, now piously preserved. The Lottos, however, were visible only upon a second visit, due warning having been sent this time to the librarian, the mayor and the town secretary. At Jesi, too, a town lying somewhat to the north of Recanati, there is a fine collection of pictures by Lotto in the library, which was once a church. Here, again, it is important to warn the librarian of your visit, or the chances are you will have to content yourself with gazing at the empty churches where once the Lottos were, and where guide-books, without danger of contradiction, still locate them.

In mentioning the pictures by Lotto I have not begun to exhaust the list of great paintings to be seen in a journey through the March of Ancona. In the most out-of-the-way places one is as likely to come upon a masterpiece as in more important towns, such as Pesaro and Ancona, which possess well-known altar-pieces by Giovanni Bellini and Titian. In Arcevia, for instance, a small village many miles from even such a tiny town as Sassoferrato, there is one of Signorelli's most important works, and in San Severino a large "Ancona," signed and dated, by Niccolò da Foligno. Until recent times most of the splendid Crivellis now in the National Gallery were in the churches a little to the south of this district; now, unfortunately, few of his works are to be found, at any rate until you get as far south as Ascoli, where he lived. Still there is always the exciting possibility of coming upon some unnoticed work by him in a remote corner, an adventure which actually happened to me in the sacristy of a small church in an inaccessible little town called Pausola. Some seventeenth-century painter had had the brilliant idea of surrounding Crivelli's severe and quiet Madonna with simpering naked angels, but he could not succeed in hiding the beauty of the original picture, any more than a fashionable dressmaker can succeed in hiding a really beautiful woman.

The feeling of discovery adds a certain charm to this region. You can never be sure that the writers of guide-books have really been everywhere; in fact, you strongly suspect at times that their information is largely hearsay. — *M. W. in the New York Evening Post.*

BOOKS AND PAPERS

THE "*Life of Michelangelo Buonarroti*," by I. Addington Symonds, in two volumes, crown octavo, gilt tops, extra cloth, with illustrations, is brought before the world in a mass and a manner for which, it is to be assumed, there were sufficient mercantile reasons. Not more than 900 pages—450 leaves—with liberal spacing and margins, are accommodated luxuriously in a bulk of 230 cubic inches, weighing seven pounds avoirdupois. What have readers done—to say nothing of purchasers—to be so over-burdened? The illustrations, it must sadly be said, are not of such uniformly superior quality as to justify an excess of dimension; otherwise, binding also being taken into consideration, the volumes might fall indulgently into the list of

"Such with their shelves as due proportion hold,
Or their fond parents dressed in green and gold,
Or where the pictures for the page atone,
And Quarles is saved by beauties not his own."

This, however, is not a quotable instance of escape from wreck, *de planche en planche*. An ambitious life of a great man—surely of a great artist—is bound to be a work of art. When materials are sufficient, as in the present case, we expect a worthy presentation of the life and the life-work of the subject—in this case, of the personal character of Michelangelo, and the characteristics of his productions in painting, sculpture and architecture. There is no need for uncandid suppression of shortcomings or demerits. Boswell has taught the world how weaknesses can be put on record without disgracing the fundamentally noble; without putting blemishes and blotches into the highest lights; or, what is even worse, turning virtues and excellences into vices and absurdities by driving description of them precisely over that perilous edge of exaggeration which it was their conspicuous merit to have skirted in security.

Leaving aside Mr. Symonds's appreciation of the personal characteristics of him whom Sir Joshua reverentially styled "that truly divine man," it must suffice here to indicate what measure of deference his works are treated with, and how far those who are acquainted with them may turn to these pages for sympathy; and what encouragement is ministered to those who at present are not to anticipate what some have regarded as the greatest opportunity of their lives.

"The David, to state the matter frankly, is a colossal hobbled-hoy. . . . The head of David is too massive and the extremities too largely formed for ideal beauty. . . . He wants at least two years to become a fully-developed man." An objection to the "close observance of the imperfections of the model at a certain stage of physical growth" is as rational as a regret that the legs of a foal are so disproportionately long as compared with its mother's. In this, as in a succession of cases, damning criticism is only rendered more absurd by association with inconsistent saving-clauses in terms even of enthusiasm.

Of the Sistine ceiling we read: "Michaelangelo has betrayed the inconsequence of his invention. It is clear that between the architectural conception of a roof opening on the skies and these pictures of events which happened on earth there is no logical connection. Indeed, Michelangelo's new system of decoration bordered dangerously upon the baroque style, and contained within itself the germ of a vicious mannerism." At the foot of the same page we have to step, without stumbling, if we may, upon this sudden contrast: "The vault of the Sistine does not strike the mind as being artificial, or worked out by calculation, but as being predestined to existence, inevitably, a cosmos instinct with vitality" (p. 241). And yet we are told of "the inconsequence of the invention."

On the "Moses": "We may even be repelled by the goat-like features, the enormous beard, the ponderous muscles and the grotesque garments of the monstrous statue. . . . Condivi does not seem to have felt the turbulence and carnal insolence which break our sense of dignity and beauty now."

Of the "Risen Christ of the Minerva": "Could this brawny man have ever suggested any distinctly religious idea? Christ, victor over Death and Hell, did not triumph by ponderosity and sinews. . . . Substitute a scaling-ladder for the cross, and we have here a fine life-guardsmen, stripped and posing for some classic battle-piece. . . . Those vulgarly handsome features, that beard pomaded and curled, etc., etc."

The "Last Judgment": "A puzzling work, at once fascinating and repellent; a collection of athletic nudes, — the total scheme of congregated forms might be compared to a self-deafening solo on a trombone. The picture is terrifying, dreadful in its expression of wrath, retaliation, thirst for vengeance, cruelty and helpless horror. . . . The angels with the symbols of the Passion are 'wrestling angels,' demonic angels tumbling in clouds like Leviathans. . . . The hosts of heaven are adult and over-developed gymnasts. Christ is portrayed as an angered Hercules hurling curses upon helpless victims."

Again, "Still the breath of life has exhaled from all these bodies, and the tyranny of the schematic ideal of form is felt in each of them. Without meaning to be irreverent, we might fancy [are we to suppose, consistently with reverence?] that two elastic lay figures, one male, the other female, both singularly similar in shape, supplied the materials for the total composition" (p. 1281).

"He even exaggerates what is masculine in the male as he caricatures the female by ascribing impossible virility to her" (p. 275).

We are called on to endure the reading of the like of this in regard to the sculptor of the "Pietà" of St. Peter's: "The only reason why his transcripts from the female form are not gross like those of Flemish painters, repulsive like Rembrandt's, fleshy like Rubens's, disagreeable like the drawings made by criminals in prisons, is that they have little womanly about them."

Of a cartoon of a Bacchante at Naples it is said: "An athletic circus-rider of mature years, with abnormally developed muscles, might have posed for this female votary of Dionysus" (p. 1276).

Yet we might bear this, too, — well, very well, — but the feeling evoked by such a criticism as the following of the awakening female figure of the Medicean chapel deserves only such an epithet as the pen refuses to write down, the tongue to pronounce:

"The 'Dawn,' again, in her deep lassitude, has nothing of vernal freshness. Built upon the same type as the 'Night,' she looks like Messalina dragging herself from heavy slumber, for once satiated as well as tired, stricken for once with the conscience of disgust." It seems as if the very spirit of the Roman past might rise up to protest against the misapplication of his honest, indignant satire to such shameless profanity.

But even worse is behind: "At best," he says, "Michelangelo's women carry us into the realm of Lucretian imagination," and, in explanation of what this would import, the evoking "images tallying to the vision of primal passion in the fourth book of the Lucretian epic," he transcribes from one of his former publications an elaborated paragraph which was anything but welcome there. He might well have foregone the temptation of indulging himself at the expense of nauseating his readers by returning to his transliteration of those sections which it was the shame of Dryden, in his latest years, to have come back eagerly to wallow in.

All this is very pitiable, and the more so as in an earlier work,

"The Renaissance: Fine Arts," Mr. Symonds has, however, succinctly given a far more sympathetic and far more just appreciation of the mighty Florentine. To this work, indeed, he sends the possessors of the present bulky life — and that is scarcely fair — for the completion of his critical survey of the Sistine ceiling.

This "life" helps us to little, if any, knowledge of its subject which is not obtainable with less alloy elsewhere. In some points, especially as to the relations of Michelangelo and Vittoria Colonna, it is very misleading. The interpretation of the drift of a letter of the Marchesa shows ignorance, which is extraordinary in such an Italian student, of her difficulties as a member of the suspected sodalium of Cardinal Pole in relation to the Inquisition.

W. WATKISS LLOYD.

PEOPLE who undertake to write books on technical subjects do not always remember that their work loses much of its usefulness if it does not cover its subject completely, so that those who consult the book for information may always be sure of finding what they want. The Germans understand this principle, and German technical books, although sometimes so detailed as to be rather exasperating to a reader not specially concerned with the subject of which they treat, are pretty sure to contain all that is to be known on that subject. In the present instance, Mr. Berg has undertaken to treat an important, if not very attractive, topic in the German manner, and from a watchman's shanty, or a section tool-house, to a great union or terminal passenger-station, there is no type of building connected with railway operation which is not intelligently discussed, and copiously illustrated, in what is necessarily a book of liberal dimensions. For the architect who, naturally, would rather concern himself with the more important classes of railway buildings, there are descriptions of two hundred and ten passenger-stations alone, explained by two hundred and seventy-two plans, elevations, sections and perspective drawings. From these, accompanied, as they are, with such observations and suggestions as only an intelligent railroad-man can give, an architect can form in two hours a clearer notion of what is needed in a design for such a building than he could by a week of effort to evolve a railroad station from the depths of his moral consciousness, which is all that most architects have to rely upon for suggestions in such matters. Even the specifications are given for several passenger-stations actually built, thus furnishing an important additional guide to the architect to whom, as to most architects, this special class of work is unfamiliar. The remaining buildings, such as snow-sheds, engine-houses, freight-stations, and so on, which are treated with minute care in the book, come much less frequently under an architect's care; but the descriptions of them are interesting, and, in a way, valuable, even to an architect, as adding detail and clearness to his conception of the conditions to be met, and the precautions to be observed, in every kind of railway structural work.

AMONGST the many periodicals which undertake to treat of building and architecture which have appeared during the last twelve months, the *Journal of Architecture* is the only one which seems to have a distinct purpose, apart from producing for its promoters more or less of an income from the advertisements of dealers in building-materials and appliances, — not that the promoters of this little publication despise or neglect this source of income, but, on the face of things, it is evident that the Philadelphia Chapter A. I. A. derive an income from the advertising field, not for the sake of a profit, but merely to procure an income which will support their undertaking. To what further length the Chapter may be induced to go on finding an increasing income might enable them to expand their undertaking, we cannot guess, but at present they confine themselves to offering a useful and desirable lesson in the several styles of architecture. Each number has contained five or six plates which illustrate, so far as so limited a number will allow, some feature of one of the Classic styles, and the lesson so presented is enforced by accompanying these plates with a single example of a modern building which illustrates the same subject. Thus the façade of the Philadelphia Custom-house illustrates the modern use of the Greek-Doric, while the Propylæa at Munich illustrates it in the next issue, and the façade of Girard College and the front of the Old Exchange, Philadelphia, show modern instances of the Corinthian order.

This purposeful undertaking of the Philadelphia Chapter is made-up in a small octavo form and printed in an attractive manner both as to plates and text, which in a more or less successful manner supports the lessons suggested by the plates.

The editors seem to have forgotten how frequently architects dissociate plates from their accompanying explanatory text, and they would do well, we think, to add full titles to the plates in future. And as the Propylæa at Munich is spoken of as "one of the most scholarly and artistically successful examples of the so-called classic revival period of modern architecture," it surely would have been no more than fair to mention Leo von Klenze's name in connection with it.

THE MORMON TEMPLE. — The new Mormon Temple will be dedicated at Salt Lake, April 6. The construction of the building was begun forty years ago, and it has cost \$2,500,000. — *Salt Lake Tribune*.

"Buildings and Structures of American Railroads." A reference-book for railroad managers, superintendents, master-mechanics, engineers, architects and students. By Walter G. Berg, C. E., principal assistant engineer, Lehigh Valley Railroad, New York; John Wiley & Sons, 53 East Tenth Street, 1893.



WORCESTER CHAPTER OF THE AMERICAN INSTITUTE OF ARCHITECTS.

THE regular monthly meeting of the Worcester Chapter of the American Institute of Architects was held at the Worcester Club last week. Dinner was served at six o'clock. Business of a local nature was transacted.

ENGINEERS' CLUB OF PHILADELPHIA.

THE secretary read five letters that had been received, expressing the opinions of their writers as to whether papers should be given to engineering journals before they had appeared in the Proceedings of the Club, four of which were opposed to such action, while the fifth favored it.

The general opinion was that the Proceedings should be issued promptly, in order that the papers might appear as soon after they had been read as possible, and that simultaneously with their appearance in the Proceedings they might be given to the technical journals.

The president referred to the varying practice of the national organizations of civil, mining and mechanical engineers, which print all papers and issue them to members prior to, or immediately after, presentation. These papers appear in pamphlet form, subject to revision, and are accompanied by the discussions when possible, but additional written discussion is also permitted. The mining and mechanical engineers also issue the revised papers and discussions in annual volumes.

Dr. Henry Leffmann presented the paper of the evening on "The West Sterilizer for Water and Milk," illustrating his remarks by the projecting lantern and by means of the apparatus itself.

He considered the application of heat the best method of sterilization. A temperature of 212° F. will accomplish this if long continued; higher temperatures (say 240° F.) produce very rapid destruction of all living organic matter. The employment of this method is, however, generally inconvenient and expensive. Moreover, if water be boiled in an open vessel not only is it impossible to get the temperature above 212° F., but the dissolved gases are expelled, rendering the water flat and rapid; and in some natural waters much mineral matter is deposited. Boiling in closed vessel requires care, unless a perfectly automatic and continuous method be devised.

The West sterilizer is so constructed as to permit the continuous heating of water intended for drinking purposes to temperatures from 212° to 250° F., thus including temperatures amply sufficient to destroy all infection. The heating is done in closed cylinder provided with an automatic valve, by which water will not be permitted to pass to the storage-chamber unless the proper temperature is maintained. If by any change in the condition of the supply or source of heat the temperature of the sterilizing-chamber sinks below that at which the valve has been set the valve closes and water ceases to flow. It is thus impossible to pass unsterilized water to the storage-chamber. The automatic valve can be set at a desired temperature. The heating taking place in an entirely closed vessel does not deprive the water of its gases.

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SPECIAL COMMITTEES, 1893.—ON REVISION OF CONSTITUTION AND BY-LAWS.

Geo. B. Ferry, Milwaukee, Wis.; C. E. Hilsley, St. Louis, Mo.; R. W. Gibson, New York, N. Y.

ON REVISION OF SCHEDULE.

W. G. Preston, Boston, Mass.; W. W. Clay, New York, N. Y.; W. C. Smith, Nashville, Tenn.



[Contributors are requested to send with their drawings full and adequate descriptions of the buildings, including a statement of cost.]

HOUSES ON NORTH STATE ST., CHICAGO, ILL. NO. 485, HOUSE OF A. SANBORN, ESQ., MR. CHARLES S. FROST, ARCHITECT. NO. 483, MR. F. B. TOWNSEND, ARCHITECT, CHICAGO, ILL.

[Hello-chrome, issued with the International and Imperial Editions only.]

✓ SKETCH FOR A COUNTRY HOUSE BY MR. RICHARD WILLIAMS, BRIDGEPORT, CONN.

✓ HOUSE OF W. K. BIXBY, ESQ., ST. LOUIS, MO. MR. W. ALBERT SWASEY, ARCHITECT, ST. LOUIS, MO.

THIS house is built of light-yellow Roman brick, with terra-cotta finish of a golden-brown. The roofs are covered with red Vermont slate.

✓ HOUSE AT WELLESLEY HILLS, MASS. MR. WARREN A. RODMAN, ARCHITECT, BOSTON, MASS.

✓ STABLE AND AMBULANCE-STATION FOR THE CITY HOSPITAL, BOSTON, MASS. MR. E. M. WHEELWRIGHT, CITY ARCHITECT, BOSTON, MASS.

✓ HOUSE FOR DR. C. A. HERTER, 819 MADISON AVE., NEW YORK, N. Y. MESSRS. CARRÈRE & HASTINGS, ARCHITECTS, NEW YORK, N. Y.

[Additional Illustrations in the International Edition.]

OSSUARY AT SIZUN, FINISTERRE, FRANCE.

WE reproduce from "*L'Encyclopédie d'Architecture*" a view of the ossuary which is placed at the side of the triumphal arch which serves as the entrance to the cemetery adjoining the church at Sizun, Finisterre. This kind of building is quite numerous in this portion

of Brittany. They serve to store the bones withdrawn from sepulture after time has expended upon the corpse its office of decomposition. The necessity of these exhumations may be conceived in view of the fact that within the cemetery confines, usually sufficiently restricted in area in the neighborhood of the church, it is continually necessary to provide free space for new burials. Now, these little monuments always form, together with the triumphal arch by which entrance is had to the "God's-acre," together with the calvary which decorates the centre of the enclosure and the parish church, situated at varying distance, a decorative *ensemble* whose originality and poetic grandeur cannot be imagined when it has not been seen. In these kinds of necropolises the Breton artist displayed the masterly qualities of the experienced decorator and a consummate knowledge of effects and the poetical feeling which attracts and retains the attention. One must see these necropolises and visit these monuments to be able to thoroughly appreciate our thought and share the feelings of wondering emotion which they cause to spring in the mind of the artist and the imagination of the poet. The reproduction is powerless to embrace at the same time all the space included within the absolutely theatrical view which one has before him, as, standing in the centre, he turns his eyes from point to point of this marvellous decoration, and consequently can give only an incomplete idea of it. Still, it does fair service in enabling us to trace the detail, and to draw from the study of this interesting composition a precious lesson. The ossuary at Sizun, like the triumphal arch at the same place, dates from the second half of the seventeenth century. It would seem rather to date from the last years of the sixteenth, for in the character of the sculpture and the mouldings it partakes much more of the architectural work of the reign of Henri II than of that included in the time of Louis XIV. The rational traditions of the Middle Ages are here manifest, although evidently altered by the existence of a preconceived idea which caused the adoption of a form derived from antique *ordonnances* rather than from some other which had no other origin than the necessity of satisfying a requirement. Nevertheless, the work is judicious as a whole, and far from being illogical in the study of its details. The construction is good and correctly indicated, the decoration is rich and brilliant without heaviness or pretentiousness. The slate roof presents a curious instance of a cresting which is even to-day still used in this region, and which certainly must date back to a remote time. In place of having recourse to lead, which, doubtless, was too expensive, the Breton builders have ever preserved the custom of laying the last row of slates upon each pitch so as to pass one another, each slate being laid at an angle, so as to form an inclined cresting, having the form of saw-teeth. Sometimes these teeth were perforated with open-work, devised after some geometrical pattern. Here the slates have been skilfully cut in *fleurs-de-lis*, and when the cresting was in good condition it must have produced an agreeably decorative effect. Unfortunately, there now survive only a few remains of this work, which, however, allow the observer to take account of the process, at once decorative and constructive, which, although primitive, is none the less very curious.

CHURCH OF ST. THEGONNEC, FINISTERRE, FRANCE.

ANOTHER plate gives a view of the tower of the Church of St. Thegonnec, a little town in the environs of Landivisiau, Finisterre. This township possesses a complete and remarkable collection of the different edifices which constitute a Breton necropolis—triumphal arch, calvary and ossuary, this last with a fine crypt in which a group of life-sized figures represents the entombment of the Saviour. The church was rebuilt last in the seventeenth century, and the highest tower, which only our view shows, dates from 1605. The arch and the ossuary are seen in the foreground of this view. The first dates from 1587, the second, attached to it and forming with it a homogeneous whole, dates, nevertheless, only to 1677. A little farther off we see the calvary (1610), whereon are a countless number of statuettes, representing the principal episodes of the Passion. The beauty and amplitude of this decorative spectacle exceeds description, but one thing that is curious to remark is its incomparable originality, so to style the eccentricity of the good quality of these forms, which have nothing in common with the architectonic conceptions of the same epoch in any other part of France. These pylons, their crowning features, and the attachments which buttress them, somewhat recall the edicules which front the Hindoo pagodas, and cause one to think of Cambodian art. If it were not for the cross which surmounts them, one might rather believe he found himself in the presence of some building erected at Cakya-Mouni than before the exterior enclosure of a Christian necropolis. The influence which the preconceived system of antique orders might have exercised over this work, erected in the middle of the reign of Louis XIV, when the fiat went forth from north to south, from east to west, to systematically clothe all buildings in a skin of Roman art,—this influence, we say, nowhere reveals itself. And if the system of moulding smacks, although very indirectly, of the manner followed in antique art, the rôle that it plays in the general conception is sufficiently effaced, for this reappearance of the past, become the fashion of the moment without serious reason, not to exercise any unfortunate action on the marked individuality of the work. Like his mediæval predecessor, the Breton architect of the seventeenth century knew how to show here that he understood the subordinating of difficulties and the suppleness of form to the exigencies of the

material which he had to use. A lantern which surmounts the tower and the four smaller belfries which buttress it, though having the mass of those edifices of the kind erected elsewhere during the Renaissance period, are not at all similar to those of the monuments of Touraine. The weight of their lines and the simplicity of their masses denote a manner of conception that is very broad, a method of creation which is entirely healthy. Here, still and always, the form is the result of the need, the consequence of the thought and not the product of a preconceived system based on the factitious exigencies of an irrational and valueless sentiment. It is good and healthy architecture, because it is independent in its principles, in its means and in its ends. They do not build like this to-day in this same region, and everybody regrets it, except, perhaps, the Academy, which is the cause of it.

INTERIOR VIEW OF THE CHURCH OF THE ROSARY, LOURDES, FRANCE. M. HARDY, ARCHITECT.

CHURCH OF THE ROSARY, LOURDES, FRANCE. LATERAL VIEW SHOWING APPROACHES. M. HARDY, ARCHITECT.

CHURCH OF THE ROSARY AND THE BASILICA, LOURDES, FRANCE. GENERAL VIEW. M. HARDY, ARCHITECT.

This and the preceding two plates are copied from *L'Architecture*, from which we reproduced other views and a very interesting description in our issue for January 28.

"THE FALL OF BABYLON," AFTER THE PAINTING OF M. GEORG ROCHEGROSSE.

A DESCRIPTION of M. Rochegrosse's great painting, "La Mort de Babylone," which was exhibited at the Salon of 1891, was published in the *American Architect* for June 20, 1891. This plate is copied from *Zeitschrift für Bildende Kunst*.

BACKFORD CHURCH REREDOS. MESSRS. DOUGLAS & FORDHAM, ARCHITECTS, CHESTER.

We devote a page to the illustration of this design, because of the excellent quality in detail which it exhibits. The general form of this reredos is governed by the necessity of hiding as little as possible the memorial window behind. The work has been very admirably carried out. On one side is shown our Lord with the cross, and on the other after the Resurrection; the canopies for the candlesticks and cross have decorated diaper backgrounds. The wall-space flanking the reredos on either side is hung with a rich fabric. The whole work is a memorial to Mrs. Mary Taylor, who died at Mollington, August, 1891, by her husband and sons. The altar-cloth and window suggested are suppositions. The plate is copied from the *British Architect*.

"THE SEASONS," DESIGNED BY W. S. BLACK.

This frieze-paper design, illustrative of "The Seasons," has been executed by Messrs. Jeffrey & Co., of Islington, and is introduced as a single-print monotone paper. It is so arranged that the hanger may be able to trim his paper without cutting through any of the actual design. The aim of the designer has been well realized in producing a background paper which is full of interest, while the figures are sufficiently subordinated so as not to be too obtrusive. The frieze is adapted for use with any single-print paper in combination. The joint in the hanging of the wall-surface paper follows the wavy line which divides the scroll pattern enclosing the figures. The sample, in reds, which we have before us, furnishes certainly a warm and well-conceived example of decorative design. Our illustration was prepared from a specially-printed black-and-white impression. Among the other papers issued for the forthcoming season by the same firm are several of novel and conspicuously attractive merit. In what we may term the "specially artistic" class is a tulip paper by Mr. Heywood Sumner, treated in very quiet monotone colorings. A brilliant and excellent piece of printing is to be noted in the frieze of birds and flowers by Mr. C. A. Voysey, whose paper, called the "Isis," in transparent greens and blues, is strikingly original and clever in drawing. Mr. Lewis F. Day's "Vatican" design, and "The Buckingham" by Mr. H. W. Batley, are handsome and well-designed all-over patterns, which in execution have received the utmost care in their several renderings in bold as well as delicate tints, to meet a considerable variety of locations. Some new ceiling-papers make up the series, added to which are machine-made papers of great variety. The plate is copied from the *Building News*.

WEST END BRANCH, CREDIT LYONNAIS, COCKSPUR STREET, LONDON, S. W., ENG.

In designing a bank for this great financial company, it was fitting that French Renaissance should be employed. Everybody assumes that architecture, as many other things, is better managed in France than among us, but we imagine that the directors of the Crédit Lyonnais would be the first to acknowledge that Messrs. Davis &

Emanuel have been as successful as any of the numerous French architects who have been employed to erect banks and offices for the company.

THE CATHEDRAL, MAYENCE, GERMANY.

We have to apologize to many correspondents who have written to us complaining of the delay in the publication of Prout's drawings. As we explained on a former occasion, there are many causes which interfere with the regular production of the parts of a series in a journal like this. As the whole of the plates are now on stone, subscribers may be confident that they will receive all the examples of Prout's works, which we have undertaken to produce.

NEW PREMISES, LLOYDS BANK, LIMITED, BEXHILL-ON-SEA, ENG. MR. ARTHUR WELLS, F. R. I. B. A., ARCHITECT, HASTINGS.

The arrangement of the bank is shown on the ground-floor plan, above which is the manager's residence, with private and back entrances. The upper part of the building is set back by reason of the estate regulations as to the building-lines. The building has been constructed of local red bricks; the roof is covered with Elterwater (Westmoreland) green slates, and the doors and sashes to the banking-room are of polished teak.



[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.]

CELLAR OR NO CELLAR?

BOSTON, MASS., February 13, 1893.

TO THE EDITORS OF THE AMERICAN ARCHITECT:—

Dear Sirs,—In conversation many years ago with the late Dr. Agnew of New York, of highest authority on hygiene, he told me that he thought that, for sanitary reasons, there should be no cellar under any dwelling-house. If there were, he remarked, the floor above should be most carefully sealed against the passage of any cellar-air into the house, while the entrance to the cellar should be wholly outside the house. This was in the beginning of my practice in dealing with the construction of factories, and it became one of the motives, aside from safety and economy, in treating the subject of the basement-floor.

I now venture to put a question which has become of considerable practical importance to architects: Ought there to be a cellar, in the ordinary sense in which that word is used, under the occupied parts of buildings of any kind, such as schoolhouses in which children are taught, factories in which men and women work, lower stories or basements of houses where much of the household work is done? In other words, ought not the lower story of almost every building to be put on well-drained ground above grade, both with a view to economy in construction, and for sanitary reasons if for no other?

In factory practice all types of basement-floors built of timber and plank placed a few feet above the ground, in an excavation or even at grade when not open to the air on every side, with the expectation of ventilation beneath, have failed. It may be alleged that it has proved to be impracticable to ventilate a mere air-space under a basement-floor of a large building over the ordinary gravel or hardpan of the soil, so as to prevent the decay of timber. In the best mill practice excavated basements or cellars, half to two-thirds under ground, with cemented floors of concrete, have been sufficiently well ventilated; but that type of construction makes an expensive underground-story, of which, as a rule, but a small part can be put to effective use. It is apt to cost as much or even more by the square foot of floor than any other floor-surface in the factory.

On the other hand, in many workshops and in some factories it is very desirable to be able to set machinery as nearly as possible upon the solid ground with timber and plank interposed between the ground and the machine, since, for many reasons, machinery may not be placed directly on concrete. This has been safely accomplished by making the concrete over a well-drained floor-space with asphaltum or coal-tar in place of cement. Timber and plank laid in cement will rot very speedily and a cement concrete is a quick conductor of heat. An asphaltum or coal-tar concrete properly laid is a non-conductor of heat, an antiseptic, and is impervious to moisture; upon such a surface timber and plank laid solid last as well as in any other part of a factory building.

Under these conditions, the question arises, May not expensive basements or cellar-stories be done away with, except so far as it is either cheaper or more convenient to make an excavation for absolute use and not merely for the purpose of interposing a partly underground story beneath the main floor of a building?

In dealing with the condensation of moisture on interior surfaces, absolute success has been attained in preventing such condensation

even over the Fourdrinier or the cylinder machines in paper-mills, from which the maximum quantity of humidity is discharged in the process of converting wet pulp into dry and finished paper. Composite roofs made of proper materials six to seven inches thick have proved to be absolute non-conductors of heat, cold and moisture, and in their application to these machine-rooms, with proper ventilation to remove the steam, the condensation of moisture on the under side has been wholly done away with.

Reverse this process: May we not put a composite floor underneath the lower story of a building, reversing the order of materials which are used in the roof, and in this way put an absolute non-conductor of heat and moisture between the first occupied room and the well-drained soil below this composite floor? Why not? Many examples can be cited of complete success in this practice, which is now becoming common in our lines.

The following conversation occurred between myself and a very practical man not long since, in the discussion of a building in which he desired to put all his main work on a single floor. On my suggesting this method of construction, he said, "Oh, but I must have a cellar! It would not be fit to build such a building without a cellar."

"Very well," I replied, "then we will put a cellar under your main floor. You will desire to floor your cellar, will you not?"

"Certainly."

"What will you floor it with?"

"Cement or concrete."

"Would it not be better to use coal-tar or asphaltum?" explaining the reason.

"Certainly," said he, "we will adopt that floor."

"Then," said I, "you had better have a light cellar, had you not? You can afford to put your main floor considerably above grade for your purpose."

"Oh, yes, light by all means!"

"Shall we put it half-way out of the ground?"

"Yes, as much as that."

"Good!" said I. Next I asked, "But where you propose to put this building will it not cost you a great deal more to excavate than it would to keep up well toward the surface?"

"Yes," he replied: "Very hard place to dig."

"Then," said I, "suppose we put the cellar two-thirds above ground."

"Well," he replied, "why not?"

"Now, then," I said, "you have just back of your location a good gravel-bank: wouldn't it be a good deal less costly to grade up a foot and drain well than it would be to dig any hole of any kind?"

"Why, certainly," said he.

"Then," said I, "why not put your cellar-floor one foot above grade and drain it well?"

"Why," said he, "what has become of my cellar?"

My reply was, "You have put it in the best place possible, with the floor one foot above ground, and that cellar, wholly above ground, being placed under your main floor, will cost you less than it would to dig a great hole in the ground in which you will generate foul air and accumulate rubbish."

"But," said he, "you have given me a two-story building with two floors, and that is double the floor-space that I want."

"Yes," I replied, "I have given you a two-story building with two equally useful floors at less cost than you would have put into a one-story building with a deep and almost useless cellar under it. What are you going to do about it? Will you waste your money by digging a hole in the ground?"

"No," he said.

"Well, what will you do?"

"Why!" said he, "why can't I leave out the upper story and bring the roof down so as to cover in the first story?"

"Well," I remarked, "why not? I think you have landed where I meant you should. If you can cut off the passage of heat, cold and moisture by properly constructing a composite floor directly upon well-drained ground, why do you want to dig a hole underneath it, at heavy cost?"

"But," said he, "I meant to store my coal in the cellar."

"Well," I said, "you can dig a hole for your coal if you want to: put it down in the hole in order to go through the work of bringing it up again. Why not put it in a shed in the rear on the level of the floor where you use it?"

"But," said he, "I meant to have put my sanitary appliances down below."

"Then," said I, "you would probably have made your cellar a great deal more foul than it would be under ordinary conditions. Better put them outside, for every reason, whether you have a cellar or not."

My practical man thought he had found for himself an excellent method of getting the room he needed on one floor at about three-fifths or perhaps one-half of what he expected it would cost him on his own plan for one floor and cellar. Yet there are still many persons who think that they must have a cellar under the main floor.

To what extent can such persons be persuaded to build their cellars wholly above grade by at least one foot?

In other words, the question put to architects and, through them, to owners, may well be, If you have no use for a cellar, why put one under your building? A building costs a certain sum by the unit of the square foot of floor, counting every floor. If the use of only

one floor is called for, why put a more expensive floor ten feet below it by digging a hole in the ground?

If it is expedient to use two floors and to have all the light, air and ventilation one can get on both, why make one a basement partly below ground and partly above? Why not put them both above grade?

Of course these questions apply to open spaces where it is not necessary to go down deep into the bowels of the damp earth or high up into the air in order to get floor-space. On a broad area floor-space on one floor can be provided at less cost than by excavating or going high into the air; on two floors at the lowest cost at which floor-space can be provided in any way.

Then why provide either cellar or basement floors below grade except in deference to a superstition derived from a period when the right way of constructing a floor directly upon the ground had not been devised?

EDWARD ATKINSON.

ONE CLUB AND THREE ARCHITECTS.

SARATOGA SPRINGS, N. Y., February 9, 1893.

TO THE EDITORS OF THE AMERICAN ARCHITECT:—

Dear Sirs,—They propose building a Gentlemen's Club here in Saratoga Springs, N. Y. Three architects have presented plans for same; they have also submitted estimates from responsible builders.

When the Club met to decide on one of the three a resolution was passed, as follows:

Resolved, That before the Club adopts any plan for a building it requires from the architect presenting a plan a certificate valid in lieu that the building when completed according to the plans so presented shall be a completed building suitable for the occupancy of the Club."

Will you kindly tell me through the columns of your valuable paper if architects are ever called upon for such as called for by the above resolution?

Yours respectfully,

"A SUBSCRIBER."

[Such ridiculous propositions are sometimes made to architects, but we never heard of an architect of any reputation in the profession who acceded to them. EDS. AMERICAN ARCHITECT.]

NOTES AND CLIPPINGS

THE PERILS OF REFEREESHIP.—A singular lawsuit with an unexpected ending is that lately tried in Paris against the sculptor Jacques France, whose real name is Paul Lecreux, for trying to assassinate Binot de Villiers, the referee in a suit against the sculptor for selling the same thing to two different publishers. He and Charles Gautier got up a popular bust called "The Republic," and France sold the right of reproducing it by lithography to two different publishers. When M. Binot, as referee, decided against him as to the second sale, the sculptor sought him at his office, fell upon him and nearly killed him. What made the attack worse was the circumstance that France, before attacking the referee, asked another man in the office to go outside. Then he struck Binot twenty blows with a sculptor's bezel. At first France acknowledged that he intended to kill his man, but on the formal trial boasted of his physical strength, and maintained that he did not wish to kill him, though it would have been easy. Strange to say, the jury at the Cour d'Assises acquitted him. His victim, having entered suit in the Cour des Débats, had the barren satisfaction of winning damages to the extent of one franc. Juries are getting strange reputations for absurd verdicts in other countries besides ours. — *New York Times*.

A TIMBER FLUME AT FRESNO, CAL.—The county of Fresno, Cal., boasts of a flume fifty-two miles long, built of timber throughout and designed for conveying lumber from the place of felling in the Sierra Nevada Mountains to the plains below. In section, the flume is V-shaped, the angle being 90 degrees; the V is 21 inches deep and for the most part 3 feet 7 inches across the top, this width being increased, however, at various points, where a decrease in the grade necessitates a larger volume of water to carry the timber, the lower terminus being 5 feet 4 inches wide by 31 inches deep. The main supply of water is received from a lake near its head, but four additional feeders are led into it at different points along its length. The sides of the flume are constructed of 1 1/4-inch boards, and the structure is carried on trestle-work for nearly the whole length, these trestles being as many as 130 feet high in some of the deep cañons crossed by the flume. The steepest grade is one of 1,200 feet to the mile, maintained for about 3,000 feet. — *New York Sun*.

DEFECTS IN TIN-LINED TUBES.—Some brass condenser-tubes in the United States cruiser "Baltimore," after being in service for a year or more, were found to have experienced a peculiar change. In many places the metal was changed to almost pure copper, of a spongy texture, the zinc having completely disappeared. An investigation showed the probable cause of the failure to have been an electrolytic action between the tin lining of the tubes and the brass, the sea-water circulating through the condenser forming the electrolyte. Had the tin-coating remained perfect, no corrosion would have resulted; but the mud and grit carried in suspension through the condenser cut away the tin-coating in spots, and it was at these spots that the change of metal occurred. It was concluded that if the tubes had not been tinned at all they would have remained intact. — *Scientific American*.

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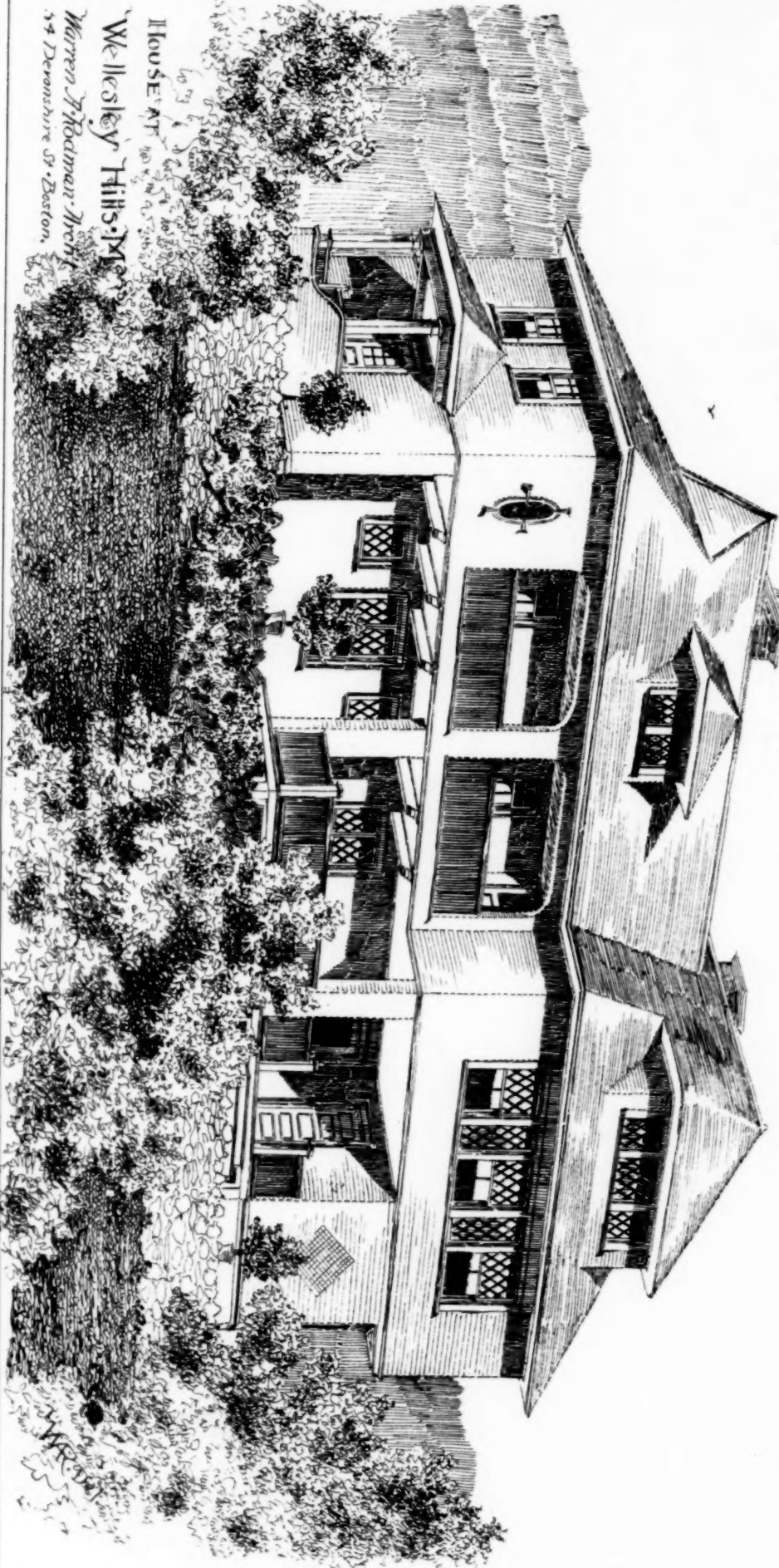
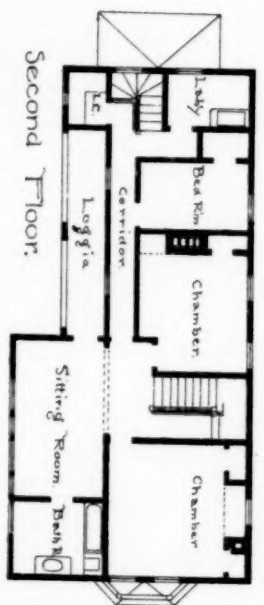
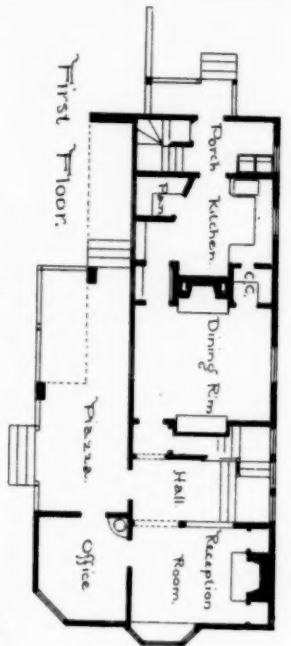
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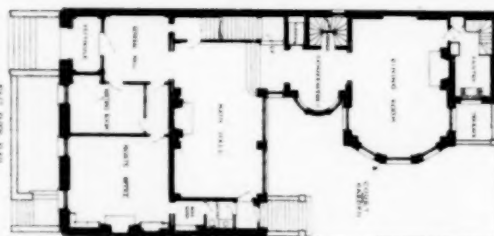
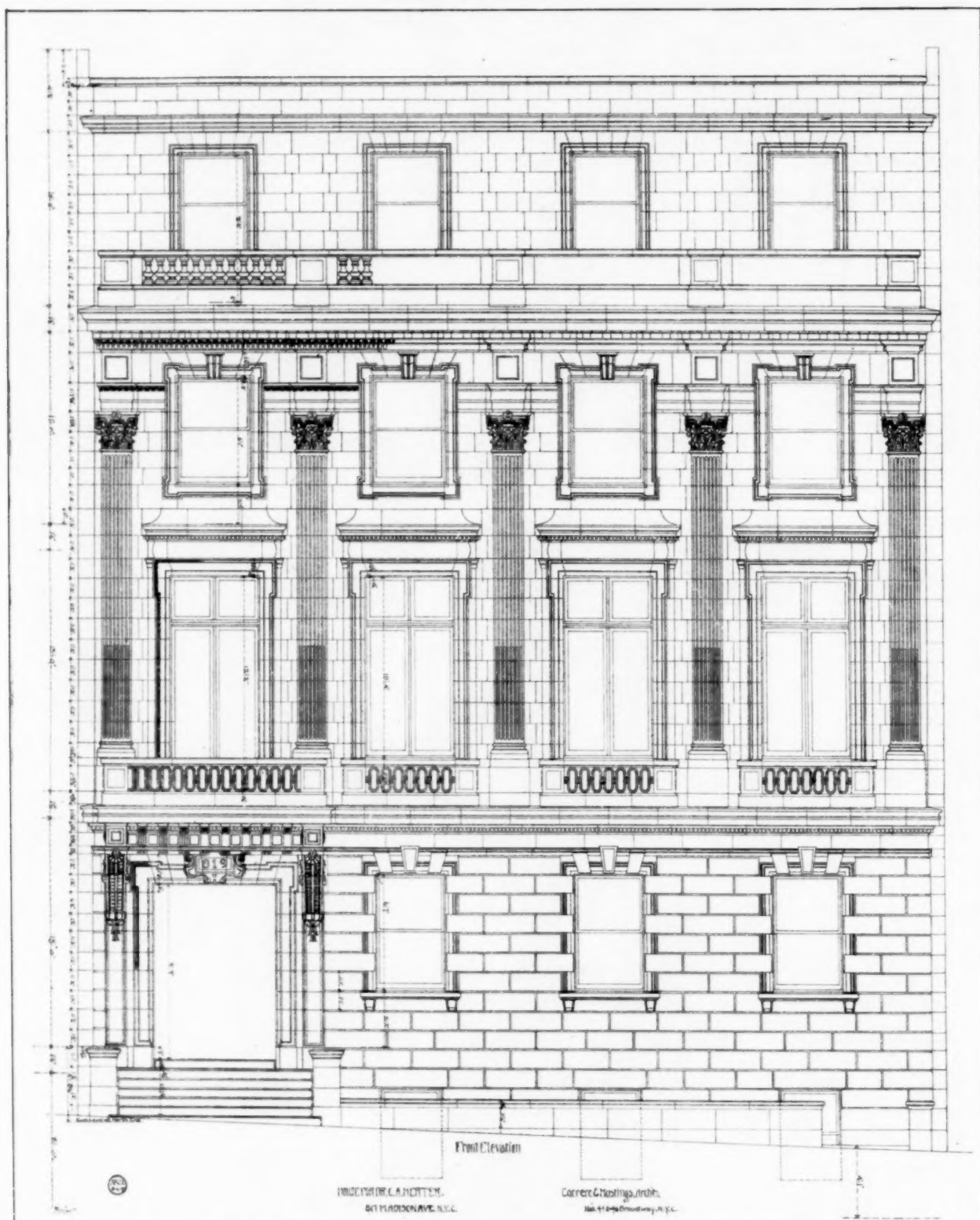
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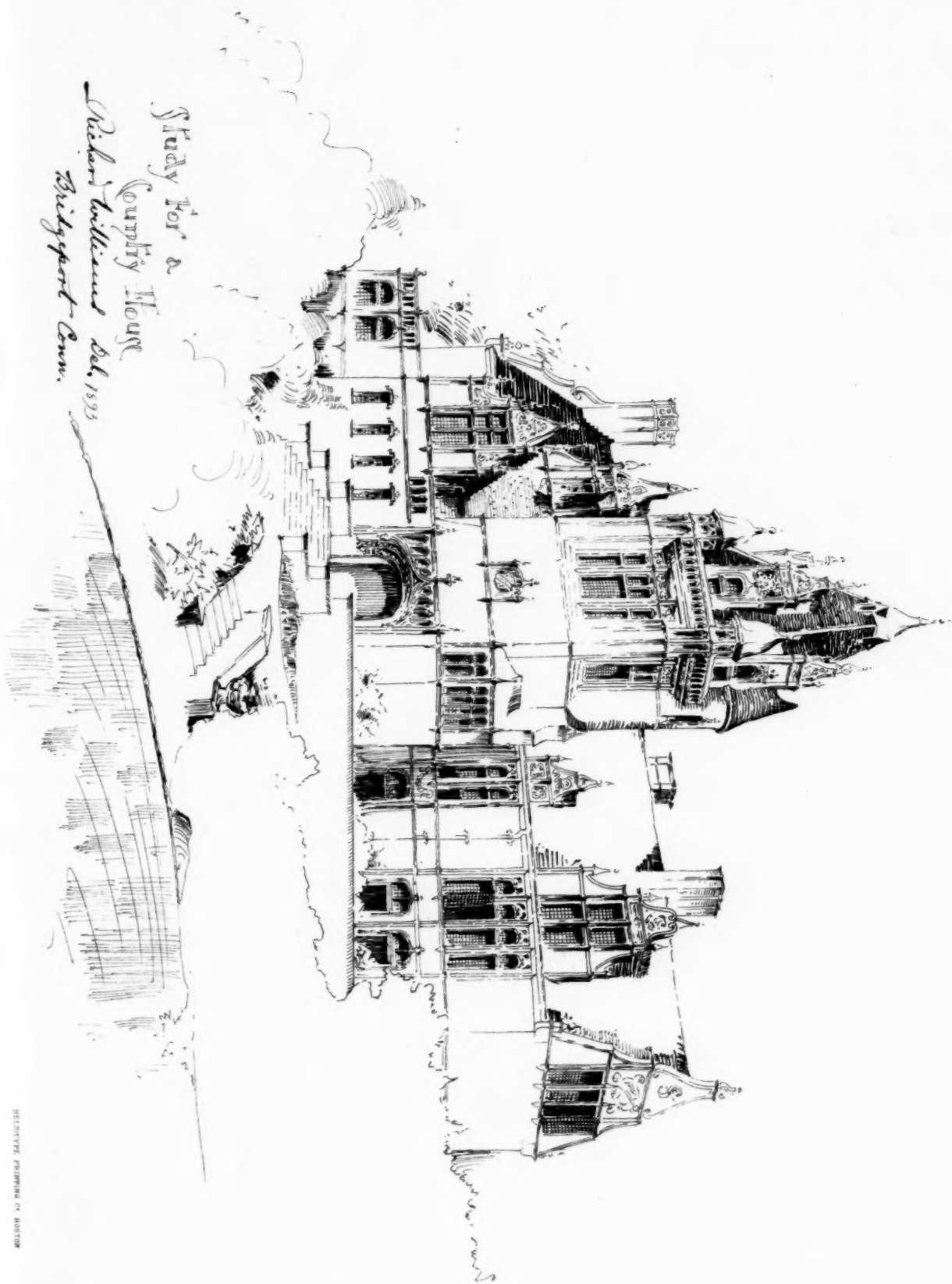
HOUSE AT
Wesley Hills, Mass.
Wm. A. Rodman Archt.
14 Devonshire St., Boston.

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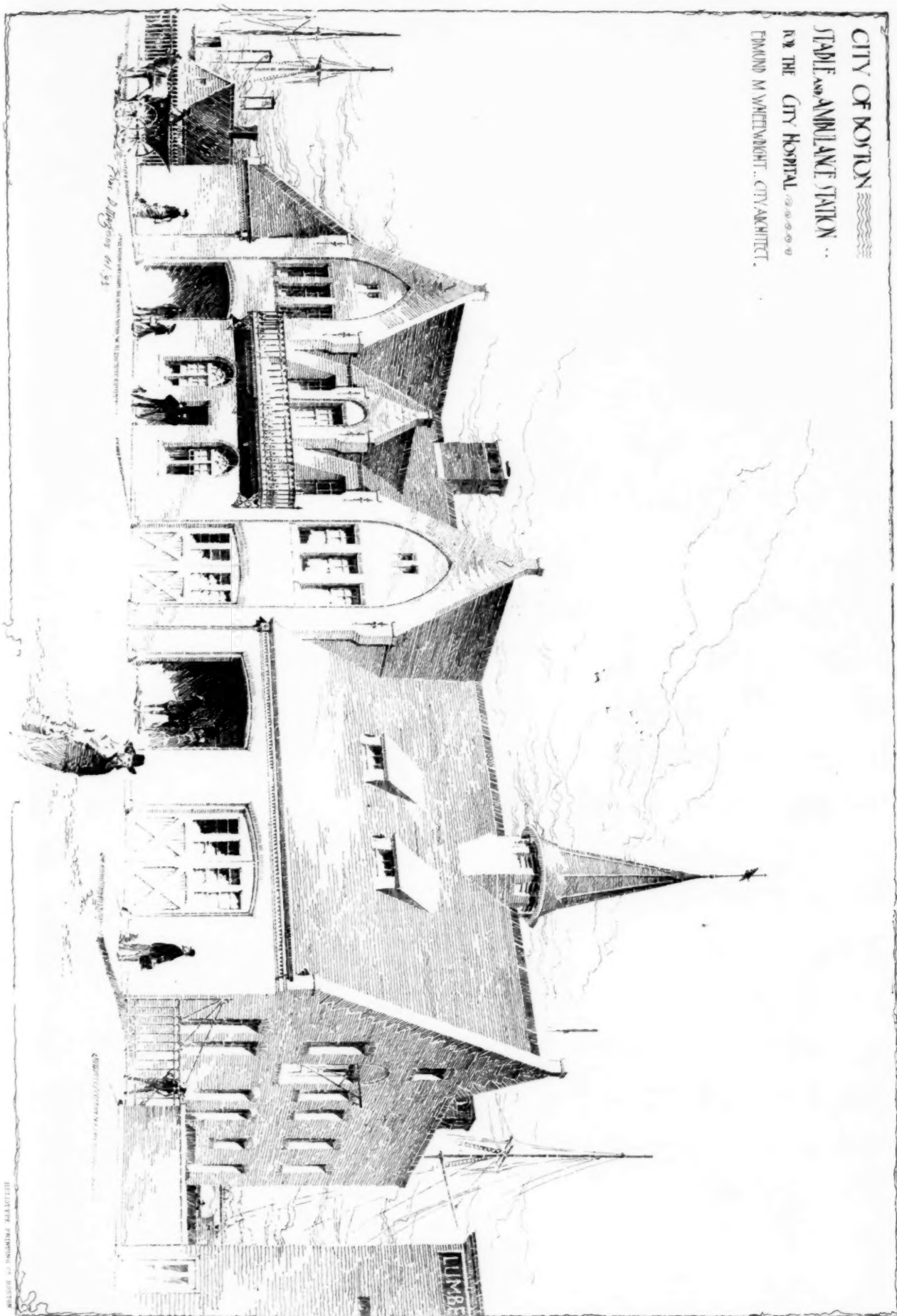
Study for a
County House
Richard Williams del. 1893
Bridgeport Conn.





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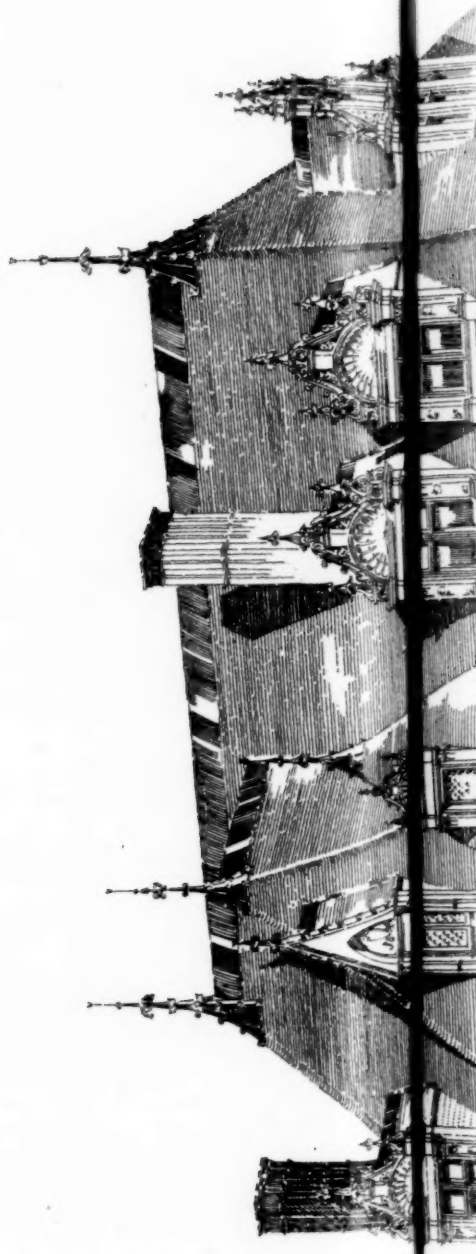
CITY OF BOSTON
STABLE AND ANIMAL STATION
FOR THE CITY HOSPITAL
EDWARD M. WHEATNIGHT, CITY ARCHITECT.

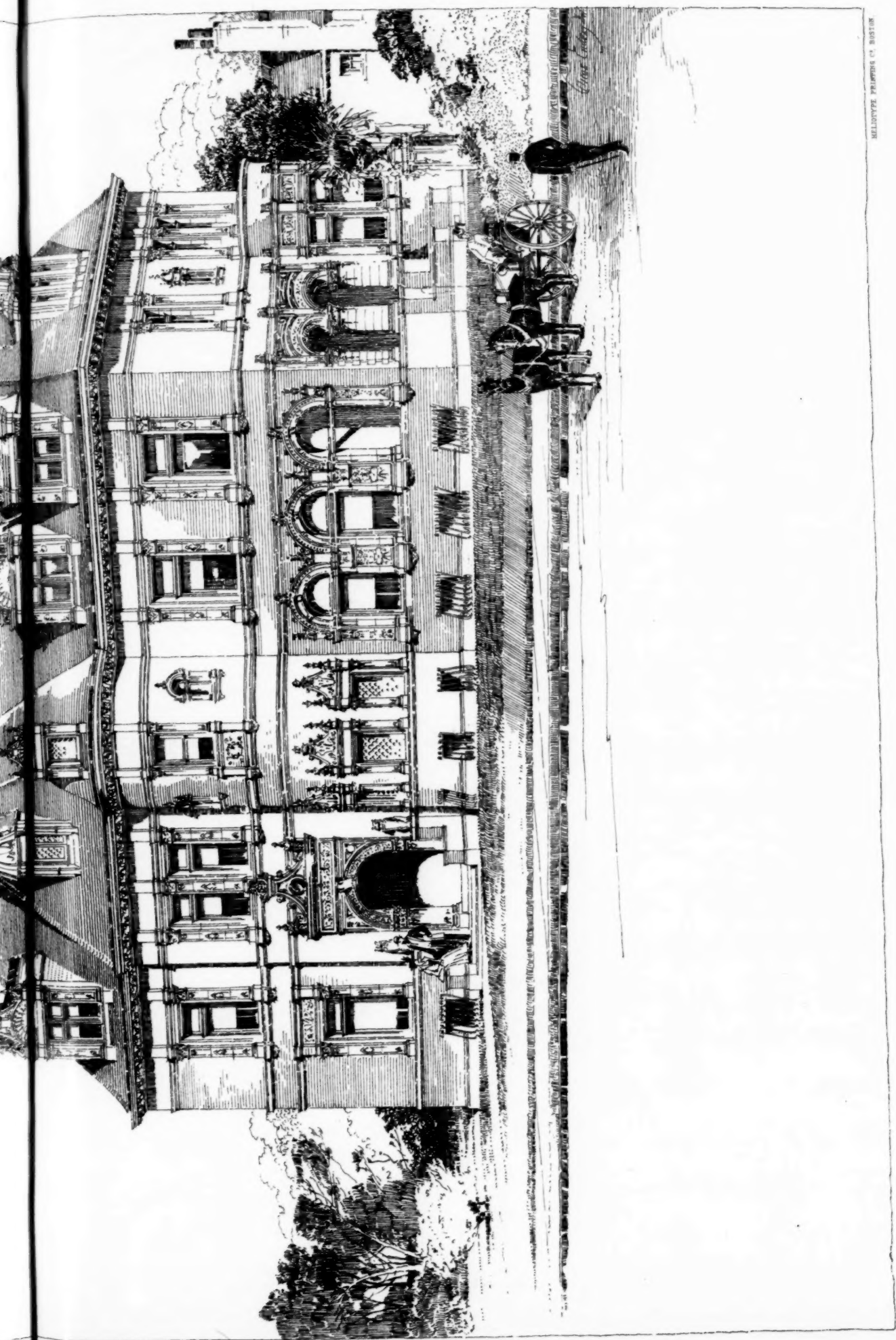




RESIDENCE OF W. BIXBY, ESQ., SAINT LOUIS.

W. ALBERT SWASEY ARCHT.





WELLS, PIERCE, FENNER & SMITH, N.Y.