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THE non-professional public hardly realizes how cheap building is now, compared with its cost fifteen or twenty years ago. Although wages are about the same, or, considering the length of the working day, are rather higher now than then, materials, especially where machinery is concerned in making them, are far lower. To say nothing of structural iron, which has fallen in price to little more than one-fifth of its cost in the early seventies, lumber, bricks, cement and other materials are cheaper now, perhaps, than they have ever been. After the great fire of 1872, the cost of bricks, laid in the wall, was ordinarily reckoned in Boston at thirty-six dollars a thousand. Now, better bricks, quite as well laid, with better lime and cement, cost there, in the wall, fifteen dollars a thousand. Moreover, fireproofing processes have been of late greatly improved and cheapened, so that an ordinary mercantile building can be erected, with floors, roof and partitions all of iron and concrete, or terra-cotta, for ten to fifteen per cent more than it would cost with the cheapest wooden floors, roof and partitions that the law will permit. Considering the immense superiority in durability, in freedom from shrinkage and rot, in exemption from the constant repairs made necessary by such shrinkage and rot, and in saving in insurance rates, of the fireproof structure, it is surprising that any other sort should, at present prices, be built for mercantile purposes. It is hardly possible that prices can go lower. Even now, American structural steel is sold in Germany and Belgium, handicapped by the cost of four or five thousand miles of transportation, in direct competition with the local material, made by workmen whose wages average thirty or forty cents a day, so that any further fall is practically out of the question, and it appears to be certain, from the reports of contracts in the foreign professional papers, that an ordinary house can be built more cheaply here, notwithstanding the higher wages paid by our contractors, than it can be, using the same materials, in England, while our workmanship is, as a rule, far superior to that of foreign mechanics. Although it is possible that such a state of affairs may last for some time longer, it is very unlikely that contractors and material men will make any further sacrifices, and a return to a normal scale of prices, which should be, for this country, a little higher than those which prevail abroad, is certain to occur sooner or later.

THE *New York Sun*, following the lead of the *Evening Post* and some other papers, "sounds a warning," as it says, to people who think of investing their money in office-buildings in New York. Although the earlier of the new office-buildings have paid a good profit on the investment,

competition with the still newer ones has brought down the rentals of both, and even in the most recent ones, and far more in the old buildings beside them, signs of vacant offices to let meet the eye in all directions, while rents have fallen in some cases to one-third those asked a few years ago. As the *Sun* points out, something of this is due to the fact that the new buildings, well lighted and ventilated, with good elevator-service and other comforts, draw tenants from the old dark and inconvenient buildings in the neighborhood, and the owners of the latter, to get their tenants back, reduce their rents; but more, perhaps, is to be attributed to the increased accommodation offered by the new buildings. It cites, as an example, the Bowling Green Building, which occupies twelve city lots, six on Broadway and six on Greenwich Street, all twenty-five feet wide. Supposing the Broadway lots to have been occupied by separate six-story buildings, and those on Greenwich Street, which is anything but a fashionable thoroughfare, by four-story ones, it is obvious that, with the necessary space for the stairs and corridors taken out, there could be only two light rooms on each floor of each building, or one hundred and twenty offices in all; and half of these, being entered only from Greenwich Street, would hardly be available for anything but tenements or cheap storage. By taking all the land for one great building, with its main entrance on Broadway, the Greenwich Street lots become immediately Broadway property, commanding a triple or quadruple rental, while the economy of space secured by treating the whole tract together has made it possible to get thirty-nine large offices on each floor in place of twelve. Moreover, as the new building is seventeen stories high, instead of six, the total number of offices which can be made in it, each with outside light and air, is one thousand and twenty, in place of one hundred and twenty; and all these offices are "Broadway offices," commanding the highest rents, all are accessible by elevators, so that the upper stories are as valuable as the lower ones, and all are much more attractive than the rooms in the old buildings which the new one supersedes. It is evident that the new building competes for tenants, not with six Broadway buildings of the sort which it has replaced, but with fourteen times as many; or, in other words, at an outlay for land, which is usually the largest part of the investment, of the price of six Broadway lots and six Greenwich Streets lots, it affords attractive quarters for the tenants of eighty-four Broadway lots, covered with six-story buildings. It is evident that by this sort of improvement the office accommodation of the city soon outruns the demand; but it is no less evident that such an operation gives a very large margin of profit, and that the owners of the Bowling Green Building can afford to be content, if necessary, with small returns on their investment, while waiting for the generous income which it should give when tenants are found for all its rooms. Where building operations of this sort have not been so prudently planned, the owners have already suffered, as in the case of the Syndicate Building on Nassau Street, which was built as a speculation, and has just been sold for the second time, with the result of cutting off the third and fourth mortgages; but in most cases the property pays, even at present, a moderate interest, and it is reasonable to suppose that rentals will increase rather than diminish, while repairs, in modern buildings of this sort, form a very small item of expense. On the whole, therefore, notwithstanding the warnings of the newspapers, and the great fall in office rents, there is reason to suppose that a well-contracted office-building, in a good location in New York, contracted for at present prices of labor and materials, is as desirable an investment as can be found. Of course, if the land can be had at a comparatively reasonable price, as has been the case with the Bowling Green and the Washington Buildings, the profit on the investment is all the more sure; and it is always prudent to plan such a building so that it can be made available for as many different purposes as possible. If office tenants should be hard to find, there is always a demand for fireproof storage, so that rooms may be temporarily let for this purpose, as they have been in Chicago, with perceptible benefit to the rent-roll; and, particularly in New York, a great deal of business is done in offices by manufacturers, who sell their goods by sample, and need storage room for their cases; and it must be remembered that any revival in general business will be followed by a great increase in the demand for offices in New York.

THE last report of the tests of metals and other materials, made with the United States testing-machine at the Watertown Arsenal, covers only the work done for the year ending June 30, 1895, but, as every one knows, the wheels of Government work turn slowly, and the report is not the less interesting because of its tardy appearance. In addition to some tests of ordnance material, and a long series of very curious experiments upon railroad tracks in service, in which delicate levels and micrometers were mounted on tracks over which heavy locomotives were run, to determine the strains of tension and compression, and the changes of shape, caused by the movement of heavy loads over rails of various sections, supported by ballast of different kinds, the report contains descriptions of tests of boiler-riveting, and some interesting trials of stones, bricks and cement of various kinds, to determine their resistance, not only to tension and compression, but to transverse and shearing stresses. The results do not differ greatly from those familiar to professional men, but the skilful management of the Watertown tests is shown in a noticeable uniformity of results, the compressive strength of four specimens of granite, from Maine, Arkansas, and two quarries in Minnesota, ranging only from eighteen thousand one hundred and twenty-one pounds to nineteen thousand five hundred and ninety-nine, the extreme variations from the mean being only about five per cent; while, even in sandstones, the greatest variation from the mean of six specimens was only about twenty-six per cent.

ONE of the most interesting of the facts ascertained, probably for the first time, by these tests is that temperature and moisture have a very great influence in determining the resistance of stone. In order to measure the permanent expansion which is known to take place in stones after soaking in water, a large number of samples were soaked in water at 32° Fahr., then in water at the boiling-point, and again in the cold water, and afterwards dried. On measurement, all the stones so treated were found to be larger than before, the actual linear expansion being from one-fifth to one-tenth of one per cent. On testing for resistance to various strains, however, the strength was found to be greatly affected by the water treatment. Granite was least injured, the average of six samples so treated showing a loss of seventeen per cent in resistance to transverse stress, while marbles showed a loss of more than half their strength, the average resistance of the water-treated samples being only forty-six per cent of that of the untreated stones, and a dark marble from Vermont lost more than two-thirds of its strength; limestones lost, on an average, forty-one per cent; and sandstones thirty-three per cent. That this loss was due to the action of the water, and not to the heat alone, is shown by the fact that specimens placed in the water with the others, but enclosed in sealed cases, so that only the temperature could affect them, lost comparatively little. This curious and important phenomenon is rendered all the more perplexing by the fact that all stones, when first quarried, are moist with "quarry sap," and rainwater filters continually through all rock formations in our climate; so that the conditions introduced by a second soaking, even in boiling water, would not seem to be so novel as to account for the effects indicated. It is true that boiling water might dissolve out certain constituents which would be insoluble in cold water, but this would not account for the permanent increase in volume produced by the treatment, and the fact that two specimens of sandstone showed an increase of about ten per cent in transverse strength after treatment still further confuses the subject. One of the specimens that showed such increase was from East Longmeadow, Mass., from the so-called "Worcester" quarry, while another specimen from East Longmeadow, from the Kibbie quarry, which produces a particularly hard and strong stone, lost, under the water treatment, forty-nine per cent of its strength.

THE noted architects, W. Böckmann and Bruno Schmitz, of Berlin, have made a sketch for a vast arena for athletic contests, which they think it would be well for the Government to lay out at the foot of the Kyffhäuser mountain, already dominated by the combined monument to the late Emperor William and Frederick Barbarossa. As the *Deutsche Bauzeitung* says, Germany has, of late years, given so much attention to intellectual development that physical culture has been rather neglected, and the idea of the people interested in

the scheme seems to be that the establishment of a sort of German Olympia will help to revive the public interest in manly exercises. The situation of the place is very favorable. At the foot of the mountain runs a little stream, the Thierborn Bach, which can be easily expanded, by means of a dam, into a long, narrow lake, for swimming exhibitions, and on the other side of this stream is a sort of elliptical valley, open on the side opposite the Kyffhäuser, and surrounded by hills of moderate elevation. To utilize these features of the ground, it is proposed to convert the valley into an immense arena, arranging semicircular ranks of seats on the hill-sides, and placing a covered stand, for privileged spectators, at the end next the lake. Two bridges across the stream connect the arena with the Kyffhäuser, and on the side of this, high enough to overlook the arena, is formed an immense terrace. Buildings for various purposes occupy the back of this terrace, and also the upper portions of one of the hills surrounding the arena. The scheme is certainly a fine one, but it remains to be seen whether it will be carried out.

M. CAILLETET presented a few weeks ago, to the French Academy of Sciences, an account of the analysis of the air collected by an instrument placed in a balloon, at a height of about nine miles above the earth. The apparatus used consisted of a cylinder of tinned copper, with a valve, arranged to be opened, and again closed, by clockwork. Previous experiments had shown that the balloon would reach its highest altitude in about an hour and a quarter after leaving the ground, and the clockwork was set for that time, the cylinder being, of course, previously exhausted. Everything seems to have worked properly; the valve opened at or near the highest altitude, as was shown by the fact that the pressure of the air contained in the cylinder, as measured by the manometer in the laboratory subsequently, agreed very closely, when corrected for temperature, with the minimum shown by the self-registering barometer; and closed again so tightly that no leakage appears to have taken place. On analysis, the thin air from the upper regions was found to be very similar in composition to that near the surface, but showed a slightly larger proportion of carbonic acid, and a smaller one of oxygen than the average surface air. M. Müntz, who made the analyses, observed, however, that the tin coating of the cylinder might have had a little carbonic acid condensed upon it, or, possibly, that some oil or grease about the apparatus might have furnished carbonic acid, at the expense of the oxygen.

THERE is trouble again in that more or less happy family, the New York Board of Walking-Delegates. It will be remembered that the steam-fitters represented in that body recently struck against the thermostat-men, and that, after much squabbling and loss of time and money by all the people concerned, the matter was referred to the arbitration of President Seth Low, who decided against the steam-fitters. The latter received the award, as the newspapers reported, "with howls and jeers." Their helpers, who have a union of their own, "sympathized" with them, and for some weeks steam-fitting in New York has been at a standstill, except where non-union men were employed. Last Saturday, however, the union steam-fitters took up their tools again, and went to work as usual, rather to the surprise of the helpers, who thought, naturally, that their "sympathy" would be requited by admission to any negotiations looking to an adjustment of the dispute between the men and their employers. Their surprise was not diminished, nor was their satisfaction increased, by the discovery that their own jobs had been coolly appropriated by the steam-fitters, half of the latter acting as helpers, while the others worked at their regular steam-fitting. It must be confessed that the plan of going on strike, and calling on some one else to strike too, for sympathy, and then going secretly and arranging to get his job, while excellent as a manœuvre in the "struggle for life," has a certain repulsion for those old-fashioned people who still believe in such things as honor, and the helpers have made formal complaint to the Board of Walking-Delegates, which they propose to follow up with stronger measures, if justice is denied them. In this attempt they will probably have the support of all the other unions, for the mutual loyalty which is the most admirable characteristic of workingmen, and on which the existence of labor organizations depends, is particularly outraged by this performance.

THREE MEDITERRANEAN GARDENS.¹—II.

II. — AMALFI.



containing the towns of Castellamare, Vico Equense, Sorrento, Massa Lubrense, and Amalfi, beside numerous villages and fishing hamlets. The mountains rise to a height of several thousand feet, effectively dividing the northern from the southern half. Off the end of the promontory is the island of Capri, which in scenery and characteristics forms a continuation of the mainland, and in both places are interesting examples of gardens and terraces.

The precipitous slopes and cliffs of this rugged coast have been for centuries the country seats of the dwellers in the populous Italian cities. From the times of the Romans until now these wonderfully beautiful spots have sheltered palace and villa, as well as hut and farm. The blue sky and healthy climate, the white-walled hamlets gleaming among the rich green foliage, and the towering mountains form such a charming environment that it is no wonder that even the ordinary architecture and the most prosaic construction takes on a festive and playful air.

At the same time, in these parts of Southern Italy arises the problem of a dense population compelled to subsist in a very mountainous and broken country. The coast is remarkably bold and rugged, often rising vertically from the water in high cliffs and then falling back little less abruptly to a mountainous interior. In order to improve the last square inch of soil, these unpromising slopes have been, with infinite pains, turned into a series of stone-walled terraces, often only five or six feet high by ten or twelve wide, just enough to give a foothold for a row of olive trees or perhaps some vines. To such an extent has this practice been carried that from a boat off



A Pergola at Amalfi.

the inlet of Praiano one can count over a hundred terraces, one above another.

It has often happened that the owners of some villa, or the occupants of some monastery, perched high among the rocks, desiring a strip of flower-garden, or a sheltered level promenade, have taken

THE use of concrete or cement in garden work is carried on with the most success in Italy in the region around the Bay of Naples. The bay is bounded on the south by a narrow and mountainous promontory, which separates it from the less known, but still charming Gulf of Salerno. This peninsula, although containing much untillable land—is quite thickly populated,

one of these terraces, and by a simple arrangement of overhead vine trellis, and walls and seats managed in the white cement, have obtained their object at very slight expense.

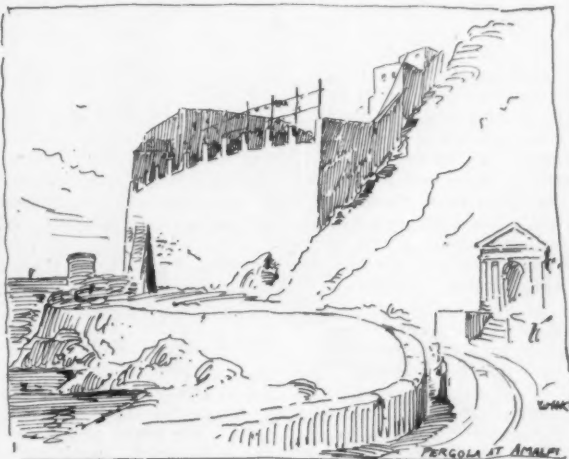
Next to the square, flat-domed houses and curiously tiled, Moorish-looking towers, one's attention is soonest drawn to the rows of low,



A Pergola at Capri.

solid-looking white plaster columns which border the vineyards and gardens. The pretty Italian custom of training the vines high has led to the vine trellis (*pergola*) being made an architectural feature of the landscape, and nowhere more effectively than along the edges of the south-facing cliffs of Amalfi and Ravello, from whence the accompanying examples are taken.

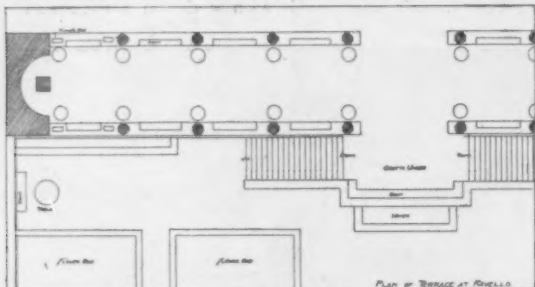
The *pergola* from which the plan was made is at Ravello, a queer little village on the top of the cliffs, eleven hundred feet above the sea. The town, which in the thirteenth century contained forty thousand people and numerous churches and palaces, is reached by



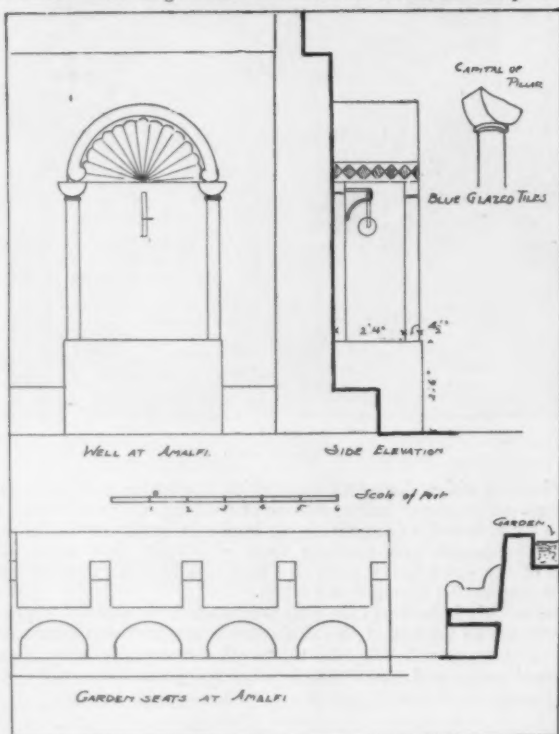
a winding and strikingly beautiful road, which debouches at length in a small and sleepy piazza, among strange-looking remains of Saracenic domes and towers, relics of its early splendor. The Palazzo Rufalo, the principal remaining monument, with its fantastic courts and domes, Saracenic in design, and once occupied by Pope Adrian IV, King Charles II and Robert the Wise, has a delightful garden, the sea end of which is formed by the *pergola* in question.

¹Continued from No. 1111, page 12.

It amounts simply to a sort of colonnade, parallel with the cliff, and making at once a promenade and a resting place as a termination to the rather thickly wooded garden behind. At either end is a high white niche for a statue or "fragment." The side walls are three feet



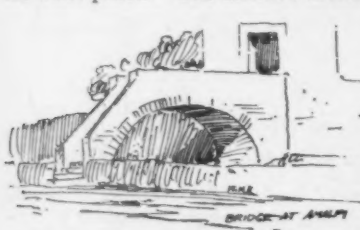
high, with the eight-foot pillars spaced about fourteen feet on centres. The width from wall to wall is also fourteen feet. Between the pillars are seats in the wall, and the adornment is further carried out by oleanders in tubs, or statuary in front of the pillars. The trellis is completed by poles placed crosswise on top of the pillars, which are thickly overgrown with vines. Flights of steps descend to a lower terrace, beyond which there is a sheer descent, and under them a grotto with a piscina is arranged. Small round tables and seats are also managed in cement and put at the ends of the walks. The magnificent view includes the entire sweep of the



Gulf of Salerno, Majori, Capo d'Orso and the low-lying opposite shore almost to the ruins of Pæstum.

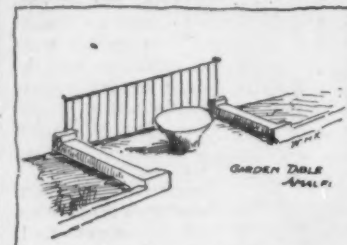
The photographs [See Illustrations] show two views of the famous Capuchin *pergola* at Amalfi which is constructed in the same way. It now belongs to the hotel which has taken the place of the old monastery, which was founded in 1212, by Cardinal Pietro Capuano for the Cistercians, but came into the possession of the Capuchins in 1583. The building itself has fine cloisters and contains many interesting examples of cement work.

Beside trellises, all the other accessories of a garden are made in the white plaster. The annexed sketches show a covered well and some garden seats, all in Amalfi. The well has a concave shell ornament under the hood and a frieze of blue-and-white glazed tiles at the sides. The round pillars have inverted semicircular, block-like capitals of the type met with in the neighboring cloisters.



The well with its hood is placed against a wall in the court of the old monastery. The seats, which suggest choir stalls, are managed along one of the levels of a small garden just above the coast road. The spaces under the seats are left hollow and a little flower-bed is introduced right above the

backs. Some red coloring has been irregularly brushed on and left to weather, and the rusty spots tend to relieve a too dazzling whiteness. Another form of well, less elaborate, is contrived by



building two pillars, say eight feet high, one on each side of the curb, and placing a pole cross-wise to carry the wheel and chains. This is, of course, the rudest form and all sorts of variations in the way of roofs and ironwork can be introduced.

Not less fascinating than the gardens are the houses and all the architectural accessories of domestic life. Amalfi lies at the mouth of a deep gorge extending far up into the mountain, and serving as a channel for a roaring brook which furnishes the power for a dozen paper-mills hanging precariously to the steep sides. The buildings are approached by curious little brick bridges which adapt themselves naively to the inequalities of the banks with miniature arches, flights of steps and parapets. On the paved quais—inches deep with the drying macaroni where the bare-footed *ragazzi* shuffle and jump—along the sandy beach and terraced roadway, now hanging over black rocks, and now lost in tangled lanes, are scores of picturesque, vaulted, open-stairwayed houses, with the vine trellises driven to the roof and flying their long leafy streamers in the air. On all the neighboring islands are hundreds more, and the accompanying sketch of one at Capri is only an instance of the possibilities of this kind of work for domestic purposes. The prevailing color is white with green wooden shutters, but brilliant coloring is often used in the soffits and backs of the vaulted openings, and here and there a tower or dome is fantastically decorated with patterns in glazed tiles.

The populace, it may be said, introduce a very strong note of color, for nowhere is the Italian love of gaudy stuffs more marked than here.

A carriage road, heavily walled and buttressed, is carried around all but the most impracticable part of the peninsula, and the searcher for garden work, even leaving the scenery out of account, should walk or ride over every foot of the distance.

This region is as yet untracked by railways, Castellamare and Salerno being the nearest stations; but the tariff is low and the distances are really not too great for walking, while the roads are excellent and the natives picturesque and amusing.

The large academic garden is seldom found here. The topography of the country, indeed, scarcely admits of it. The materials are almost always of the rudest kind. The round pillars seldom have capitals or mouldings of any kind, nor are the walls and seats ornamented with any relief work. The wooden poles which form the roof of the trellis are generally round and plain, and placed both at right angles and diagonally to the axis. Squared timbers, or beams with ends cut ornamentally, are not often employed, a mistake sometimes made when the *pergola* is imitated in this country, which tends to give the effect of the unfinished framing of a roof. Red unglazed tiles are used for paving the walks and alleys. Much of the effect depends on the proportion and spacing of the columns.



They are always kept rather stout and with not too much entasis, and are as often octagonal as round. Oleanders or orange trees, in tubs or large earthen pots placed along the alleys, are very useful to take away the too stiff air of the strictly architectural forms and to partly conceal the bases. —WALTER HARRINGTON KILHAM.

[To be continued.]

AN OWNER LOSES HIS SUITS FOR DAMAGES.

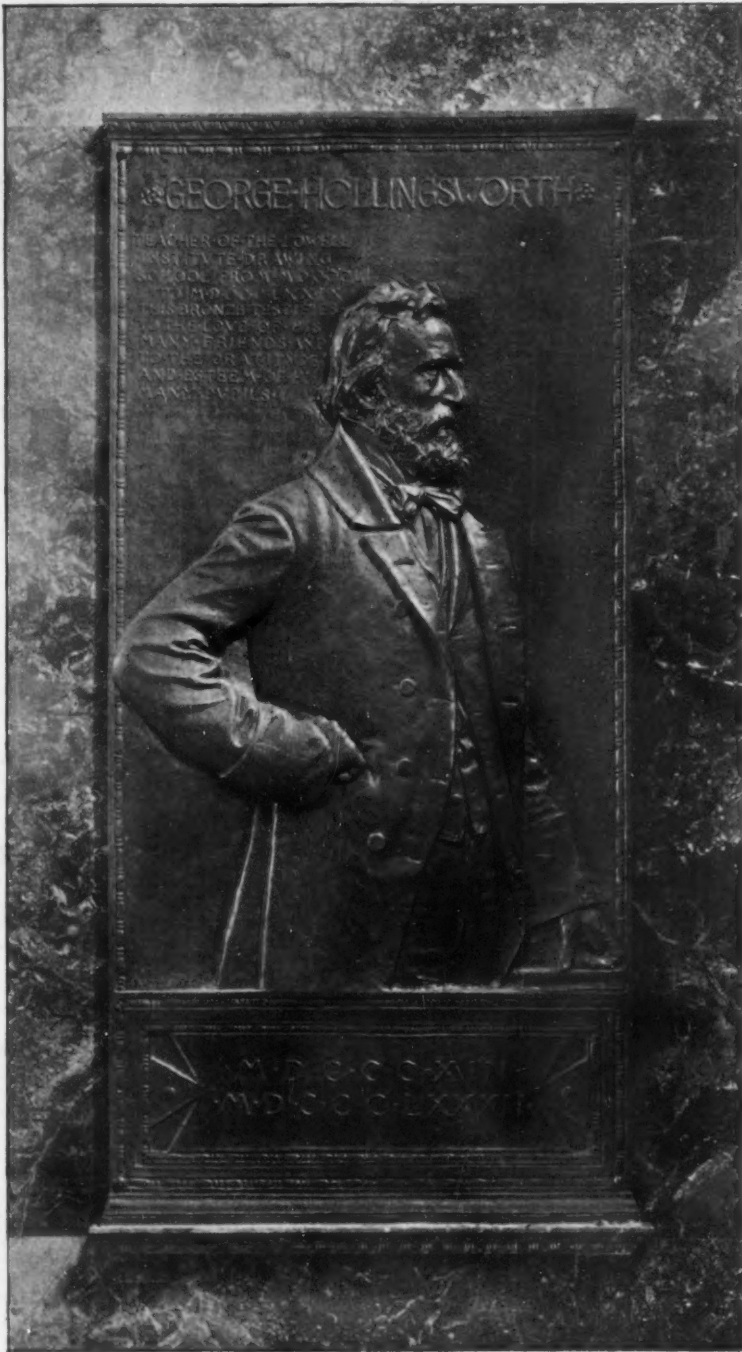
IN 1888 Dr. H. J. Berkley employed J. A. & W. T. Wilson, architects, to prepare drawings and specifications for a residence in Baltimore. When the bids were opened it was found that the lowest exceeded the limit of cost. Accordingly the architects set to work to reduce it, and after consultation with their client, and by reducing the size somewhat, as well as by leaving out a number of items, the contract was finally awarded to a builder, George Bunnecke, for the sum of \$13,372 on June 12, 1888. The house was completed and turned over to the owner who occupied it in February, 1889. Soon after moving in, complaints, most of which seemed trivial, began to be made, but the builder, at the request of the architects, tried in every way to render the house satisfactory to the owner. Whenever one set of complaints was remedied, another set was always presented, until in March, 1889, the architects, wearied by the continual fault-finding and the apparent impossibility of satisfying their client's demands, asked him to write out a list of everything of which he considered he had a just cause of complaint, and to agree that if everything on this list were made good, he would finally be satisfied. The list was given, and the builder did his best to meet its demands. After a final inspection of the work by the architects they decided that everything was properly completed, and gave their final certificate. This the owner refused to pay, on the ground that the work was not according to specifications. The balance of the architect's commission was also refused on the same grounds. The builder and the architects then entered suit separately, for the sums due them, when the owner promptly followed, by suing each of the parties for \$10,000 damages, in 1890. These suits slumbered on the court docket until November, 1896, when the damage suit against Bunnecke was tried in the City Court before a jury. More than twenty witnesses testified for the defense, embracing nearly all the persons who had furnished material or done work on the house. The plaintiff called as witnesses a builder and the ex-Inspector of Buildings, together with a man who had done some work for him about the house, and a painter. The case was well contested by able counsel on both sides, and at the end of seven days, resulted in a verdict for the plaintiff of one cent damages. A subsequent motion by the plaintiff for a new trial was refused, and he was obliged to pay the costs.

On April 12, the trial of the suit against the architects was begun. They had substantially the same witnesses as in the first case, among them two well-known architects and several prominent builders who had made a thorough examination of the house. The plaintiff called the same witnesses as before, with the addition of a paper-hanger, another builder and an amateur photographer, who showed more than twenty pictures taken by flash-light, of the interior of the house,

from the cellar to the attic. Every crack in the plastering had been photographed and the footings of the walls exposed and subjected to the same process. Portions of the flooring which in the familiar manner of photography were horribly distorted, with magnified perspective, were shown, small cracks being enlarged until they resembled wide seams between the boards. The case had been so carefully worked up that no part nor portion of the building escaped. The jury were told that the water "poured" through the walls, that "more than half" the bricks in the front pavement were cracked and broken when laid; that the front wall was so much out of perpendicular, that nothing remained but to tear it down, at a cost

variously estimated at from \$2,500 to \$3,500. They were told that the walls had cracked and settled, that none of them had any foundation; that things had been omitted wilfully from the work which had been contracted for, and so on. The fact was brought out that the footings of the brick walls, instead of having two courses, each projecting 4 inches, making an 8-inch projection on each side of the wall, were built in some places with two courses, each projecting 2½ inches, or a total of 5 inches on each side. Very much was sought to be made of this by the plaintiff, as being a departure from the letter of the specifications (and the only one), notwithstanding that the testimony showed the footings, as built, were capable of sustaining twice the safe load put upon them, and also that the 750 bricks saved by the builder had been used, and more, in a dormer originally intended to have been of wood and for which no charge was made. The clause in the contract, allowing changes to be made by the architects, was considered by the jury as covering this point. It was sought by the plaintiff to exclude the record of the former case, but at the conclusion of the testimony the judge allowed it to come in, so that the contention was narrowed down to whether the drawings and specifications were accurate and sufficient, and whether the supervision by the architects was what it should have been. The jury was out but a short time, and brought in a verdict unconditionally for the architects, the plaintiff to pay the costs of the suit.

In these cases the fact most clearly brought out was, that in assuming to supervise the actual work of construction, as is the general custom of the profession in this country, an architect renders himself liable to the most disagreeable and possibly embarrassing consequences, which in extreme cases might easily ruin him financially, and all for the pittance of one-and-one-half per cent on the cost of the work! There should be a radical change in this matter, and no building of any importance should be erected without a clerk-of-the-works, or superintendent, paid by the owner and responsible to him. Most of the risk and trouble to which architects are subjected proceed from this cause, and they had much better refuse to visit the work at all, than to do so under the false impression that they are "superintending" it. It is almost impossible for the public



Bronze Memorial Tablet, Museum of Fine Arts, Boston, Mass. A. St. Gaudens, Sculptor.

to discriminate between the supervision of an architect, and the superintendence of a clerk-of-the-works.

Another fact, brought most clearly into prominence, was, that the members of the same profession will render the best service to themselves by cheerfully rendering it to one another. The members of the profession should always strive to uphold one another, and not lend themselves to abusing and defaming their confrères. In the present case, two architects rendered most efficient service in giving their unbiased testimony, while others were ready on a moment's notice, had they been needed.

The scope of the cases may be inferred from the fact that the testimony in the first case alone comprised five large volumes, closely type-written.

X.



NEW YORK CHAPTER OF AMERICAN INSTITUTE OF ARCHITECTS.

A REGULAR meeting was held at the rooms of the New York Chapter, 156 Fifth Avenue, on Wednesday, April 14, 1897, at 4 o'clock P. M., President Carrère in the chair.

The Secretary presented a letter from the Boston Chapter A. I. A., enclosing resolutions passed by it on 8th inst., recommending that the present incumbent of the office of Supervising Architect of the United States Treasury Department be retained, and expressing the hope that the New York Chapter may be led to take similar action.

The documents were received and, after considerable discussion of several resolutions offered and withdrawn, the following resolution was passed:

Resolved, That the New York Chapter of the American Institute of Architects endorse the work which has been done by the present incumbent of the office of the Supervising Architect of the United States Treasury Department, and respectfully request that he be retained, and not removed for political reasons; but that, by this action, they in no way endorse the present system under which the Government determines its designs for federal buildings.

The Secretary presented a printed document, being a proposed petition to Congress, covering preambles and resolutions passed by the Fine-Arts Federation of New York, condemnatory of certain of the Fine-Art provisions in the tariff bill known as the "Dingley Bill," now before Congress, together with a letter asking for the Chapter's consideration of the same.

A discussion ensued on the subject of the proposed municipal building for the Hall of Records of the City of New York, and preambles and resolution were passed as follows:

Whereas, It is of the utmost importance that all Municipal Buildings should be an honor to our city, not only practically, but also as works of art; and

Whereas, It is usually impossible for the public to be assured that such results will be obtained, where direct appointment of the Architect is made by officials representative of the people—officials who may lack skill in judgment concerning art matters, and who may be accused of capricious action or favoritism in making such appointment; and

Whereas, The appointment of an unskilled architect cannot be remedied by the appointment of a skilled consulting architect by the authorities, such a course being especially undesirable, as producing a division of responsibility; and

Whereas, The Municipal Authorities are about to erect a new and important building for the Hall of Records:

Therefore, be it *Resolved*, that we, the New York Chapter of the American Institute of Architects, do hereby memorialize the Authorities, to whom the construction of this building has been entrusted, to institute a competition, as a basis upon which the choice of Architect for the Hall of Records may be made; and we further beg that they advise with architects of the highest reputation in New York, and possibly with other artists, as to the best form of such competition, which will assure the presentation of plans by, at least, a sufficient number of those eminent in the profession; but which will, at the same time, not necessarily debar others of talent who may wish to enter the lists as competitors.

To this end we suggest that your body may find it best to ask the counsel of this Chapter of the National Institute of Architects to formulate, in connection with those representing the Municipal Government, a scheme of competition which, in their judgment, will meet the demands of art and of public sentiment.

Adjourned to the call of the Secretary.

A. J. BLOOR, Secretary.

NATIONAL SOCIETY OF MURAL PAINTERS.

THE National Society of Mural Painters held its annual dinner Tuesday evening, April 20th, in a special parlor at the "Arena," the Honorary President, Mr. John LaFarge and the First Vice-President, Mr. Frederic Crowninshield, who acted as master of ceremonies, occupying respectively the opposite ends of the table.

A large number of invited guests of the kindred professions of Architecture and Sculpture, as well as the Art of Letters were present, and under the deft leadership of Mr. Crowninshield, after the cigars and coffee had arrived, many informal speeches were made. With a few introductory remarks in regard to the Mural

Painters and their work, Mr. Crowninshield spoke of the "Lazarus Scholarship" of Mural Painting and a letter he had just received from Mr. Breck, the first beneficiary, who has but recently taken up his residence in Rome.

He then introduced the Honorary President, who spoke forcibly of the question of the American artist's point-of-view and his distinct and legitimate right to it. He was followed by Mr. W. W. Taylor, President of the Municipal Art Society of Cincinnati, whose Society has just undertaken the decoration in part of the City-hall of that city, the prize-drawings for which, by Mr. Otto W. Beck, were hung as part of the decorations of the room.

Mr. Taylor was, in turn, followed by Messrs. Walter Cook, George B. Post, Frank Miles Day of Philadelphia, C. Howard Walker of Boston, Prof. W. R. Ware, Henry Rutgers Marshall, J. Q. A. Ward, F. S. Lamb and Edward Simmons, representatives of the various professions forming the Allied Arts, all of whom spoke in the interest of the "unity of the work," whether from the point-of-view of the Mural Painter, the Sculptor or the Architect.



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

ENTRANCE GATEWAY: PHELPS HALL, NEW HAVEN, CONN. MR. C. C. HAIGHT, ARCHITECT, NEW YORK, N. Y.

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

PHELPS HALL was built in 1896 at a cost of about \$115,000, from money bequeathed by Anson G. Phelps and his son, William Walter Phelps. It is of brown Longmeadow sandstone, and contains, on the lower story, rooms for the janitor and apartments for a professor, while above are fourteen recitation-rooms and the quarters of the Classical Club.

WESTERN PENNSYLVANIA HOSPITAL, PITTSBURGH, PA. MR. WM. ROSS PROCTOR, ARCHITECT, PITTSBURGH, PA.

THE plan submitted is of the pavilion type, and the group consists of fifteen buildings, beginning with the porter's lodge at the main gateway. Passing this, we come in succession to the nurses' home, the receiving building, back of which are the stable and the pathological building, the three surgical pavilions, the pavilion for male paying patients, administration building and pavilion for female paying patients, combined under one roof, though entirely distinct and separate, and the three medical pavilions, the most westerly of which is designed for children and maternity cases. The kitchen and laundry building is immediately in the rear of the administration building.

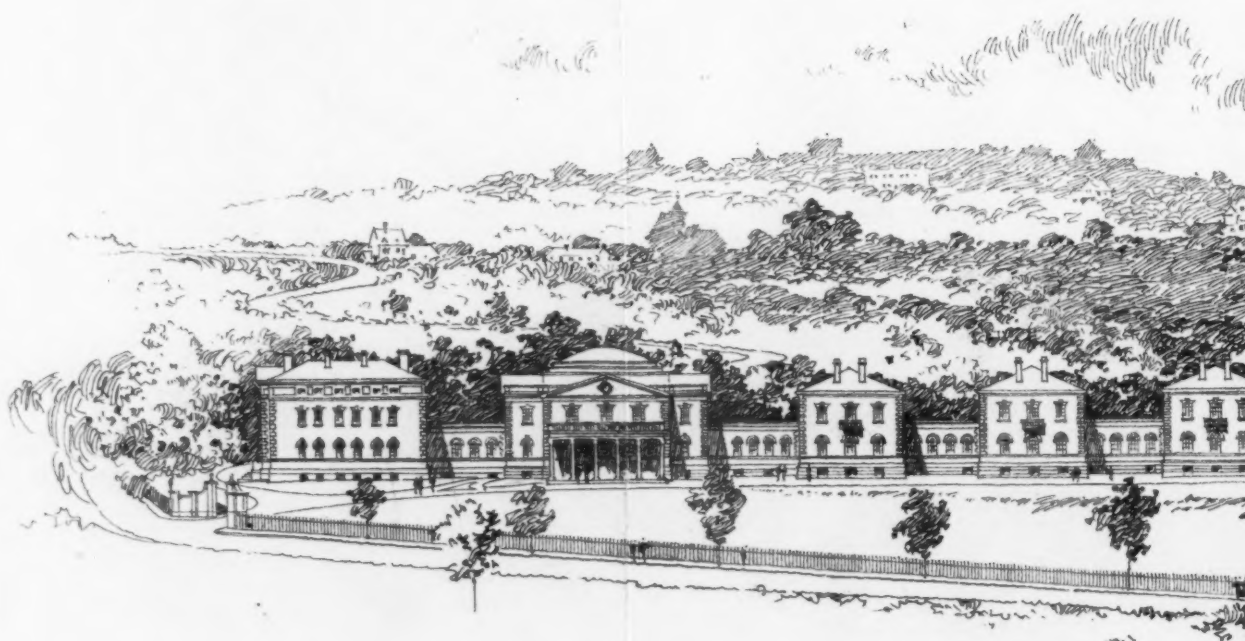
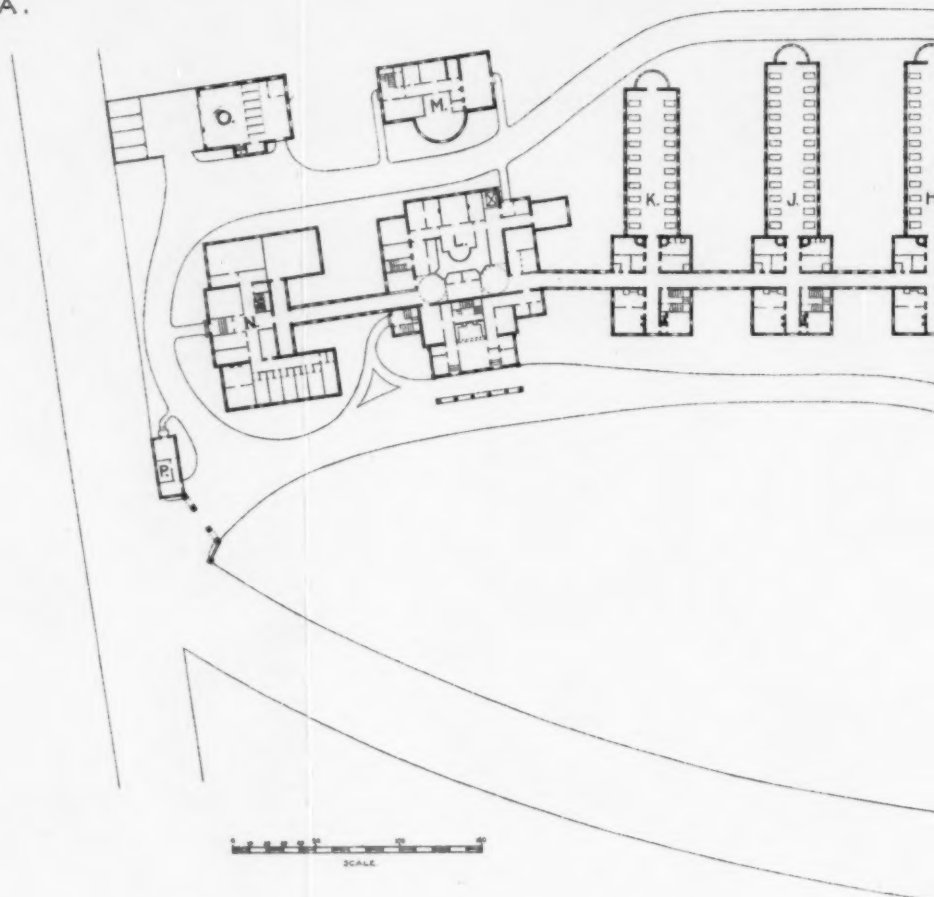
The Administration Building will be three stories, with a high basement, in which are to be domiciled the male employés. The ground-floor will contain the executive offices of the institution, comprising the general office and telephone exchange, superintendent's office, board-room, officer's dining-room, a sitting-room for the internes, a library, public parlor and a large assembly-room for religious services and entertainments, lavatories for men and women and the pharmacy.

The second floor will contain the internes' apartments on the westerly side, and opposite, the apartments of the superintendent, and between these two rooms for the use of the staff, and the third floor will contain the sleeping-rooms for the out-ward female employés.

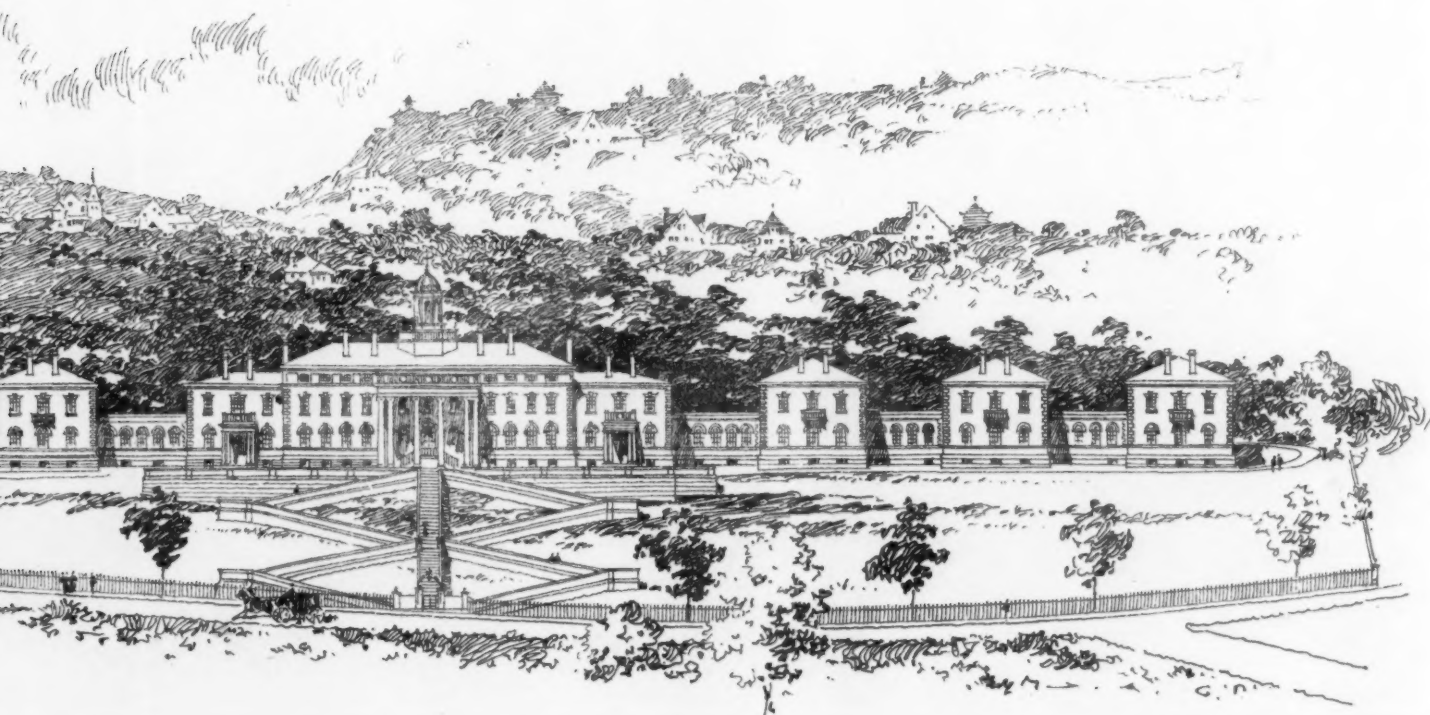
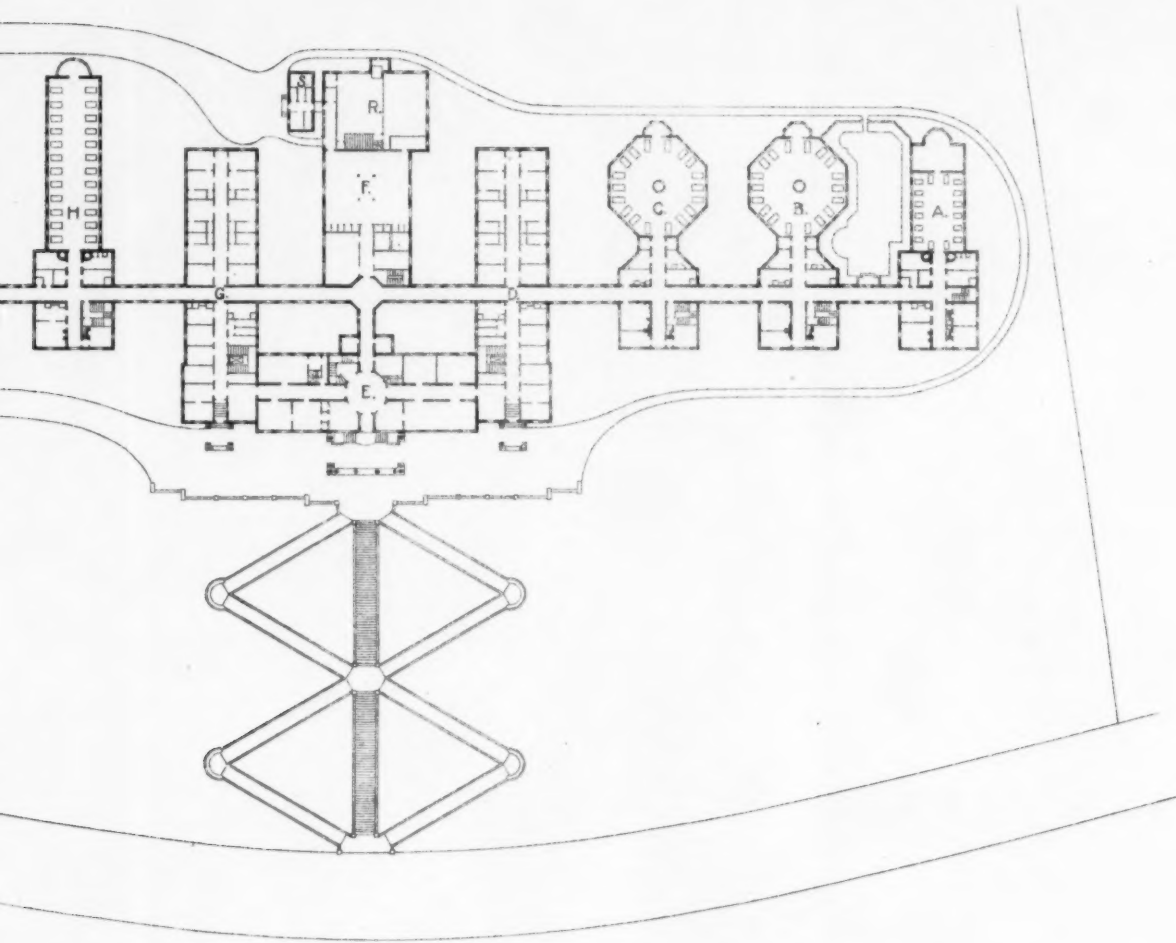
The Administration Building is flanked on either side by pavilions, one for male and the other for female paying patients. The rooms in these buildings will be comfortably fitted up, well-lighted and ventilated, varying somewhat in price, depending upon the accommodation offered, and all will be thoroughly private. The number of paying patients that can be accommodated, each with a private room, will be fifty, in addition to which there are eight private parlors, which could be used for bedrooms, making the total fifty-eight. On the second floor of the female pavilion will be a gynecological operating-room, attached to which will be an etherizing-room, instrument-room, sterilizing-room, bandage-room and dressing-room and lavatory for surgeons.

On a level with the main floor of this building, directly in its rear, but completely isolated therefrom, provision is made for a large Kitchen Building, thoroughly lighted on every side and efficiently ventilated. A basement scullery will be provided beneath the kitchen, in which all the food will be distributed and all soiled dishes received through the basement of the main connecting corridor. This building is to be connected to the main building by a covered corridor, and will contain, besides the kitchen and its dependencies, dining-rooms for all out-ward employés of the hospital. A cold-storage building is located near the kitchen and connected thereto by a covered corridor. Access to the storage-room and kitchen is provided for by a driveway, passing along the rear of the three eastern wards.

WESTERN PENNSYLVANIA HOSPITAL
PITTSBURGH, PENN'A.



WM. ROSS PROCTOR, ARCHITECT.

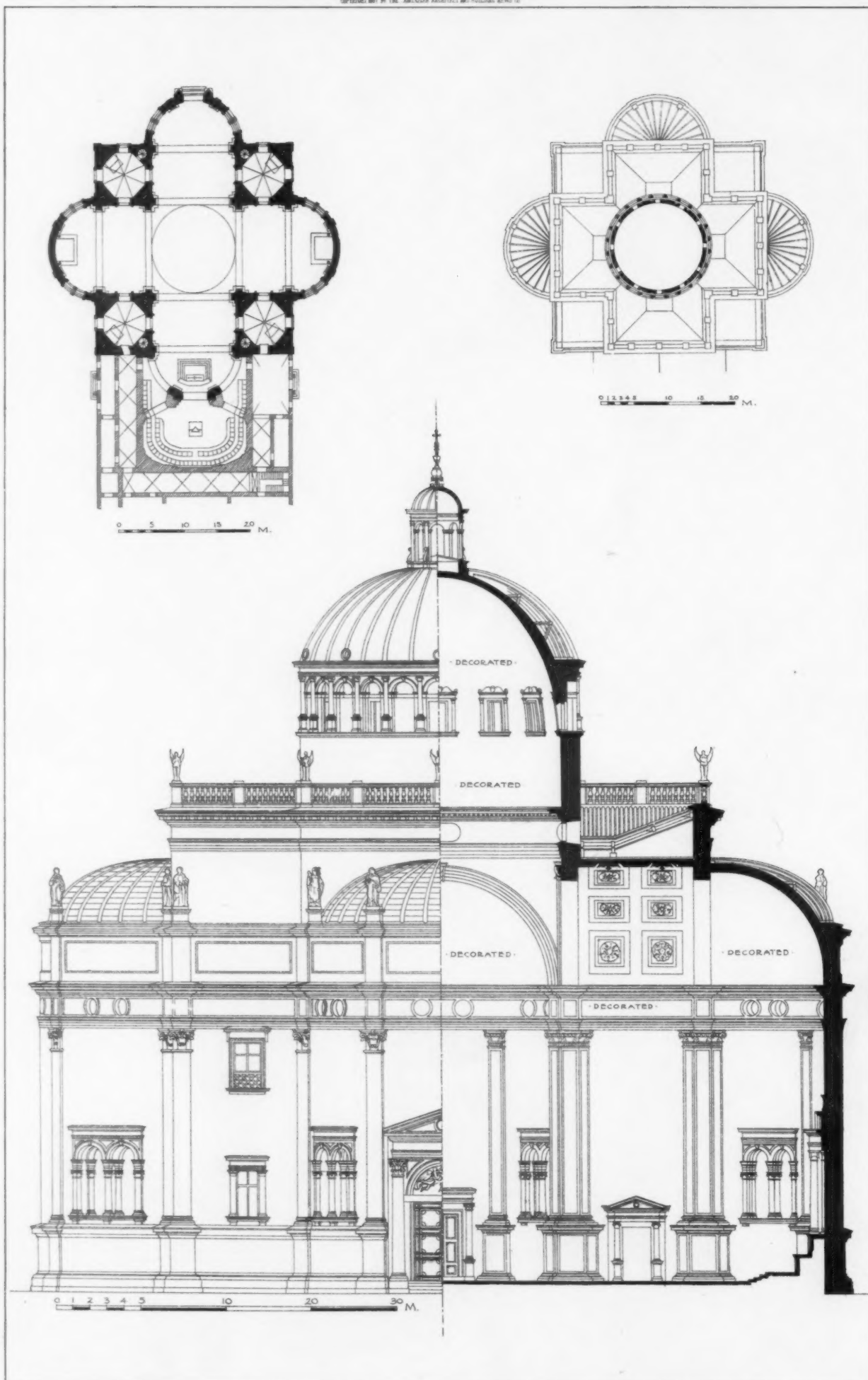




RENAISSANCE DOMES, No. 5:—CHURCH OF THE MADONNA DELLA STECCATA, PARMA, ITALY.

BERNARDINO ZACCAGNI, ARCHITECT.

DESIGNED BY THE AMERICAN ARCHITECTS AND BUILDING NEWS CO.



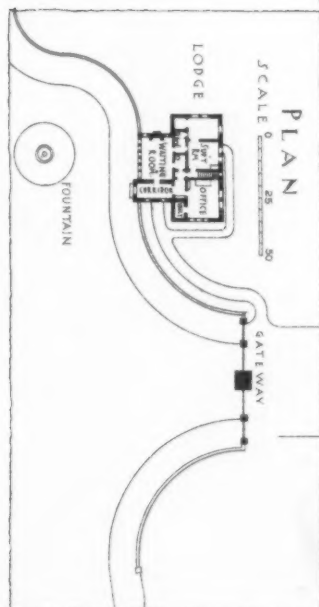
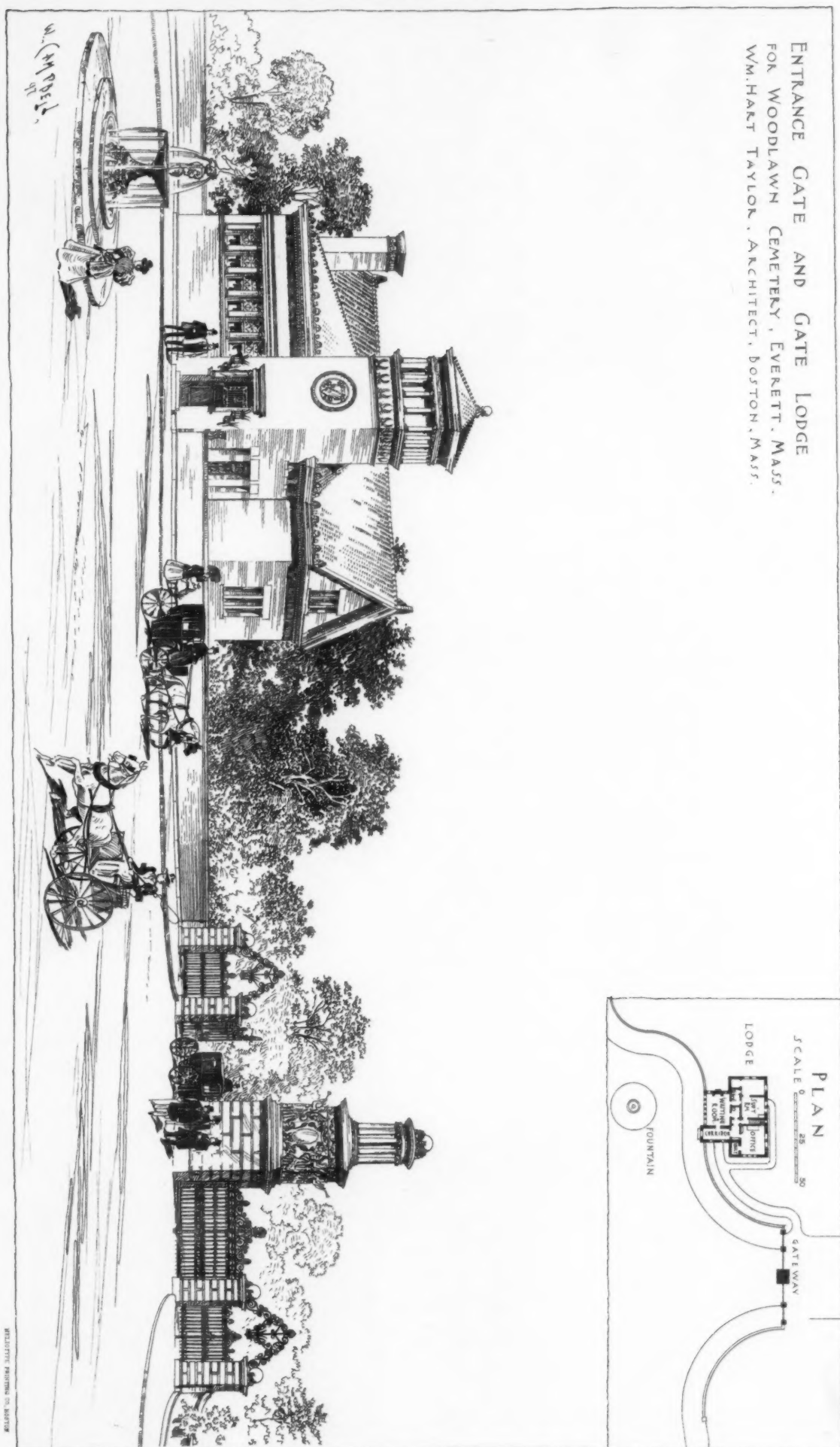
RENAISSANCE DOMES, No. 6: CHURCH OF THE MADONNA DELLA STECCATA, PARMA, ITALY.

BERNARDINO ZACCAGNI, Architect.

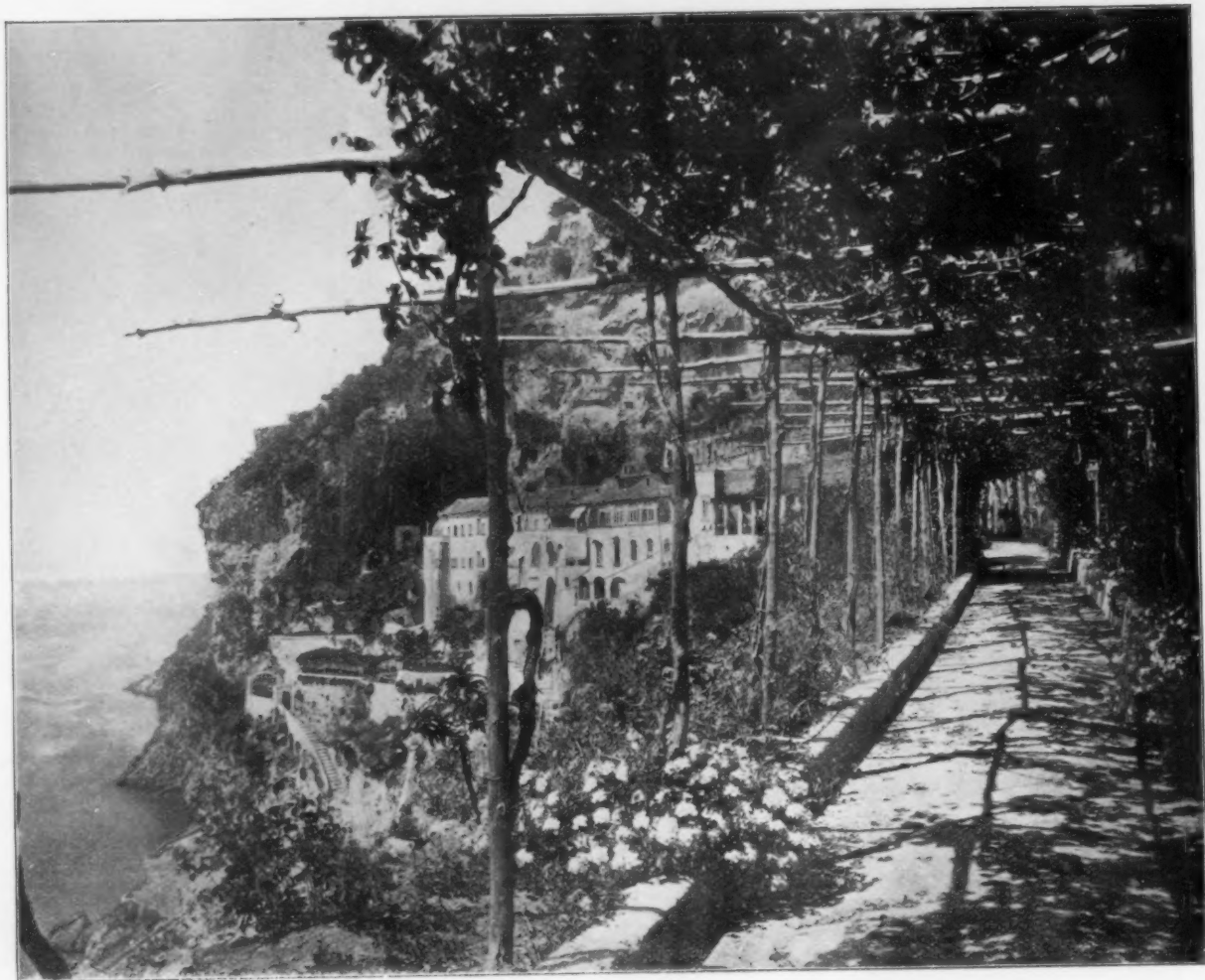
HELIOTYPE PRINTING CO., BOSTON

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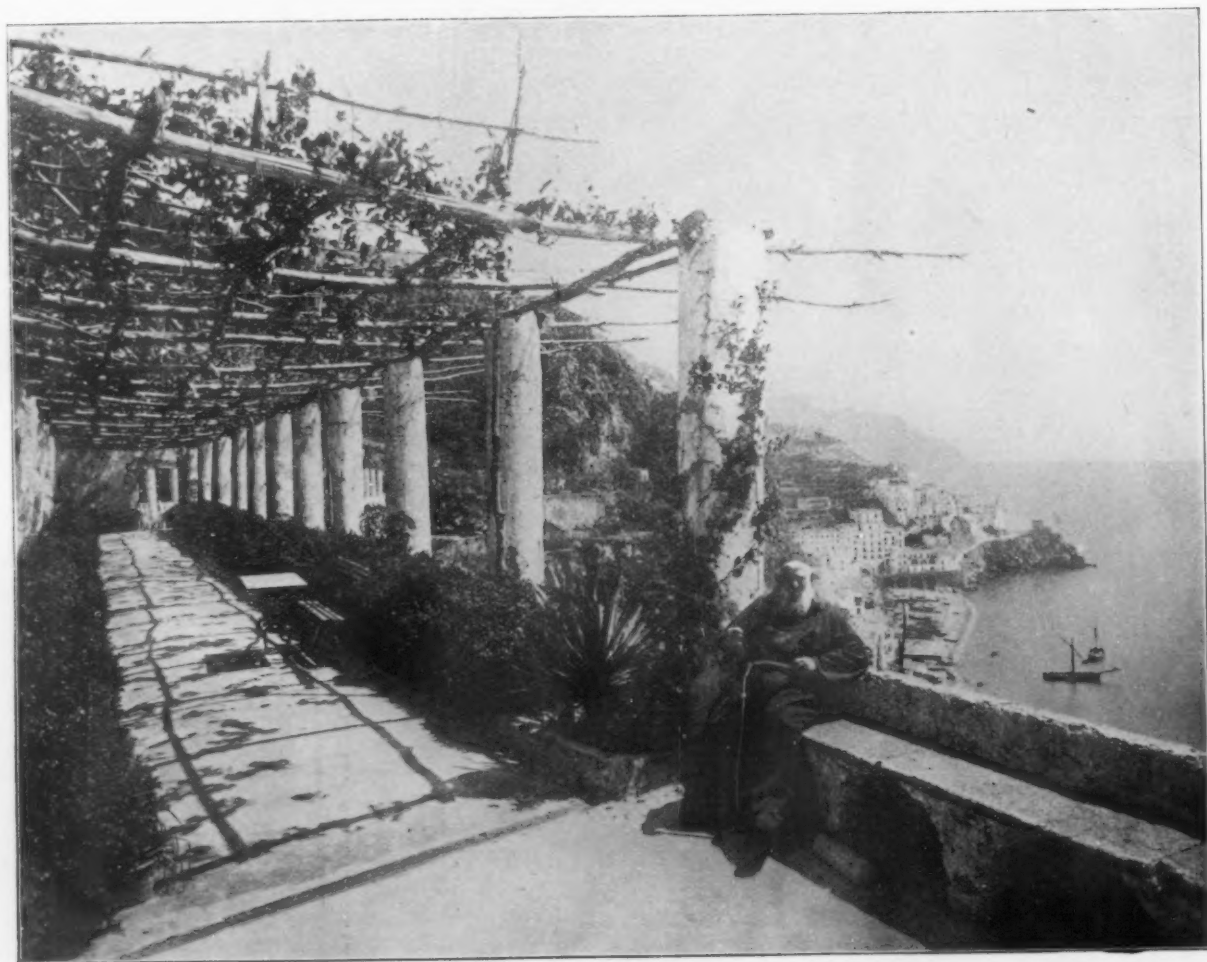
ENTRANCE GATE AND GATE LODGE
FOR WOODLAWN CEMETERY, EVERETT, MASS.
WM. HART TAYLOR, ARCHITECT, BOSTON, MASS.



REPRODUCED BY THE ARCHITECT



MEDITERRANEAN GARDENS II: GRAND HOTEL DEI CAPUCCINI, AMALFI, ITALY.



MEDITERRANEAN GARDENS, II:—VIEW FROM THE GRAND HOTEL DEI CAPUCCINI.

The Laundry Building is immediately in the rear of the kitchen building, but completely isolated from it, and will be a one-story building, containing ironing and washing rooms, with a steam drier and the necessary mechanical apparatus, and a disinfecting apparatus for infected materials of whatever nature which are obliged to pass through the sterilizer from the outer air before reaching the laundry. This building will have a flat roof, where clothes may be dried in good weather. The mending, sorting and distributing rooms are in the basement of the kitchen building, and lifts are provided for the transfer of linen from one floor to another.

The Medical and Surgical Pavilions are all similar in general arrangement, containing, besides the general ward, a small ward or quiet room, a convalescents' dining-room or day room, a diet-kitchen, nurses' closet, lavatories and bath-rooms, linen-room and a room for patients' clothing.

The most westerly Medical Pavilion, designed for children and maternity cases, contains on the first floor, a ward for children, and in addition to the usual dependencies, a large play-room for convalescent children, and adjoining the building a play-ground for their use. The second story of this building contains a maternity ward, divided into alcoves, giving much greater privacy and comfort to the patients than would a large open ward, with all the beds exposed to the view of visitors and others, besides containing two quiet rooms and the usual dependencies.

The most westerly Surgical Pavilion is to be designed for the accommodation of eye and ear cases and will be provided with an operating-room, and an ophthalmic room, and will have a number of beds, arranged so that they may be kept in darkness, and others provided with running hot water for their special use.

The Receiving or Operation Building is probably the most important in the group.

Here all patients, except private ones, will be received and examined. There are two entrances provided for patients, one for those coming in the usual way, and another for emergency cases. Adjoining the latter entrance is an office for the officer of the day, under whose supervision all persons coming to the hospital must pass. Beyond this, is an etherizing room, where an emergency case is taken before transferring to one of the three operating-rooms provided.

The accommodation offered for ordinary cases comprises a general waiting-room, with lavatories for men and women, two examining-rooms and two bath-rooms, where incoming patients can be bathed, if necessary, and their clothing removed. If the clothing happens to be foul or infected, it can be taken at once to the crematory furnace and destroyed, or along the roadway in the rear of the institution to the disinfecting apparatus, and there rendered harmless before it is taken to the locker on the floor of the building to which the patient has been assigned, one of which is provided for each bed in the institution.

In the rear of the receiving portion of the building and across the dividing corridor, will be the operation portion, containing the special operating-room, the septic operating-room, and the operating-theatre, with seats for two hundred and thirty students, surrounded by its dependencies, consisting of an instrument-room, cleaning-room, sterilizing-room, bandage-room, sewing-room, dressing-room for surgeons, and consultation-room for staff and others, etherizing-room, storage-rooms and lavatory, and an elevator to the recovery-rooms above.

On the second floor, over the receiving portion, are two rooms for use as dental dispensaries, access to which is had by stairs from the emergency hallway, and a dental lecture-room, which is reached by stairs from the students' entrance, and by which students are also admitted to the operation theatre.

Over the dependencies to the operating-theatre, are recovery rooms with the usual conveniences, a photograph-room, a record-room, and a room for the resident surgeon.

The Pathological Building will be three stories in height, the first containing the mortuary, mortuary chapel or inquest-room, a waiting-room, a lavatory, a crematory furnace, an animal-room for guinea pigs and rabbits, and a work-room. The upper two floors will contain a large museum and lecture-room, rooms for bacteriological work and pathological histology, and microscopic room, a clinical laboratory, a laboratory for the resident pathologist, a room for private research, a photograph-room and the autopsy theatre, which runs through both upper floors and affords accommodation for sixty students.

The Nurses' Home will be a four-story building, on the first floor of which will be a dining-room and pantry, a large lecture-room, so arranged that the male nurses may attend, a general sitting-room or library, a reception-room, the office of superintendent of nurses, and a parlor and bedroom for her use, and rooms for the head nurses, and linen-room and lavatories, with staircase and elevator to the floors above. The basement will contain an experimental kitchen, which could be used for the food supply of the building, or it may receive food from the general kitchen in the usual way. The upper floors contain bedrooms for nurses, the number to be accommodated being seventy in all.

The stable will accommodate three ambulances and six horses, and will be arranged on the plan of the modern fire-engine house, and provided with rooms for its employés on the second floor. Adjoining the stable is a yard and a shed for waiting buggies and carriages.

The gate-lodge provides an office, and a living-room and bedroom for the gate-keeper.

Passing from the examination rooms, in the receiving building, access will be had to a covered corridor extending through the entire range of buildings, some 825 feet, giving a view throughout the entire group. Access to the wards will be had by short hallways leading directly from this corridor, and grouped about it, and on opposite side of the corridor are located the dining-room and quiet-room, the lavatories, diet-kitchen and the like.

By means of this corridor, visitors and others can go through the entire range of buildings without passing through any of the wards for the sick.

The main corridor will be two stories in height, the upper story of which will be on a level with the first floor of all the buildings, and the lower story of which, forming a foundation for the corridor, will be largely underground. This basement corridor will be used for the passage of food and supplies from the kitchen to the different buildings or wards, by means of lifts, buggies and hot-water conveyors, and for the conveyance of soiled linen from the different wards to the laundry, and *vice versa*, and for the heating and water-pipes and electric-wires. The roof of the connecting corridor will form a terrace between the buildings, and in summer it may be covered with awnings, affording a convenient place for convalescents to rest.

It is proposed to locate the necessary steam-generating boilers, electric dynamos, etc., in a building adjoining the Penna. R. R. tracks, from whence a small brick tunnel will extend up the hill to the main building. Within this tunnel all steam-pipes, electric-wires, etc., will be placed.

The total number of beds for patients of all kinds will be three hundred and fourteen, of which number fifty-eight are for paying patients in the pay wards, and eighteen are in small wards, or quiet-rooms, in the front part of the Medical and Surgical Pavilions.

The following legend will explain the distribution of rooms shown in the plan:—

- | | |
|---|------------------------------|
| A. Maternity Building. | H, J, K. Surgical Pavilions. |
| B, C. Medical Pavilions. | L. Operation Building. |
| D. Pavilion for Female Paying Patients. | M. Pathological Building. |
| E. Administration Building. | N. Nurses' Home. |
| F. Kitchen and Laundry Buildings. | O. Ambulance Stables. |
| G. Pavilion for Male Paying Patients. | P. Gate Lodge. |
| | S. Cold-storage Building. |

RENAISSANCE DOMES, NO. 5: CHURCH OF THE MADONNA DELLA STECCATA, PARMA, ITALY. BERNARDINO ZACCAGNI, ARCHITECT.

THE church of La Madonna della Steccata is so called from a palisade (steccato) erected round a popular painting of the Virgin upon a house-wall, which was supposed to be miraculous, and which the church was afterwards built to enclose. Begun in 1521, it was completed in 1539.

RENAISSANCE DOMES, NO. 6: PLANS AND SECTION OF THE SAME.

ENTRANCE GATE AND GATE LODGE FOR WOODLAWN CEMETERY, EVERETT, MASS. MR. WM. HART TAYLOR, ARCHITECT, BOSTON, MASS.

VIEWS FROM AND TOWARDS THE GRAND HOTEL DEI CAPUCCINI, AMALFI, SICILY.

SEE reference in article on "Mediterranean Gardens" elsewhere in this issue.

[The following named illustrations may be found by reference to our advertising pages.]

ACCESSORIES OF LANDSCAPE ARCHITECTURE, NO. LV: VIEW IN THE GARDEN OF THE ACADEMY OF FRANCE AT ROME, ITALY.

ACCESSORIES OF LANDSCAPE ARCHITECTURE, NO. LVI: AVENUE DE BEAUMONT IN THE PARK AT COMPIÈGNE, FRANCE.

PLACES OF PILGRIMAGE.

A GROUP OF MANTELS.

[Additional Illustrations in the International Edition.]

THE NEW ACADEMY OF FINE-ARTS [KOENIGLICHE KUNSTAKADEMIE], DRESDEN, GERM.

[Gelatine Print.]

THE imposing new building, erected, at enormous expense, during the years 1887 to 1894, for the Royal Academy of the Fine-Arts, at Dresden, was designed by Prof. Constantin Lipsius, the President of the Architectural Branch of the Academy, who died in 1894, a

couple of months before the completion of his work. It stands on the "Bruehl'sche Terrasse," so familiar to continental tourists, facing the River Elbe. While the splendid site offered the architect a rare opportunity to distinguish himself, from the æsthetic point-of-view, it presented, at the same time, great technical difficulties, owing to the slanting character of the ground, the rear of the lot being about ten feet lower than the front. The building which is composed of several groups, inclosing two large courts, is constructed of Saxony sandstone, an excellent material, varying in hue from a light grey, almost white, to a rich deep yellow. All the dimensions are on a grand scale, the distance from axis to axis in the main façade being not less than 25 feet. The structure serves not only the purposes of instruction in the Fine-Arts, but one entire group is devoted exclusively to the annual Art Exhibitions. Our plate shows the left pavilion of the main façade of the portion containing the studios for painters and architectural students. It is impossible to give the cost of the structure, as well as other interesting details of information, as the Government authorities seem bent upon withholding them from publication.

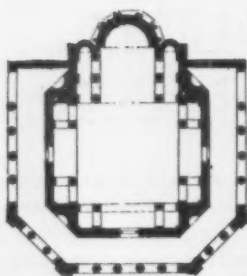
Another portion of the building was shown in our issue for October 31, 1896.

GRAND STAIRCASE: STAFFORD HOUSE, ST. JAMES'S, LONDON, ENG. SIR CHARLES BARRY, ARCHITECT.

CHOIR AND NAVE, LOOKING EAST: SALISBURY CATHEDRAL, ENG.

SEMI-DETACHED HOUSES, SNEYD PARK, BRISTOL, ENG. MR. H. DARE BRYAN, ARCHITECT.

S. FOSCA, TORCELLO: A CORRECTION.



caped detection until now. The plan of S. Fosca, also a triapsidal church, is printed herewith.

A CORRESPONDENT draws our attention to the fact that on the plate, "Apsidal Treatment No. 20," published in our issue for April 17, an error was made in giving to one of the plans the ascription S. Fosca, Torcello. On looking up the matter, we find that the cut in question shows the plan of the Martorana at Palermo, and that the cause of the error lies in an earlier error of the compositor, who, in our issue for July 5, 1890, interchanged the titles of S. Fosca and the Martorana and es-

caped detection until now. The plan of S. Fosca, also a triapsidal church, is printed herewith.



TO DETECT SALT IN SAND.—A writer in one of the London architectural papers presents some interesting remarks relative to methods by which salt may be detected in sand. He says that if the sand is not contaminated with decaying organic matter, the easiest way is undoubtedly to put a few grains in the mouth, or to taste the water in which some of the sand has been stirred. If this test is objected to, put some of the sand in a wine-glass, cover with distilled water, and after agitating for some time, dip a piece of clean platinum wire into the water, and hold it in a colorless Bunsen gas-flame. A persistent deep yellow color imparted to the flame will indicate the presence of sodium. The platinum should first be heated to burn off impurities; another method is to filter off the water from the sand by means of blotting-paper, and to the liquid add a drop of silver nitrate solution. A curdy white precipitate will at once betray the presence of common salt. In ascertaining the presence of salt in sand it is assumed that the object is to discover any tendency to absorb moisture, and, consequently, to cause damp walls. This could be equally well ascertained by drying some of the sand for some hours at a temperature of 212° F. Its weight should then be accurately taken and the sand exposed for some days to a moist atmosphere. Any increase of weight at the end of the period would be due to water absorbed from the air, probably owing to the presence of common salt. — *Scientific American Supplement*.

PENNELL vs. SICKERT.—So widely conflicting was the evidence presented at the trial in London of the libel suit brought by Joseph Pennell against Walter Sickert, that judge and jurymen were alike bewildered, and disinterested auditors were reminded of the sort of swearing that is done when the officers of two ships that have collided in a fog are trying to account for the accident. After a vast deal of testimony had been given as to what a lithograph is and its merits as compared with a paper transfer, and when the result of the trial seemed bound to be a disagreement, Mr. Pennell's counsel called the defendant to the stand and asked him whether a print of his own had not been produced as a lithograph, though, in fact, it was something else; whether he had intended to defraud the public; and whether he had done anything to warn possible purchasers of the misdescription. As Mr. Sickert had to answer "yes" to the first question and "no" to the other two, the jurymen seized upon the plain fact that he had done exactly what he had criticised Mr. Pennell for doing, and, with that beautiful

irrelevancy which characterizes the average jury's mental operations, brought in a verdict of £50 for the plaintiff. This verdict is taken as establishing, not that lithographs, properly so-called, and paper transfers are of equal merit, but that an artist should be able to explain the difference between them without suggesting discreditable conduct on the part of a brother artist. — *New York Times*.

THE ARC DE TRIOMPHE, PARIS.—The French scaffold-builders are proud of their constructions, and therefore are more opposed to their demolition than men who employ stone or brick in building. Sanguine people imagined when they found the forest of timber around the Arc de Triomphe was removed, in order to allow the Czar to have a glance at Chalgrin's work, that they would be able to enjoy once more the fine prospects in which the arch was an element. But they were doomed to be disappointed. The scaffold-builders, with the approval of the authorities, have selected the time when crowds of Parisians once more have to pass by the Arc de Triomphe for another display of their handiwork. It is to be hoped they will condescend to remove the timbers before the international exhibition of 1900 is closed, so that some strangers at least may have an opportunity to see the most remarkable example of a triumphal arch which the world possesses. If the *Départ des Volontaires* by Rude can be preserved, the Parisians would not object to a temporary concealment of the masterpiece; but it is remarkable that while figures which express the revolutionary spirit more emphatically than any history should be decaying, the lifeless *Résistance* of Etex should be invulnerable to all that time and weather can do. — *The Architect*.

ANOTHER MODEL TENEMENT FAILURE.—The tearing down of sixty-seven houses in "Winans's Row" in Baltimore marks the inglorious ending of an effort to provide workmen with better tenements. They were built by Mr. Ross Winans about a quarter of a century ago. The high rents prevailing previous to the panic of 1873 impressed him with the idea that mechanics needed homes which, while providing them with all conveniences known at that time, could also be rented cheaply enough to allow the men to avail themselves of the advantages the houses would give. With this purpose in mind, he had his extensive shops removed, and in their place the houses were built. They were put up at a cost of nearly a half million dollars, a portion of which was devoted to grading the intersecting streets. All the conveniences, and many things considered luxuries, were introduced. The houses attracted much attention at the time, and were in quick demand by skilled mechanics. For a number of years the property has been deteriorating. Rents have gone down, and some of the tenants have so abused the houses that they have been rented at a loss. It was finally determined by the owners to tear down 67 of the 113 houses, and to devote the land to business purposes. — *New York Evening Post*.

DANGEROUS SMOKE-PIPES.—A hitherto unsuspected cause of fire has been discovered by Inspector McDevitt, of Philadelphia. The origin of the recent destructive conflagration on Market Street in that city could not be found out at first. The inspector, however, by patient research has hit upon what was the real author of the mischief—namely, a piece of apparatus called a "carry-off" pipe from Dennett's restaurant, which crossed the cellar of the grocery store where the fire started, and in which an accumulation of grease and soot caught fire, making the pipe hot enough to ignite a quantity of wooden boxes stored near it. Here was a source of danger not to be suspected by any one but an expert—an unusual source, and yet one potent to burn down a city block. The lesson will, doubtless, be heeded by restaurants, hotels, clubs, and other places where cooking is done on a scale large enough to require the use of a "carry-off" to remove the smoke, steam and odors arising from the process. — *Fire and Water*.

LOG-RAFTING ON THE PACIFIC COAST.—Two immense rafts of piling and spars will be constructed at Stella, on the Columbia River, during the next four months by the Robertson Raft Company, and towed to San Francisco. Each of the rafts will contain about 500,000 feet. Sea-rafting will prove the basis of a great industry on the Columbia River within a few years. It has been established that the business can be successfully carried on when the rafts are taken to sea at the proper season of the year, and Mr. Robertson thinks that, if all goes successfully this year, the business of constructing rafts will be permanently established at Stella, and an immense plant erected. Efforts have been made to transfer the industry to Puget Sound, and some days ago it looked as though this would be done, as loggers on the river were inclined to demand a higher rate than the company offered, but later accepted the terms. — *Portland Oregonian*.

ROOM-COOLING.—The modifying of the temperature of rooms has become an art, but it probably has never taken a more ornamental form than that devised by M. Pierre Roche, a French sculptor and engineer. M. Roche, taking a hint from the facts that pipes carrying liquefied gases become coated with frost, has constructed hollow metal forms of animals, etc., which are chilled by the expansion in their interior of gases liquefied under pressure. A coat of snow, hoar-frost, gathers on their exterior, even in warm rooms, and the snowy figure gives a coolness to the heated atmosphere of balls and feasts. — *Boston Transcript*.

PHARAOH'S PALACE FOUND.—The Rev. Alfred P. Putnam, D. D., President of the Danvers Historical Society, has received a letter dated March 26, from F. Petrie, Honorary Secretary of the Victoria Institute, England, in which Mr. Petrie says: "It will interest you to hear that one of the Institute members writes home from upper Egypt to announce his discovery of a palace of a Pharaoh of the sixth dynasty, with numerous valuable inscriptions. The wine jars of the Pharaoh were found intact in a long cellar. All were hermetically sealed, but on breaking the seal of one, the wine seemed petrified."

THE AMERICAN ARCHITECT AND BUILDING NEWS

ADVERTISERS' TRADE SUPPLEMENT.

No. 179.

SATURDAY, MAY 1, 1897.

VOLUME LVI.
No. 1114.

THE BEDFORD QUARRIES COMPANY.

THE Bedford Quarries Company is the largest producer of Oolitic limestone in the world. Its quarries are situated near Bedford, the county seat of Lawrence County, Indiana. The northern border of the county lies along the 39th parallel, and it is in the third tier of counties north from the Ohio River. It is about 45 miles from the Illinois State line, and 85 miles from the Ohio line. This famous limestone is commonly and widely known as "Bedford Stone," and derived its name from the town of Bedford, now a city of 7,500 inhabitants. It is in the vicinity of Bedford that this valuable stone was first discovered and quarried, and nowhere else can it be found of equal purity and excellence.

The quarries of the Company, consisting of the "Hoosier," "Buff Ridge" and "Oolitic," are situated about four miles northwest of Bedford, in what is known as Buff Ridge, a district about one mile wide and about three miles long, from Dark Hollow north-eastwardly to Salt Creek, with the quarries of this Company exactly in its geographical centre. At this point, the deposit of stone shows an unbroken depth of from 40 to 60 feet, and a fineness and uniformity of texture and color that is abruptly lost in following the strata east and west, and more gradually lost in a northerly and southerly direction, the stone changing for the worse both in color and texture. Buff Ridge is a wonderful ledge of the best stone that has yet been found in this region. It is remarkably free from defects, pure and even in its make-up, bright and beautiful in color, sufficiently elastic to prevent brittleness, and possessed of a cohesive power which renders it absolutely safe for any use to which stone can be put.

Outside of this locality, the stone is of various degrees of quality — much coarser, generally, with frequent shells, pebbles and glass, crowfeet and seams, the color being more dull and often streaked. These defects render a large proportion of it fit only for bridge piers, sidewalks, curbing, and the rougher classes of masonry.

The "Old Hoosier," the queen of Oolitic

quarries, was opened in the year 1879, and has produced such immense quantities of stone of the very best quality, that its reputation has gone wherever Bedford stone is known. It has a splendid equipment of the latest improved machinery used in quarrying, together with power houses, seven 30-ton derricks and two steam travellers, two blacksmith-shops, machine-shop, office, and buildings for storing supplies. Near the centre is situated the building for cutting stone. This is a massive structure, built of stone, and contains a battery of large boilers, a 250-horse-power engine, electric-light plant, nine gangs of the Merriman screw-feed saws (fed by three sand pumps), two planers, one header, with accompanying machinery and tools. Here great blocks of stone are sawed into any size, up to twenty feet in length by nine feet in width, and

quarries in the country. No blue stone is found here, its entire product being a bright creamy buff of a fine and even grain. It is thoroughly equipped with improved machinery, derricks, power-house, shops, etc.

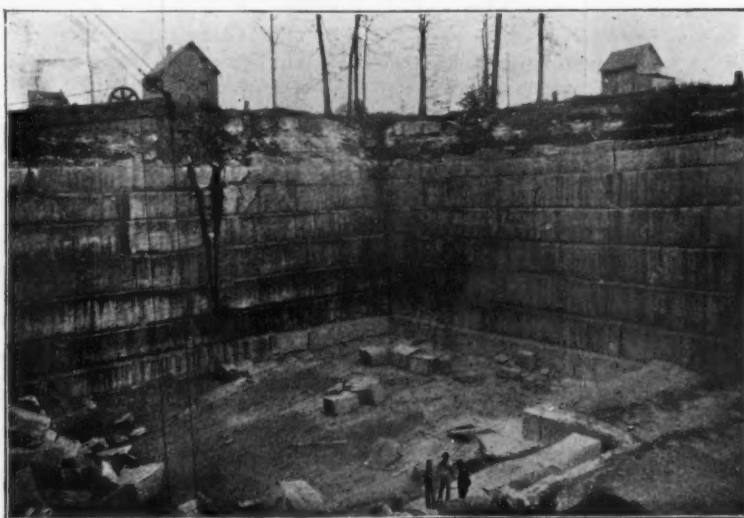
The Oolitic quarries (originally numbered 1 and 2) are now one, but within the next year they will be opened into the old Hoosier quarry and lose still more of their identity, as the intervening space is now being quarried out.

A blue stone of excellent color and fine grain is found under the buff stone in the Hoosier and Oolitic quarries. It is in all respects equal to the buff, differing only in color.

The Hoosier quarry and three other quarries, located near the southwest extremity of Buff Ridge, made the reputation of Buff Bed-

ford stone. The three quarries referred to, it will be confessed, have seen their best days and are now practically abandoned on account of the great expense attendant upon heavy stripping. To take away twenty to thirty feet of earth, and as many additional feet of solid bastard stone, in order to reach the merchantable article, increases the cost of production to a point where quarrying becomes unprofitable.

The quarries of this Company are situated in the centre of Buff Ridge and upon its very crest, where the necessary



Southeast Corner of the Hoosier Quarry.

stripping, which consists of from two to eight feet of soft earth, is easily removed, exposing to view incalculable millions of feet of the identical stone which has achieved a more enviable reputation than any other known to the building trade.

These quarries proved that, without exception, no other stone was equal to it in value, in beauty, in working qualities, and in reliability. When introduced, the demand for it increased so rapidly as to induce many persons to engage in quarrying over the entire length and breadth of the Oolitic district. Stock companies and all sorts of combinations were formed in order to get together enough money to purchase land and machinery. People plunged into the business of quarrying as heedlessly as gold miners plunge into the

of any thickness desired. On the header and planers stone is cut into every conceivable shape. Mouldings of any desired pattern are rapidly carved, and various styles of finish can be given to the stone more rapidly, evenly and smoothly than could be done with a hand-tool and mallet, the more difficult portion of the work required to be carved, etc., being left for the stonecutter to execute.

Quarrymen, and others acquainted with the facts, admit that this mill and this quarry are the best in Indiana. This company believes that the "Old Hoosier" is the best Oolitic limestone quarry in the world.

Buff Ridge Quarry, one-third of a mile northeast of Hoosier and Oolitic, opened in the year 1892, shows most excellent qualities, and promises to become one of the greatest

as heedlessly as gold miners plunge into the

country surrounding a phenomenal "find," expecting to open up anywhere and everywhere a mine which shall prove equal to or better than the one great lode which induced them to flock to its neighborhood. With the exhaustion of the "grub stake" comes the acknowledgment that Nature gives but one "Virginia," "Anaconda" or "Nevada" to a locality. The same story is told in the many abandoned holes scattered everywhere over the hillsides of Indiana. The stone in every instance was found to be of poor quality, coarse, or too hard to work well, with many seams, crowfeet and crooked grain, some combining all of these characteristics, and all of them a portion. Quarries which were opened within two hundred yards of each other showed products entirely dissimilar in color and qualities, both bad enough to condemn them. In 1889, a quarry was opened within a mile of the southern border of Buff Ridge, by three large stone contracting firms doing business in Chicago. It was operated extensively, six channelers being employed. When the quarry was abandoned and the books balanced in June, 1895, it was asserted by one of the proprietors that \$2,700 had been cleared in the venture — not enough to pay three per centum upon the cost of machinery alone! Gradually the lesson has been learned, and it is no longer a secret that a good quality of Bedford stone — such stone as built its reputation — can, with certainty, be found only in Buff Ridge.

A number of quarries were opened in Monroe County under the belief, which prevailed a few years ago, that all of the oolitic stone in the district was Bedford stone. The result was precisely the same as that which attended the indiscriminate opening of quarries in Lawrence County. It is asserted that the most successful quarry in Monroe County has struck a strata of No. 1 stone, nine feet in thickness. It may be true; but it is equally true that nine feet of stone was never found in Buff Ridge that was not No. 1. Architects and dealers are just beginning to know that all oolitic stone is not Bedford stone. Ninety-five per centum of the first-class oolitic stone produced in Indiana is taken out of Buff Ridge.

One of the best evidences of the superiority of the stone produced by the Bedford Quarries Company is the fact that more of its output is shipped into New York City than the quantities forwarded by all other Indiana quarries combined. Stone sent there is subjected to a very severe inspection, by an official inspector, and the rate of freight is so high that dealers there do not find it profitable to order any but the best quality. Inferior grades of stone have been marketed in some of the western cities, but New York will accept nothing but strictly No. 1. It is for this reason that very little stone goes to the metropolis aside from that taken out of the locality known as Buff Ridge.

The six hundred acres of land owned by the Bedford Quarries Company, and surrounding its quarries, show by outcroppings and exposed ledges that the supply of stone is practically inexhaustible.

Those who have never seen the operation of quarrying stone as it is performed in these quarries have an erroneous idea that it is done by blasting. No powder is used. The stone is cut by channelers, machines very much resembling a portable engine or small locomotive. Each machine is provided with portable iron rails, braced and bolted together in sections, of the proper width or gauge to

carry the machines in the same manner that a locomotive follows its track. When the channeler reaches the end of its track, the operator, by the movement of a lever, reverses its action and it starts in the other direction, continually moving backward and forward from one end of its track to the other. A set of drills, five in number, clamped side by side, and sharpened to an edge, play up and down on each side of the machine, the mechanism being so arranged that one set plunges downward as the other rises. The drills cut about an inch at each stroke. In this way a cut is made about an inch and a half wide, six to ten feet deep, and as long as the tracks will permit. After a cut is completed to the desired depth and the channeler removed to another position, a steam drill is employed to drill a line of holes about eight inches apart and on a level with the bottom of the cut. An iron plug is inserted into each hole, and a few strokes with a heavy hammer upon each in succession serve to break the stone loose on the bottom. Derrick power is then applied and the stone is rolled over upon its side ready to be drilled and broken into blocks of any size. Some months ago, a block weighing fifty tons was taken out of Hoosier quarry and shipped to an eastern city. Not long ago, a block in the same quarry was turned over which measured 6 feet wide, 6 feet high, and 120 feet in length. It might just as well have been 10 feet wide and 10 feet high. The old Hoosier quarry could produce a shaft beside which Cleopatra's needle would suffer by contrast.

The horizontal lines along the ledges in the accompanying picture shows the depths of the channel cuts. The ledges are solid from top to bottom and are never stratified.

Bedford stone in rough blocks weighs about 180 pounds to the cubic foot.

Fine and delicate carvings on Bedford stone will withstand the effects of temperature and remain as perfect at the end of a century as when first cut, as is evidenced by the appearance of the ragged edges of the natural outcroppings of the stone, everywhere abundant. These edges, exposed as they have been to the sun and rain, ice and snow, for centuries, are still sharp and clear.

Moss does not grow upon the outcropping boulders of Bedford stone, which can be taken as a sure indication that the stone does not absorb enough moisture from the atmosphere to sustain plant life. Loose and porous rocks will be found covered with a growth of moss, and the more porous the stone the heavier the growth, but on pure oolitic limestone no growth whatever is to be found.

The density of Bedford stone, as shown by a number of reports, exceeds that of the celebrated Portland oolitic, quarried in the south of England, to which Bedford oolitic is often compared. The ratio of absorption of the English stone is 1 to 20, while in the Bedford stone it is 1 to 42. That Bedford stone is the stronger of the two is shown in the fact that the reliable sustaining weight of a square foot of Portland stone is 82,000 pounds, while that of Bedford is not less than 135,000 pounds to the square foot. For the purpose of showing the weight which building material may have to support, it is stated that the piers underneath the dome of St. Paul's Cathedral, London, sustain a weight of 30,000 pounds to the square foot, and the piers of St. Peter's, Rome, support a weight of 39,000 pounds to the square foot.

Bedford stone is of the same geological age and quality as the Portland stone. A com-

parison of analyses shows the Bedford stone to be somewhat superior in its composition:

	PORTLAND STONE.	BEDFORD STONE.
Carbonate of Lime.....	95.16	97.26
Silica	1.20	1.69
Oxide of Iron.....	.50	.49
Magnesia	1.20	.37
Water and Loss.....	1.94	.19
	100.00	100.00

Following will be found a list of a few of the important buildings built of stone from the quarries of the Bedford Quarries Company, of Bedford, Indiana. The names of the architects of these buildings should be a guaranty that the quality of the stone is of the highest. The quarries of The Bedford Quarries Company are equipped with the best machinery, and have a capacity many times larger than any others in the Oolitic district.

Samples of the stone, and an illustrated pamphlet containing a description of the quarries, will be sent on application.

Wm. Martin Aiken, Architect, Washington. — Post-office, South Bend, Ind.; Post-office, Saginaw, Mich.

Babb, Cook & Willard, Architects, New York. — Hoyt Residence, New York.

J. B. Baker, Architect, New York. — Presbyterian Building, New York.

Beers, Clay & Dutton, Architects, Chicago. — Residence of Milton H. Wilson, Evanston, Ill.

Burtar & Gassman, Architects, Chicago. — Academy of Sacred Heart, Lawndale, Ills.

Berg & Clark, Architects, New York. — The Deeves Mansions, New York.

L. H. Broome, Architect, Jersey City. — City-hall, Jersey City.

C. E. Brush, Architect, Chicago. — Northern Illinois State Normal School, De Kalb, Ill.

Buchman & Deisler, Architects, New York. — Smith, Gray & Co. Building, New York.

Chas. Buek, Architect, New York. — Buek Block, New York.

Cady, Berg & See, Architects, New York. — Mt. Olivet Church, St. Andrew's Church, Ayers Estate Building, New York.

Martin Carr, Architect, Chicago. — St. Mary's Church, Elgin, Ill.; St. Patrick's Church, Lemont, Ill.

Carrère & Hastings, Architects, New York. — City-hall, Paterson, N. J.; Sloane Mansion, New York.

Henry Ives Cobb, Architect, Chicago. — Lewis Institute, University Buildings, Chicago.

Leon Coquard, Architect, Detroit. — Covington Cathedral, Covington, Ky.

John H. Duncan, Architect, New York. — Candee Block, New York.

James J. Egan, Architect, Chicago. — St. Vincent's Church, St. James' High School, Church of the Holy Angels, Chicago.

Chas. S. Frost, Architect, Chicago. — C. & N.-W. Passenger Station, Winnetka, Ill.; C. & N.-W. Passenger Station, Elmhurst, Ill.

Frommann & Jebson, Architects, Chicago. — Schlitz Opera-House, Minook, Ill.

Thomas Graham, Architect, New York. — Graham Hotel, New York.

Geo. O. Garnsey, Architect, Chicago. — Butts Residences (4), Chicago.

C. P. H. Gilbert, Architect, New York. — Dummerich Residence, New York.

H. J. Hardenbergh, Architect, New York. — Manhattan Hotel, Schermerhorn Building, London & Lancashire Fire Ins. Bldg., American Society of Fine-Arts Building, New York.

Geo. Ed. Harding & Gooch, Architects, New York. — Postal Telegraph Building, New York.

Thos. Hawkes, Architect, Chicago. — Yerkes Fountains, Chicago.

Haydel & Shepard, Architects, New York. — Memorial Church, Scarborough, New York.

Hazelhurst & Huckel, Architects, Philadelphia. — Manufacturers' Club, Philadelphia; James S. Sinnott Residence, Bryn Mawr, Pa.

Hill & Woltersdorf, Architects, Chicago. — Stensland Building, Chicago.

W. H. Hume & Son, Architects, New York. — Scotch Church, Emigrant Savings Bank, Scotch Church Lecture-Room, Mutual Reserve Fund Life Building, New York.

Richard M. Hunt, Architect. — Hoyt Residence, New York.

George Keller, Architect, Hartford, Conn. — Hartford Gas Co.'s Office, Hartford, Conn.

Lamb & Rich, Architects, New York. — Syndicate Building, Lamb & Rich Building, German Life Insurance Building, New York.

N. Le Brun & Sons, Architects, New York. — Church of St. Mary the Virgin, New York.

Little & O'Connor, Architects, New York. — Merritt Residences (5), Puritan Apartment House, Mercantile Building Co.'s Block 1, Mercantile Building Co.'s Block 2, Mercantile Building Co.'s Block 3, Metropolitan Apartment Building, New York.

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— Algonquin Club, Boston; Shepard Mansion,
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house, Mrs. W. K. Vanderbilt's Residence, New
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Ohrenstein & Cowles, Architects, Chicago. —
Barry & Bailey Residences (4), Chicago.

W. A. Otis, Architect, Chicago. — Hull Memorial
Chapel, Chicago.

Fridmore & Stanhope, Architects, Chicago. —
Tannhauser Apartment Building, Chicago.

Peabody & Stearns, Architects, New York. —
Ogden Mansion, New York.

John F. Pope and Henry Engelbert, Architects,
Chicago. — Church of Our Lady of Sorrows, Chi-
cago.

George Pfeifer, Architect, Chicago. — Vorwaerts
Turner Hall, Chicago.

William G. Preston, Architect, Boston. — Inter-
national Trust Co. Building, Boston.

Samuel B. Reed, Architect, New York. — Wick-
wire Mansion, Cortland, N. Y.

Harry J. Rill, Architect, Detroit. — Church of
the Holy Redeemer, Detroit.

R. H. Robertson, Architect, New York. — Corn
Exchange Bank, New York.

A. Sandegren, Architect, Chicago. — T. J. Leon-
ard Residences (7), Chicago.

W. H. Schickel & Co., Architects, New York. —
Constable Building, St. Ignace's R. C. Church,
New York.

A. C. Schrader, Architect, Chicago. — West
Park Subway, Chicago.

John Scott, Architect, Detroit. — Residence of
Capt. Frank Hecker, Detroit.

Henry Sierks, Architect, Chicago. — Southern
Illinois Hospital for Insane, Anna, Ill.

Schlacks & Ottenheimer, Architects, Chicago. —
St. Martin's R. C. Church, Chicago.

J. L. Silsbee, Architect, Chicago. — Bridge in
Garfield Park, Chicago.

J. B. Snook & Sons, Architects, New York. —
Dean Hoffman's Residence, New York.

B. F. Tolen, Architect, Ft. Wayne, Ind. — Allen
County Court-house, Ft. Wayne, Ind.

Clarence True, Architect, New York. — Platt
Block, Mercantile Building Co.'s Block, New
York.

D. E. Waid, Architect, Chicago. — Monmouth
College Gymnasium, Monmouth, Ill.

Alfred Zucker, Architect, New York. — Brower
House, Hotel Majestic, Hoffman House, Decker
Building, University Building, New York.

BEDFORD QUARRIES CO.,

BEDFORD, IND.

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THE first warm days of spring bring with
them a reminder that we shall soon need to



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OF EVERY DESCRIPTION.
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be looking after our defences against the too
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An experience of over a quarter of a cen-
tury in the manufacture and improvement of
these goods renders Mr. Wilson's claim that
they are the best in the world worthy of all
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that, instead of including them in his cata-
logue, as formerly, he publishes them in a
separate pamphlet.

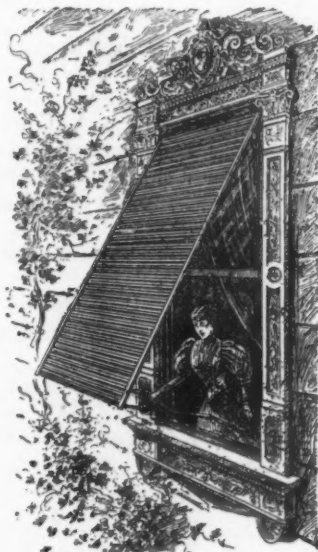
Mr. Wilson's specialties include Rolling
blinds, Steel Shutters, Rolling-partitions,
Venetian Blinds, Hygienic and Ventilating
Wardrobes, Window Frames, Awnings, Black-
board Partitions for Schools and other inge-
nious devices.

Ordinarily speaking, a man usually has to
choose whether he will endure the discomfort
of having to get up in the night and refasten

a swinging outside blind that violently slams
at every puff of wind, or endure in the sum-
mer time the discomfort of an overheated
room, though having avoided the slamming of
an outside blind by using the inside or so-
called Venetian blind. One of the most im-
portant duties of the blind is to protect and
keep from the sun's rays the penetrable sur-
face of window-glass. This protection is lost
where the inside folding or Venetian blind is
used, and it is well-known that rooms so pro-
tected are about as uncomfortably hot in warm
weather as if the window opening were closed
neither with blind, shade nor curtain.

Mr. Wilson has devised a form of outside
rolling-blind which protects the glass and pre-
vents the passage of the sun's hot rays, while
it, of course, wholly removes all possibility of
the disturbance through the slamming of a
blind.

This new form is shown in the annexed cuts,
and it will be noted that one of its merits is
that it can be operated from the inside, while
it, of course, involves the application of the



coiling apparatus in the window head, which
is common to other of Mr. Wilson's blinds.

The blind itself is furnished in two ways,
either with the close rule-joint common to the
roll-top desks and the ordinary rolling-shutter

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The following test, made in actual work, by Col. D. C. Houston, Corps of Engineers, U. S. A., at the sea wall around Governor's Island, New York Harbor, has never been equalled by any other cement. It is as follows: Tensile strength per square inch, one day, 384 pounds; seven days, 600 pounds; thirty days, 818 pounds.

For Sidewalks it gives the best color, and the most enduring wearing surface. Most of the prominent Railroad Bridges and the large Office Buildings of the country stand upon a foundation of concrete made of ALSEN'S CEMENT.

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—in this form it should rejoice the hearts of Philadelphia and Baltimore householders who still hold to the old-fashioned solid shutter, closed every night when darkness comes, preferring to keep the snug comfort of their homes to themselves and allow none of its pleasant light and cheerful scenes to gladden the heart of the wayfarer in the gloomy street outside. In the second form blind slats connected by metal ribbons are used, so that both light and air can pass into the room. It is this form which appears to us likely to be of more general service than the more solid form, since it has the advantages that belong to the old swinging blind without having its noisy disadvantages. Still there are a great many isolated country houses where the owners, particularly if they are women, would feel more safe if they knew their lower windows were protected with the close rolling-shutter, even if they did not feel it needful that this shutter should be of steel—as Mr. Wilson can furnish—in place of wood.

EXTRACT FROM REPORT OF SMOKE COMMISSION OF THE CITY OF ST. LOUIS ON THE HAXTUN STEAM AND HOT-WATER HEATING BOILERS.

OBSERVATIONS were taken from thirty-six boilers; in thirty-five of the cases the owners of the boilers were not advised that observations were being taken and the boilers were being run as they usually are, without any special attention. On one boiler a test was made for efficiency as well as smoke prevention. The average per cent of smoke from all the observations was 2.6%. In summing up the merits of the Haxtun Base Burning Boiler the Committee reports as follows:

1. The abatement of smoke is accomplished in a very satisfactory degree without requiring unusual attention or skilled labor.
2. The parts are simple and not easily put out of repair.
3. The boiler is admirably adapted to heating service, whether when using steam or hot water.
4. For efficiency, economy and reliability in heating service it gives results that are entirely satisfactory and such as should commend it for general use.

Respectfully submitted,

(Signed) WILLIAM B. POTTER,
WM. H. BRYAN,
CHARLES E. JONES,
Smoke Commission.

P. S. These boilers are manufactured by the Kewanee Boiler Company, at Kewanee, Ill., and 111 East Lake St., Chicago. Copies

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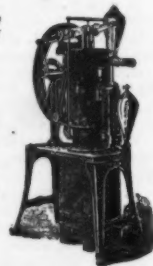
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of complete report and catalogues descriptive of the boilers will be furnished on application.

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SOME time since, an engineer in a large factory called the attention of a visiting expert electrician to the electricity in a big driving-belt, and was quite surprised when the expert informed him that the electricity

was caused by the belt slipping. The expert added that it was simply a wasting of power and could be prevented by applying *Dixon's Traction Belt Dressing*, made by the Joseph Dixon Crucible Co., Jersey City, N. J. This dressing was applied and the electricity disappeared at once. Electricity in belts is not only a waste of power, but is also an element of danger by fire.

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JERSEY CITY, N. J.