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DECEMBER 6, 1890.

THE
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AND BUILDING NEWS

VOL. XXX.

* REGULAR EDITION *

NO. 780.

ARCHITECTURE



ENGINEERING

DECORATION

TICKNOR & COMPANY

CONSTRUCTION

BOSTON MASS.

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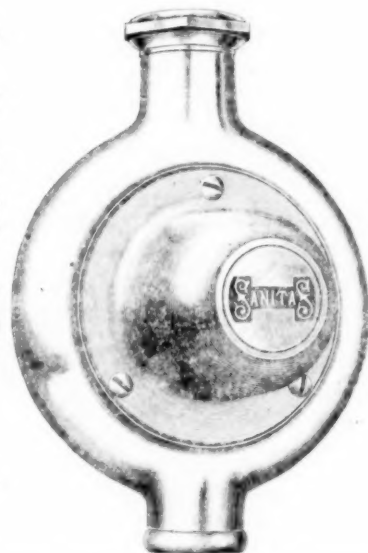
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stands on a street sixty feet wide, and as the proposed addition would make the total height seventy-six feet, the Superintendent of Buildings refused to grant a permit for the work. An appeal was taken to the Fire Department, and Mr. Rockefeller's counsel not only brought forward his theory as to the sort of buildings to which the law applied, but explained further that it referred to structures "hereafter to be erected," so that it did not cover the case of alterations or additions to structures which were in existence before the passage of the Act. We should have said that this claim had only a little more visible shadow of foundation than the other; but there are few laws which can be sustained against the interest or feeling of any large portion of the public; and the Fire Commissioners, on the representations of Mr. Rockefeller's counsel, reversed the action of the Superintendent of Buildings, and ordered the permit to be issued. Some time ago, the same law was appealed to, for the purpose of restraining the proprietor of the Buckingham Hotel from carrying it to a height of more than eighty feet, but after a good deal of litigation, the highest court in the State decided that the statute did not apply to hotels; a conclusion which seems obvious enough from its language. Another decision, however, has established the principle that apartment-houses which do not have kitchens attached to the suites, but whose occupants take their meals in a general dining-room, are not apartment-houses, but hotels; so that the list of structures, the height of which is limited by the Act, appears to be now a very short one.

FIRE AND WATER describes two cases of incipient fire, which were discovered in the neighborhood of New York a week or so ago, and which furnish good examples of the affairs which trouble insurance companies and fire-engineers. In the first case, a clerk, who slept in a furnishing-goods store, was, according to his own story, overpowered by three burglars, who bound and gagged him, and then set fire to the place and went off, leaving the clerk, still tied, in the burning building, where he was, luckily for himself, found by the neighbors before he was suffocated. As the contents of the store were destroyed, there was nothing to show whether the burglars carried away anything or not, and still less did any reason appear why they should have wished to roast the clerk, in addition to their other iniquities. In the second case, the tenants in the upper part of a building in Brooklyn, the first story of which was occupied by a clothing-store, were awakened one night by a smell of gas. The gas was traced to the first-story rooms, and a policeman summoned, who forced open the doors, and discovered that a gas-pipe had been cut; that on the stove, in which a fire was burning, stood a demijohn of kerosene, while two lighted lamps were on the floor, surrounded by loose paper; and that the key-holes had been plugged up, and the curtains drawn down. The proprietor and his wife were away, at a wedding-party, and did not return until the next morning, when, on the suggestion of the Fire Marshal, seconded, we should imagine, by the tenants of the rooms above, who must have taken a lively interest in the preparations made for burning them alive, they were arrested for attempted arson.

THE preliminary steps appear to have been taken in the matter of the construction of a bridge across the Hudson River from Jersey City to New York, and the indications are that work on the bridge itself will be commenced in the spring. The present plan is to cross the river at or near the foot of Forty-second Street. The bridge will be one hundred and fifty feet above tide-level, but the railroads on the New Jersey side, which at that point slopes rapidly to the water, can reach it directly with a very moderate grade, and on the New York side it is intended to carry the connecting roads by viaducts to the entrance of the bridge. The whole affair is intended almost exclusively for railroad use. There will be a foot-path across, but no carriage-way, which, we think, is a public misfortune. Instead of this, there are to be either six or eight tracks, so as to admit an almost unlimited amount of railway traffic. Whether the effect of the construction of the bridge will be to transfer railway business to a more distant terminus, making New York only a way-station, as some have predicted, remains to be seen. A part of the scheme consists in the erection of an immense station at the New York end of the bridge, which will be used by the Baltimore and Ohio, the Pennsylvania, Erie, West Shore and Hudson River Railways, at least,

and perhaps by the New Haven and Long Island roads, so that a passenger can take a train from this station for any other station in the United States, Canada or Mexico. As the plans for the bridge have been approved by the War Department, little remains but to carry them out. It is said to be intended to issue fifteen million dollars in stock, and thirty-five millions in bonds. While every one will be interested in this great enterprise, it is impossible not to regret that it should have been undertaken under circumstances which will bring it into competition with the Hudson River tunnels, probably to the great disadvantage of both. The tunnels have been so ingeniously devised, and carried on with such courage and skill, that their owners are fairly entitled to the undisturbed enjoyment of the profits of successful management for, at least, some years; and if they are obliged to compete with a bridge for business, they will be very likely to do so by putting rates of toll so low that neither enterprise can be made to pay dividends.

THE town of Szegedin, in Hungary, which was almost completely destroyed by a flood a few years ago, is again threatened. It appears that the original inundation was due to the unintelligent and unskilful manner in which the current of the River Theiss, which runs by the city, had been regulated by engineers. Since then, an embankment and seawall have been constructed, by throwing in masses of stone and building with masonry on top of them, but the random piles of stone have already been undermined by the current, the seawall shows great crevices, and imminent ruin threatens the whole structure. The Hungarian Minister of Agriculture has now taken up the subject, and, in conformity with the recommendations of an expert commissioner, the embankment is to be greatly reinforced, and the wall repaired, in the hope that it will need no further treatment. The *Wiener Bauindustriezeitung*, after describing this, says that two Austro-Hungarian engineers, engaged in supervising the construction of the new railway in Asia Minor, from Angora to Ismit, have been captured and carried off by brigands, who demand fifteen thousand dollars ransom for them; and sarcastically observes that, however distressing it may be to have to chronicle such sinful actions on the part of bandits, it is impossible not to wish that they might have turned their attention earlier to the engineers of the Theiss-regulation and the Szegedin embankment.

NOT long ago, excavations were made in the little village of Vaphio, in Laconia, in the place where the Homeric towns of Amyclæ and Phasis are reported to have been situated, and a domed subterranean chamber was discovered, similar to those found at Mycenæ, and in other places. In this chamber, or "treasury," were found a large number of vases of earthenware and metal, together with ornaments of gold and silver, bronze weapons, jewels, and, most important of all, two vases of pure gold, decorated with beautiful figures in relief, one representing a hunt of wild oxen, and the other, similar animals placidly pasturing. All the figures are full of expression and action. In the hunting scene, one of the wild cattle is caught in a net, stretched between two trees, and plunges desperately in the effort to escape, while a second turns furiously, and gores his pursuer. What the date of these vases may be, we believe no one has yet undertaken to say, but the subject and style are quite different from any work of the kind belonging to the classical Greek period, and perhaps no one is sure that they do not date back to the days of Agamemnon and the siege of Troy.

ONE of the useful recipes which the *Wiener Bauindustriezeitung* collects is that for removing rust from iron objects.

It often happens that a valuable article of iron becomes so rusty as to be useless. To scrape off the coat of oxide is a long process, and, as it cannot be applied to joints, or covered parts, it is often of no value. It is therefore important to know that a nearly saturated solution of chloride of tin will dissolve the oxide completely away, and, unless the solution contains free hydrochloric acid, it will not attack the iron. The object to be cleaned is simply placed in the solution, where it stays until the rust is dissolved, which will take from twelve to twenty-four hours, according to the thickness of the coating. The metal then appears like silver, and should be first thoroughly washed with pure water, and then dipped in ammonia, and quickly dried. If desired, it may then be polished.

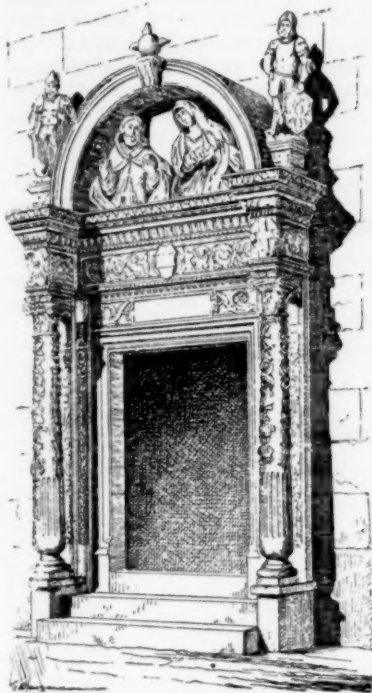
AUSTRIAN ARCHITECTURE.¹—IX.THE RENAISSANCE OF THE SIXTEENTH CENTURY IN AUSTRIA.
—II.

Fig. 7. Portal of the Chapel of the Holy Saviour, Vienna.

IN the archduchies of Upper and Lower Austria, the earliest Renaissance remains are wholly Italian—more especially Venetian—in character. The oldest monument of the style, in the Federhof at Vienna, consists of a lunette adorned with acroteria, in the form of palm-ettes, and enclosing the armorial bearings of the Edelsberger family, with the date MCCCCLXXXVII (1497).

The pure Venetian style is shown in the elegant portal of the chapel of the Holy Saviour (Figure 7), at Vienna, erected in 1515. Two columns in the form of richly sculptured candelabra bear an entablature crowned with a lunette; the latter en-

clozes the half-figures of Christ and the Virgin Mary, and on either side is the statue of a warrior holding a shield. Although the Renaissance is seen penetrating thus early into the Austrian archduchies, Renaissance constructions are nevertheless rare there, and with few exceptions, quite unimportant. The Emperor Ferdinand I was chiefly instrumental in introducing the new foreign style into these provinces, where he employed Italian architects on a few constructions. The principal entrance to the artillery barracks at Wiener-Neustadt, bearing the date 1524, is a masterpiece of the best Italian style, and was doubtless the work of Italian architects. The Italian masters Jacopo and Antonio di Spazio reconstructed during the same reign the imperial palace at Vienna, on the plan of a square main building with three wings, surrounding a large court. But the *porte cochère* is all that has been preserved from this period; two Doric columns in relief flank the archivolt and support an entablature with consoles, bearing an attic which contains the imperial coat-of-arms and inscriptions with the date 1552. The heavy proportions of the architecture were dictated by the fact that the castle was designed as a fortress; the same purpose was expressed in a similar fashion in the city gates of Vienna, which were constructed in the sixteenth and seventeenth centuries, mainly by Italian masters. These were demolished at the same time as the fortification walls—about thirty years ago—to make place for the boulevards which now encompass the capital.

The "Stallburg" (stable castle) is a very well preserved structure erected by the Emperor Ferdinand for his son Maximilian; it is quadrangular in form and encloses a court 100 feet by 125 feet in extent. The court is surrounded by three orders of arches, borne on pillars and now walled up; in the frieze of the third entablature, we find the same consoles as on the portal of the imperial palace; the treatment is severe and simple; the proportions of the pillars, pilasters, and arches are broad and low as in the portal; both works were probably by the same architect. Externally, the Stallburg possesses no artistic value.

The best Renaissance productions in the archduchies are to be sought in the numerous provincial châteaux, which were in great part restored at this period, as much for purposes of defence as to make them suitable residences for their owners. The castle of Schallaburg (Figure 8) is the most important in this respect. It was reconstructed between 1530 and 1601 by Chevalier Johann Wilhelm of Losenstein. Here, too, the

court is the most artistic portion of the edifice. It is surrounded on three sides by Doric colonnades of red marble, supporting archivolts of rustic ashlar stones. An arcaded gallery, the

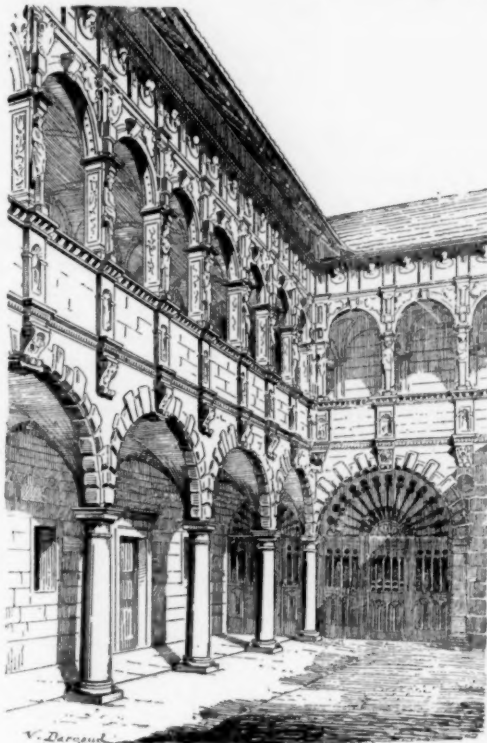


Fig. 8. Inner Court of the Castle of Schallaburg.

short pillars of which are adorned with caryatides, rises above the colonnades of the ground floor. For the other ornamental features the student is referred to the cut (Figure 8). He will notice some quite odd details and conceptions, as for example, the small columns in relief between the archivolts of the upper gallery, which give the architecture the appearance of the German Renaissance. The fine terra-cotta decorations on the lateral faces of the gallery-pillars are, however, treated entirely in the Italian manner.

Not less remarkable is the château of Rosenberg—restored in 1593—which has a magnificent arcaded court, a triumphal entrance, and two orders of loggie applied to a round tower in the pure style of the Renaissance. The castle of Göllersdorf has a quite simple portal, a charming gallery on the second story towards the court, and a winding stairway sumptuously decorated in the same style.

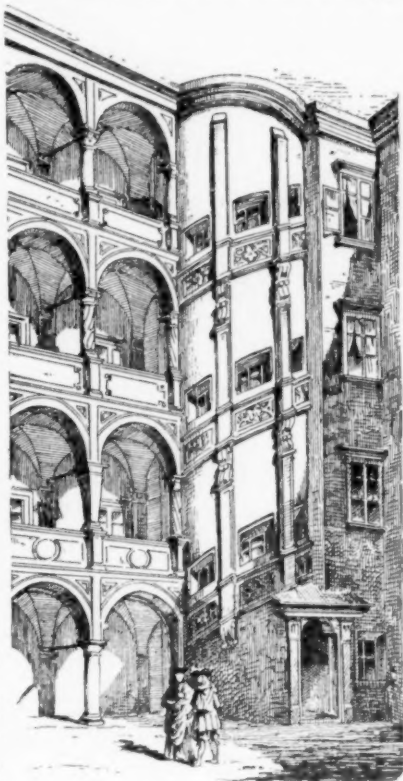


Fig. 9. House in the Graben, Vienna.

In the castle of Schleinitz there is a fine plaster ceiling in the great hall. The castle of Ebreichsdorf contains a family mausoleum in the purest forms of the Italian Renaissance. The castle of Michelstatten, which belongs to the beginning of the

¹ From the French of H. Semper, in Planat's "Encyclopédie de l'Architecture et de la Construction." Continued from page 129, No. 779.

seventeenth century, still exhibits in the court specimens of the noblest Renaissance types in the two orders of arches, and in the beautiful fountain which occupies the centre of the space and is adorned with festoons, trophies, masks, and figures of children throwing water.

There are also a few burgher dwellings at Vienna where courts may be seen having several orders of arches, according to the Italian system, but with forms showing a local interpretation. As a good example of these we give an illustration of the court of a house in the Graben (Figure 9).

The Corn-Exchange at Steyer (Figure 10), built in 1612, is an original specimen of the architecture of the close of this



Fig. 10. The Corn-Exchange at Steyer.

period. Its interest architecturally is confined to the cornice and the portals, which have the broad low proportions so common in the German Renaissance. The quadrangular windows are without other decorations than the elegant designs in sgraffito which frame them. Houses of the German Renaissance order may also be seen at Znaim, Krems, Eggenburg and elsewhere.

Among the monastic edifices of these provinces, the convent at Gaming boasts of a beautiful library hall, a court with open galleries, and a magnificent church portal in the Renaissance style. At Klosterneuburg there are likewise some remarkable bits of Cinquecento architecture.

In addition to the constructions, it is particularly necessary to study the decorative sculptures in order to have a complete idea of the Renaissance in the archduchies. The church of

Kirche at Vienna. In St. Stephen's there is a quite simple memorial stone in relief, of the year 1529, to Dr. John Cuspis and his two wives; it represents a type which is very common in Vienna; the basement is ornamented with bas-relief figures of the members of the family in postures of adoration; two pilasters support an entablature, surmounted by a lunette which is filled with a shell-like coving; between the pilasters, in three niches, are busts in relief of the deceased persons. A similar but more sumptuous composition is seen in the tablet to Nicolaus Engelhart, who died in 1559. In the interior of the choir there is a very beautiful representation of Mary and Christ, and the Seven Sorrows of the Virgin. The Church of the Teutonic Order at Vienna contains an elegant memorial tablet in red marble to the knight, George of Liechtenstein.

Salzburg, though possessing Italian features, as becomes the residence of powerful archbishops, can yet show no remarkable constructions in the

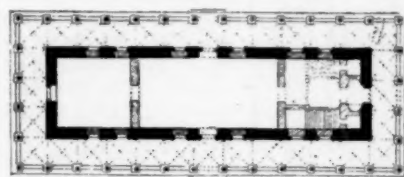


Fig. 11. Plan of the Belvedere at Prague.

style of the sixteenth century; the Schloss was built in the fifteenth century and is Gothic in character; the Tuscan arches of the burial ground of St. Peter are of mediocre interest; the imposing cathedral, for which the first design was made by Scamozzi in 1606, is one of the noblest Italian productions of religious architecture, but it belongs to the following period, and will be described later.

The Renaissance style obtained entrance into Bohemia and Moravia in much the same way as into the archduchies; as it was introduced chiefly by Italian masters, we do not find the Renaissance types there bearing a genuinely local and original imprint, as is the case in Germany. In Bohemia, the princes and nobility adopted the new style in their castles and palaces. The burghers had no time to familiarize themselves with it; the religious struggles which finally led to the Thirty Years' War prevented them from engaging in great building enterprises.

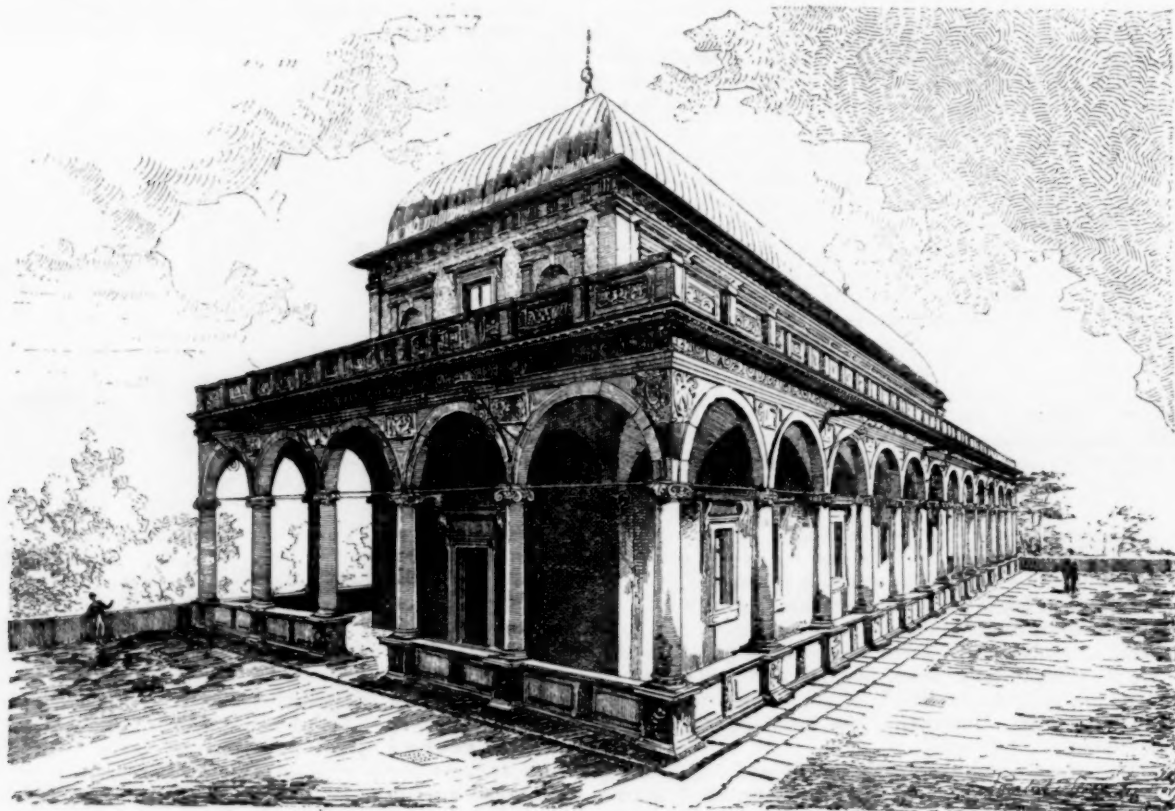


Fig. 12. View of the Belvedere, Prague.

Waldhausen has an imposing portal, a tabernacle, and a rood-loft in this style, while the church itself is Gothic. We find an especially large number of funerary monuments in the churches in the style of the Renaissance. The transition character appears in the tomb of Count Nicolas Salm, in the Votiv-

It was under Ferdinand I that Bohemia was incorporated into the Austrian States; and it was during his rule that the most important Renaissance constructions were erected there by Italian masters. At Prague, on a height overlooking the city and the valley of the Moldau, Ferdinand had a park laid out in

which he built a casino according to the designs of the Italian architect, Paolo della Stella. This pavilion (Figures 11, 12), known as the Belvedere, begun in 1536 and completed in 1589, is one of the best examples of the high Italian Renaissance; it is admirable alike for its delicacy of execution and beauty of proportions. An arcaded portico of slender Ionic columns (6 at the ends and 14 on the sides) extends around the oblong body of the edifice, which comprises two stories, the lower one divided into several chambers and small halls, covered with small vaults *à miroir*, the upper one forming a single large hall covered

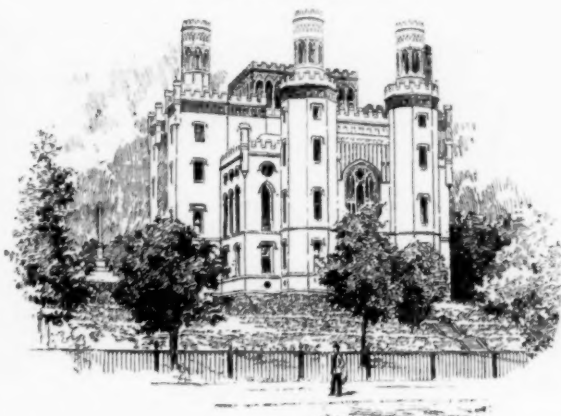
with a barrel vault. An open gallery runs around the hall in the second story, above the portico. We will not attempt to describe the exquisite elegance of the mouldings and richly sculptured ornaments of the columns, archivolts, entablatures, parapets, doors, niches, and windows; for a more minute study of these details we refer the reader to our illustration and to an article in the *Algemeine Bauzeitung* of 1838 (Plates CCXXXII-XXXV). The architecture and carving will bear comparison with the best productions of the kind in Italy itself. John of Spazio and Zoan Maria (probably Venetians) executed most of the stonework, under the direction of the chief architect. A German, Hans Trost, also had a part in it, but he had doubtless been trained in Italy, for in no portion is there any trace of the German manner.

It appears, moreover, that these Italian masters had established a sort of school among the local artists, for the fountain (Figure 13) in front of the Belvedere, modelled in 1565 by Lorenz Kriz and cast by Thoman Jarosch and the Tyrolese, Gregory Löffler, preserves intact the Italian characteristics, in its elegant outlines and in the pure style of the ornamental designs and the figures.

(To be continued.)

SOME SOUTHERN CAPITOLS.¹—II.

LOUISIANA'S CAPITOL.



The West (House) Wing, facing the River.

PROBABLY to the larger number of citizens of our republic it would occasion some surprise to be told that the State capital of Louisiana is not located at New Orleans, the metropolis not only of the State, but of the South. The seat of government was at New Orleans throughout the various changes of sovereign jurisdiction to

which Louisiana was subjected, and for thirty-seven years after it was admitted into the American Union as the eighteenth State. It was not until 1849 that the capitol was removed to Baton Rouge, then a town of four thousand inhabitants, a hundred miles or so farther up the Mississippi River. After the civil war the seat of government went back to New Orleans, and it was there all the while that the State politics was attracting so much attention throughout the country. In 1874 a war-shattered and decaying hotel in the Crescent City was purchased by the commonwealth and was made to serve as a State-house. In 1877, as most politicians will remember, there were two separately organized State governments. The popular government made use of the Supreme Court Building. The government which secured possession of the State-house was protected by Federal troops, but was practically reduced to a state of siege for four months. In 1882 the seat of government returned to Baton Rouge, where it still remains.

It is not strange that in the popular mind New Orleans should have continued the State capital from the first. All the noted events in Louisiana's legislative history have transpired there. The "Pelican State" has reigned in peace and quiet so long as she has kept her headquarters at the City of the Red Stick. The attention of the outside world is only attracted to a State capital when something of national importance transpires therein. When the State is merely attending to its own affairs the outside world cares very little whether it has one capital or two, or where either or both are located. So there are two surprises in store for the visitor in Baton Rouge. One is to find it the seat of the State government; the other is to find it possessed of a capitol that does not consist of a columned façade, pediments and dome, but is assertive of independent characteristics.

If any one is disposed to question the propriety of establishing the seat of government in a city of so little importance compared with the southern metropolis, it may be well to state, that if any mistake was made in regard thereto, it was made by Bienville in 1718, in not locating New Orleans upon the site of Baton Rouge. Bienville selected a site for his now famous city at a point readily accessible to the French colonies on the Gulf Coast, and as he thought, at the first land he found on the Mississippi River not subject to overflow during the spring floods. He did not foresee all the caprices of the Father of Waters; nor that his city would be perpetually menaced with inundation, even after its resort to levees as protection. Had he gone farther up the river until he reached "the plains"—the level, elevated part of the "bluff-land," marking the borders of Upper Louisiana and dividing the cane from the cotton country—he would have found an admirable site for his city where Baton Rouge now stands.

Baton Rouge received its name from an enormous cypress tree which stood upon its site early in the eighteenth century, out of which a certain carpenter once offered to build two boats of sixteen and fourteen tons respectively. The cypress of Louisiana has bark of a reddish hue, grows to a great height and is bare of branches excepting at the top. Naturally this particular cypress was recognized



Senate—The Front—House.

among the pioneers and settlers as a landmark, and "one of the first travellers who arrived at this locality" says Le Page du Pratz, an old chronicler, "exclaimed that this tree would make a fine stick" (a walking-stick for the Titans, presumably) "hence the name of Baton Rouge (Red Stick) given to this place."

It was "a pretty town" we are assured by an historian of the State, who, however, may have been prejudiced in its favor from having his residence there, "when the seat of government was removed to it in 1849, where the federal government of the United States had erected an arsenal and barracks on a large scale and of imposing aspect." The State penitentiary was already there and the Jesuits had a college there. The historian mentions no other building of importance, but goes on to say that "to serve as the capitol of the State a castellated building" was erected in 1847 at a cost of \$230,000 "which was intended to imitate the Anglo-Norman style of architecture." J. H. Dakin was the architect.

During the civil war the capitol was occupied by Federal troops as barracks and prison until December 28, 1862, when it was destroyed by fire. It was not until 1880, that the attempt was made to rebuild and the building was ready for occupancy March 1, 1882

¹Continued from No. 763, page 86.

Under the architectural supervision of Will. A. Freret, later Supervising Architect of the Treasury Department, the rebuilding was accomplished at a cost of \$222,000. Of this amount \$35,000 was contributed by the city of Baton Rouge, which has grown since the war to a population of fifteen thousand, and appreciates having the State capitol within her borders. Evidently the newer building conforms to the general plan of the former one. It is in excellent condition; furnishes ample accommodations for a Senate composed of thirty-six senators and a House of Representatives of ninety-eight members, and is so thoroughly satisfactory in its equipment that it will be long years before Louisiana considers the subject of building another.

The capitol stands within ample and well-kept grounds, about two hundred yards from the river bank and considerably elevated above it. The Senate and House of Representative chambers are in wings on opposite sides of the main building. The latter chamber looks out through a large mullioned window towards the Mississippi River. The grounds are terraced on that side and with marble steps leading up from the street. Two marble lions guard the entrance from these steps. The main entrance is on a street at right angles to the river. A granite shaft rising from the capitol grounds near the Senate wing, marks the last resting place of Maj.-Gen. Henry W. Allen, who died Governor of the State in 1864.

ARTHUR HOWARD NOLL.

ANCIENT ARCHITECTURE FOR STUDENTS.¹—V.

EGYPTIAN ARCHITECTURE.



View of Pavilion, at Medinet-Abou.



Plan of Pavilion, Medinet-Abou.

OF the domestic architecture we have hardly any remains. All energies in earlier days were devoted to preparing tombs that should last to eternity and the Egyptians apparently paid little attention to the temporary dwelling-places of the living. Only one example exists and that is the small Royal Pavilion at Medinet-Abou, erected by Rameses III (1242 B. C.). The character of its architecture was very similar to that of the temples. Its plan was peculiar, enclosing on three sides a court, roughly forming a cross. At the lower end or foot of the cross was a building almost a square on plan forming the junction of the two wings that enclose the sides of the court, which themselves terminate in lofty buildings looking like the propylons of a temple. The mansion was of three stories, and at its widest parts measured about 75 feet x 60 feet. Whether this building formed the whole house, or whether there were other buildings of a less substantial nature connected with it, is a matter of conjecture. We have to get a great deal of our information as to the arrangements of a building of this kind from the paintings and sculpture that have come down to us. The sensual and luxurious Egyptians no doubt finished their abodes with utmost sumptuousness, and made themselves as comfortable as the civilization of the time admitted.

Occasional buildings were constructed with great ingenuity and skill, and methods demanding no little patience were employed; but, as a rule, even in their temple architecture they display a considerable degree of carelessness.

A few words must be said about sphinxes, those singular combinations of human heads and animal bodies invented by the Egyptians. So far as we know, they were not used as idols, but were like the colossal statues, silent guardians of the tomb. Their origin is shrouded in doubt. The principal example is "The Sphinx" erected not far from the Pyramids about the year 2400 B. C., but it has no architectural beauty, and need not delay our history.

To the Egyptian belongs the invention of the column: starting with great and massive piers of masonry, they gradually reduced the area, first by taking off the angles and forming octagons, and then by making them circular on plan.

Their general construction being massive and clumsy, all their details partook of the same character, and although the conception of their great hypostyle halls was very grand, yet the excessive massiveness must have deteriorated from the effect, as, owing to the small space between the columns, no great vista could be obtained, and few columns could be seen at one view. For ornamentation, the Egyptians relied more upon color-decoration than upon mouldings or carvings. The shafts of the columns were usually straight, without entasis, but tapering. Bases are generally mere flat blocks having no connection with the shafts, and the caps are usually bell-shaped, widening out to an abacus, on which would rest the beams of the roof.

At Karnac, the central row of columns of large diameter have the bell-caps, but all the other columns have caps like inverted flower-pots, as previously mentioned. Fergusson thinks that this is for the purpose of exposing the decoration on them to the light which comes from above them. At the palace of Thothmes III at Thebes, the capitals are bell-shaped, but with the mouth downwards. But at

Sedinga there was a temple erected by Amenophis III which contained a different kind of pillar altogether. These are known as the Isis-headed pillars. The cap is square on plan, with four upright, flat surfaces (like the sides of a box), and on these were painted the head of Isis. Isis heads constantly appear in the mural paintings, as also do many kinds of imaginary columns that could not be carried out in reality.

From the colossal figures spoken of as standing in front of the columns spring the caryatid figures. An example of an original caryatid was to be seen at Medinet-Abou.

Another form of cap, known as the "proto-Doric," is met with at an interesting tomb at Beni-Hassan. There are but two of these columns on the outside of the rock-cut tomb, though in the inside



Pillar from the Temple at Dendera.



Pillar from the Ramesseum, Thebes.



Pillar at Sedinga.

are similar ones. They are not monoliths, but are made up of small fragments, and they were fluted when complete; on the top is placed a large flat tile to bear the superincumbent weight.

Lotus-stalk pillars are of great interest, as showing the steps by which the column was developed from a tree or post. They represent bundles of lotus stalks bound together at the neck of the shaft, slightly bulging out above, and then narrowing again to receive the abacus tile. These are all very early examples, but this last was a favorite form.

The Egyptians were not happy in their choice of colors or in applying them for decorative purposes. Their method was bold and clumsy. "Brilliant coloring on large surfaces, coarse and violent reds, dull blues and strong yellows predominate. White is introduced scantily, and shading is unknown."² Historical events, or events in private life, gave subjects for mural decoration. Plants and foliage are copied in a dull, conventional manner, stiff drapery and wooden actions are given to the figures. Their imagination led them to portray details that had no semblance to any existing forms.

Statuary of the Egyptians had a curious origin, already alluded to. In their fear lest the mummy should not remain intact until the day of its awakening, they made images of the dead, funerary statues, as they are called, that the spirit might not be without a place of habitation, which, if such a thing occurred, would mean annihilation of the soul of the deceased. As many as twenty such statues of the same person have been found in one tomb. This necessity resulted in very careful portraiture, in which the detail was wonderfully accurate, and, although there is a dull repose pervading the countenance, there is a certain amount of artistic expression among some of the best works discovered.

The figures are of stone and clay, and there is an absolute lack of any action. A statue of Thothmes II (1700 B. C.) seated, and resting a small casket upon his knees, and with the palms of the hands placed against the sides, is remarkable for its good proportions, but it is very stiff. Hands and feet, fingers and toes, are as straight as possible, but the features are good.

Other statues of the same period, known as the Musical Memnons, colossal, 50 feet high, are also examples of good proportion. Of the



Pillar at Beni-Hassan.

¹ Continued from No. 776, page 90.

² Rawlinson.

statues of Rameses II (1420 B. C.), one is in the Museum of Turin, and is the finest example of Egyptian statuary. It is a seated figure executed in black granite, but only 5 feet 7 inches high. The crozier of the god Osiris is in the right hand, against the chest, while the left hand rests on the knee, and has the knuckles clenched. Several colossal figures of this monarch's reign are in existence, notably the four seated figures over 60 feet high at the entrance of the rock-cut temple of Abou Simbel in Ethiopia, but none of these are of such fine workmanship as those of three hundred years before. The Ethiopian physiognomy, thick lips, flat or turned-up noses, is the model, and there is a want of care in modelling the whole figures.

In later Egyptian sculpture there was no improvement, but rather a gradual decay, until the art seems to have died out. It is not until the Greeks had a hand in the works of Egypt at the end of this dispensation that we find any statuary at all after the time the Persians invaded the country in 529 B. C.

There is little more to be said about Egyptian architecture pure and simple. We have seen that as the Egyptians entered the land from the northeast and went southwards down the valley of the Nile, so their best examples of architecture are to be met with in Northern Egypt, and the pyramids, temples and tombs of Ethiopia are of debased forms both in shape and construction. One large temple has been discovered in Ethiopia, evidently a copy of the great Ramesseum of Thebes on a small scale, 500 feet long by 140 feet wide, but this and other remains in the neighborhood have never been very thoroughly explored, our explorers devoting their attention to those monuments of departed glory and regal splendor likely to repay their exertions with more profitable results.

The pyramids in Ethiopia are in groups, and form a regular burial-place or cemetery. They differ in proportion from the greater pyramids, and have attached to them external chambers, in which, and not in the pyramid itself, the coffin was placed. These pyramids are solid, without any internal chamber, and upon their external angles all have a roll-mould, like the roll of a hip roof. No attention



Pylon from Beni-Hassan.

Colossal Statue of Rameses as Osiris.

Statue of Thothmes II.

is paid to orientation, neither the sides nor angles pointing to the cardinal points, but they are placed irregularly and in groups, without any uniformity of position. So far as has been at present ascertained, they date about the year 700 B. C., so that we shall not gain much by spending more time over this class of work.

R. W. GAMBIER-BOUSFIELD.

[To be continued.]

COUNTING DUST PARTICLES.—In *Knowledge*, Dr. McPherson describes a contrivance, devised by Mr. John Aitken, for approximately counting the dust particles in a given volume of air. Thus, the bright motes dancing in the sunbeam, hitherto assumed to be beyond the power of computation, are brought within the range of human calculation. Mr. Aitken's processes confirm the accepted inference that without dust there could be neither fogs, mist nor rain. If two glass receivers, the one filled with common air and the other with filtered air, be placed alongside each other and a jet of steam be introduced, the first will become dense with fog while the other will remain clear. The conclusion arrived at is that the particles, though invisible, being free surfaces, attract the cooling vapor and in the shape of fog assume a visible existence. By making a mixture of ordinary and filtered air and then introducing a jet of steam Mr. Aitken produced a shower of mist particles, which he counted as they fell on a prepared silver surface. An average being obtained, he estimated each cubic inch of air to contain 1,000,000 particles. In the air of Glasgow he found 7,000,000, and in that of Edinburgh 4,000,000. Above a Bunsen gas-jet he found 480,000,000 of particles, and in the air collected on a mountain side a large amount of cosmic dust. — *Boston Herald*.

THE ARTS AND CRAFTS EXHIBITION, NEW GALLERY.



"All the Modern Improvements."—No. 22.

THE general impression conveyed by this exhibition is that of being less crowded, and perhaps somewhat more refined than earlier ones.

It is to be hoped that ere the Society prepares its next catalogue, the committee will see to it that the name of the craftsman is not made to give place to that of the mere firm for whom the piece of work has been executed; otherwise the Society will fail of the high purpose which alone is its *raison d'être*. Glaring offenders in this respect are Morris & Co., by whom nearly all of Burne-Jones's de-

signs are carried out, though much else could be mentioned, where no other name is given than that of the firm exhibiting, who in some cases affix a price, thus converting the gallery into a show-room.

In the room devoted to designs for stained-glass and mural decorations there are several by Mr. Burne-Jones: his nine cartoons for a window at Jesus College, Cambridge, called "Hierarchy," represent angels, archangels, virtues, and show masterly treatment on the whole, though some of his figures look rather weak, physically or intellectually. His "Flora," a design for Arras tapestry, is distinguished by charming simplicity, but "Jacob and Rachel" and "Lazarus and Mary" do not call for special mention.

Mr. C. Whall has cartoons for a three-light window in a cemetery chapel; in the centre being the Crucifixion, while on one side we see Jesus addressing the disciples going to Emmaus, and on the other His showing the nail-prints in His hands to Thomas.

These are flanked by two lights for a memorial window to a child five years old, "Incidents in the Life of St. Christopher." All these display great vigor, but the latter window merits admiration for its singular appropriateness and elevation above mere conventionality; as also for the clever drawing of the water through which the saint walks.

E. Ingram Taylor sends two first-rate drawings of SS. Peter and John, for stained-glass, which will no doubt look very rich in execution. In two beautiful windows for domestic purposes, by Bladen, "Good-bye," and "A female head," both the faces are à la Rosetti. Mr. Heywood Sumner exhibits two large cartoons for sgraffito work in Clane Church, Kildare; the first, "The Baptism," is quite devoid of devotional feeling; it is stiff and unnatural, and a ludicrous caricature of the subject. The companion drawing, "The Resurrection," is far superior, but scarcely rises to the dignity of the event; though some of the details are truer to the facts than in his "Replica of gesso-panel for a church in Kent," in which angels with utterly characterless faces, sit at the head and foot of a tomb that resembles a marble bath; the silver wings against the blue sky look effective but are made too important.

Undoubtedly the best thing in the room is a very large cartoon for a fresco in Manchester Town-Hall, "The Baptism of Eadwin." Through the entreaties of his Christian queen and of Paulinus—the bishop who accompanied her from Kent—Eadwin, the powerful Bretwalda and King of Northumbria, agreed to summon a witan to consider the question of his renunciation of heathenism. At this assembly, the high priest, Coifi, acknowledged the vanity of the national idolatry, while an ealdorman concluded a powerful speech with these words, "If this new religion brings us any certitude of the future, whereof we now are ignorant, I, for one, vote for its adoption." This decided the king to accept the Christian faith.

Eadwin's baptism is vividly depicted in this artist's best manner, without the least appearance of crowding. The venerable Paulinus, holding his pastoral staff, and attended by priests and acolytes, is blessing the king, who kneels in a large font while a priest administers the rite, which is witnessed with evident thankfulness by the queen, who is clasping the hand of her astonished little girl.

The mosaic pavement bears, just under the queen's feet, a Latin inscription, in which occur the words "*Hadrianus Imperator*," thus recalling the days of Pagan Rome. One side of the temporary building is filled with interested spectators, who will probably form part of the 11,000 to be baptised in the Swale on the morrow.

A very suitable design is one for a frieze in a marine insurance

office in Liverpool, and called "Ancient and Modern Shipping," is by Frank Murray. In the former we see a large galley flanked by two solid-looking tubs of sailing vessels standing out against a western sky; while in the latter, we have the rising sun for a background to three splendid steamers, the largest a Cunarder; advantage being taken of masts and ensigns, to introduce richness of color. Dr. Saviati has carried out the work in glass mosaic.

A plaster cast for the centre of an altar, modelled by Dressler from a design by J. D. Sedding, is most admirable. Joseph and Mary, the latter kneeling, are adoring the infant Jesus, who is lying, at the foot of an apple-tree—the period being probably that of the Presentation in the Temple—as in the background, in low-relief, we see the walls and towers of Jerusalem. Birds in the branches are supporting a sort of scroll, having on it the words "Love, Joy, Peace," etc., while, overhead, angels are eagerly regarding the scene. The whole is marked with the greatest refinement and beauty.

In another room there is a sketch-design of the same, in colors, which will be executed in electrotypes or beaten metal. As deserving high commendation we notice an exquisite mosaic panel, "The Virgin Mary," designed by Miss Harrison, in delicate colors on gilt background, which displays in every detail, the hand of a true artist.

Among a great many designs for wall-papers and textile fabrics we select one by Walter Crane, named "Corona Vitæ," for wall-paper and frieze; it is shown, also, elsewhere as a kind of Lincrusta-Walton. It is highly elaborated and gorgeous, especially the frieze. A lucid description of the author's idea is appended, without which we doubt if it would be intelligible. The designs, chiefly by Mr. T. Wardle, for cretonnes and velveteens are fairly good; there is also a capital one by J. D. Sedding.

In the north gallery with the furniture, etc., there are so many articles composed, wholly or in part, of copper, as to make us wonder whether or no a copper age is dawning on us. In repoussé or embossed work, we see all around plaques, dishes, lamps, some partly of brass, mirror frames and coffee-pots; while some little coffers, covered with embossed leather, are hinged and clamped with this rich metal.

With regard to most of the chairs, one asks, Why are they here? Few profess to be recently designed; they have little beauty, while some look scarcely as strong as their size demands. Among one or two exceptions that occur to us, is a Presidential Chair from the Arts and Handicrafts Guild. The back and seat are made of embossed leather, the former being laced to the frame-work by narrow strips of the leather. On the back the following lines are embossed:

"Here sit I, Firmness, Justice, Gravity,
Speed me likewise as I sit
Patience, Brevity and Wit."

The woodwork is white, unpolished, and utterly devoid of ornament. Two or three cabinets beautifully inlaid with ivory are exhibited by well-known firms; one of these, very compact and well-made, is designed by Mr. Lethaby; the same description applies to a writing-cabinet designed by Mr. Gimson. Howard & Sons send a remarkably handsome walnut cabinet, the top, of pagoda-like form, being supported by carved pilasters. A very well-made one which attracts much notice is from G. Jack's design. It is made of oak, stained olive-green, the drawers below are shut-in with diamond-panelled doors, with a shelf above, the chief feature, however, being a coffer along the top; the front of this, handsomely carved, forming a frieze; it opens downwards. If there be a fault it is that of top-heaviness. Mr. Ford Madox Brown's cottager's chest of drawers, with looking-glass attached, is worth the admiration it receives, as is Mr. Blomfield's mahogany corner-cupboard inlaid with snake-wood and ebony; while the billet-doux screen, designed by H. J. Cooper, the panels being painted by Mrs. Jopling, is a useful toy for the boudoir it would adorn. Messrs. Liberty exhibit a very large chimney-piece made of teak in the Neo-Egyptian style, with relieved intaglio decoration. The over-mantel is formed into three presses. Plates of repoussé copper are fitted into the face of the grate, and seem to be the best part of the whole structure. Candlesticks, having over them swinging-shades, all of copper, project from each side of the over-mantel. Two comfortable chairs upholstered in tawny velvet, are copied from some in the British Museum.

Mr. Sedding sends two plaster-gilt panels for choir-stalls in Holy Trinity Church, Chelsea; and Mr. W. Crane several in gesso-work, of rich color and design, representing Astronomy, Philosophy, etc., intended for a frieze in a library.

"A Hertford Monitor and Monitress" (Christ's Hospital) are two wonderful life-like and charming statuettes, carved in box-wood, by J. E. Knox; the expression on the girl's face is quite captivating; she is knitting.

The piece of hand-woven tapestry, "The Forest" designed by and executed under the superintendence of Mr. W. Crane, will look better when its rather crude colors are toned down; there is little of the freedom of forest life about it. His design for a panel called "Seedtime" is pretty good—a yoke of oxen drawing a plough; all in good red tiles on white background.

We find a better specimen of woodland life than Mr. Crane's in the west gallery, a screen designed by G. Jack and worked by Mrs. Jack in wool on velveteen.

Over the portals of this west gallery "Here woman reigns" might have been inscribed, as its walls are almost entirely covered with her

handiwork, and much of it so excellent in design or execution, or both combined, as to make it rather an invidious task to cull specimens.

Miss Hadding has a very beautiful portière or quilt embroidered in silks on gray-green silk with border of Roman satin, she has also a dainty centre for a dining-table, both designed by F. A. Lawrence.

The Leek Embroidery Society sends one case only, but it contains exquisite work; a table centre, with a conventional design, worked in rich but delicate and harmonious colors, on white silk; the legend "Art still has truth, take refuge there" follows the course of the design. The embroidered border is of pale gray cotton-velvet. A handsome panel and some doyleys accompany it.

Miss Day and Mrs. Wright send work similar to the last, designed by Lewis F. Day, and there are some beautiful cushions and portières, all exquisitely worked on silk or satin.

Ruskin linen, embroidered in crewels or silk, is shown in the form of coverlets and curtains, for both of which it is very suitable. The Royal School of Art Needlework—largely and creditably represented here—besides many curtains, panels and hangings, has a coverlet in Ruskin linen, with bunches of willow-like leaves tied with lover's knots in blue crewels. It is very natural for an old design.

Miss May Morris sends a curtain of blue linen, designed and partly embroidered by herself. It is called "Fruit Trees," and is charmingly carried out, the trees being loaded with temptingly-ripe fruit, long sprays of acanthus leaves in outline forming a sort of easy, conventional border. In Miss Ethel Martyn's panel for a screen, worked in Tussur silk on linen, we have a real bit of nature; from the birds pecking at the rich red cherries and other fruit, and the squirrel in the corner cracking a nut, to the airy grasshopper—all is to the life. Mrs. Burchaell sends a few Roman aprons embroidered in and on wool from old designs. Perhaps the finest bit of color in the room is a front for a cottage piano: richly-shaded red leaves with a lyre in centre, embroidered on dark satin, designed by Lewis Day and executed by Miss Buckle. This piece of work has also the charm, far too rare, of being natural, and here we cannot do better than quote from the essay by Selwyn Image—one of several from the pens of May Morris, Mary Turner, Allan S. Cole, etc., on furniture and embroidery in their various details, and prefixed to the catalogue. Mr. Image says: "Learn your business in the schools, but go out to nature for your inspirations. See nature through your own eyes, and be a persistent and curious observer of her infinite wonders. Yet to see nature in herself is not everything; it is but half the matter: the other half is to know how to use her for the purposes of fine art, to know how to translate her into the language of art." From that by Mr. Seddings our space allows only a few short extracts. "The honor of the British nation, the credit of royalty, are in a manner staked upon the success of our 'Schools of Needlework.' And yet we get no nearer to the old work in regard to power of initiative and human interests. Truth and gallantry prompt me to add it is not in stitchery, but in design, that we lag behind the old. Finger-skill was never defer, yet our work hangs fire. It fails in design. Why? The flowers we embroider were not plucked from field and garden, but from the camphor-scented preserves at Kensington. Our needlework conveys no pretty message of

'The life that breathes, the life that lives.'

It savors only of the now stiff and stark device of dead hands. The old masters are dead, but 'the flowers,' as Victor Hugo says, 'the flowers last always.'"

These words remind us of an exhibition of American decorative art held in London last year, part of which consisted of tapestries and embroideries sent by the Associated Artists of New York—ladies. Many of these were designed by Mrs. Wheeler, the foundress, and her daughter, and were truly pictures in silk, notably "Venus," and "Roses in a net." They were so magnificent as to be above the reach of any but millionaires, but were, nevertheless, nature idealized.

Before leaving the embroidery room, which contains some rich lace, both English and Irish, we just mention an Irish national flag which some one, taking time by the forelock, has given to Mr. Parnell, and bears his autograph. The centre is symbolical, while the corners contain the shields of the four provinces. It is designed by W. Crane and worked by Una Taylor, but the colors are very crude.

Among the more admirable specimens of plaster-work in the entrance-hall, is a portion of a ceiling by Stephen Webb. The design is of scroll-work and figures, in low-relief, early Italian in character, very delicately treated, and modelled with great life and vigor: in Albert Toft's "Bronzed Panels," illustrative of ship-building, the attitude and expression of the men are most excellent.

The "Heraldic Lion," from J. D. Sedding's design, capitally modelled by R. A. Ledward, has a sad interest, as we have just heard of the death of this clever young sculptor, at the early age of thirty-three.

Wilson and Pomeroy send a fireplace, intended for the Notting-Hill Free Library; it is executed in aluminium, and represents Undine. Now we should like to know, what connection a water-nymph has with a fireplace? Were it for a balcony overlooking a small lake, or for a fountain, the idea would be charming; but it is quite incongruous for the purpose specified. The Coalbrookdale Co. send a curious fireplace in cast-iron, electro-bronzed; the shelves, etc., suggest a handsomely carved cabinet. Mr. Voysey's quaint little "save-all" grate looks fit for a doll's house. There are some good

examples of wrought-iron; a serviceable music-stand from an old design, a light and elegant panel, having gilt-copper roses, designed by J. D. Sedding; a fine gate by F. B. Wade; a newel and panel for stairway designed by Amor Fenn, and a newel standard and lantern, both from Strode & Co., with a lock and door-plates in repoussé steel and a pierced and engraved steel and iron fire-guard, all demand special notice.

Misses E. and N. Casella exhibit specimens of engraved glass, and Powell & Sons have a case of delicate glass and wrought-iron for the table, besides some elegant glass of various kinds for the electric light.

Horace Elliott has some handsome jars in grès de Flandres and one in salt-glaze ware, with four finely-twisted handles. A screen of various painted tiles, and some pottery sent by Maw & Sons, and designed by Messrs. Day, Temple, Earles, etc., are admirable. There are not many tiles in the exhibition, but they are mostly very good in color and design.

In the balcony—set apart to printing, book-binding, and designs for illustrating books—the Chiswick Press show some printed books; the book-binding from Cobden-Sanderson, Roger De Coverly and others, is superb in all respects. Louis Davis sends headings with proofs for *The English Illustrated Magazine*, and Heywood Sumner sends his drawing for "The Labors of the Twelve Months" for the same.

The few specimens of illuminated books, by Mr. and Mrs. R. Hallward and G. E. Reuter are worthy of great praise. Some few volumes are most daintily bound in white silk and embroidered with gold thread, others are in linen worked in crewels or silk.

From the Architectural Illustration Society are sent some photographs by Henry Reeves of various buildings lately erected.

For some reason this exhibition is very sparsely attended; perhaps they are too frequent, and the fickle public has lost its former interest, but of its interest to the architect there can be no question, an interest that increases with each succeeding exhibition.

AMBROSE GODFREY'S FIRE-EXTINGUISHER.



1723 Ambrose Godfrey brought to perfection his invention for extinguishing fires, and in his patent, which is dated Nov. 12, 1723, it is described as "consisting of divers casks and other vessels and materials for the extinguishing of fires in houses and ships of which he hath made two publick experiments with good success."

The first of these experiments was tried in the presence of the Lord Chancellor, Sir Hans Sloane, Sir George Beaumont, Sir J. Thornhill, and other distinguished persons, in Belsize-park on the 2d of April, 1723. "A wooden house, three stories high, having been erected for the purpose, with the addition of shavings, brushes, faggots, pitch, oil, &c., to increase the fury of the flames, which were suffered to rise to their utmost height. Then a machine was flung into the ground apartment, which instantly extinguished the fire there."

The second experiment was tried in Westminster-fields on May 30th, when a fire lighted in a house of three stories was extinguished in three minutes. These experiments were described in a pamphlet published in 1724, entitled "An Account of the New Method of Extinguishing Fires by Explosion and Suffocation," in which Godfrey complains of Charles Povey's behaviour to him, Povey being the proprietor of Belsize-house and a rival inventor. On the title-page is this reference to the patent taken out in the previous year: "A method easily practicable, certain in its effects, and so universally useful to the publick, that his Majesty has been moved to authorize and encourage this happy discovery, for the general advantage of his subjects, by his most gracious Letters Patent."

The following description of the apparatus is given by the inventor: "The new method I have to offer to the publick consists of gunpowder closely confined, which as soon as animated by fire acts by its elastic force upon a proper medium (water impregnated with a certain preparation) and divideth it instantly into millions of millions of most minute and imperceptible atoms, which with equal violence and swiftness are immediately forced into the innermost recesses of the flames." Further on we are told that "The constituent parts of the machines are the shell and the powder magazine. The shell is a small wooden barrel with wooden hoops: in the middle of the top an opening is left for the fuzee to pass through. This barrel is cased without and well lined within, the better to hold the liquid, which is a mixture which never corrupts or alters, when on the contrary mere water would soon putrify and stink. The powder magazine is a vesica of a spheroidal figure, either of pewter or some other lasting substance, filled with gunpowder, having on one end a pipe, which pierces the top of the shell in the middle, and serves to guide the fuzee to the main magazine. This powder magazine is fixed in the centre of the shell, incompassed with the above mentioned liquid. The fuzee is garnished with wild-fire, secured with a tin cover lined, to be taken off when the machine is to be used."

The prices of the machines were: first size, £1 5s.; second size, £1 1s.; third size, 18s. The chimney shells: first size, 10s. 6d.; second size, 7s. 6d. They are sold at "Mr. William Briggs", joiner, over against Salisbury Street, in the Strand."

These small kegs appear to have been used for a time with

success, as the following notice from *Bradley's Weekly Messenger* of November 7, 1727, seems to show: "Last Sunday . . . a fire broke out at the 'Crown Tavern,' in King Street, near Guildhall. The same morning, I am informed, two other fires occurred, but I have not heard the particulars. In some of these, however, I hear that the famous machines, or fire watches, invented by Mr. Godfrey, the great chymist, in Southampton Street, Covent Garden, display'd their wonderful effects, and prevented the progress of that furious element; with what quiet and satisfaction may we not therefore live when we have the advantage of such safeguards."

The inventor died on January 15, 1741, and his pamphlet was reprinted in 1743 and 1744; but little more is heard of the fire annihilator until September 1760, when the inventor's son, Ambrose Godfrey (the second), wrote to the Society of Arts, "giving an account of the success of his family's invention for the extinguishing of fires." This letter was considered by a committee, and arrangements were made for testing the invention. A Mr. Keys was engaged to erect a building in the Marylebone-fields which could be experimented upon. The date and hour were fixed, but great fears were entertained in respect to the conduct of the mob that was likely to be attracted to the exhibition. The secretary was "ordered to write to the printers of the several newspapers printed and circulated within the Bills of Mortality, that it is the request of the Society that if they should hear of the day appointed for the experiment for extinguishing fires, they will not insert the day in their papers." Application was made to the authorities for a guard of 200 men, and a civil magistrate was requested to attend. The experiment was successful, and gratuities were given to the guard and to the peace officers. The cost of building the house was £54 1s.

The following description of the proceeding is taken from a contemporary number of the *Gentleman's Magazine* (vol. xxxi., p. 236) — "May 19, 1761, Mr. Godfrey's experiment for extinguishing fire was tried in the house erected for the purpose, by the Society of Arts, &c., in Marybone-fields. The Duke of York, Prince William and Prince Henry, several persons of distinction, and a numerous crowd attended on this occasion. The house, which is of brick, consists of three rooms, one above another, a staircase, chimney, lath and plaster ceilings, and a kind of wainscoting round the rooms, of rough deal. At twelve o'clock the ground room and that up one pair of stairs were set on fire by lighting faggots and shavings laid there for that purpose. In about fifteen minutes three of the machines were thrown into the under room (the wainscot of which was then in flames), which by their explosion immediately extinguished the fire, and even the smoke soon disappeared. The like experiment was next tried with the same success on the middle room, the staircase by that time having taken fire, and lastly, to remove all doubt (the populace beginning to be dissatisfied, and to talk of a second bottle conjuror), Mr. Godfrey consented to a third experiment in the upper room, which was entirely of wood. The flames were now suffered to get to a considerable height, and even the window frames destroyed before the machines were thrown in, which, however, answered exactly as before. One hundred and forty of the Foot Guards attended on this occasion."—*Journal of the Society of Arts.*



MILAN, II.—S. AMBROGIO.—
RELICS OF THE CRUCIFIXION.
—THE HOSPITAL.

STARTING from the well-kept Public Gardens, near the Central Depot, we can, by continuing along the Bastione di Porta Venezia and the succeeding boulevards, which together form a promenade seven miles in length, again arrive at our starting point. The promenade is shady and forms one of the finest features of the city, and as we continue, towards the left, it is not long before we arrive at a short street leading to the cemetery. The cemetery is a very fine one and abounds in beautiful chapels and other monumental work, nearly all from Milanese ateliers. Milan is well represented in the branch of plastic art by such men as Barzaghi, Argenti, Calvi and Barcaglia.

Cremation is quite in vogue here, very likely, however, only among the German and Swiss residents, of whom there are many, and among whom cremation has always found its strongest supporters and not among the Italians, or at least, not among adherents of the Catholic Church. The crematory was founded by a Swiss resident some fifteen years ago. Two systems which the intelligent guide fully explains, are in use. In one the process takes two hours and, including a tablet, costs nineteen dollars; in the other one, known as Varini's gas-process, a body can be destroyed in one hour at the cost of only ten dollars.

Again pursuing our first path it is not long before we come to the Arena and the Triumphal Arch, which were both constructed under the regime of Napoleon. The former structure in which races,

bull-fights, etc., are now held is merely a copy of the old Roman amphitheatre, is elliptical in form and ornamented on the exterior by a succession of arcades. Its capacity is 30,000.

The park and grass-plots in the neighborhood after six o'clock, when the workmen are returning home from their day's labor, present a very lively appearance. All the devices for the amusement of the people are in full blast. There are numerous merry-go-rounds, always doing a rushing business; photograph galleries, never seeming to do anything; lemonade-stands with poor lemonade and poorer proprietors; and fruit-stands with fruit quite as old and sour as the proprietors themselves. Then you can see all the wonders of the world by bending your back, looking through dingy glasses and paying two soldi. Of course the human skeleton and the wise-woman-from-the-mountain are not missing nor the phrenologist and a host of others belonging to the same useless tribe. Then we force our way through a crowd collected about a magician who is just concluding his performance by the following *coup*: He takes three five-lire pieces out of his pocket, which three-quarters of the crowd regard with envious glances, and announces that a most startling transformation is about to take place. He puts them into a box and, his magnetic powers being somewhat on the wane, he begs for a little more time than has been required for his other transformations. Now being a man of business as well as a master of the black-art, he proceeds to supply his patient audience with gold collar-buttons. Like the young man with the least hair on his upper lip, who spends the most for pomades and similar substances, so the man, with the least number of shirts, buys the most collar-buttons, consequently there is a rapid sale. Now that this deed is accomplished he is ready to go on with the next. He displays four silver spoons, into which the silver money has been transformed, which he now will sell for the sum of five francs. Which transaction will of course result in a loss of ten francs to him. There being no idiot of this order in the assemblage, which does not at all surprise this master of the black-art, he continues to search for an idiot belonging to the next lower order, that is, one willing to give four lire. Even this class not being represented he continues downward. When he arrives at the one-franc class and no one has spoken, a dead silence pervades the atmosphere, for the audience knows what is coming. For now the gentleman becomes justly indignant, his proud Italian spirit is aroused, he prances up and down the small arena that has been formed, he pulls his hair, he grows eloquent and finally in his intense excitement unbuttons his waistcoat, throws it on the floor, and in noble attitude, like Spartacus, defies the world — to sell spoons at as big a sacrifice as he is willing to do. He tells how the practice of losing opportunities grew upon a man until finally he didn't know an opportunity when it was thrust upon him and "that," cried he, "is your condition." He cursed, he blasphemed, he raved. But us let drop the curtain and leave this noble man in his great pain.

Then we pass the Castello formerly the seat of the Visconti (a mummy of one of the Visconti can be seen in the cathedral at Monza), and Sforza, at one time the ruling families of Lombardy. It is now used as a barrack. Presently turning up the Via S. Vittore we arrive at the church of S. Ambrogio, a structure of great historical interest and a fine specimen of the Romanesque style. The building as we now see it dates from the twelfth century, the original church, however, which stood on this same site was founded in the fourth century by St. Ambrose. The old tombstones and half-obliterated paintings, could they speak, would have many a strange story to tell, for Lombardy has, since the fifteenth century, been the bone of contention and the battlefield of all the great powers of Europe. And indeed, it is a district of which any country might justly be proud, with its lakes, its mountains and fertile plains.

We first enter the characteristic court, with its colonnades, a remnant of the Basilica and consequently of the Roman house, behind which rises the crude façade, flanked with two towers. The whole structure is of brick, a material which was much used in Lombardy.

The interior is, as most Romanesque interiors are, gloomy and cold, light being excluded excepting through the windows in the front, but little light coming through the small openings, cruciform and round-headed, in the slope of the dome. There are no windows in the nave walls, but these are pierced by a number of arches, forming a gallery. The middle nave, ending in a semicircular apse, decorated with mosaic, is divided into four parts, all but the last part, which is surmounted by the dome, are vaulted in brick. The ribs only of the vaulting are exposed, the rest of the ceiling having received a coat of cement. There are no transepts and the aisles end in semicircular chapels, as in the basilica. The nave at one end is also raised, forming the tribune, under which lies the crypt, which here contains the tombs of the Saints Ambrose, Protasius and Gervasius. To the right of the entrance, on the wall towards the court, hangs a picture of St. Ambrose. Under this the German Emperors formerly caused themselves to be crowned with the famous Iron Crown, now preserved at Monza, a little town eight miles from Milan. It was taken to Monza by Frederick Barbarossa, and is now contained in a casket forming part of the cross placed over the altar. May it rest there forever! Thirty-four kings have worn this royal relic, which brought with itself so much power and caused so much contention, and the last to feel its weight upon his brow was Ferdinand II, in the year 1838. And now this crown, that left the marks of its pressure upon the foreheads of the stern Red-beard and the great Napoleon, but serves to fill the pockets of the custodian, and any curious sight-seer may place it upon his head for a paltry sum.

It consists of a broad, jewelled hoop of gold, which hides the narrow ring of iron said to be made from a nail taken from the Holy Cross by the Empress Helena, mother of Constantine.

Italy, besides being a perfect museum of art and antiquity, contains so many relics of historic interest and things dear to every Christian, provided he be not of a suspicious nature, that it is difficult for the tourist to keep in mind all he has seen. I say, "If he be not of a suspicious nature," for it is hard to believe the evidence of tradition or evidence founded upon the assertion of a pope or a saint, of the early years of Christianity, who, as we know, believed cause to justify means, and would do anything to further their plans. We need not go so far away from home as Italy to find a good specimen of one of these saints in whom we can place but little confidence. I refer to St. Dunstan, Archbishop of Canterbury, about the end of the tenth century. Dunstan possessed a pair of pincers with which he had twisted the devil's nose. We are inclined to believe that the shrewd architects placed little confidence in Dunstan's feat, for we have never seen the devil represented with a cock-screw nose.

Dunstan is to be remembered by another feat which proved to be more destructive to some of his good subjects. Once, during a meeting of the church while the question, whether priests should have the permission to marry, was being discussed, Dunstan, after many pros and cons, arose and said, "To Christ himself, as Judge, do I commit this cause." A second after, the floor on the side where his opponents were seated gave way, and some were wounded and others killed.

The most interesting of these relics are those of the Crucifixion, and it is not a hard matter to find the whereabouts of most of them, for they are nearly all in Italy. We owe their discovery to the pious Empress Helena who in the fourth century went to the Holy Land, and razed to the ground the temple of Venus which had been erected over the tomb of the Saviour. After the excavating had been in progress for some time the men came upon three crosses, and the inscription "I. N. R. I." lying near by, but detached. The true cross was ascertained by the working of a miracle. Whereupon the Empress took two pieces, one of which she sent to Rome and the other to Constantinople, and enshrined the remaining parts in a case of silver. When Jerusalem was captured by the Persians the cross was conveyed to Persia, but soon afterwards the victorious Heraclitus restored it to its former possessors, who this time divided it into small pieces and presented them to the various churches. Helena also found three or four nails, one she threw into the raging seas to calm the storm and another is the one at Monza, but what became of the others I do not know.

The Church of S. Giovanni in Laterano at Rome rejoices in the possession of a piece of Christ's purple vestment. Here in this basilica under the altar, over which rises a beautiful white marble ciborium, lie the heads of SS. Peter and Paul. Here also is the Papal altar, where the Popes alone have a right to say mass; this contains a wooden table taken from the catacombs and thought to have served St. Peter for the same purpose. Elsewhere in the church is the calyx in which St. John the Evangelist took the poison.

The Church of S. Praxede at Rome, remarkable for nothing else, contains the pillar to which Christ was tied while being scourged. At Turin, in the Capella del Santissimo Sudario of the cathedral, the shroud, in which Joseph of Arimathea wrapped the body of Jesus, is preserved in an urn over the altar.

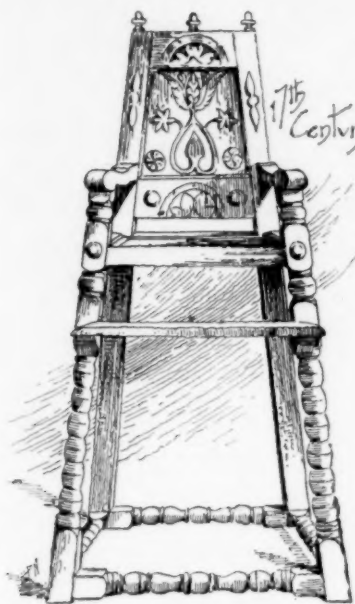
In Rome there is also the towel of Veronica, which bears an imprint of the face of Christ; and by the means of which many people have been cured of various diseases. The story of the cure of the Emperor Tiberius, who was afflicted with leprosy, will be remembered. He, hearing of the miracles which Christ had wrought at Judea sent ambassadors to him to obtain a cure. The ambassadors, however, came too late, for when they arrived at Jerusalem Christ had already been crucified. But hearing of the towel which He had left the holy woman, Veronica, they procured it and at the sight of it Tiberius was actually cured of that loathsome disease.

At the beautiful little Gothic Church of S. Maria della Spina, on the banks of the Arno at Pisa, the veritable "Crown of Thorns" was once preserved.

The largest memento of the crucifixion is at Rome, the holy stairs or the Scala Santa, near the church of S. Giovanni in Laterano, a flight of twenty-eight marble steps, covered for protection by wooden treads. It is supposed, Christ ascended these while being brought into Pilate's presence. No one is allowed to ascend them except on the knees. A very difficult and painful task, as may be imagined, for the pilgrims halt from time to time reciting aloud prayers and invocations. On the day I visited the Scala there were some eighteen to twenty pilgrims making the ascent, and some of them were unusually ardent in their prayers. One man, whom I timed, required one hour and forty minutes to reach the top; and when he did reach the summit, he for a short time was unable to use his legs. The descent is by the flights, on each side of the Holy Stairs, which terminate at the base with very striking pieces of statuary, one representing the betrayal of Jesus, and the other, Pilate presenting the bound Christ to the populace. The tourist desiring to see the chapels at the summit, but unwilling to go up on his knees, may also use the outer flights in ascending. Of the vast hospital at Milan, of which an illustration was given a fortnight ago we can say but little. Its façade is entirely of brick and terra-cotta; the detail is very finely executed. Of the nine courts which it contains only the principal one is of striking merit.

THEO. F. LAIST.

JOTTINGS ABOUT THE LEVEL.



THERE must be many architects who, from time to time, have occasion to use a level, and yet who know very little about its construction and manipulation.

In such cases, there is usually a confiding friend who lends the instrument for the occasion, but on its return, there must always be a feeling of uncertainty as to whether either through accident or curiosity the instrument has got out of adjustment.

As no amount of care will ensure correct results with a faulty level, it is of the greatest use to be able to find out if it is in proper adjustment.

A level is simply a telescope having a spirit-level fixed to it, and arranged so that the axis of the telescope is parallel with the glass tube of the level.

Thus, when the bubble is in the centre of the tube, the line of sight of the telescope will be horizontal.

In order to definitely fix the axis, it is marked by cross hairs near the eye-piece of the telescope, arranged so as to be in its focus, and thus clearly seen.

Now once the cross hairs have been adjusted to the proper relation with the spirit-level, it is not easy to have the adjustment destroyed by a blow or fall, so that so long as the bubble (when the level has been set up and adjusted by the levelling screws) will "reverse," i. e., will remain central when the telescope is looking either from right to left, or left to right, the chances are that nothing is amiss.

It is, however, very seldom that the bubble will "reverse" exactly, and this is of little importance, so long as, when taking a sight, the bubble is adjusted to the central position; accurate work can still be done, but of course with the extra trouble of adjustment of the screws for every sight.

To determine if the cross hairs are in exact adjustment, set up the instrument carefully on as level a place as can be found with a clear view in either direction, of about 60 yards. Measure off an equal distance, say 60 yards in either direction from the level, and drive in wood pegs, or bed a small stone firmly in the ground to hold the levelling staff on. The pegs and the level should be as nearly as possible in a straight line, thus:—Peg A—60 yards—level—60 yards—Peg B.

Now take a reading of the staff on peg A, which let us assume is 4.36, and a reading on peg B, say 3.36, that is, B is one foot higher than A.

In both readings the bubble should be most carefully adjusted to the centre at the time of sight.

Now, however much the cross hairs may be out of the axis of the telescope, the rate of deviation will be the same when looking at A or B, so that the horizontal distance in each case being equal, the amount of divergence from the true horizontal line will be the same, thus the relative levels of A and B will be correctly found.

Next move the level and set it up again carefully on the other side of and near to A, but not so near that the staff cannot be seen through the telescope, thus:—Level—peg A—120 yards—peg B.

Now, take a reading on A, say 5.23. We know that B is one foot higher, so the reading on B should be 4.23. If it is, then the instrument is in perfect adjustment.

If the reading is only 4.10 we know that the line of sight droops; if, say 4.30, that it is too high.

Finding that it is out, and supposing the requisite skill in delicate work, without which I would strongly advise no one to attempt adjustment (except with his own instrument), the next thing is to see if the bubble will exactly reverse; if it won't, then find the end of the level tube which has the adjusting screws, and either raise or lower it by their means until the bubble remains in the centre when pointing in all directions, remembering always that half the apparent error is to be taken out only; the other half will go when the level is levelled up with the usual levelling screws.

Next take a fresh reading on A, which suppose now to be 5.22, and then read on B, this should be 5.22—1.00=4.22; in order to obtain this reading it will be necessary to alter the position of the cross hairs; this is done by the small screws at the top and bottom of the tube, near the eye-piece.

First slightly unscrew one and tighten the other; if this makes the reading better, continue little by little till the exact reading of 4.22 in the hypothetical case is arrived at. If the reading is worse after

the first movement of the screws, reverse the direction, and continue till the correct result is obtained, readings being from time to time taken on B as the adjustment proceeds, to note if it is affected, which will not be the case when small adjustments only are required.

As a final precaution, it is best to again set up in the mid-position between A and B, and see that the difference in level remains the same; if not, a fresh adjustment must be resorted to with the new difference obtained, which, of course, should not exist if the distances and readings were correct in the first instance.

It is well to bear in mind that the eye-piece is made to slide in and out in its mounting, to suit the sight of the observer, i. e., so that the hairs may be in focus; thus, if the hairs are not clearly seen, all that is necessary is to alter the position of the eye-piece in or out till the eyesight of the observer is suited.

In setting up a level, the quickest way is to plant all three legs firmly on the ground, then, placing the telescope at right angles to one leg, move the leg sideways till the bubble is nearly central. Next turn the telescope parallel to the same leg, and work the leg in or out till the bubble is central in this position. The final adjustment can then quickly be made by the levelling screws by placing the telescope over each pair of screws in succession, and simultaneously tightening up and slackening one screw of each pair at a time, as may be required to level up.

When "changing," it is always well to be as nearly equi-distant from the first, or "foresight," as possible, and also to have the staff rocked when reading, so as to ensure a correct observation in the upright position, which is the minimum reading seen.

Wilfrid Stokes in A. A. Notes.

THE VICE-REGAL PALACE AT SANTA FE, N. M.



Capital, Palace of Fontainebleau.

THE sound of the hammer, the saw, and the trowel, the Santa Fé *New Mexican* says, makes a merry echo-song in and about the historic adobe palace to-day. The National Government has supplied the funds and Secretary Thomas has let the contract for \$3,000 worth of improvements or, more properly speaking, repairs on this ancient official edifice, so full of interest to all tourists and sight-seers who visit Santa Fé. The workmen took possession of the building yesterday, and in sixty days will have completed their task.

The Governor's palace is in much the same condition as last year, except that the additional lapse of time has made the need of repairs more pressing. The Secretary of the Territory, who is its custodian, has obtained an appropriation of \$3,000 from Congress for this purpose, and while this sum is considerably less than that which he estimated to be necessary, yet it will do much to preserve this interesting historic edifice in fair condition.

Without disparaging the importance of any of the cherished historical localities of the East, it may be truthfully said that this ancient palace surpasses in historic interest and value any other place or object in the United States. It antedates the settlement of Jamestown by nine years, and that of Plymouth by twenty-two, and has stood during the 292 years since its erection, not as a cold rock or monument with no claim upon the interest of humanity except the bare fact of its continued existence, but as the living centre of everything of historical importance in the southwest. Through all that long period, whether under Spanish, Pueblo, Mexican, or American control, it has been the seat of power and authority. Whether the ruler was called viceroy, captain-general, political chief, department commander, or governor, and whether he presided over a kingdom, a province, a department, or a territory, this has been his official residence.

In his recent annual report to the Secretary of the Interior, Governor Prince takes occasion to present some highly interesting data relative to this structure. He states that from here Onate started in 1599 on his adventurous expedition to the Eastern plains; here, seven years later, 800 Indians came from far-off Quivira to ask aid in their war with the Axtaos; from here, in 1618, Vicente de Saldivar set forth to the Moqui country only to be turned back by rumors of the giants to be encountered; from here Penalosa and his brilliant troop started on March 6, 1662, on their marvellous expedition to the Missouri; in one of its strong rooms the Commissary-General of the Inquisition was imprisoned a few years later by the same Penalosa; within its walls, fortified as for a siege, the bravest of the

the loads and tie-rods keep it from yielding upwards; and the purlins keep it from yielding sideways. The safe compression per square inch on Georgia pine (see Table IV) is 750 pounds. Without bothering with the complex Formula (3) for columns, we will assume that we can safely use

$$\left(\frac{c}{f}\right) = 700 \text{ pounds in our case,}$$

we require then in the main rafter an area of cross-section

$$a = \frac{58400}{700} = 83.4 \text{ square inches,}$$

or say a timber $8\frac{1}{2}$ inches x 10 inches. This we increase to 10 inches x 10 inches to allow for cutting away at bolt-holes.

If the purlins had not been placed directly over the joints we should have to increase this size to provide for the transverse strain

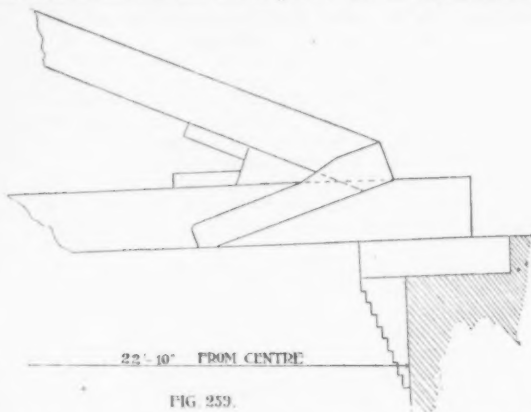


FIG. 259.

in each panel. In such a case we should have a beam 8 feet 6 inches long, supported at both ends. The transverse load on the beam would not be the full vertical load, but only its resultant normal to the rafter, as shown in Figure 260.

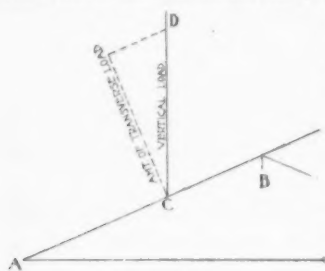


FIG. 260.

If CD were drawn at any scale equal to the vertical transverse load on rafter AB , draw ED parallel rafter, beam, and EC normal to same, then will EC measured at same scale as DC represent the transverse load on the rafter AB , the latter being considered as a beam of length AB supported at A and B .

Returning to our truss; if it were not supported sideways by purlins we should have to greatly increase the size of rafter, to guard against lateral flexure, see Formula (5).

The stress in tie-beam is 54000 pounds tension, the safe $\left(\frac{t}{f}\right)$ for

Tie-beam.

Georgia pine (Table IV) is 1200 pounds, therefore required area

$$a = \frac{54000}{1200} = 45 \text{ square inches.}$$

In a wooden truss the principal members are naturally of same thickness, therefore we should require $4\frac{1}{2}$ inches x 10 inches to resist tension. To this must be added the necessary area for bolt-holes, transverse strain due to ceiling hanging to tie-beam, etc. In our case the beam was pieced, as shown at centre, and it was therefore rather heavily increased and made 10 inches x 12 inches.

The struts were of spruce; their size will, as a rule, be determined by the area of their bearing against the principals — so as not to indent these — rather than by their length as columns, though both should be tried.

By making our larger strut 6 inches x 8 inches we get a bearing against the rafter of about 6 inches x 10 inches, or say 60 square inches, this would make a compressive stress across the grain on the Georgia pine rafter of

$$\frac{14000}{60} = 233 \text{ pounds per square inch.}$$

Table IV gives 200 pounds as safe across the grain on Georgia pine, but we can pass the above as safe. It should be remembered that the action of crushing stress in short blocks greatly resembles that of an explosion. A short block or cube of stone, if compressed, will fly off in the four directions normal to the four free sides, with sudden and great force, as if there had been an internal explosion. If the block is large the central

Nature of compression large blocks. fibres will tend to explode outwardly, while, of course, the fibres nearer the edge will tend to explode inwardly and as a result the central fibres, meeting with the opposition of the external fibres, will resist more compression than they would if they were free. This is confirmed by actual experiment, where it is found that large blocks of the same material will resist crushing pro-

portionately to a very much greater extent than will the small blocks.

Where, therefore, we are proportioning the sizes of struts — or later the sizes of washers — for their bearing area, across the wood, we will bear the above in mind, and if the safe values for crushing across the grain, as given in Table IV, require unusual dimensions, we will increase the amount of the safe value per square inch, as our judgment may dictate.

Now trying the strut as a column of spruce 6 inches x 8 inches, or 48 inches area, and 9 feet, or 108 inches long, we should have from Formula (3) the safe load:

$$w = \frac{48.650}{1 + \frac{108^2 \cdot 0.00033}{6^2}} = 13700 \text{ pounds,}$$

which is near enough to be safe.

In calculating the other strut we should find that as a column 6 inches x 6 inches and 6 feet 3 inches long it can safely carry 14400 pounds, the actual strain being 12000 pounds. For pressure across the grain against the rafter and main tie-beam we have an area of about 6 inches x 8 inches against each or 48 square inches, therefore actual compression per square inch across the grain = 250 pounds, which they can safely stand, as these parts are of Georgia pine and the crushing area quite large.

We next proportion the sizes of tie-rods, which will be of wrought-iron. The safe tensional stress of wrought-iron being 12000 pounds per square inch we require areas as follows:

For the principal rod,

$$= \frac{18000}{12000} = 1\frac{1}{2} \text{ square inches.}$$

For the side rods,

$$= \frac{5600}{12000} = \frac{7}{15} \text{ or say } \frac{1}{2} \text{ square inch.}$$

The rods being circular the principal rod would need to be $1\frac{1}{8}$ inch diameter and the side rods $\frac{3}{8}$ inch diameter or say $\frac{1}{2}$ inch.

We also place a small $\frac{1}{4}$ inch diameter rod in each end panel to keep the tie-beam from sagging. The rods will all have to have their ends upset, or else they will not have enough sectional area between the threads. In practice, however, it would be cheaper, where the rods are so small and short, to enlarge their diameter and pay for the extra material, rather than to save this and have to pay for expensive blacksmith's work.

Screw ends should only be upset where the material saved fully counterbalances the labor.

We next proportion the washers, they bear against Georgia pine and across its grain and should, therefore, be proportioned at about 200 pounds per square inch.

For the principal rod we will need, therefore, a bearing area for each washer of

$$\frac{14000}{200} = 70 \text{ square inches,}$$

or say 8 inches x 8 inches.

For the side rods we will need

$$\frac{12000}{200} = 60 \text{ square inches,}$$

or about the same, we will therefore to save expense make them all alike.

The lower washers are made to bear horizontally against both head (or nut) and tie-beam, but the upper washers have to be modelled to bear against the slanting side of rafter, and horizontally against nut. It will also be noticed that the lower end of the washer is "toed-in" to the rafter to keep the washer from sliding.

The wooden blocks which are screwed onto the rafter at each washer were made to allow for cutting away, to provide horizontal surfaces on which to rest the bridle irons which carried the purlins.

It will be noticed that the principal tie-beam is pieced at the centre. The cut or halving was made slanting, so **Halving long timbers.** as to force each half to bear on and pull against the other half; and all sharp edges, where sudden increase in strains would take place were avoided by rounding off, as shown. Wrought-iron plates were placed over and below the cut and sufficient bolts placed each side of the cut, not to crush the wood.

We now must still design the foot-joints.

The bearing area required must first be found; we can safely put 200 pounds per square inch on Georgia pine, across the grain, and our load at each reaction being 27000 pounds, we need

$$\frac{27000}{200} = 135 \text{ square inches of bearing area, and as the timber}$$

is 10 inches wide, it would have to rest on its bearing for a length of $13\frac{1}{2}$ inches.

In this case, however, we made it 24 inches, because the principal rafter bearing on the tie-beam so far from the support, it would have been apt to bend it. The left end rested on an iron column and was bolted to it as shown in Figure 258. In Figure 259 is shown the right end, which rested on and was bolted to a wall. The latter was corbelled out under the truss and capped with blue stone.

We next provide at each foot an inclined bolt, to hold the rafter down to the tie-beam and keep it from jumping out of the strap, which it might do, if subjected to heavy transverse strains. We next "toe-in" the rafter to the tie-beam as shown, taking care to get enough bearing area and area ahead of the toe to keep it from pushing or shearing its way out through the tie-beam, or from being sheared off itself. In our case, however, the toe is made small, the only reliance we place on it being to steady the rafter sideways. The rafter transfers all the load vertically across the tie-beam, we shall therefore need the same length of bearing area on the tie-beam, $13\frac{1}{2}$ inches, as the latter needs on the wall.

We more than get this by means of the hardwood block, driven in tightly with its edge grain against the rafter and tie-beam and held in position by screwed on blocks.

We next calculate the strap. The strains coming on it are 54000 pounds tension and resisting this 58400 compression. The lesser will, of course, be the one it must resist. The width of strap required not to crush the rafter must first be determined. The strap bears almost along the grain of the rafter, but not quite, we will therefore reduce slightly the safe allowance for compression along the grain as given in Table IV, and allow, say, 670 pounds per square inch, we then require $\frac{54000}{670} = 80$ square inches, or the rafter being 10 inches wide,

a strap 8 inches wide. The thickness of strap should be sufficient not to shear off, we have two shearing areas one at each angle or $\frac{54000}{2} = 27000$ pounds on each. The safe shearing stress on wrought-iron being 8000 pounds per square inch (see Table IV) we need an area at each angle = $\frac{27000}{8000} = 3\frac{3}{4}$ square inches. The strap

being 8 inches wide would therefore need to be about $\frac{7}{8}$ inch thick. It was made $\frac{1}{2}$ inch, however, as in this case, it was doubtful whether the ironwork would be of a high character. Now each side of the strap will have to withstand a tensional strain of 27000 pounds. While the safe tension on wrought-iron in Table IV, is 12000 pounds, in this case it was assumed at 9000 pounds only, or the strap needed a sectional area = $\frac{27000}{9000} = 3$ square inches.

The strap being $\frac{1}{2}$ inch thick, would therefore need to be 6 inches wide, to which must be added $1\frac{1}{2}$ inch to allow for bolt holes, making the strap $7\frac{1}{2}$ inches $\times$ $\frac{1}{2}$ inch. We now settle the number of bolts, which we will make 1 inch diameter.

The safe shearing on a 1 inch bolt will be = $\frac{1}{4} \times 8000 = 6300$ pounds. Each bolt has two shearing areas, one at

bolts, each end and will therefore resist 12600 pounds. The total strain being 54000 pounds, we need $\frac{54000}{12600} = 4.3$ or say five bolts to resist shearing.

For bearing we have an area 1 inch diameter by $\frac{1}{2}$ inch thick against the strap at each end of each bolt, or just one square inch bearing area against iron to each bolt, which will equal a safe resistance to compression of 12000 pounds per bolt, we need therefore $\frac{54000}{12000} = 4.5$ or say five bolts to resist the compression of the strap.

The bolts also bear against the Georgia pine tie-beam and tend to crush it along the grain, the safe resistance of the wood being 750 pounds per square inch. Each bolt bears against 1 inch $\times$ 10 inches or 10 square inches of wood, and will safely bear therefore $10 \times 750 = 7500$ pounds. We need therefore, to avoid crushing the wood $\frac{54000}{7500} = 7.2$ or say eight bolts, which is the number shown in drawing.

LOUIS DECOPPET BERG.

[To be continued.]



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

THE PROGRESS CLUB-HOUSE, SIXTY-THIRD STREET AND FIFTH AVENUE, NEW YORK, N. Y. MESSRS. ALFRED ZUCKER & CO., ARCHITECTS, NEW YORK, N. Y.

[Gelatin Print issued with the International and Imperial Editions only.]

WEST END STREET RAILWAY COMPANY'S CENTRAL POWER STATION, HARRISON AVENUE AND ALBANY STREET, BOSTON, MASS. MR. WM. G. PRESTON, ARCHITECT, BOSTON, MASS.

A POWER-HOUSE and boiler-house for the West End Street Railway Company are now in the course of construction on the Hinkley Locomotive-works property (purchased for the purpose). The power-house is 300 feet long by $173\frac{1}{2}$ feet wide, the side walls being 34 feet in height, while the central front gable will be 65 feet from the ground. The walls are strengthened by buttresses

opposite ends of roof trusses. The boiler-house is 161 feet long by 84 feet 10 inches wide, with side walls 31 feet in height. The walls are also strengthened by buttresses running to the eaves. The roof of the power-house is to be in three gables, the central one being higher than the others and having a line of sky-lights at the apex and 12 dormer-windows on the sides. The roof of the boiler-house is a single gable with six dormer-windows. At the east end of the power-house next to the boiler-house are located the economizers and chimney. The economizers are on each side of the chimney. The chimney is 250 feet in height, diameter of base 26 feet 8 inches, diameter of flue, 13 feet, diameter of top, 17 feet 7 inches. It is square for a distance of 30 feet from the base and circular in plan above that point with a straight taper to within a few feet of the cap. Communication between the buildings is effected by two tunnels leading under the economizers and opening into the basement of the power-house. In the corner formed by the junction of the buildings is situated the pump-room and a toilet-room. Toilet-rooms are also in the basement of the power-house. Offices are provided in the west (Harrison Avenue) end of the power-house. The foundations of the buildings and machinery are of block granite resting on about 10,000 piles. The foundation of chimney rests on 812 piles. As the land is "made land" and the buildings and machinery are of the heaviest character very massive foundations were required. The materials of the walls of the buildings are dark, hard-burned, water-struck brick, with sills, lintels, copings, bed-mouldings of arches, weatherings of buttresses, etc., of Longmeadow brownstone, underpinning of Cape Ann granite, rock face. The inside of the walls of the power-house, pump and toilet-rooms are to have a base of English glazed brick of dark red color, 2 feet in height, above them a dado of cream glazed brick 4 feet 6 inches high, the rest of the wall being smooth common brick. The roofs are of iron and will be slated; the underside plastered on wire lathing. The valley platforms between the central and side gables of power-house are of boiler-iron. The roof trusses, rafters and purlins are of iron. Trusses 40 feet on centres in power-house and 25 feet on centres in boiler-house. The basement, engine and dynamo floors of power-house are to be of steel beams, iron flooring and non-conducting wood surfaces. The dynamo floor is to be stiffened by heavy plate girders. Floor of boiler-house to be of concrete. The dynamo engines, thirteen in number, have a normal capacity of 1,000 horse-power each. They are being built especially for the West End Company by the E. P. Allis Company of Milwaukee. Twelve pairs of Babcock & Wilcox sectional boilers will be used. Mr. F. S. Pearson is the chief engineer of the West End Company. The foundation work has been done by Wm. H. Ward of Lowell. Messrs. Whidden & Co. and Ira G. Hersey are the contractors erecting the buildings and the iron roofs are being erected by the Boston Bridge-Works.

HOUSE FOR GEORGE T. OLIVER, ESQ., PITTSBURGH, PA. MR. C. M. BARTBERGER, ARCHITECT, PITTSBURGH, PA.

CAPITALS FROM THE CLOISTER AT MOISSAC, FRANCE.

THE EDISON BUILDING, NEW YORK, N. Y. MESSRS. CARRERE & HASTINGS, ARCHITECTS, NEW YORK, N. Y.

The two lower stories of this building, of which only a fragment is here shown, are to be of light gray marble. The remainder of the building is to be of "old gold" brick with white terra-cotta finish.

HOUSE OF W. A. BARBOUR, ESQ., PATERSON, N. J. MR. CHARLES EDWARDS, ARCHITECT, PATERSON, N. J.

[Additional Illustrations in the International Edition.]

THE HOTEL DE VILLE, COMPIEGNE, FRANCE.

[Copper-plate Etching.]

We have always had an especially friendly feeling for this building ever since, in 1877, we insisted that our operatives should attempt to reproduce an engraving of it which had just appeared in one of the French journals. The successful accomplishment of this difficult feat—declared by the head of the establishment to be an impossibility—brought about the abandonment of the process of reproduction until then employed and the substitution for it of the much superior method that has been employed ever since. This jewel amongst the works with which Renaissance art has endowed France is styled by Viollet-le-Duc "the most complete and most remarkable" of all the town-halls of France. It consists of a single main building which has a grand spiral staircase, crowned by as fine a belfry as can be found. On three stories large halls open to right and left of this staircase. Northern town-halls usually had a projecting balcony whence the populace could be harangued, but at Compiègne this is reduced to a mere recess, at the base of the belfry, at the level of the balustrade which crowns the cornice. The doorway formerly was at the right where there are now twin windows, and we feel that the change of position is an injury to the design, for though it now comes under the great niche in the second story, it is not, any more than that, on the axis of the dominant feature, the

belfry tower. The bronze equestrian bas-relief of Louis XII, which is thrown out by its gilded background, is one of the most striking features of the façade. The building dates from the sixteenth century; the restoration was made about 1877.

THE HOFCHAUSPIELHAUS OR HOFBURG THEATER, VIENNA, AUSTRIA. HERREN SEMPER AND HASENAUER, ARCHITECTS.

[Gelatine Print.]

This building, the new Court Theatre, stands on the inner side of the Franzensring opposite the Rathaus, from the steps of which this view is taken. The building, of light stone, has a more graceful and less overloaded air than most of the buildings which are typical of the city, and is altogether a more pleasing piece of design than the Paris Opéra. A description of the arrangement and some of the constructive features was published in the *American Architect* for September 26, 1885, not long before the completion of the building.

BACCHUS AND ARIADNE. A PORTION OF THE FRIEZE OF THE HOFBURG THEATER, VIENNA, AUSTRIA. PROF. RUDOLF WEYER, SCULPTOR.

[Gelatine Print.]

This plate represents the central group, above the main entrance, of this animated and graceful frieze, portions of which have already been published in the *American Architect* for September 13, last.

A MASTER'S HOUSE AT HARROW, ENG. MR. T. G. JACKSON, M.A., ARCHITECT.

THE DINING-HALL OF THE SAME, HARROW, ENG. MR. T. G. JACKSON, M.A., ARCHITECT.

THE FOREST. ARRAS TAPESTRY. MR. W. MORRIS, ARCHITECT.

TEMPLE AT MEDINET HABOU, THEBES. DRAWN BY MR. R. PHENE SPIERS, ARCHITECT.

NEW PREMISES, DOVER, ENG. MR. T. KINGSLEY OLIPHANT, ARCHITECT.

This building was designed for Messrs. Stacey & Bird of Market Square, Dover, an enterprising hardware firm, who intend, in addition, to make extensive alterations to the rear. The building has a central position in Dover, and, moreover, the old market-place is bound up with the most interesting and, perhaps exciting history, England has experienced. From the Roman Conquest to the present time processions, both martial and peaceful, have passed on their way to the sea for embarkation; while the castle overshadowing the town alike commands admiration for its defenders and veneration for its antiquity. The building was therefore made to suggest some of the most interesting epochs in the history of the town, and events that occurred within sight of its shores. In the niches will be busts of Hubert de Burgh, Sir John de Penchester and others. The panels illustrate the beating off the French, the departure of Henry VIII for the Field of the Cloth of Gold, Elizabeth in the Armada period, Charles II at the Restoration, all executed in terra-cotta, with dark-colored stone in bands and on plain surfaces to give relief. The first and second floors are show-rooms for plated and other goods. The drawing from which the illustration has been taken was exhibited this year at the Royal Academy.



[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.]

MR. ANDERSON AND THE CAPITOL AT WASHINGTON.

HARTFORD, CONN., November 25, 1890.

TO THE EDITORS OF THE AMERICAN ARCHITECT:—

Dear Sirs,—In your editorial of November 1st, you call attention to the general admiration of the members of the American Institute, attending the late convention at Washington, for the unrivalled architectural magnificence of the city, the chief ornament of which—the Capitol—you call the noblest architectural object in the world. The President of the Institute, Mr. Hunt, in the annual address, evidently refers to the Capitol when he says that "After running the gauntlet of every conceivable style of building to be found in this metropolis, one enjoys a certain feeling of rest while contemplating his (Mr. Walter's) work." Your editorial also gives Mr. Walter the credit of having designed the Capitol, evidently forgetting the large share the late Charles Frederick Anderson had in the original design. You say "the critics who imagine that they are subtracting

from the merit of the great artist who created the Capitol, by ascribing its beauty to its position, forget that Dr. Walter's appreciation of its advantages of position was probably quite as intelligent as theirs; and that his work, instead of being thrown together at random, and dropped by chance on a hill, was studied for the place which it occupies, so that the surroundings must be considered a part of his design."

It is nearly forty years ago since Mr. Anderson submitted his design in competition—December 1, 1850. Yet in all these years it is not generally known in the profession that the chief credit of the design of the Capitol belongs to him.

I was a pupil in Mr. Anderson's office during a year before the war. A large front elevation of his original design, beautifully rendered, hung on the wall over my desk, a glance at which was sufficient to show that it was substantially the design of the Capitol, then approaching completion.

Mr. Anderson told me that it was at his suggestion to the President that Capt. M. C. Meigs was appointed; as he felt that in a government work of such magnitude the government should be represented by one of the engineer corps; and that after Capt. Meigs's appointment they went together and staked-out the proposed extensions.

After this Anderson was supplanted, but his design was virtually adopted though he had to struggle for over twenty-five years before Congress recognized his claim. Soon after he died, a worn-out, disappointed and well-nigh forgotten old architect.

Last week I received from Washington a copy of a report on file there, of the Committee on Public Buildings and Grounds, which throws some light on this subject. It is dated March 29, 1864, but the bill did not pass until the following session of Congress, the 38th. It was approved by the President, February 7, 1866.

Here are some extracts:

"It remains only to be seen by a comparison of the building with the plans of Mr. Anderson to discover whether there is any similarity or identity between them. The separation of the wings from the old building by connecting corridors; the colonnades on the east, north, south and west sides are similar, as well as the exterior of both wings. . . . On the main floor of the wings containing the Senate Chamber and Hall of the House, both being placed in the interior or centre, with the other rooms for the committees, officers, and offices surrounding, but separated by corridors from those halls, while the two are not precisely identical, the general similarity and resemblance are too strong to doubt that Mr. Anderson's plan furnished the idea and suggestion by which this floor in both wings was arranged. Mr. Anderson's was the only plan that located the halls in the centre as they now exist."

The plan for lighting, heating and ventilation of the halls of Congress as carried out in the completed building were changed from those proposed by Anderson. Here is what the report says on this point:

"The Senate Chamber and Hall of the House of Representatives in locality and form are similar, the difference being that, by Mr. Anderson's plan, there is a different arrangement for lighting the rooms from the roof, while his mode of heating, ventilating and securing acoustics is different from those now existing in the halls. . . . Mr. Anderson's plan for the lighting, heating and ventilation of the halls of Congress and the several apartments of the two wings, which it has been stated had been submitted to Captain Meigs, coincided entirely with the notes on those subjects which were prepared by Captain Meigs, and thoroughly examined and approved by Professors Bachie and Henry."

The bill providing compensation for Anderson stipulated that his plans should be retained. It would be interesting to have some of them published if they are still in existence. Some years ago when in Washington I endeavored to find some trace of his family, he had a wife, three sons and one daughter, but could find no tidings of them.

The report ends thus: "The committee recommend the retention of all Mr. Anderson's plans and drawings, and deem it but an act of simple justice to him to make an adequate compensation for the time, professional skill, labor and expense which he has bestowed on this subject for so long a continued period of time, to the neglect and detriment of his regular professional business; and they therefore submit a bill for his relief, and recommend its passage." I hope you will see your way to giving this communication a place in your influential paper and thus assist in righting an injustice to the memory of my old master, Charles Frederick Anderson, who lived for years in poverty in Washington, watching the creation of his imagination taking form on Capitol Hill though deprived of any part in its execution.

Very truly yours, GEORGE KELLER.



BRICK-DUST CEMENT.—Many an inventor has made a fortune by devising some means for utilizing materials of one kind or another previously held to be useless or nearly so, says *The Brick and Tile Gazette*. There is scarcely a branch of manufacture connected with building that does not produce its store of waste material: and he who can suggest a use for the latter becomes the means of leaving the world richer than he found it. In mixing concrete, we can always find a use for broken

brick, but there is another purpose to which this material can be applied in which it would appear that it is capable of playing a more important part. According to a writer in *The Manufacturer and Builder*, ordinary brick-dust, mixed with lime and sand, affords a tolerably good substitute for hydraulic cement, the brick-dust mortar being decidedly, though not strongly, hydraulic. In his "*Engineer's Pocket-book*," Trautwine recommends its employment in all cases where hydraulic cement cannot be obtained. In experiments made by him with mixtures of brick-dust and quicklime, he found that blocks of one-half inch in thickness, after immersion in water for four months, bore without crushing, crumbling, or splitting, a pressure of 1,500 lbs. per square inch. He appears to have been thoroughly convinced of its merits, since he recommends the addition of small quantities of it to ordinary cement and water. He believes that the addition of even as small a proportion as one-tenth as much brick-dust as sand to our ordinary mortars would prevent the disintegration so generally visible in the mortars used in the masonry of many of our public works. The expedient to which we draw attention is not a new discovery, but we venture to think that brickmakers and builders in this country might avail themselves of it much more extensively than they do. The use of brick-dust with lime and sand is said to be very extensively and successfully practised in the Spanish dominions in America, as a substitute for hydraulic cement. Mr. F. B. Miles, of Philadelphia, who has spent a number of years in Cuba engaged in engineering work, and who has had abundant opportunity of testing the merits of the material, states, as his experience, that it is in all respects superior to the best Rosendale hydraulic cement for culverts, drains, tanks, or cisterns, and even for roofs, whether for setting flat tiles or for making the usual tropical flat roof. It is known in that country as a regular article of commerce. The proportions used in the manufacture are approximately one of brick-dust, one of lime, and two of sand, mixed together dry and tempered with water in the usual way. Mr. Miles expressed the opinion some years ago that as this material could be produced at a lower cost than cement, it would prove a profitable plan to utilize the waste and broken bricks by setting up pulverizing mills in all large brickyards.

THE PIAZZA DI NAVONA.—The Piazza di Navona has its shops and palaces and florid churches at its four sides, marble seats set about it, statues here and there, and gigantic fountains dating from the time of the fifth Sixtus, whom Master Pasquin nick-named Summus Pontifex, instead of Summus Pontifex. This is a quarter of Rome much abandoned to nursemaids and idlers, although it is close to the Senate House of the Italian nation. Time back it was the circus attached to Nero's baths. Only the other day, speaking comparatively, it served as a convenient place for summary execution of the law upon criminals. Here they set rogues in the pillory, or stretched them face downward on the stone bench, and whipped them well with a thong of cowhide—vastly to the amusement of their fellow-Romans, who enjoy anything in the nature of a spectacle. An assassin or a thief caught in the act was in those days hanged with but little formality. The gallows was always ready, as indeed it ought to have been in a city wherein from 1758 to 1769 there were 4,000 homicides. It was only needful to send for the hangman, who soon turned the poor wretch off, and then jumped on his shoulders to make him die the quicker. It might happen, however, that during the execution the coach of a Cardinal rolled into view. His Eminence, if in good humor, was likely enough to exercise the privilege of pardon, which belongs to all Cardinals. At the lifting of his finger, as the coach rumbled by, there would be a cry of "Respite!" The arm of the flogger would be instantly arrested, the man in the stocks would go free, and if the luckless villain swaying to and fro from the gallows was not already dead, he would be cut down and released. It is told how one man at such a contingency had actually been hanged, and the hangman was just about to leap upon him, when His Eminence gave the sign—a narrow escape out of the fell jaws of death. Another characteristic of this notable piazza—the largest in Rome—was the efficacy of the water of one of its fountains to convert Jews into Christians. But the virtue is nowadays not so considerable. It has gone the way of the cemetery for prostitutes, the wolves of the Campagna close to the city gates, the prejudice against the innovation of gas, (publicly denounced by Gregory XVI), all of which were current in Rome a few decades ago.—*The Cornhill Magazine*.

A NEW USE FOR SAWDUST.—For several years certain Germans have been experimenting, with a view to utilizing sawdust as a material for mechanical purposes. It was discovered, years ago, that vegetable fibre, after subjection to certain chemical action, and afterward to a pressure sufficient to expel all liquids from it, could be made into a substance almost indestructible by the elements, and of great utility in the mechanical and ornamental arts. The only trouble has been from the fact that but a few kinds of fibre were capable of the transformation under any existing formula. It might almost be said that there was only one fibre that, so employed, produced results satisfactory in respect of economy of manufacture and beauty and usefulness of the resulting product; and that one fibre is cotton, its delicate structure, strength and ready submission to the action of the necessary chemicals keeping it almost alone in its adaptability for the purpose. Thus far, almost the only result has been the manufacture of celluloid, which is unsuitable for anything but the finer mechanical uses. Scientists claim, however, that all vegetable fibre is, to a certain extent, identical—that is, having its essential constituents in common, there must be some means by which the coarser kinds can be transformed into similar substances. The experimental processes have included nearly the entire list of common vegetables, but within the last few years attention has been specially directed to the waste products of the saw-mill, especially the dust. The first results were the production of paper-pulp. But as only certain species of timber could be used satisfactorily for that, the experiments have been continued farther, with a view to not only using any kind of sawdust, but to broaden the field, so as to produce a substance that can be used for more general purposes than

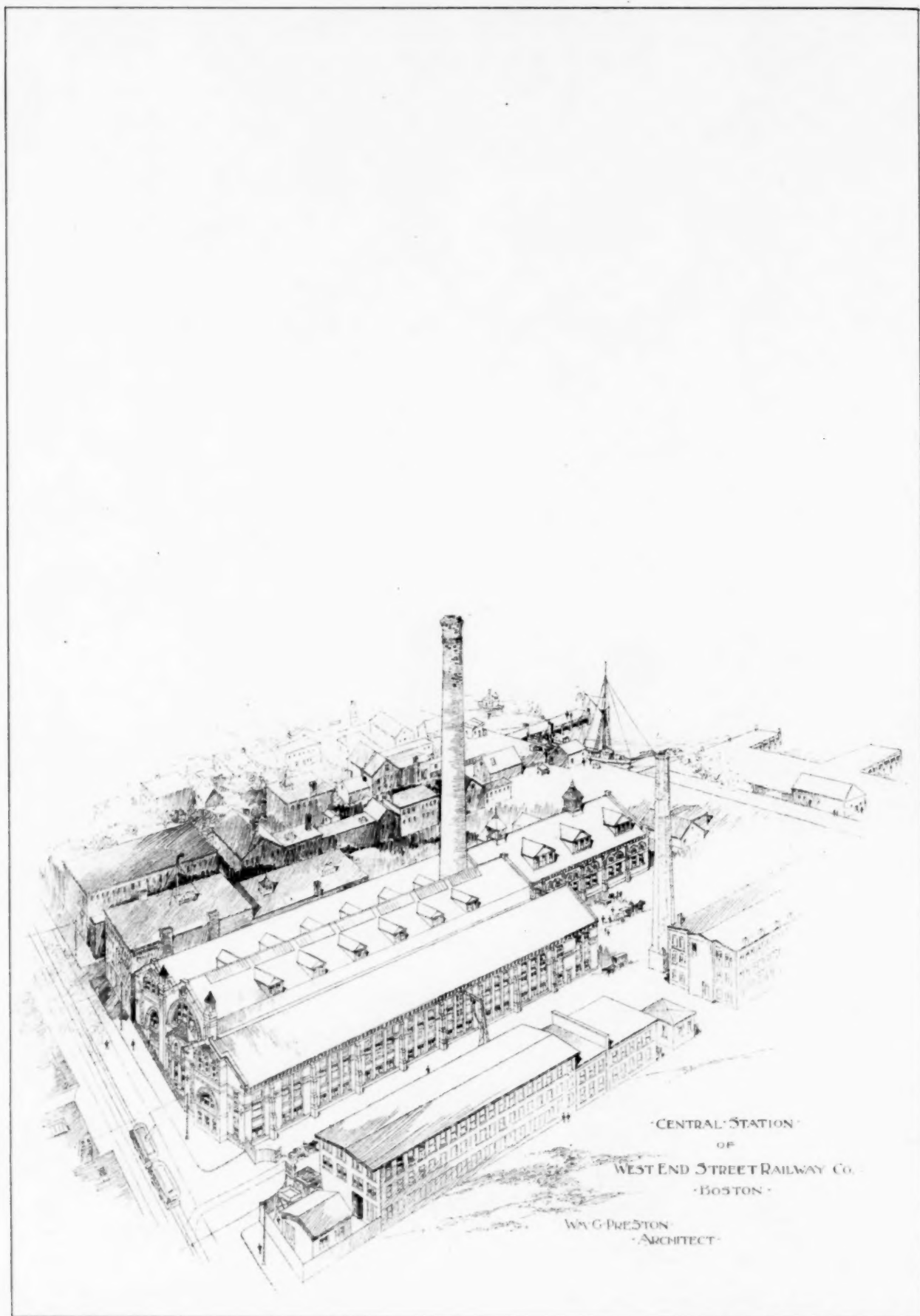
paper or celluloid, and which should, if possible, combine the best characteristics of both substances. A German scientific journal professes to give the results of the experiments in that country thus far. It claims the production of a substance made from common sawdust, by means of an acid process, that promises to be of great value. It is described as being exceedingly firm of texture and of great hardness, incapable of being bored by a common gimlet or of being penetrated by a nail, more impervious to the action of the elements than the ordinary metals or the common building stones, and practically indestructible by fire, a Bunsen burner simply charring the exterior surface. It is claimed to be stronger than timber for joists and girders, and several times lighter than iron or steel, and, above all, the cost of manufacture is claimed to be so low as to bring it into competition with both wood and iron. It is said that experiments will be made to still further decrease the cost and increase its field of influence, and that its manufacture is to be pushed.—*Northwestern Lumberman*.

A HAY PALACE.—The hay palace at Momence, Ills., is 206 feet in length and 166 feet wide in the centre. The main hall is 103 feet in diameter, flanked on the four sides with wings. A circular gallery eighteen feet wide, sweeps entirely around the main hall. The walls are built of baled hay with just enough baled straw to make a pleasing contrast in shading and color. The primary object of the exhibition is to make a display of the varied products of eastern Illinois and western Indiana, which will include products of the farms, factories, forests, mines, quarries and of the arts, domestic skill, and the accomplishments of the people of the district in music, oratory and manual training. A special feature is the display of the latest tools in haying machinery and implements for ditching, laying and making tile, and road machinery.—*N. Y. Commercial Advertiser*.

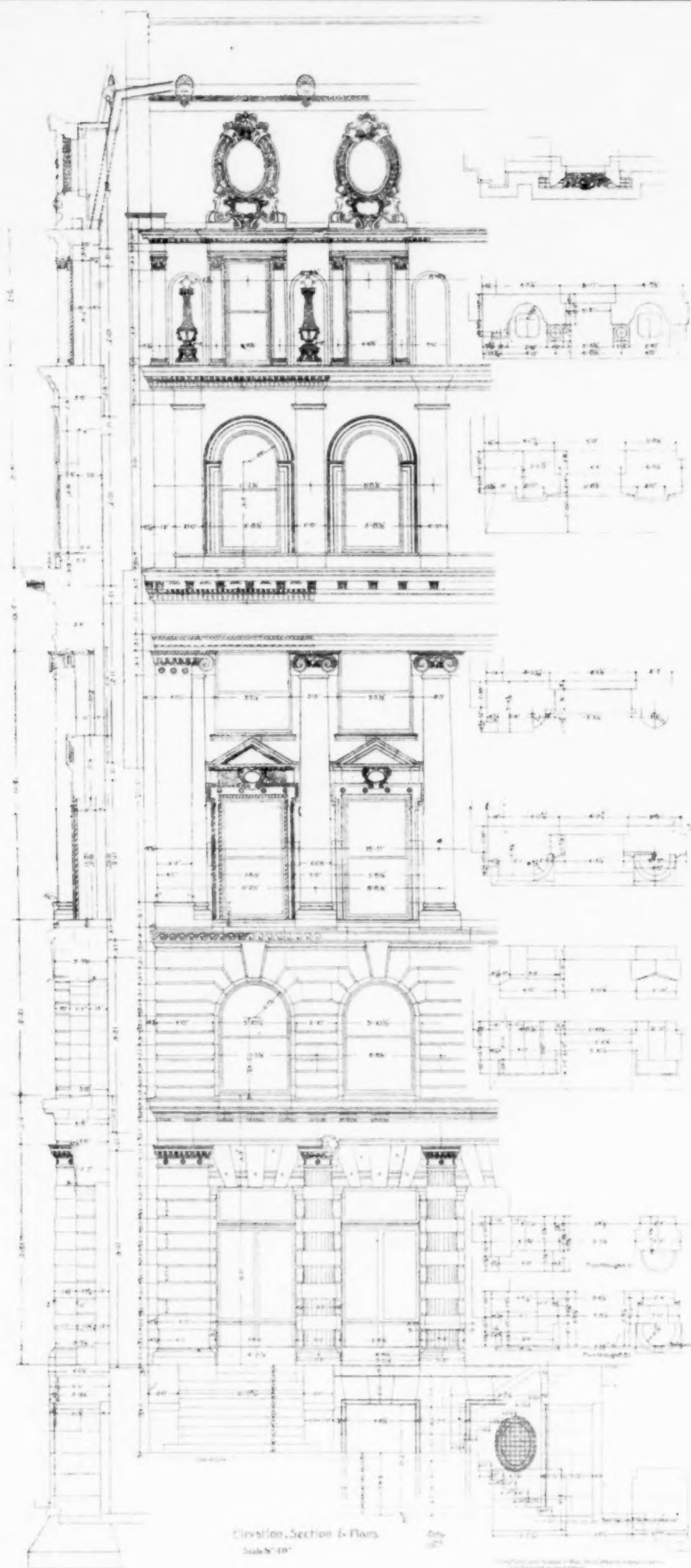
THEIR VOICE FOR PEACE.—An interesting story which is now going the rounds of the iron trade attributes to a well-known rolling-mill firm of this vicinity a degree of conscientious adherence to principles that is not often found in business circles. The firm in question is an old and honorable concern, whose members are of the Quaker persuasion. During the last year they have erected a fine new mill for rolling heavy ship plates and such material, and, as the story goes, there was no work ready for it upon its completion. The Bethlehem Iron Company was much pushed about that time to fill its contracts for material for Government war-vessels, and as the new plate-mill was without work an order of 10,000 tons of ship-plate was offered to its owners. These honest Friends learned that the plates were to be used for ships of war, and they therefore declined the order, preferring that their mill should remain idle rather than that they should lend a hand in the promotion of the art and science of war.—*Philadelphia Record*.

TRADE SURVEYS

ALL trade and financial statistics show that an enormous volume of business is being done. Manufacturing interests in all parts of the country report general activity. In many industries overtime is the rule, and not the exception. In the iron trade, mills are on double time, and all kinds of mill products are in demand. Among bridge-builders great activity prevails. Among managers of railway improvements there is much stir over proposed improvements. It is, therefore, a significant fact that several railway corporations have given instructions that purchases of material of all kinds be restricted to actual demands. Ship and boat building interests are all crowded with work, and it appears that a number of very important ship-building enterprises will take practical shape next spring. The industrial situation throughout New England has not suffered. Building material of all kinds has not declined. Stocks in manufacturers' hands have run low. Distributors and retailers are carrying light stocks. Paper-makers report a downward tendency in prices, but no sluggishness. Hardware manufacturers have sold more goods this year than in any, and in most lines there will be a steady winter's work. In engine and machinery work the greatest activity seems to prevail. Among textile manufacturers orders have been up to anticipations. Labor organizations have concluded that peace is the safer policy, and outside of the building trades there are no agitations contemplated at present. In fact, there are no disturbances probable in any of the great industries, and the attention of labor leaders is being again directed in the direction of political action at some future day. The agricultural interests are steadily organizing, and are becoming a threatening factor in politics, but their interests, rightly understood, cannot be at such variance with the interests of other classes and sections as to create any distrust or apprehension over agitation and granger combinations. Business men in all avenues of activity feel more or less concerned over existing complications and possible emergencies for which the country is not especially prepared. Newspaper discussions show that writers are at sea. Magazine-writers have about exhausted their cheap theories and prophecies. Politicians do not know what sort of a song to sing to catch the popular ear. Matters and policies which should long ago have been definitely settled are still kicked up and down the arena of discussion every day. Business men, investors, capitalists, home and foreign, all want to see a sound, settled set of principles adopted, over which the "outs" and the "ins" can no more quarrel. A time has come when a vigorous public sentiment will arise and express itself in this matter. Railway-builders want to push work, manufacturers are ready to risk fresh millions, ship-building promoters are anxious for the wind to start, yet there is widespread uncertainty and delay because some unknown platform writer may secure the hurrahs of a political convention to some scheme that may catch the public eye and ear. While the banking and railroad interests are conferring how to place the railway interests on a stronger foundation than they have ever been, it would be well if the vaster interests of the country could be served through the adoption of some sort of cohesive policy that would divorce business from mere politics. The events of the past few weeks show that efficient corrective agencies are at work. When the errors of the past year or two have been eliminated as they will be, business men will find their horizon clearer, and will see better opportunities for expansion and growth than they have seen even in the phenomenally prosperous period since 1885.



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Division, Section & Plans
Scale 1/8" = 1'-0"

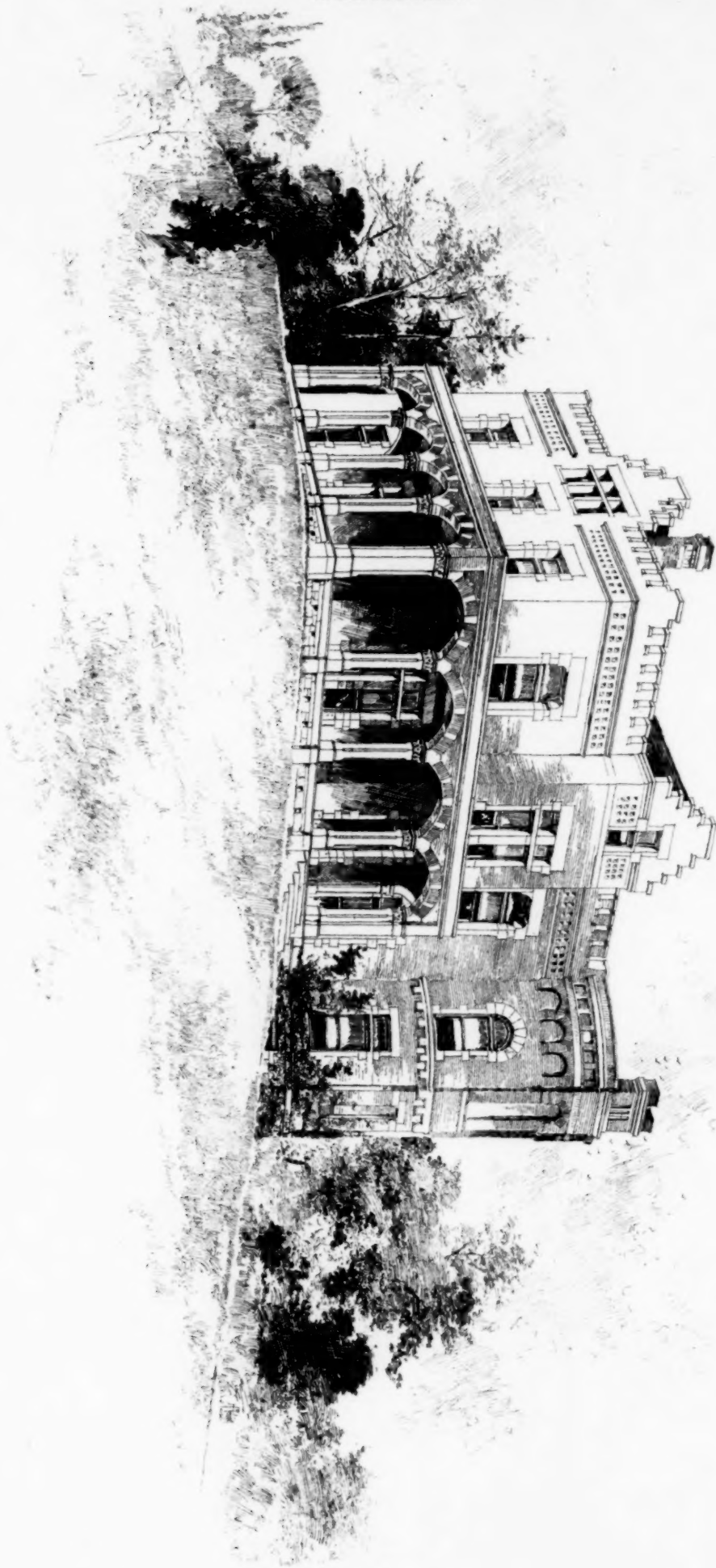
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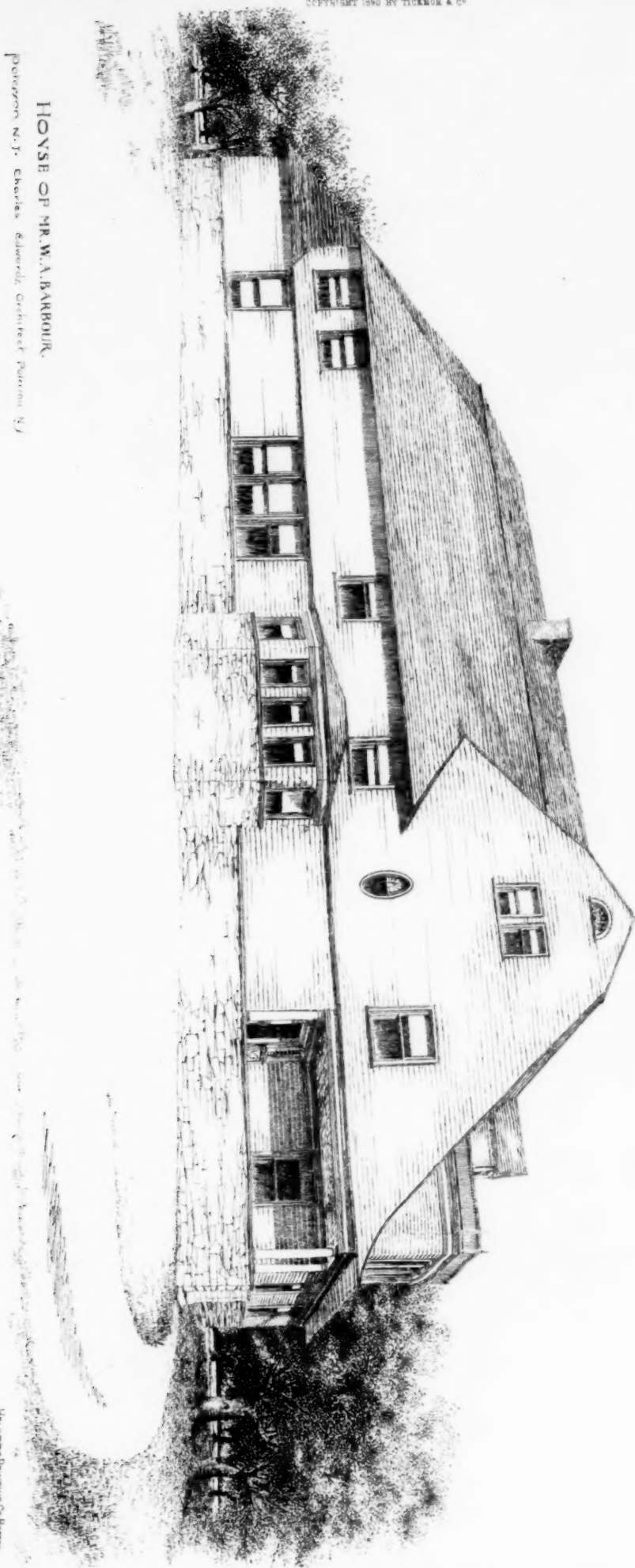


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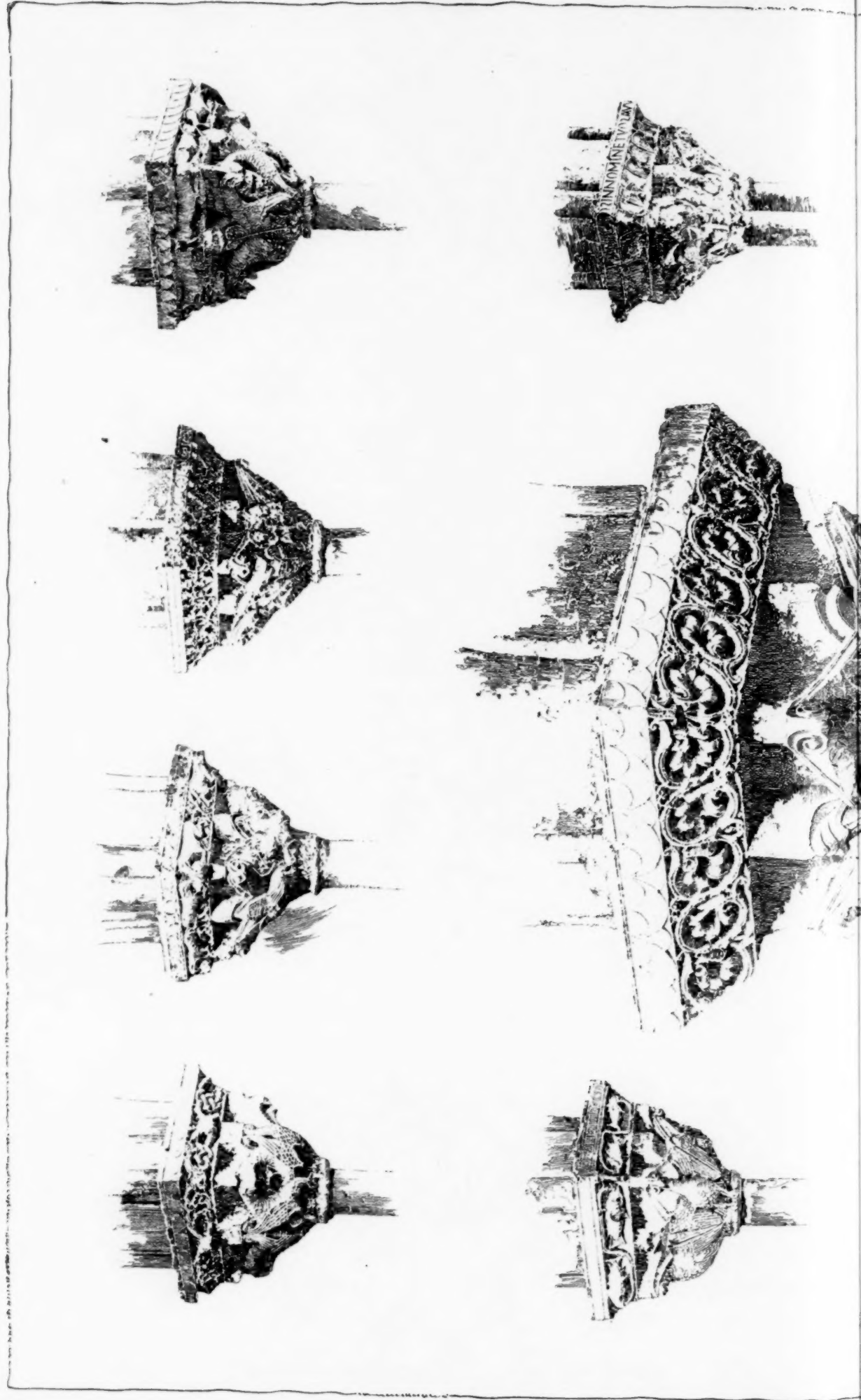
HOUSE OF MR. W. A. BARBOUR.

POTTERSON N. Y. Charles Edwards, Architect, Putnam N. Y.

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