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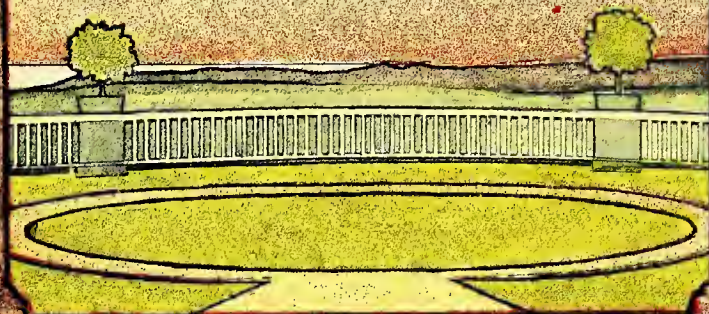








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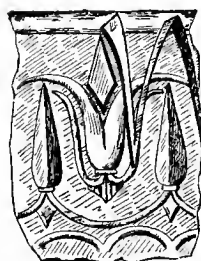
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# The Architectural Record

A MONTHLY

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WITH this issue of ARCHITECTURAL RECORD, this periodical ceases as a quarterly to appear henceforth monthly.

The first number of the new series will be issued on May 15, and the subsequent monthly numbers will be published thereafter on the fifteenth day of each month.

This increase in the frequency of publication is due to the constant solicitation of a large number of our subscribers, and to a desire of theirs and of the publishers that the scope and purpose of the magazine shall be broadened and extended so as to cover not only Architecture and the interests immediately attached to it, but the remoter departments of Fine Art Design.

Connected with this desire there is also the purpose to give to the pages of ARCHITECTURAL RECORD a more contemporaneous and less of an historical note than hitherto and it has been found that greater frequency of publication is an absolute necessity to the maintenance of this quicker tone.

The magazine will also be made more popular (in the best sense of that term). The past success of ARCHITECTURAL RECORD has shown that it is possible not only to carry the interest of architects and others professionally and commercially interested in Architecture, but also the interest of large numbers of the educated laymen who desire at least a running acquaintance with the most public of all the Arts.

The ARCHITECTURAL RECORD was the first periodical of its class to regularly seek its writers among the leaders of the architectural profession and among art critics of the highest standing in this country and abroad. The best writers of the day have been among its most constant contributors

since the magazine was started eleven years ago. Many reputations have been made in its pages. In the future this policy of getting the best the world affords will be pursued in the wider field to be covered.

It is also the purpose of the publishers to include in the monthly magazine not only a greater variety of subjects but a more extended territory geographically. Art is a universal interest. American taste is especially cosmopolitan. Without at all neglecting the work done in the U. S. and the tendencies therein, attention will be given in the monthly ARCHITECTURAL RECORD to the best work abroad—especially in France, Germany and England.

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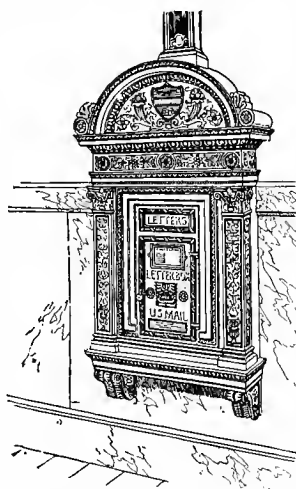
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# The Architectural Record

April, 1902

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VOL. XI

APRIL, 1902

No. 3

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THE WORKS OF ERNEST FLAGG.

---

INTRODUCTION.

**T**HE first building that brought Mr. Flagg into prominence was the new St Luke's Hospital, on Morningside Heights, in New York City. Roughly speaking that is an affair of a decade ago.

Rarely has an architect been so fortunate as to make his debut upon so monumental a stage, and a student of architectural history might be piqued to inquire whether this unusual opportunity was not merely a gift of chance, were he not estopped by the architectural worth of the building itself, and by the rapid professional successes that followed it, won by its author in a series of works, which in volume at least, represents a marked achievement even in these days of big "architectural plants," and large "outputs."

Omitting for a moment the "personal factor," the explanation of both the initial opportunity and the subsequent success is to be found in the fact that Mr. Flagg brought to his task a very thorough preparation obtained at the École des Beaux Arts. Mr. Flagg was fortunate in that he brought that particular training to this country at that particular moment, thus joining a small coterie of architects possessed of a professional equipment similar to his own—men of "the School" whose work in the beginning of the "Nineties" was coming into style, that is coming to possess high commercial value.

Our architecture at that moment was in a transitional condition. The "Romanesque Movement" derived from Richardson, was running feebly to its impotent conclusion. It was in its very

last stage. Practitioners were struggling to throw off the heavy archaic handwriting they had so laboriously acquired during the preceding decade and over, and in the main were turning for novelty to the "classic" of Rome and to the Renaissance. It is interesting now from an historical point of view to study designs like that of Post's Havemeyer Building on Cortlandt Street, or R. H. Robertson's Corn Exchange Bank, to see the new tendency and the old habit struggling one with the other. The new Netherlands Hotel, the Metropolitan Telephone Building, the Mutual Reserve Building were recent expressions of an expiring faith, whereas from designs such as those of the Bowery Savings Bank, the Waldorf Hotel, the "Mail and Express" Building, the Herter residence, the John Jacob Astor residence, we obtain some idea of the many directions in which novelty was sought.

The conditions of modern architecture do not permit or at least do not favor a general style and the Romanesque movement even at its height was signalized not only by the number of its adherents, but by the contrasting achievements of the nonconformists. But although we cannot hope for a commonly accepted style, there is always observable a tendency towards some centre of design, and in the early "Nineties" when Mr. Flagg entered practice he was extremely fortunate in bringing with him those particular architectural ideas that were destined in the next ten years to attract the profession, catch the public eye and become the basis of the latest "current style." Others before Mr. Flagg had enjoyed the benefits of the *École des Beaux Arts* training, but as was the case with the elder Hunt and with Richardson this training was merely their schooling, and in much of the work of the former and in still more of the work of the latter, one might easily miss all trace of the Parisian academic training. In Mr. Flagg's case, however, as in the cases of a few other "Beaux Artists" the importation is obvious. No one, not even the man in the street, can possibly mistake, say, the Scribner Building or the Singer Building, for anything but Parisian in general form and spirit, and even in such cases as, let us say, the homelike Clarke residence on Riverside Drive, New York City, or the splendid buildings for the Naval Academy, at Annapolis, Maryland, no one at all instructed

would hesitate for a moment in saying that, despite a foreign accent, such things speak French very well.

It must not be imagined that in describing as "importation" the ideas and training underlying this work, there is any intention to disparage. Those ideas and that training are technically considered the best the world to-day affords. They have a vitality and reality quite unmatched. If there be a distinctly modern style of value as fine art it is the French, however much one may be inclined to quarrel with it. In turning from the Romanesque and the Classic to Modern French, American architects directed their thoughts, at any rate, from the dead to the living, from a style archaic and obsolete that had entirely passed from the world with the conditions that produced it, to a style "foreign" it may be, but alive, producing its examples and capable of contemporary explanation.

Of course, fictitious in a sense, the modern French style must always be for our architects, or at any rate, for all who, unlike Mr. Flagg, have not acquired it as their vernacular. And despite the vast amount of work produced in it lately, little is at all vernacular. Probably none has more of the native spirit than Mr. Flagg's. With him it is not the French of Stratford-atte-Bow. Herein, no doubt, we have another reason for his rapid success or vogue, for clearly at a time and in a "movement" when all are imitating and most imitating badly, the artist who draws, so to speak, "from the source," possesses a distinct advantage.

But neither the timeliness of Mr. Flagg's advent nor the "authenticity" of his product in the midst of a widespread imitative movement accounts for the high position he has attained in the ranks of his profession. The designs of few men in the country are more sought for and studied professionally than are Mr. Flagg's. This interest is, perhaps, livelier with men of the rising generation than with the older architects, and the basis of this interest lies in the fact that Mr. Flagg's designs are, if one may say so, so thoroughly professional or technical, have been so obviously arrived at by a special trained process of thought, and are expressed in a manner so thoroughly grammatical and educated. His work is indubitably the work of a



man who has thoroughly accepted certain well-defined principles from which he proceeds logically. There is nothing obscure, slipshod, unformulated; no groping, no obvious experimentation. The result is work wherein everything seems definitely and purposely "placed," and the building, as you study it, clearly "declares itself." One may or may not like the building, one may prefer something more structural, or something more picturesque, but there is no denying that the building before one, such as it is, has been deliberately "done," is organic and logical and represents a clear process of architectural thought and not a number of loose reminiscences forced together in some way onto paper. And there is something very admirable, and, let us add, very French, in this clearness. There is very little work in this country that is so architectural or will stand so well technical analysis as Mr. Flagg's. We say technical analysis advisedly, because in many cases the excellences are more of a technical and formal character than of an imaginative order; much more likely to excite admiration from the educated than from the popular critic.

We hope no one will derive from this any idea that Mr. Flagg's work is "caviare to the general." The intention is to point out one of its distinctive excellences. As a matter of fact, no style to-day is quite so "taking" with the crowd as the modern French. Its very defects are of the sort that attract the public, and Mr. Flagg's buildings do not seem to miss popular appreciation, because they are technically excellent as well as French. But then popular admiration of a design rarely reaches what is really architecture.

Finally, we ought to qualify what we have already said by pointing out that Mr. Flagg is not always French. Witness the F. K. Bourne residence, the admirable Lawrence Library, and his own country place on Staten Island. These show that his thoughts are free enough in other styles, but even here we may notice the same good qualities of design that distinguish his Parisian mode—logical clearness, freedom from eccentricity and all those irritating marks of the uneducated pencil.

*H. W. Desmond.*

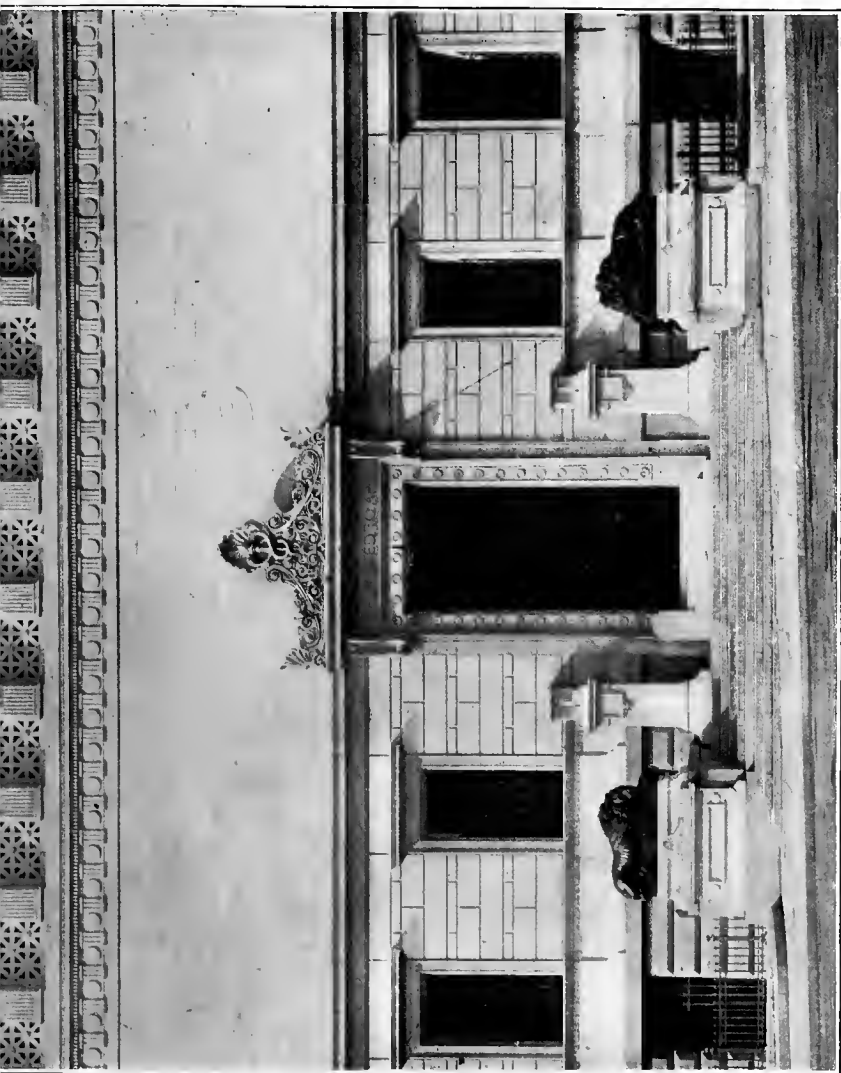


FIG. 2. DETAIL OF THE MAIN ENTRANCE, DOORWAY OF THE CORCORAN GALLERY OF ART. WASHINGTON, D. C.

This illustration shows the bronze doors and clathri of the windows. The door opening is about ten feet wide and somewhat over twenty feet high. The bronze lions, which do not harmonize very well with the design, are copies of those by Carnova in St. Peters, Rome, and were in possession of the trustees before the building was built. It is hoped that in time the design may be completed by placing allegorical figures on the pedestals at the side of the doorway. The inscription in the frieze, "Dedicated to Art," was the same as that on the old building of the gallery at the corner of 17th street and Pennsylvania avenue.

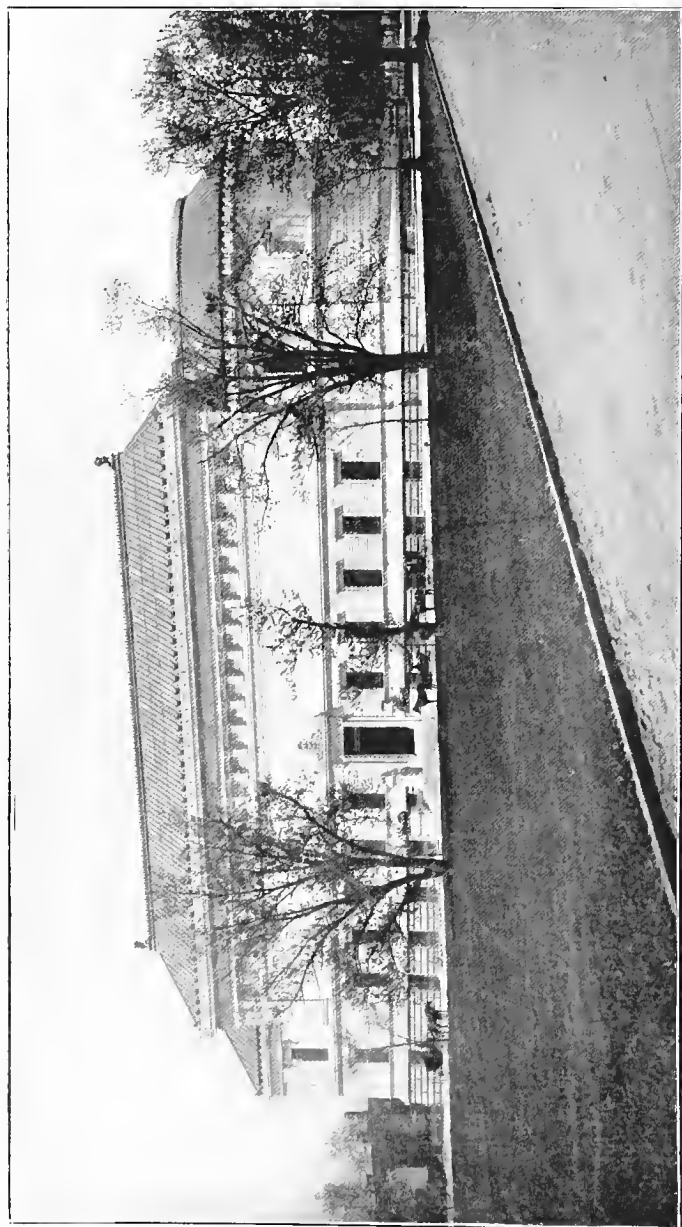


FIG. 3. VIEW OF THE SEVENTEENTH STREET FACADE, CORCORAN GALLERY OF ART. WASHINGTON, D. C.

This view is taken from what is known as the White lot, just to the south of the State, War and Navy Buildings. The base is of a warm shade of granite, and the superstructure is of selected Georgia marble of the most beautiful workmanship. The roof is almost entirely of glass, in copper frames.

The scale of the building is somewhat deceptive, for the lower story is 20 feet high, and the windows, which appear rather small, are in reality quite large. The greater part of the second story is unperforated by windows, though there is a frieze of square openings having marble clausura below the main entablature. These openings admit of a free circulation of air, in summer, across the principal galleries. This facade is surmounted by a rich entablature. The frieze is inscribed with the names of distinguished artists of all times and nations. The cornice supports a carved marble cheneau of a bold and rich design.

The cost of the building was about \$500,000, which seems very low when its size and the excellence of the workmanship are considered.



FIG. 4. MAIN STAIRWAY OF CORCORAN GALLERY OF ART. WASHINGTON, D. C.

This stairway is directly opposite the main entrance, at the other side of the atrium. The steps are of marble, about sixteen feet wide, each in a single piece. The large blocks at the side are intended for decoration or sculpture. There is a broad landing half way up where the stairs turn on themselves. The balustrades and walls of the cage are of limestone. The stairway is lighted from above, and though simple in design, it produces a fine effect as seen upon entering the building.



FIG. 5. VIEW OF THE CENTRAL STATUARY HALL OR ATRIUM OF THE CORCORAN GALLERY OF ART. WASHINGTON, D. C.

This apartment is somewhat over fifty feet wide and about one hundred and fifty feet long. The columns, which are about eighteen feet high, are of Indiana limestone. The Ionic columns of the second tier have a necking of gilt bronze. The hall is well lighted by an enormous skylight.

The picture galleries open from the galleries of the second floor. These galleries are about ten feet wide, the picture galleries are about thirty feet wide, and are well lighted. It was unfortunate that the glass ceiling of the atrium was not elevated by about ten feet, which might easily have been done. This change might be made now at a trifling expense. The great defect of the hall is an appearance of low-ness when seen from the second floor.

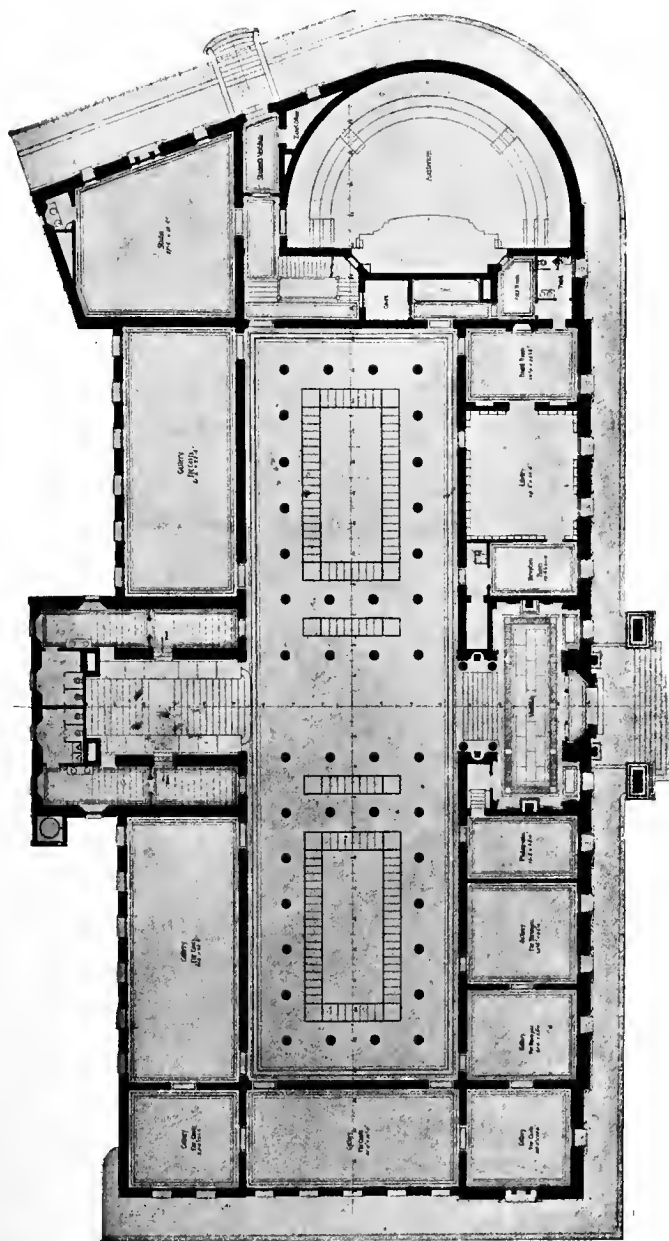


FIG. 6. PLAN OF THE GROUND FLOOR OF THE CORCORAN GALLERY OF ART, WASHINGTON, D. C.

The building occupies the whole front of the block on 17th street, between New York avenue and E street, overlooking the grounds of the White House. It is about 260 feet long, and something over 100 feet wide. Only about one-half of the plot owned by the gallery is occupied, and provision has been made for future extension. The main entrance is in the center of the 17th street front. The lower floor contains a large central hall or atrium, the library, board room and offices of the administration, a lecture hall in the form of a hemicycle, studio and a number of exhibition rooms.

On the second floor there are galleries about the central hall, while these in turn are surrounded by the main picture galleries. There are also on this floor several studios for the schools.

The students' entrance is on New York avenue, and a separate staircase in this part of the building is for the use of the schools. The lecture hall is a noble apartment, extending through both stories.

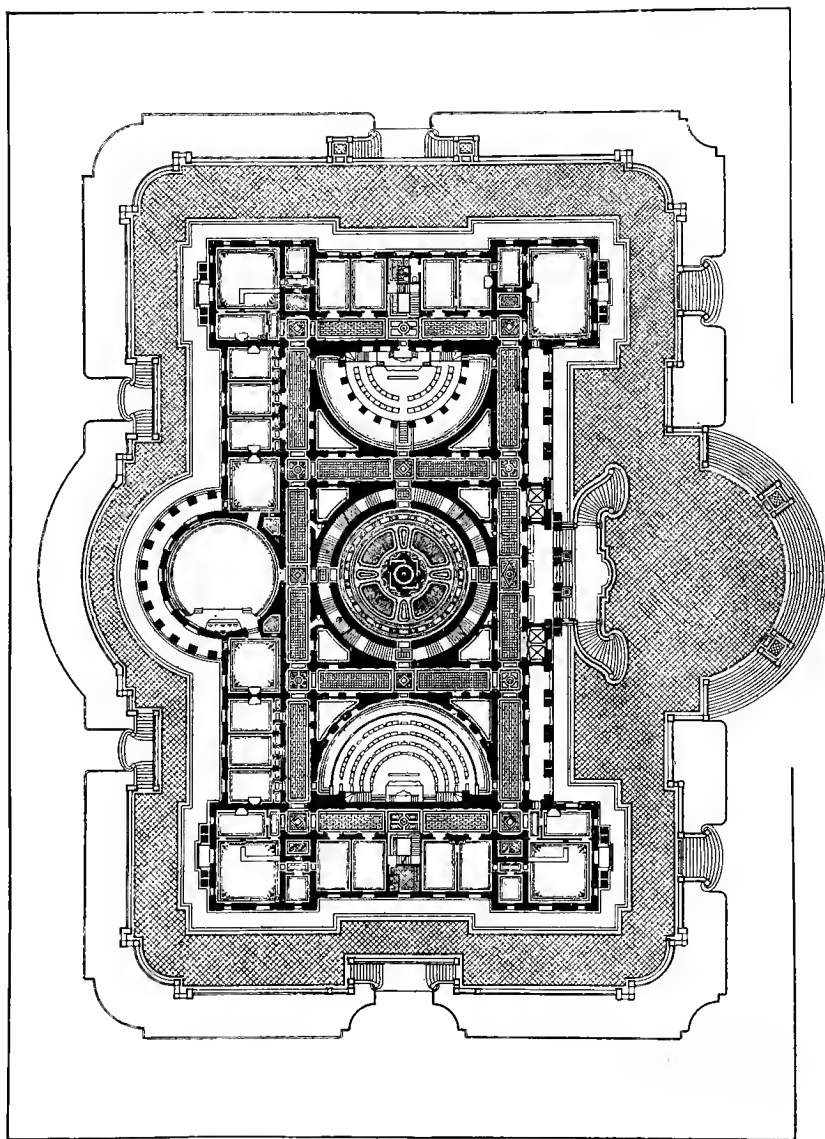


FIG. 7. GROUND FLOOR PLAN OF THE WASHINGTON STATE CAPITOL AT OLYMPIA, WASHINGTON.

The central rotunda is sixty feet wide on the ground floor. The main stairway, in four flights, is between the inner and outer walls. On the second floor a colonnade stands on the inner wall and the openings between the columns add to the spacious appearance of the apartment. The Senate Chamber and Hall of the Representatives are each semi-circular in plan and are separated from the rotunda by transverse corridors. Other transverse corridors or lobbies separate these apartments from the committee rooms. The Governor's and Lieutenant-Governor's rooms are in the angle pavilions of the south facade. The Supreme Court occupies a circular room to the north of the rotunda. The estimated cost of the completed building is \$1,000,000.





FIG. 8. GENERAL VIEW OF THE WASHINGTON (OLYMPIA) STATE CAPITOL FROM THE SOUTH.

Since this preliminary sketch was made the design has been improved by moving the solid bays close up to the central portico one thus extending the length of the two loggias. The building occupies a very commanding site on a bluff at the head of Puget Sound, and will be in full view for miles as one approaches the city by water.

The material used is a local sandstone, of a very good quality, but too dark in color for the best effect. The dome is entirely of masonry. The designs for this building were secured as a result of a competition in which two hundred architects participated.

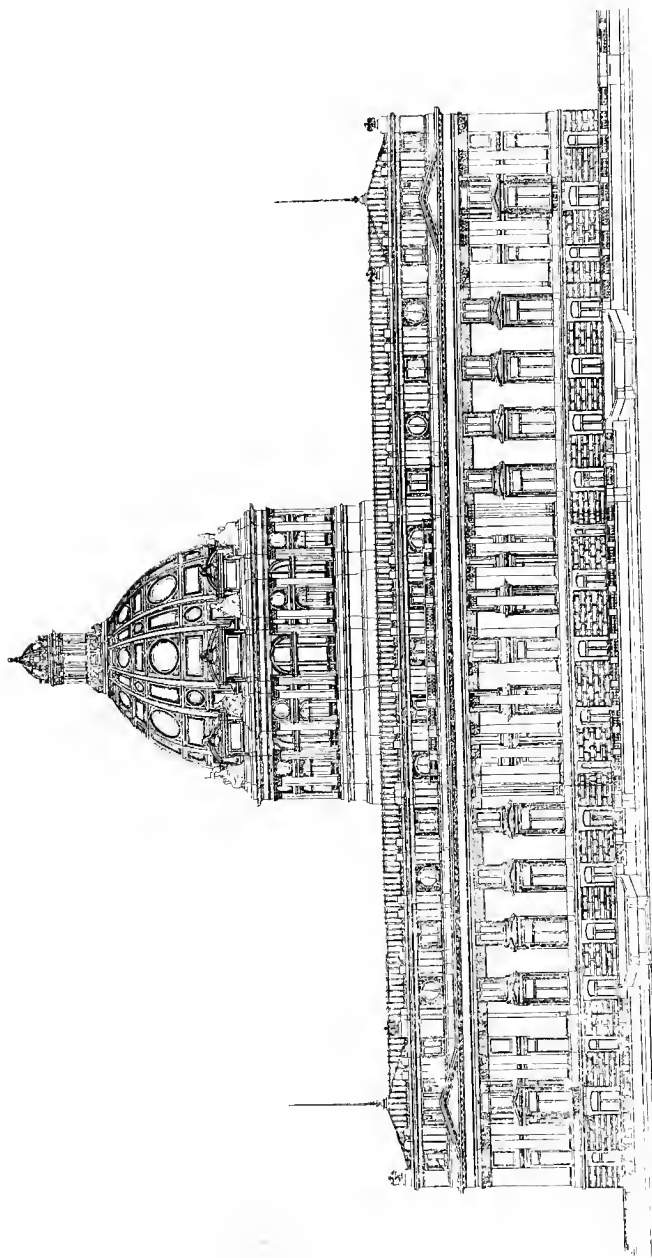


FIG. 9. NORTH ELEVATION OF THE WASHINGTON (OLYMPIA) STATE CAPITOL.

This is the side which can be seen from the water. The Supreme Court Chamber occupies the semi-circular projection, which is surrounded by a colonnade. The boldness of this projection and the shade of the colonnade it is hoped will do much to compensate for the lack of sunshine on this facade.

There is a small strip of property between the Capitol grounds and the edge of the bluff. As this could be bought for very little, a bill was introduced in the Legislature making the necessary appropriation, so that the view of the building from the water might always be unobstructed. It is reported that when it came to the Senate committee, the chairman said, "Oh, hell! We ain't buying scenery," and the measure was killed. Perhaps a subsequent Legislature may take a different view of the matter, but the price of the scenery will probably be advanced in the meantime.

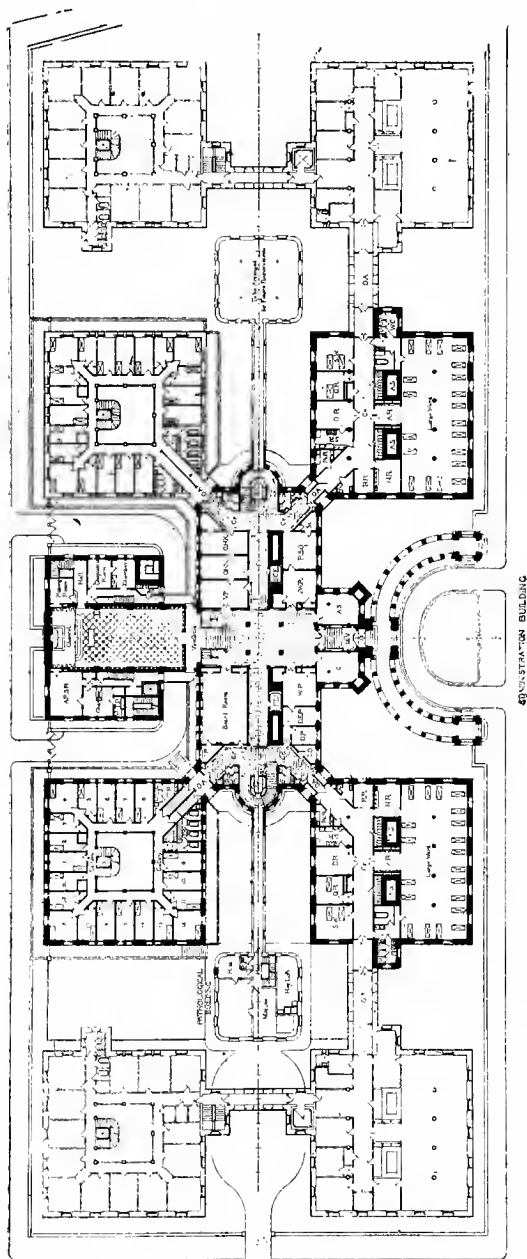


FIG. 10. GROUND FLOOR PLAN OF ST. LUKE'S HOSPITAL, CATHEDRAL HEIGHTS, NEW YORK CITY.

When completed, the hospital will consist of a group of ten pavilions, of which five have been built at the present time. The walls of the part which is completed are in black on the plan.

The main entrance is in the base of the tower in the center of the south facade of the administration building. From the vestibule one enters a large central hall, from which a broad flight of marble steps leads to the chapel, which is separated from the hall by a glass screen. A longitudinal corridor in the administration building leads to the two main staircases, one at either end of the pavilion; near these staircases, the corridors radiate to the outlying pavilions. The pavilions on the south side, facing on 113th street, and overlooking the cathedral grounds, contain the wards. The two pavilions which are nearest the chapel pavilion are entirely devoted to the housing of the nurses and employees. The corner pavilions on 114th street are for private patients.

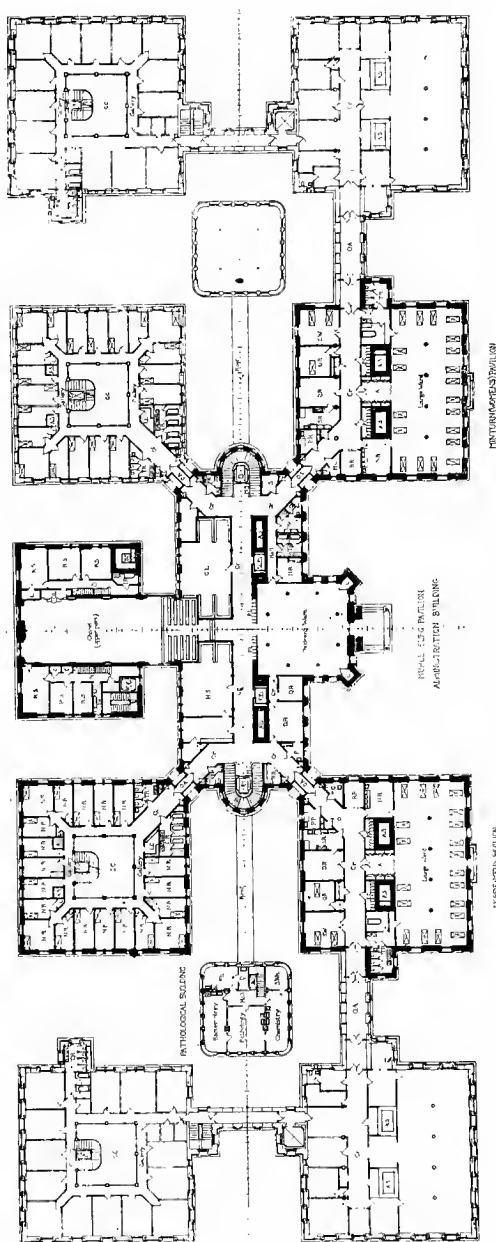


FIG. 11. SECOND FLOOR PLAN OF ST. LUKE'S HOSPITAL, CATHEDRAL HEIGHTS, NEW YORK CITY.

The planning of this hospital was a problem of great interest and considerable difficulty, and one which is frequently encountered when such institutions are located on valuable land in cities. This problem is: How can land which is immensely valuable be made to accommodate a large number of patients, and at the same time comply with those sanitary laws which require no overcrowding for the sick, the supply of an abundance of light, air and sunshine in every part, and the possibility of isolating any part from the rest to avoid the spread of contagion? This plan shows how the solution was sought in this case. The ward pavilions contain no staircases or shafts connecting the various floors by which air could circulate from one floor to another, but the wards are easily reached on every floor from the administration building; the links which connect the various pavilions to each other are so many fresh air cut-offs, having open arches on each side through which fresh air can freely circulate; as every ward with its dependencies occupies an entire floor of a pavilion, the air can thus circulate around all sides of each; as the whole southern exposure is devoted to the wards, the sun enters through some of the windows during all hours of the day.

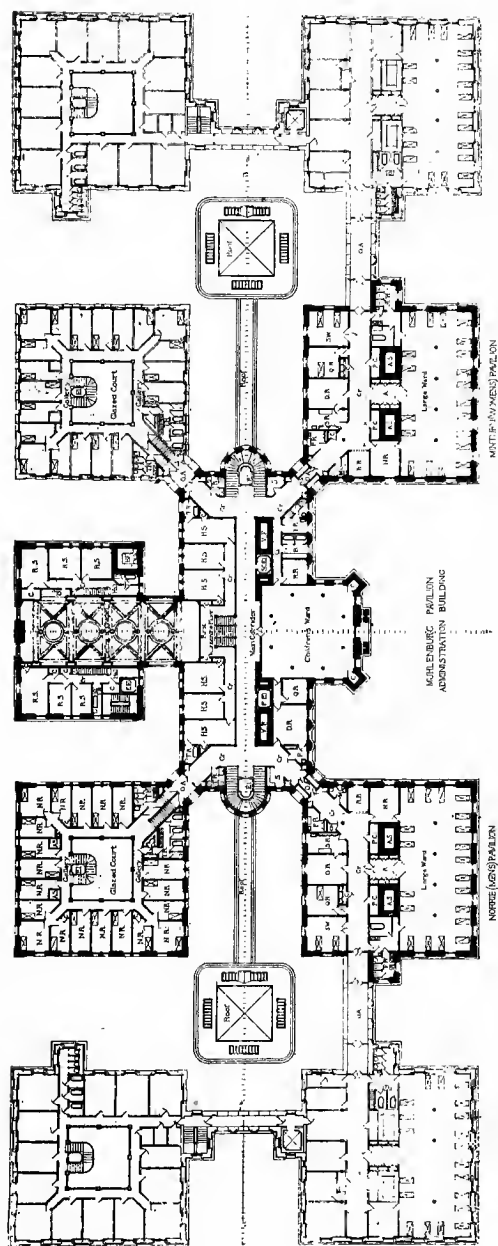


FIG. 12. THIRD FLOOR PLAN OF ST. LUKE'S HOSPITAL, CATHEDRAL HEIGHTS, NEW YORK CITY.

It will be seen by the plan that each of the ward pavilions contains two large ventilating flues near the center; these flues are provided with electric fans at the top, which exhaust the air from openings near the floor in winter and from other openings near the ceiling in summer. Fresh air is admitted through openings under the windows connecting with radiators which heat it, and the whole apparatus is automatically controlled by thermostats so perfectly regulated that one of the nurses unacquainted with the working of the system complained to the superintendent that the thermometers of the wards must be out of order, for she had looked at them a hundred times and they always registered exactly the same degree of heat.

In the two employees' pavilions there is a central court about 30 feet square, glazed above, with galleries at every floor, which give access to the rooms. The kitchen is located on the fourth floor of the chapel pavilion, and from it food is sent in covered carts to all the dining rooms.

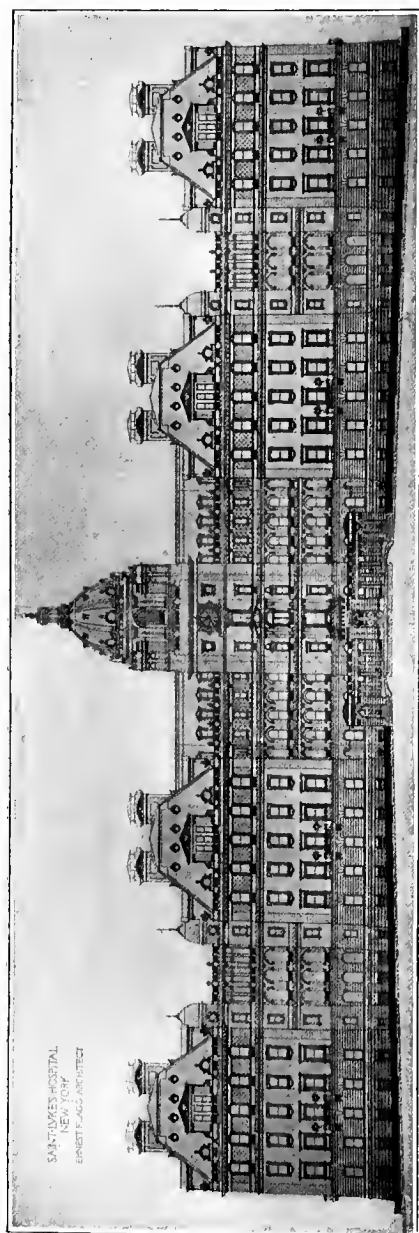


FIG. 13. ELEVATION OF ST. LUKE'S HOSPITAL ON 113TH STREET, NEW YORK CITY.

This elevation shows the building as it will appear when completed. The basement is of granite, and the first story window dressings, quoins, main cornice and upper part of tower are of white Georgia marble. The plain surfaces are of light brick. The roofs are of red slate and copper.

Here are seen the open arcades connecting the ward pavilions. The small turrets in the angles contain the water closets. The large ventilating stacks are seen above the roofs. The total length of the facade is about 500 feet. Each of the ward pavilions is 76 feet wide; the stories are 18 feet high, from floor to floor.



FIG. 14. THE END ELEVATION OF ST. LUKE'S HOSPITAL, OVERLOOKING MORNINGSIDE PARK, NEW YORK CITY.

The building is superbly placed on an eminence about eighty feet high, overlooking the city to the east. As the park is on this side, the view of the building can never be obstructed. On the south side, the cathedral has unfortunately been placed close to the hospital, on the extreme northerly side of its grounds, and both buildings will be greatly injured thereby. This is the more to be regretted, as the grounds of the cathedral were sufficient to have allowed of a liberal open space between the two buildings.

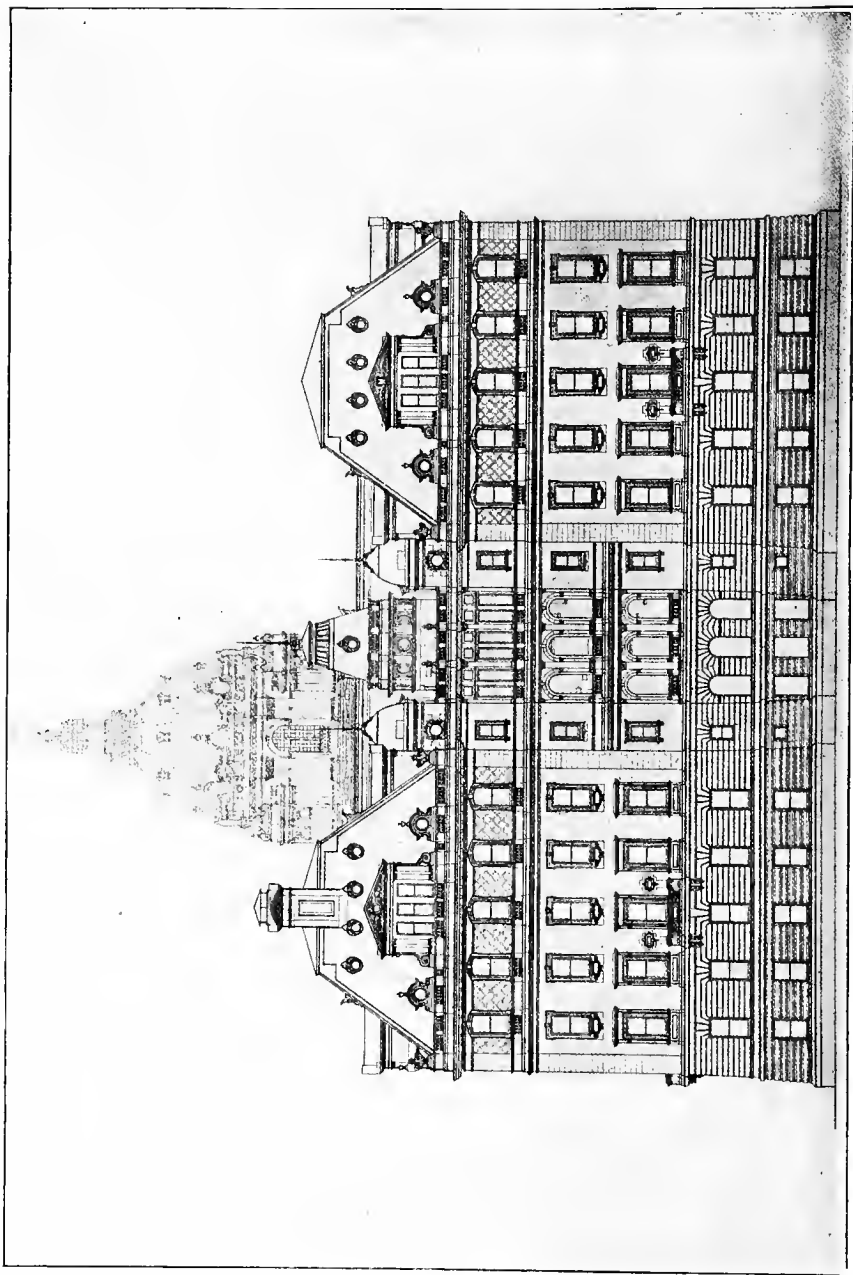


FIG. 15. VIEW OF ST. LUKE'S HOSPITAL FROM THE CATHEDRAL GROUNDS, NEW YORK CITY.

This illustration shows the Muhlenburg Pavilion or Administration Building at the back of the court recessed from the street. The Minerva Pavilion on the right and the Norrie Pavilion on the left. The other two completed pavilions are back of these. The cost of the five pavilions which have been completed was about \$1,500,000.





FIG. 16. VIEW OF ST. LUKE'S HOSPITAL FROM COLUMBIA UNIVERSITY, NEW YORK CITY.

This picturesque view is already injured by buildings which have been erected since it was taken. It would be fortunate if the block opposite the university could be kept open as a small park. When the five remaining pavilions of the hospital are built the appearance of the building from this point of view, as from every other, will be greatly improved.



FIG. 17. SKETCH OF THE TOWER FROM THE MINTURN  
PAVILION, ST. LUKE'S HOSPITAL, NEW YORK CITY.

All the work above the main cornice, including the cross which surmounts the lantern, is of marble, excepting the panels of the dome, which are of light brick.

The main operating room of the hospital is under the dome. The surgical department and wards occupy the entire fifth floor.



FIG. 18. VIEW OF THE INTERIOR OF THE CHAPEL OF ST. LUKE'S HOSPITAL FROM THE GALLERY AT THE REAR.

The chapel is about 75 feet long, 30 feet wide and 36 feet high. It is lighted by a large stained glass window at the north end and by two large windows at either side of the southerly end. The reredos, altar and tracery of the great window are of marble, as is also the pavement. The vault is of concrete, ornamented with relief work in stucco. The arcade between the main piers is of carved oak, as is also the organ case and the furniture. The chairs are movable. The central panel of the great window represents the "Healing of Nations," one side panel the "Curing of the Body," and the other the "Saving of the Soul." The circular medallions in the tracery represent the "Seven Healing Works of Mercy."

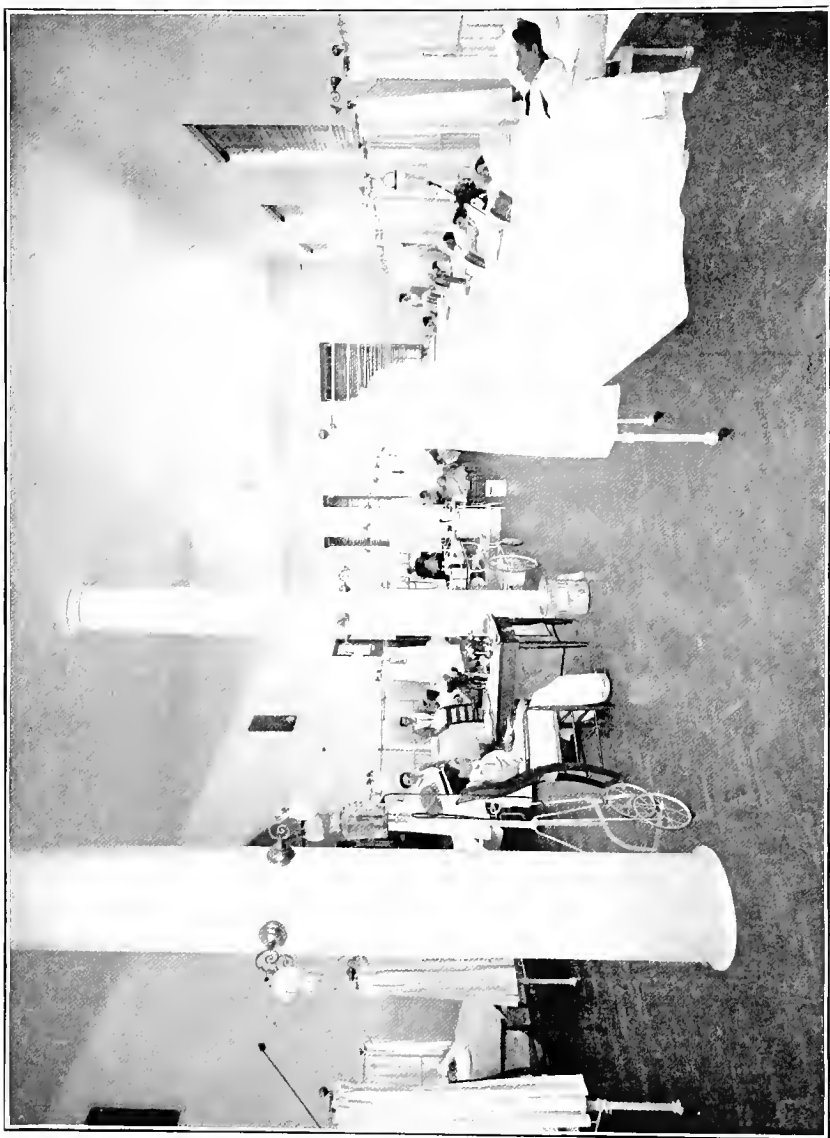


FIG. 19. INTERIOR OF ONE OF THE WARDS OF ST. LUKE'S HOSPITAL, NEW YORK CITY.

This ward is in what is called the Minturn Pavilion, which is entirely occupied by the wards for women. Each ward is about 75 feet long, 30 feet wide and 17 feet high, and contains 20 beds. There is an unusually large allowance of cubic space per patient, and the air supply is so great that five or six thousand cubic feet of air is supplied per patient per hour.

The dependencies of each ward consist of an ante-room containing cases for bandages and implements used in the ward, a nurses' room, ward dining room, pantry and diet kitchen, small reception room for patients' friends, a quiet room, small ward of two beds for special cases, the toilet rooms and bath rooms. The ward proper is separated from the dependencies by a corridor having a window at either end.

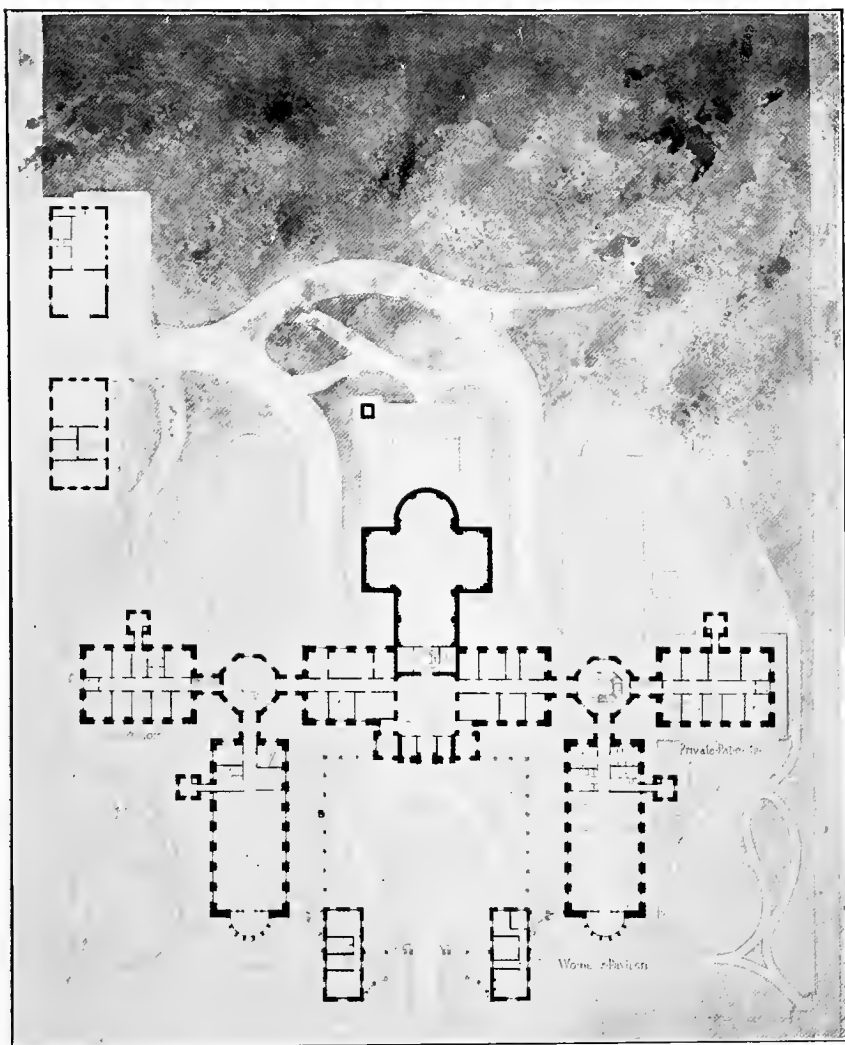


FIG. 20. PLAN OF ST. MARGARET MEMORIAL HOSPITAL, PITTSBURG, PA.

This plan is of a different type from St. Luke's, New York. In this case, there is an abundance of comparatively inexpensive land. The administration building is in the center of the group. The private patients' pavilion is to the right of it, and the nurses' pavilion to the left of it, both on the same axis. Two ward pavilions project at right angles from this central line on one side and the chapel on the other. Provision is made for two more ward pavilions on the side with the chapel. The two staircases and elevators are each in a separate octagonal construction, conveniently placed for all the buildings, but separated from all by fresh air cut-offs. Like St. Luke's Hospital, the wards have light on three sides, but in this case the windows are in the two long sides and one end, while in the other the windows are in one long side and two ends. Every pavilion can be completely isolated from the rest, and the air can circulate freely around each. The ward dependencies are much less extensive than at St. Luke's. The water closets are placed in detached turrets at the side of the ward pavilions.

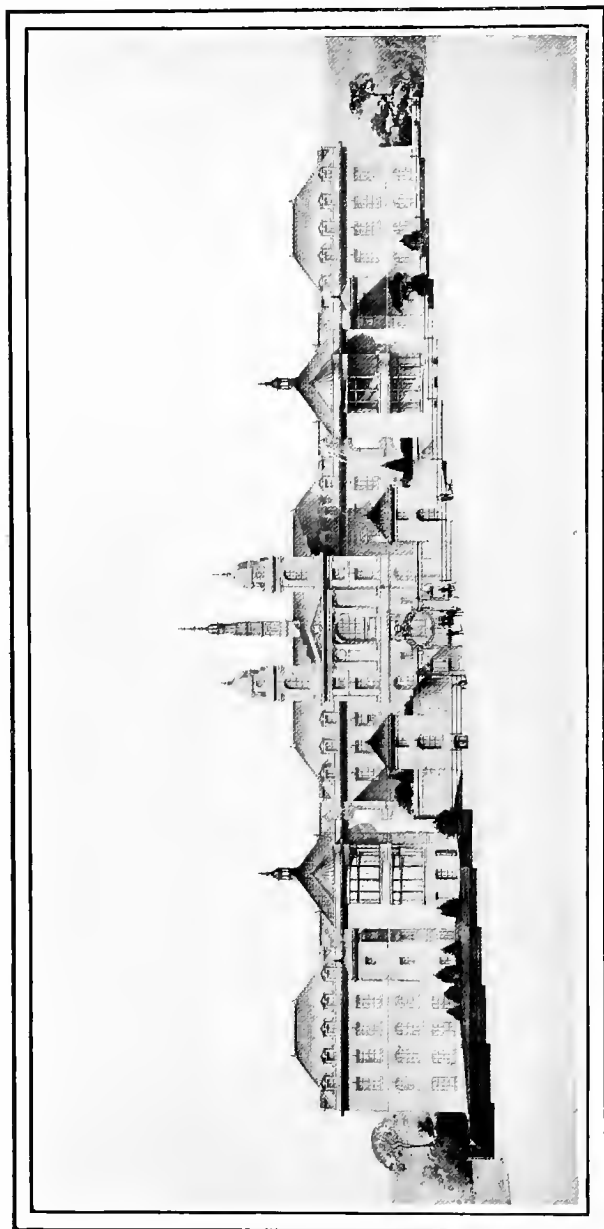


FIG. 21. ELEVATION OF ST. MARGARET MEMORIAL HOSPITAL, PITTSBURG, PA.

The building is constructed of red brick and a light sandstone. The roofs are of red tile. The total length of the main facade is about 320 feet, and the cost was in the neighborhood of \$350,000.

The semi-circular bays at the ends of the ward pavilions serve as solaria, one for each ward. The operating department is on the second floor of the administration building. The out-patients department occupies the lower floor of the ward pavilion to the left. The enclosed courtyard in front of the administration building and between the ward pavilions is about 125 feet square. The hospital as it now stands contains beds for 85 patients; when the two additional ward pavilions are completed, 50 beds will be added.

The hospital, with its endowment, was a gift of the late John Haley Shoenberg, of Pittsburgh.



FIG. 22. INTERIOR OF THE CHAPEL OF ST. MARGARET MEMORIAL HOSPITAL, PITTSBURG, PA.

The chapel is cruciform in plan, the sanctuary being in the form of an apse. The extreme height is 82 feet and the extreme breadth across the transepts is 52 feet. The organ occupies a gallery in the north transept, and there is another gallery at the end of the nave, which can be entered from the second floor of the administration building. This is to accommodate the sick on the second floor, who can thus attend the services without going down stairs. The vault is made of concrete, with relief ornament in plaster. The woodwork and furniture are of quartered oak. As at St. Luke's Hospital, New York City, the interior of the chapel can be seen from the entrance hall, and is very effective.

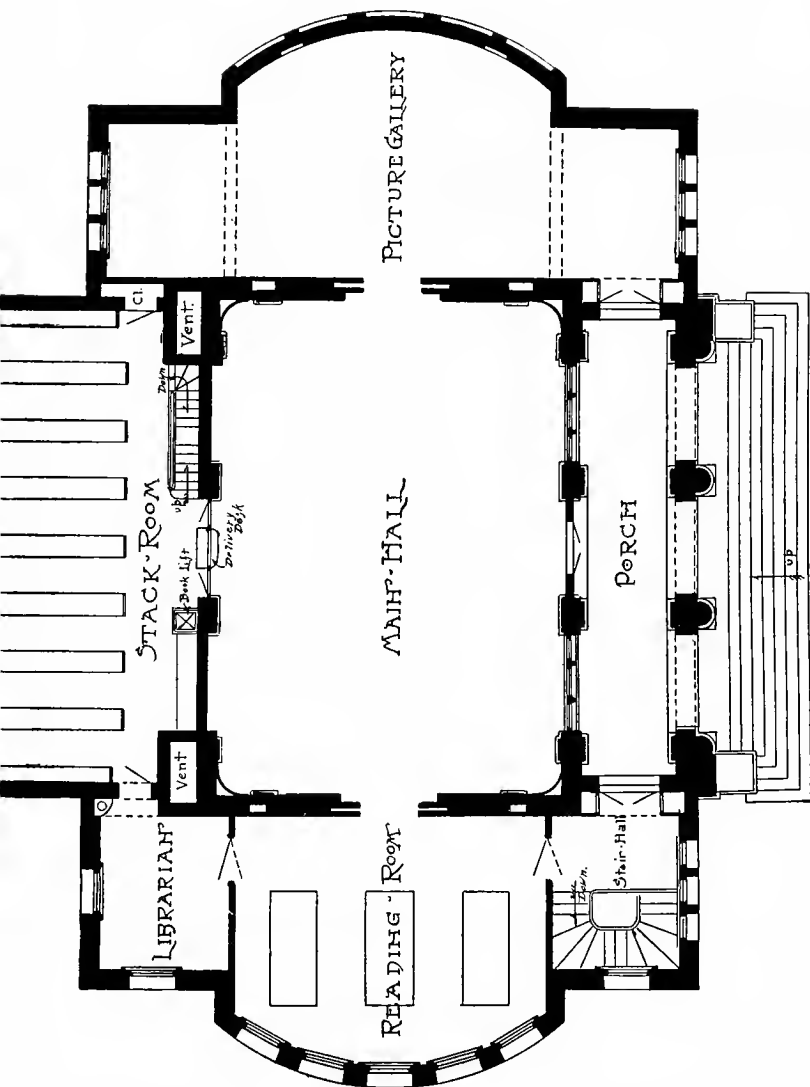


FIG. 23. PLAN OF THE LAWRENCE LIBRARY, PEPPERELL, MASS.  
Ernest Flagg and W. B. Chambers, Architects.

This plan needs very little explanation. The main hall serves both as a reading room and as a distributing room. The delivery desk directly opposite the entrance permits the clerk to keep a general oversight over the whole interior and to see all who enter or leave the building.

The stack room is arranged in three tiers, and there is accommodation for about 50,000 books.

The picture gallery on the left of the main hall is an interesting feature of the plan.

The building has a very thorough system of ventilation, which is operated by the waste heat from the smoke pipes of the heating apparatus.





FIG. 24. GENERAL VIEW OF THE LAWRENCE LIBRARY, PEPPERELL, MASS.  
Ernest Flagg and W. B. Chambers, Architects.

The design is simply a clothing of the plan. All the divisions of the interior are clearly indicated on the exterior. There is a stone loggia, the central hall, the wings, including the stack room, all expressive of the purpose for which they are used. So also in the use of material, it was the endeavor to give to each kind used its appropriate form and its proper function. Everything used was the best of its kind, and great care was bestowed upon the workmanship. It is unnecessary to say that the building is thoroughly fireproof.

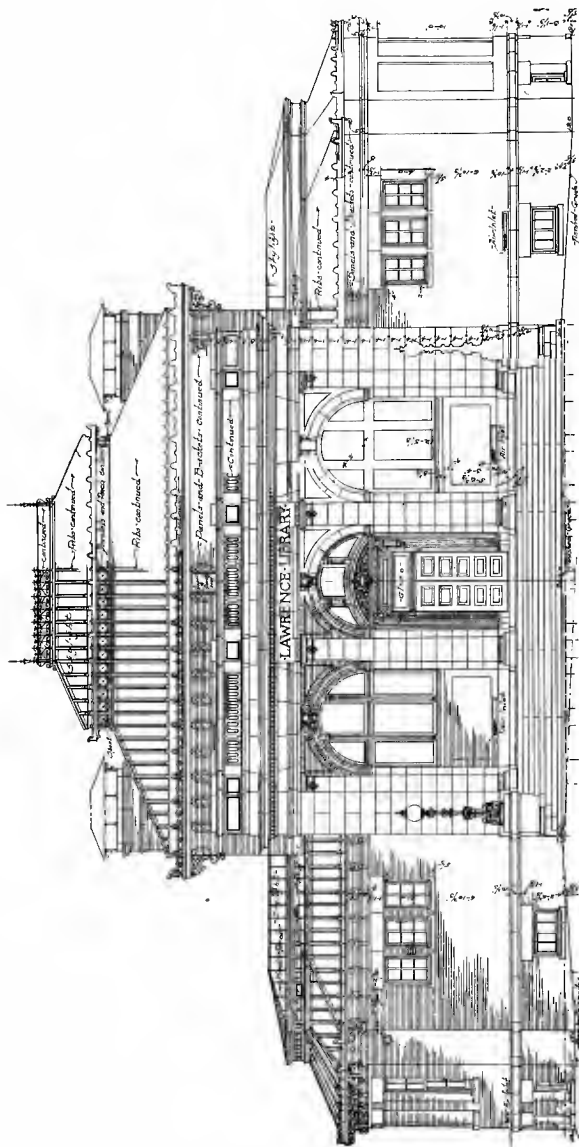


FIG. 25. MAIN ELEVATION OF THE LAWRENCE LIBRARY, PEPPERELL, MASS.

Ernest Flagg and W. B. Chambers, Architects.

The building is built of brick and limestone. The cornices and roofs are of copper, supported by wrought iron brackets. The cost of the building was fixed at \$55,000, and it was built within that amount.

The total length is 92 feet and the width is 64 feet.



FIG. 26. GENERAL VIEW OF THE FARMINGTON AVENUE CHURCH, HARTFORD, CONN.

Mr. George M. Bartlett was associated with Mr. Flagg as architect of this building. The church is built of a common grade of bricks of an agreeable shade of warm red. They are laid in a pattern with wide joints, which gives to the plain wall surface a very pleasant and interesting appearance. The cornices are of wood, painted white. The string courses are white marble, and the roofs are of red tile. There are colored glazed tile set in the walls below the cornice pediments. The tracery of the large windows is of copper.

The cost of the building, including the Sunday school building at the rear, was about \$110,000.



FIG. 27. INTERIOR VIEW OF FARMINGTON AVENUE CHURCH, HARTFORD, CONN.

The general plan of the church is cruciform. There is a large central octagonal rotunda into which open the arms of the cross. As shown in the photograph, the choir arm is almost entirely occupied by the organ. The pulpit is so far advanced that the preacher can be seen from all parts of the interior. The rotunda is about fifty feet high, and the vault is richly ornamented with caissons and relief work. The transepts and nave are covered with barrel vaults with penetrations. The upper part of the organ case is of Keene's cement; the woodwork is white enamel, trimmed with mahogany.



FIG. 28. TOMB OF THE LATE SAMUEL J. TILDEN, NEW LEBANON, N. Y.

The monument stands on a knoll in a very beautiful cemetery, and can be seen from a great distance as one approaches the town. New Lebanon was the birthplace of Mr. Tilden, and the family has long been identified with its history.

The monument consists of an oblong base forming a platform about 24 feet long and 16 feet wide, the sarcophagus resting upon a truncated pyramid, on the steps of which lies a wreath and palm branch in bronze. The platform is reached by steps at one end, closed by a bronze gate. The material is Westerly granite. The carving is as sharp and fine as if executed in marble.

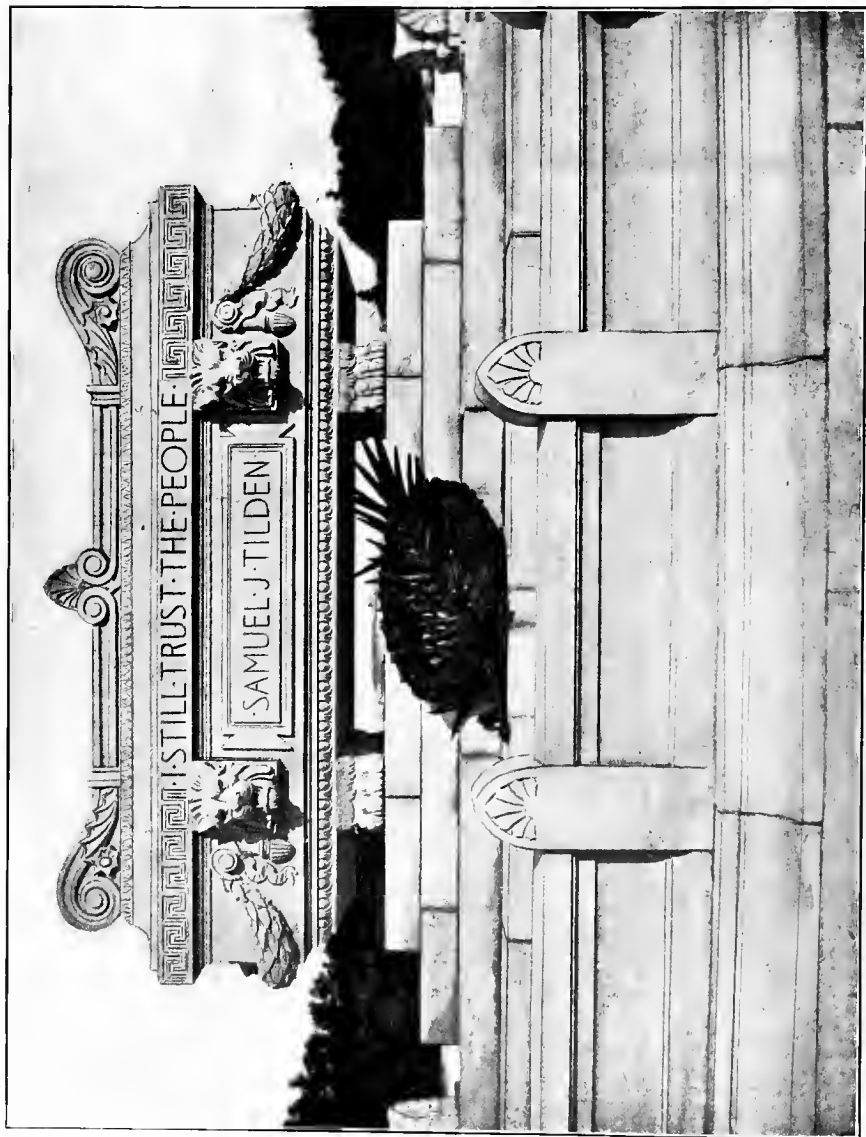


FIG. 29. TOMB OF THE LATE SAMUEL J. TILDEN, NEW LEBANON, N. Y.



FIG. 30. TOMB OF THE LATE SAMUEL J. TILDEN, NEW LEBANON, N. Y.  
Detail Showing Bronze Gate.

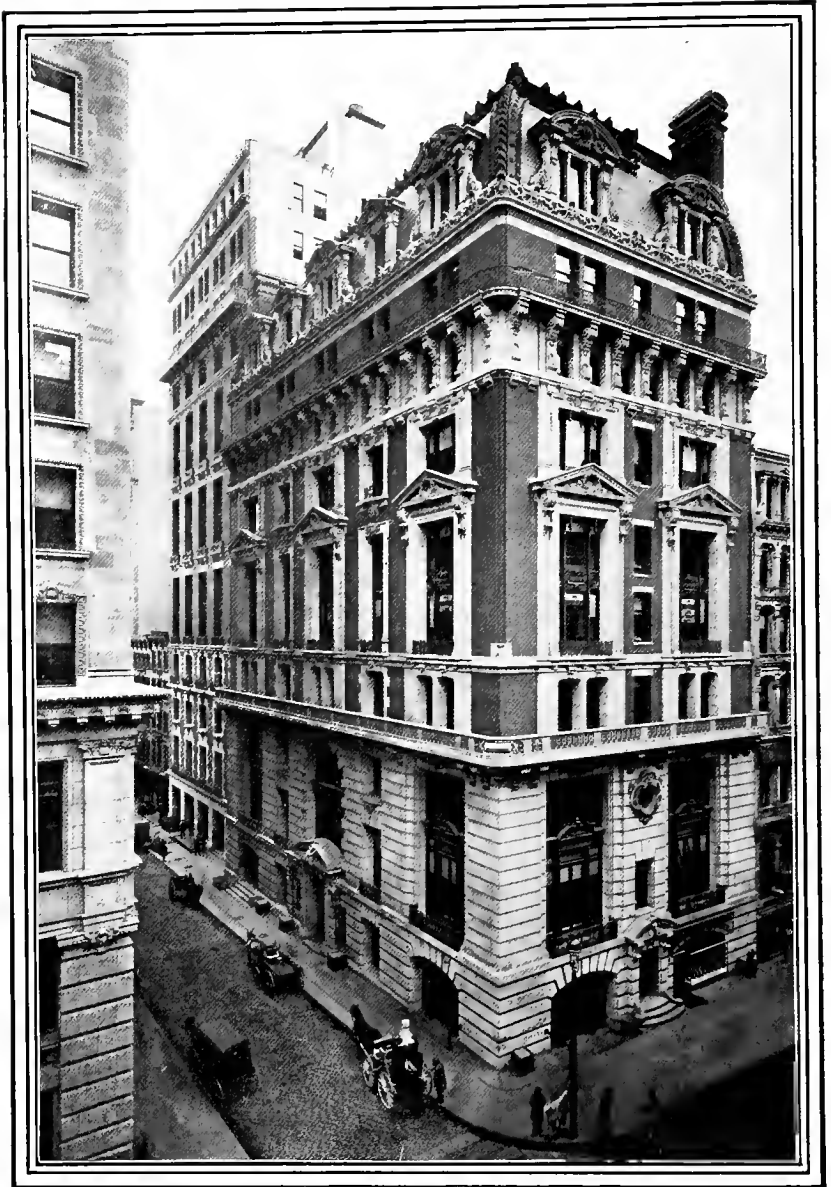


FIG. 31. SINGER AND BOURNE BUILDINGS.

Liberty Street and Broadway, New York City.

Each of these building cost about \$500,000. The materials used are red brick and Indiana limestone. The roof of the Singer Building is of slate and copper. It is proposed to add to this building on the Broadway side. When this is done, the principal entrance will be in the center of the Broadway front, and the small doorway in the base of the pier will be closed up.





FIG. 32. SINGER BUILDING, ST. PETERSBURG, RUSSIA.

This building, which is soon to be commenced, faces the principal square of the city. It is about 100 feet wide and 200 feet long. It is to be constructed of stone. The lower floor is to be occupied as a showroom by the Singer Sewing Machine Company. The upper floors will be used as offices.

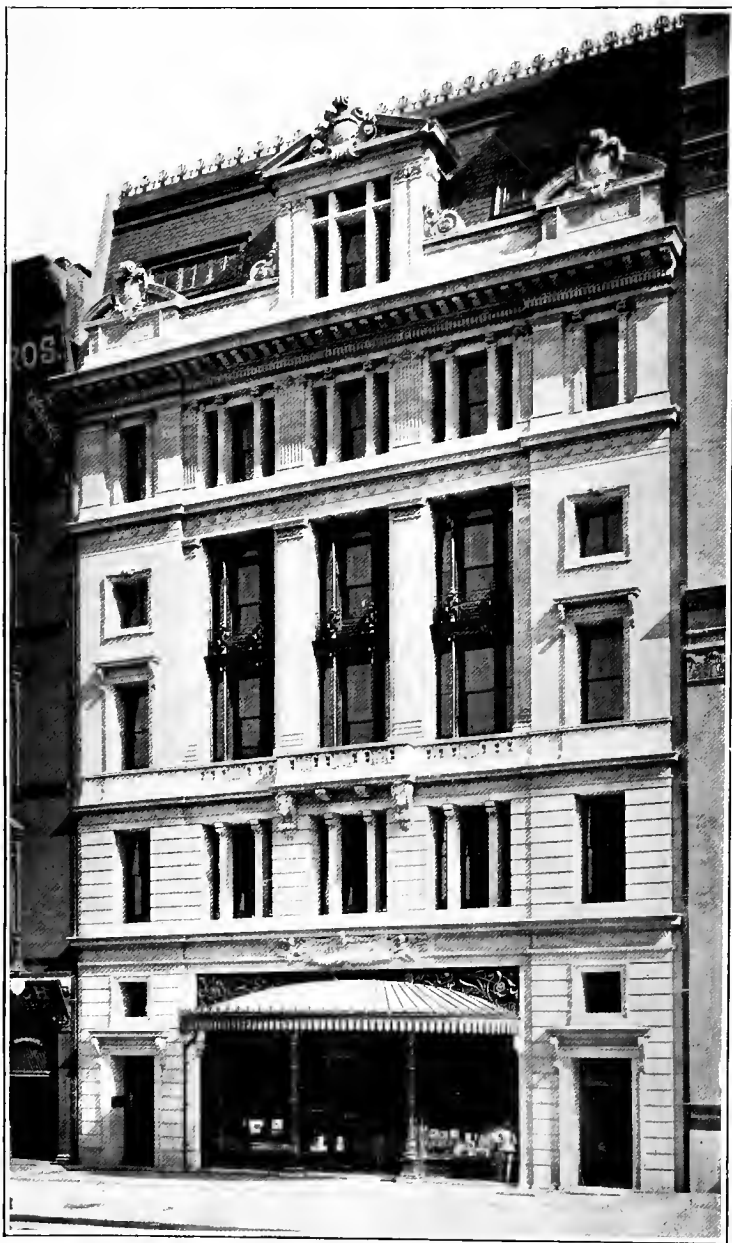


FIG. 33. THE SCRIBNER BUILDING, FIFTH AVENUE, NEW YORK CITY.

The building is about 64 feet wide. It is built of Indiana limestone. The marquise, which has been extensively copied, was the first of its kind in the city. The cost of the building was about \$200,000.

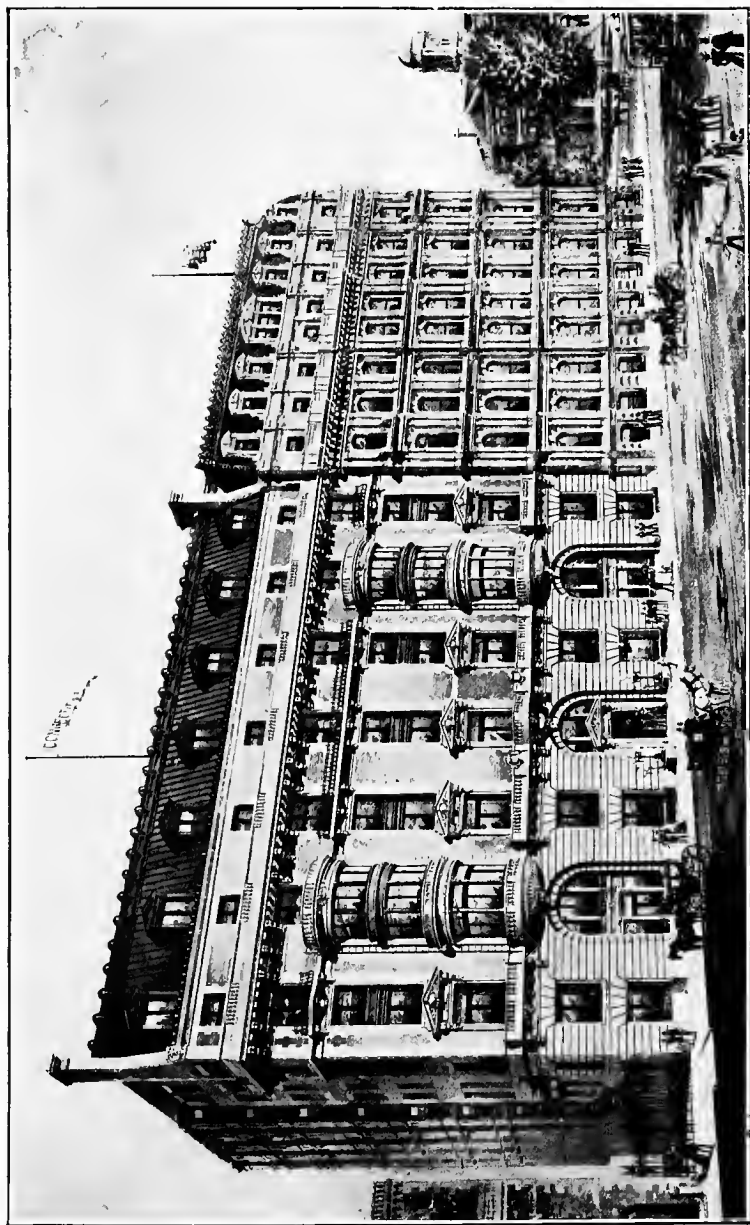
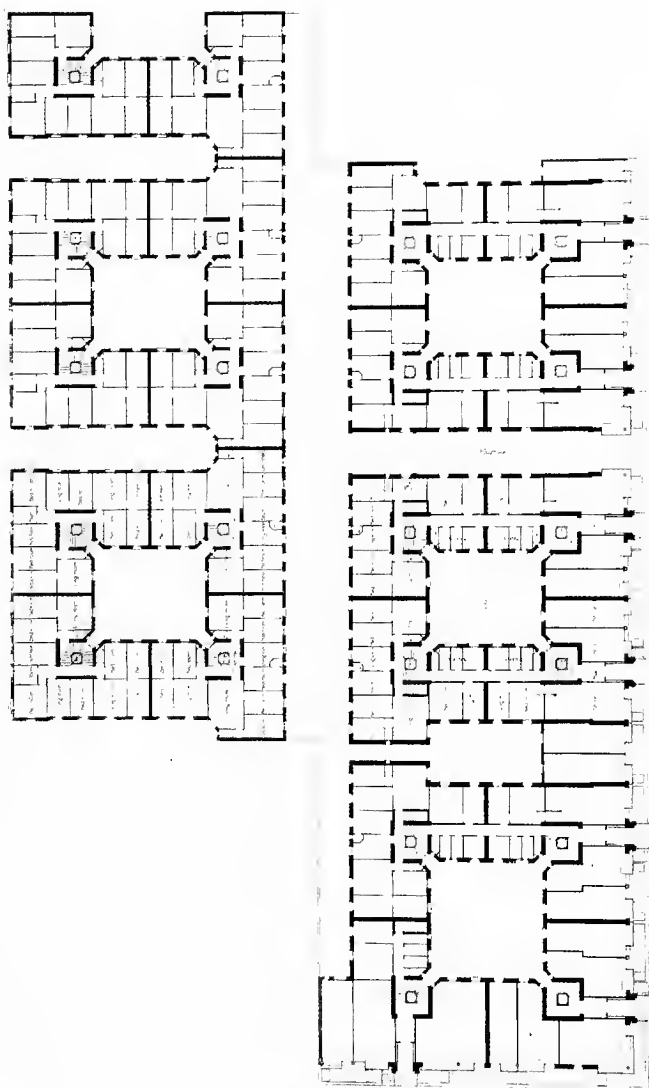


FIG. 34. PERSPECTIVE VIEW OF THE CONNECTICUT MUTUAL LIFE INSURANCE CO.'S BUILDING, HARTFORD, CONN.

The company's old building at the corner of Main and Pearl streets is shown at the right of the picture. The two upper stories are now being added and extensive alterations being made to the interior. The old building is of granite. The new building is of brick and limestone. The facade of the latter measures about 150 feet in length. The new building will cost about \$700,000, and the alterations and additions to the old building about \$200,000. Although there are more stories to a given height in the new building than in the old, an attempt has been made to bring the two as much as possible into harmony. To accomplish this, the main cornice and certain other lines were kept at the same level, and the two stories added to the old building were designed neither to clash with the old work nor to be out of keeping with the new.



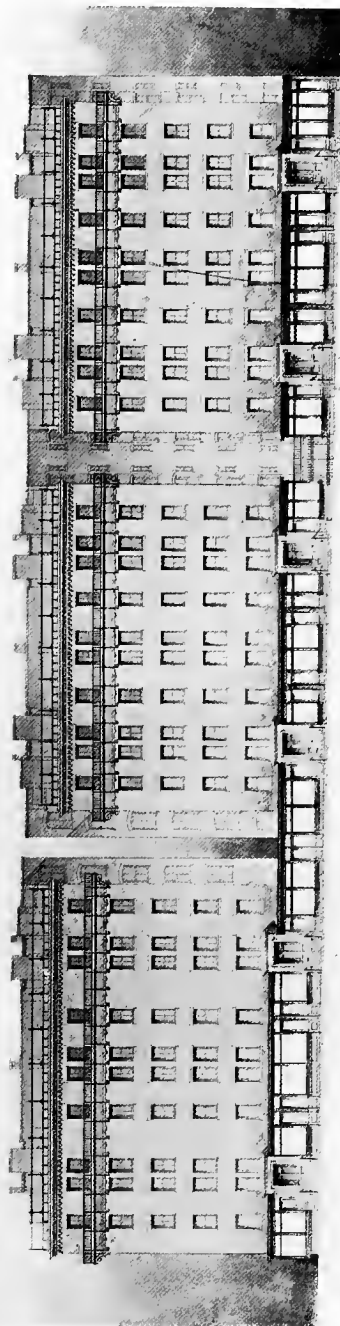


FIG. 36. FORTY-SECOND STREET ELEVATION OF BUILDINGS FOR THE NEW YORK FIREPROOF TENEMENT ASSOCIATION.

These buildings are built of light salmon-colored brick, with limestone dressings about the doorways. The window sills and lintels are of marble. There are 11 buildings in the group, containing 1,519 rooms, arranged in suites for 470 families. Each building has baths for the use of all the tenants, and 60 suites have private bathrooms.

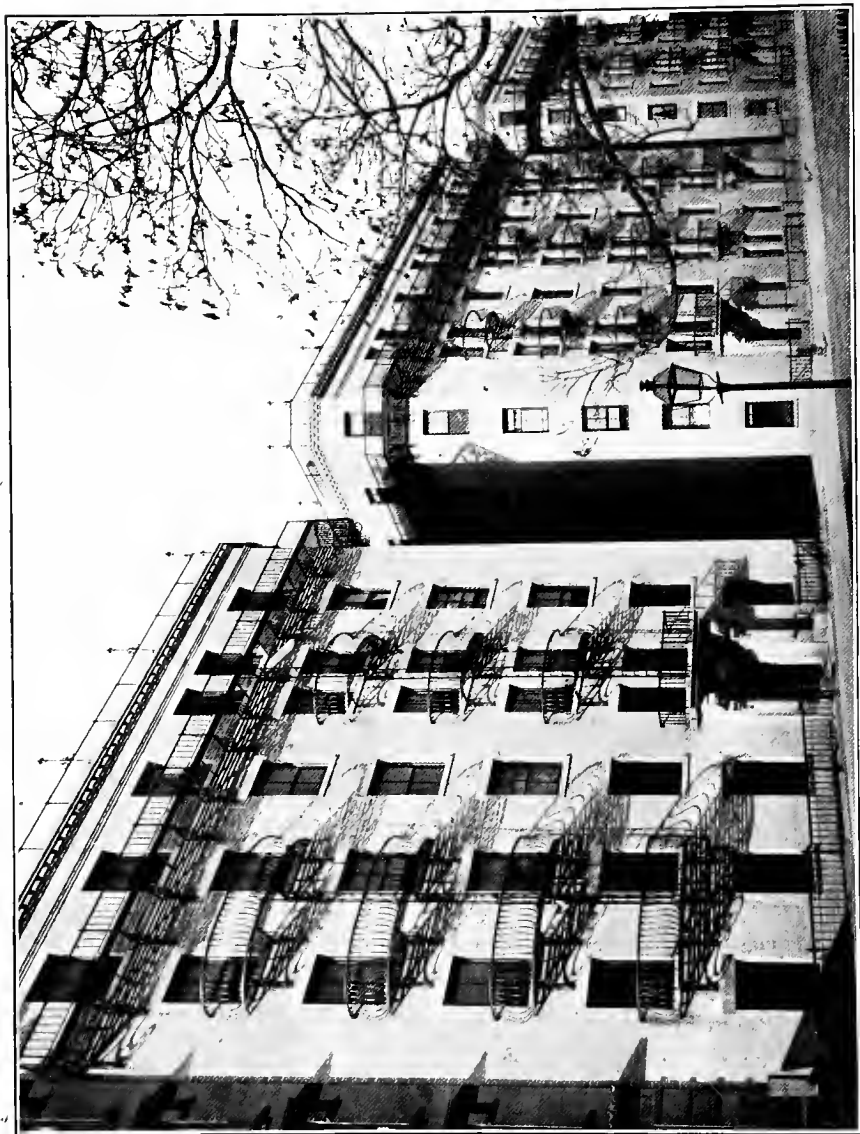


FIG. 37. MODEL TENEMENTS FOR THE CITY & SUBURBAN HOMES CO., 68TH AND 69TH STREETS, NEW YORK CITY.

These buildings cover 19 lots. They are not fireproof. The material is light brick and Indiana limestone. The plan is similar to that in the buildings of the New York Fireproof Tenement Association at 41st and 42d streets and 10th avenue.



FIG. 38. ENTRANCE TO MILLS HOUSE NO. 1, BLEECKER STREET, NEW YORK CITY.

This entrance is in the center of the Bleeker street front. It gives access to a broad hall well lighted from above. A ticket office is on either side of the hall, just beyond the vestibule. It is here that guests of the house obtain their rooms, very much as state rooms are engaged on boats. The charge is 20 cents per night, and it is needless to say that no credit is given, though many of the inmates have kept their rooms almost ever since the house was opened.



FIG. 39. MILLS HOUSE NO. 1, BLEECKER STREET, NEW YORK CITY.

The building is on Bleeker street, between Thompson and Sullivan streets. It is built of light brick with trimmings of Indiana lime-stone. The cornice is of copper, with brackets of wrought iron. As there are 1,500 bedrooms in the building, to say nothing of the public rooms, and as it was desired that each bedroom should have an independent window, one of the problems was to supply the windows without giving the building a jail-like appearance. How this was accomplished can be seen by looking at this picture in connection with the plan. It will be seen that in certain places the windows for six rooms are grouped so as to count almost as a single opening. In its construction this building is one of the most fireproof structures in the city, as scarcely any wood is used. There is no wooden trim around either windows or doors, and the floors are of cement.



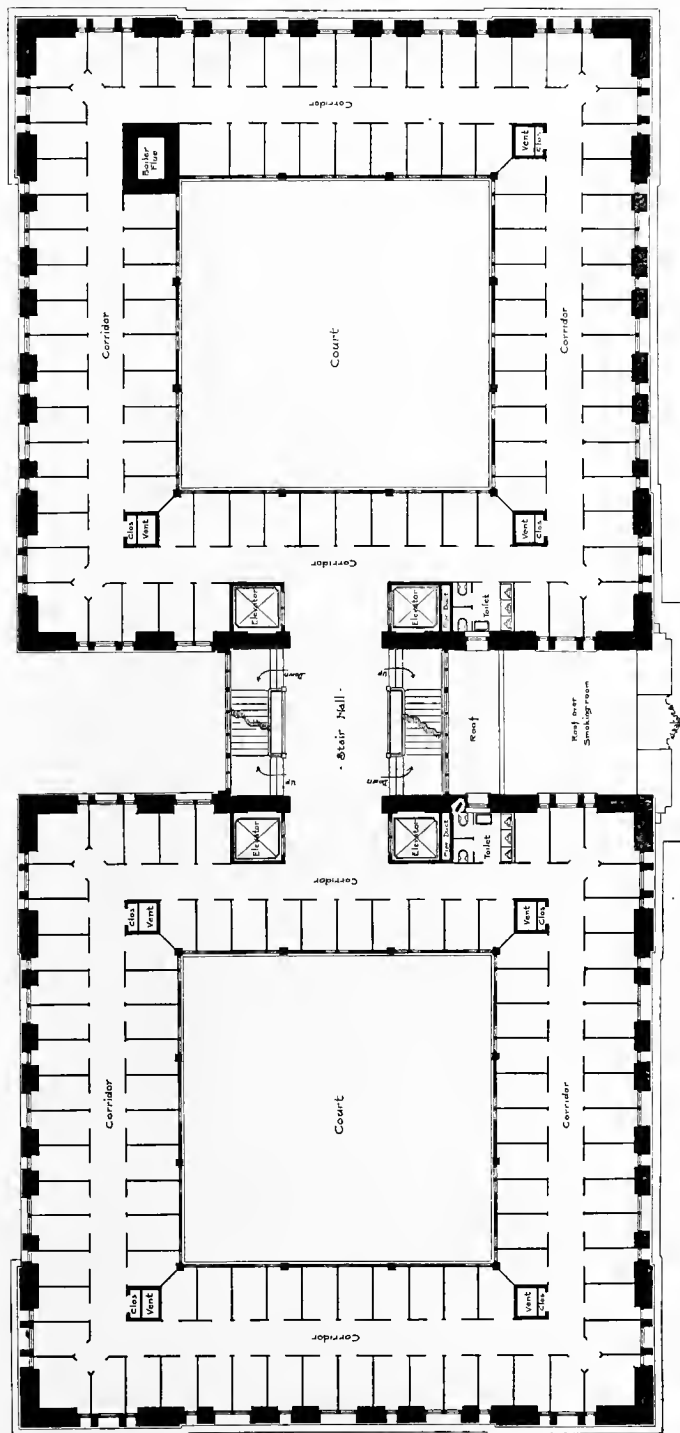


FIG. 40. TYPICAL FLOOR PLAN OF MILLS HOUSE NO. 1.

The building is 200 feet wide and 90 feet deep. It has streets on three sides and an open space 20 feet wide on the other. The two courts, which are each 50 feet wide, are covered with glass. The partitions between the rooms do not extend quite to the ceilings. Each room has a separate window either to the street or to the court. The ventilation is perfect. The fresh air is admitted through louvres under the skylight, and as it falls into the court it is drawn off through the windows on the court (which are provided with screens) and through the rooms to the corridors, from which it is discharged by the large vent flues, of which there are eight. The heat is supplied by steam pipes suspended from the ceilings of the corridors.



FIG. 41. VIEW OF ONE OF THE PARLORS OF MILLS HOUSE NO. 1.

This room is on the second story of the Bleecker street side. It connects with another room of the same size, and together they occupy the whole length of the Bleecker street front, a distance of two hundred feet. Few hotels in New York have a handsomer suite of parlors.



FIG. 42. DINING ROOM, MILLS HOUSE NO. 1.

The receipts from the restaurant amount to more than the receipts from the rooms. The average price of a meal is from ten to fifteen cents, so that one can obtain a room and board at about fifty cents a day. The dining room is over a hundred feet square, and has attached to it a very completely equipped culinary department.



FIG. 42. MILLS HOUSE NO. 2, RIVINGTON STREET, NEW YORK CITY.

Ernest Flagg and W. B. Chambers, Architects.

This building is situated at the corner of Rivington and Chrystie streets. It is built of the same kinds of materials as the Mills House No. 1, but is somewhat less than half its size. The internal arrangement is very much like that of the Bleecker street house. There are accommodations for 600 guests.



FIG. 44. CENTRAL COURT OF MILLS HOUSE NO. 2.

Ernest Flagg and W. B. Chambers, Architects.

This court, like the similar ones in the house No. 1, serves as a sitting room. The steps lead to the rooms, and the opening at the right of the picture gives access to the reading room. The floor is of glass set in iron frames, and gives light to the dining room, which is below.



FIG. 45. FIRE-ENGINE HOUSE IN GREAT JONES STREET, NEW YORK CITY.

The building occupies two lots. It is built of Indiana limestone and red brick. The cornice is of copper, supported by wrought-iron brackets. The brickwork is laid up with wide joints, and the face brick, as in all Mr. Flagg's later work, bonds with the rough brick backing. The brickwork of the coves at either side of the large window is an interesting and very fine specimen of bricklaying. The cost of the building was about \$40,000.

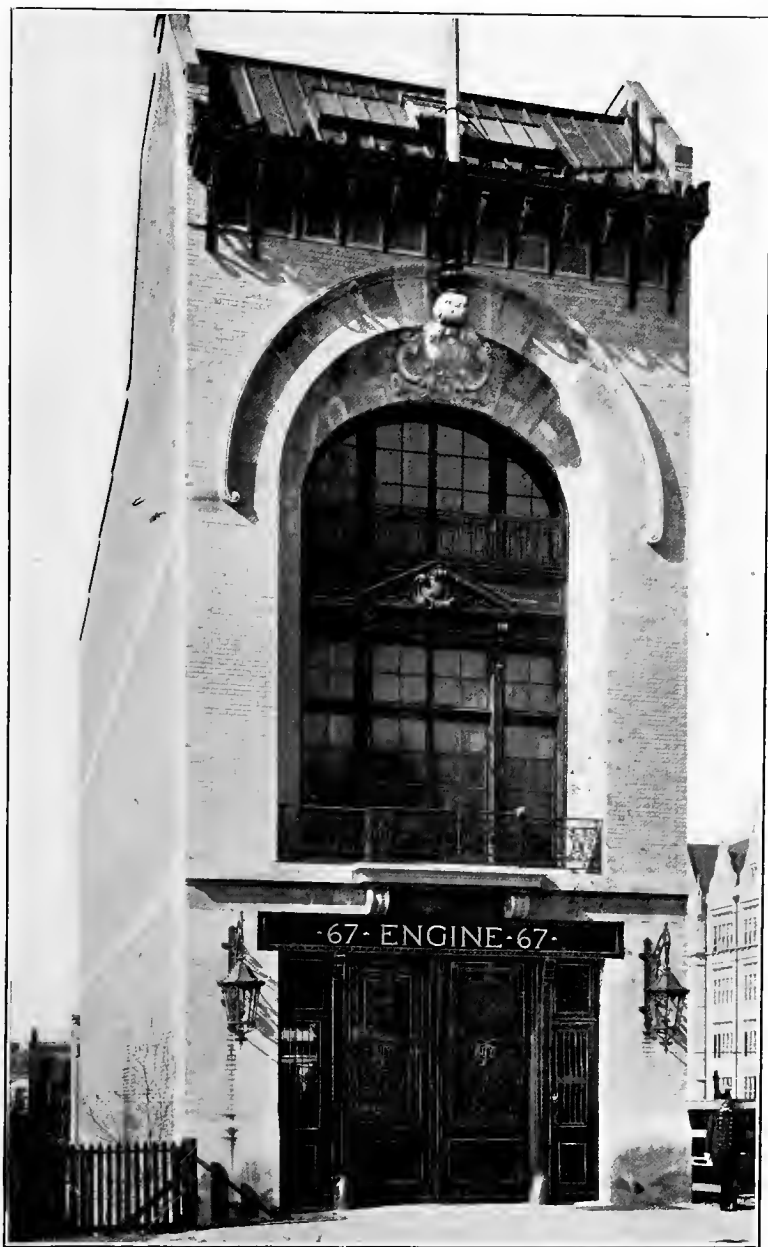


FIG. 46. FIRE-ENGINE HOUSE IN 170TH STREET.

Ernest Flagg and W. B. Chambers, Architects.

The building occupies a 25-foot lot. It resembles the Great Jones street house in design and construction, except that the brick is light yellow instead of red.

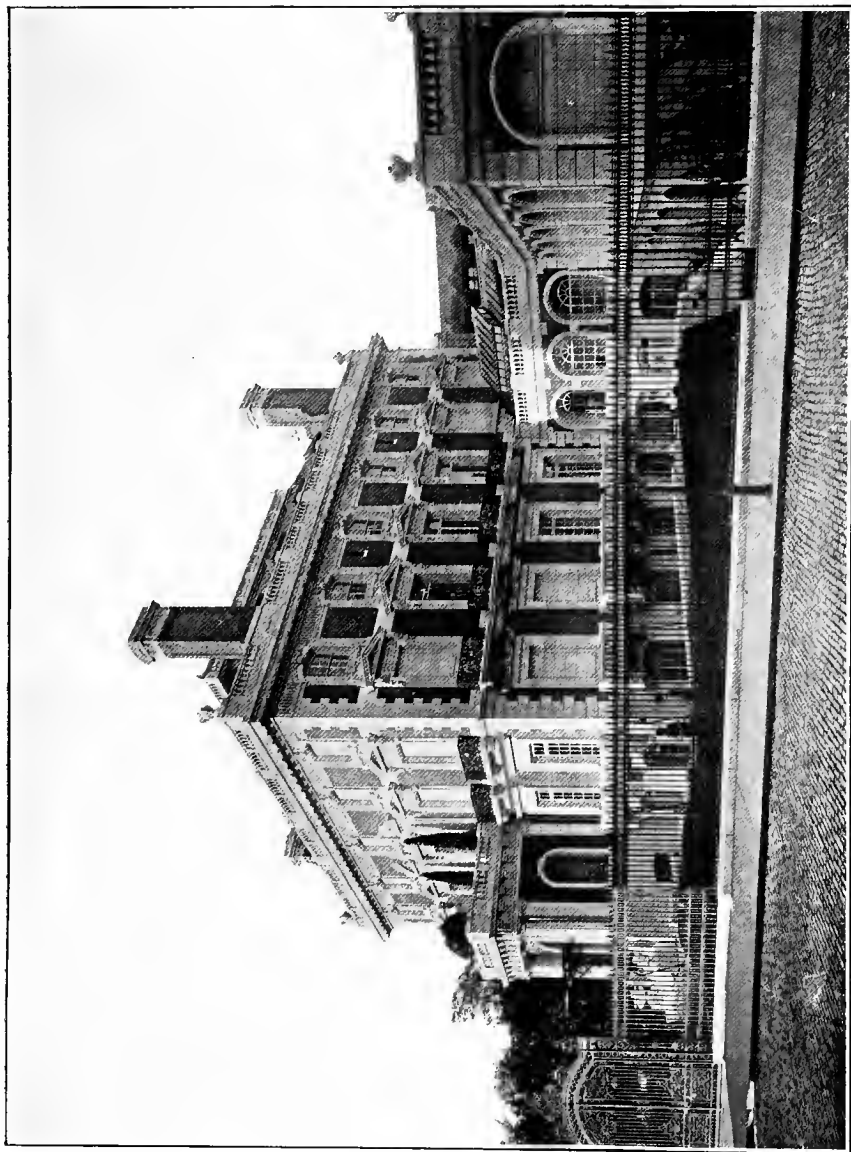


FIG. 47. RESIDENCE OF MRS. ALFRED CORNING CLARK, FROM THE SOUTH, RIVERSIDE DRIVE, NEW YORK CITY.

The materials used are white marble and red brick for the walls, and copper for the roofs. The house is finished front and back, inside and out, with equal care, and the workmanship and appointments are the best that money can buy. Probably no better built or ventilated house was ever put up. It was the desire of the owner that it should be plain, substantial and dignified.



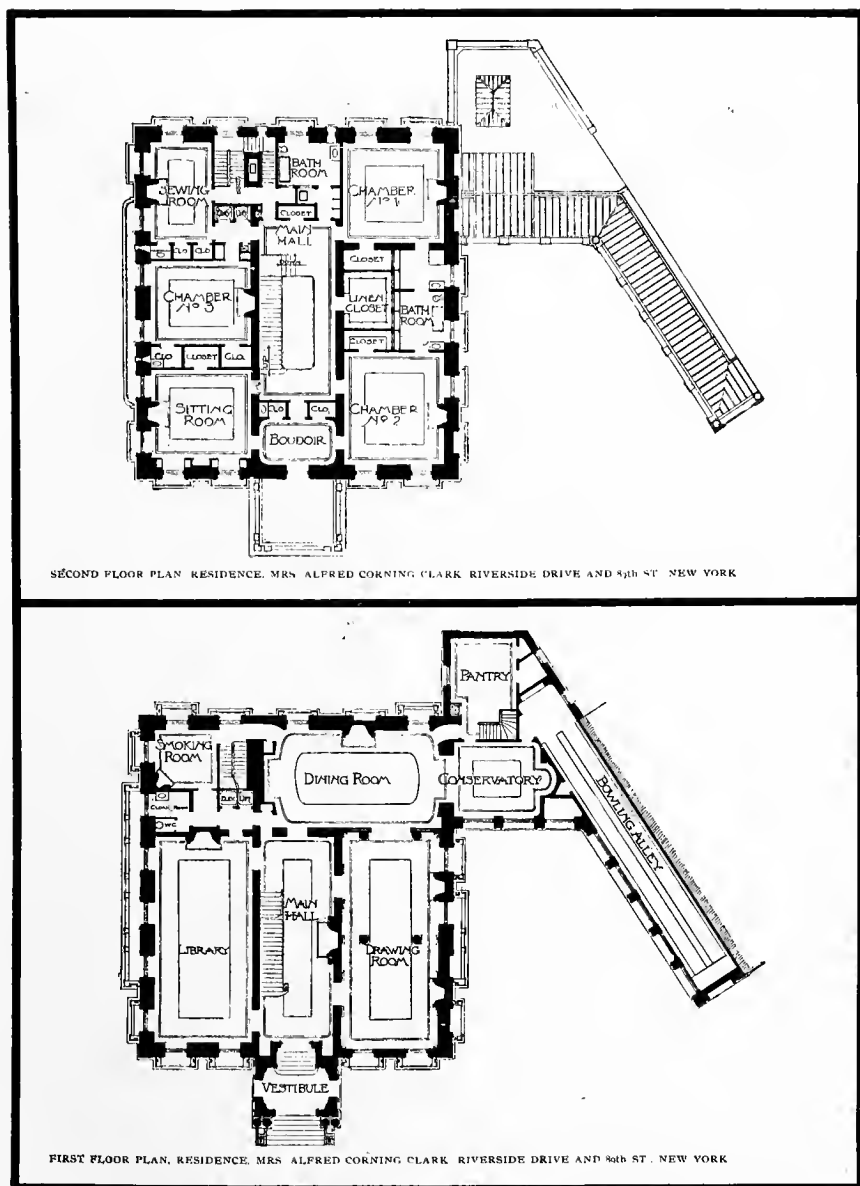


FIG. 48. PLANS OF A HOUSE FOR THE CLARK ESTATE, RIVERSIDE DRIVE AND 80TH STREET.

This house occupies a plot of ground of irregular shape, but whose principal dimensions are about 140 feet by 175 feet. The body of the building is about 70 feet wide and 80 feet long. The drawing room and library are each 22 feet wide and the hall is 18 feet wide.

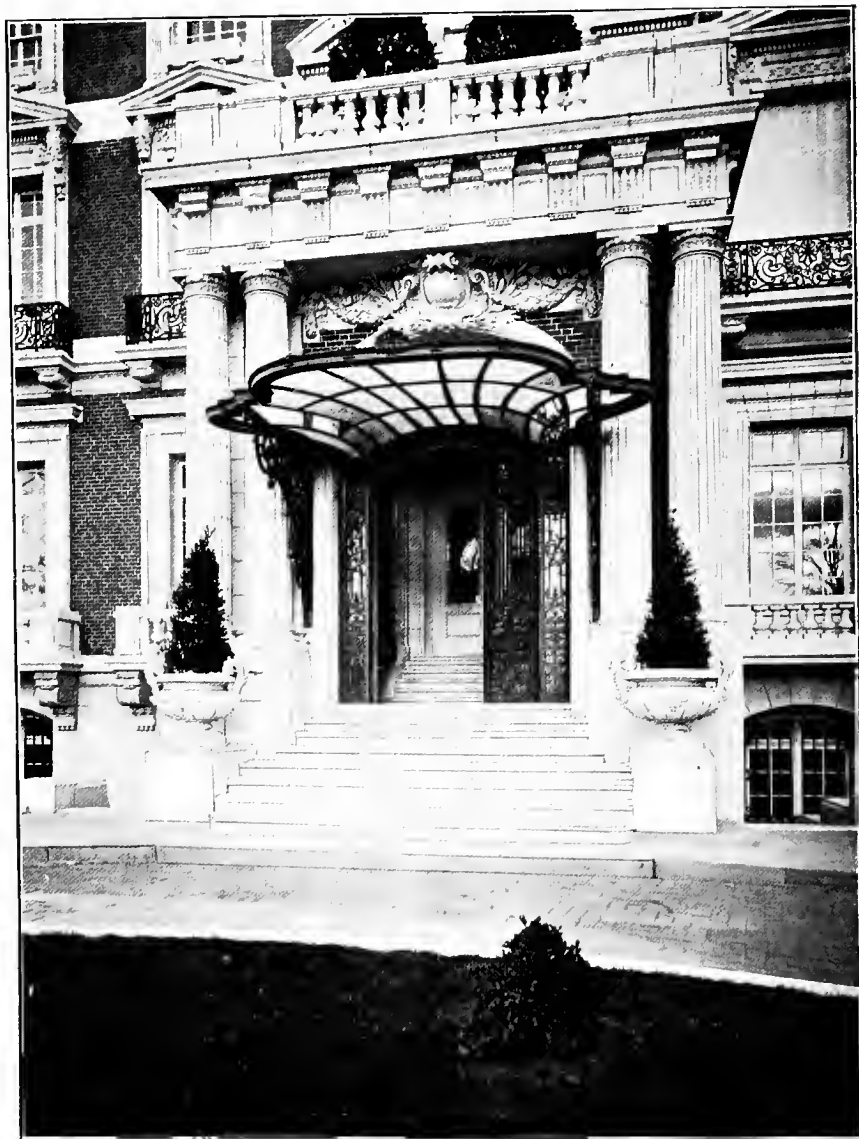


FIG. 49. MAIN ENTRANCE, RESIDENCE OF MRS. ALFRED CORNING CLARK, 89TH STREET AND RIVERSIDE DRIVE, NEW YORK CITY.



FIG. 50. SOLDIERS' MONUMENT.

New Britain, Conn.

Ernest Flagg, Architect.

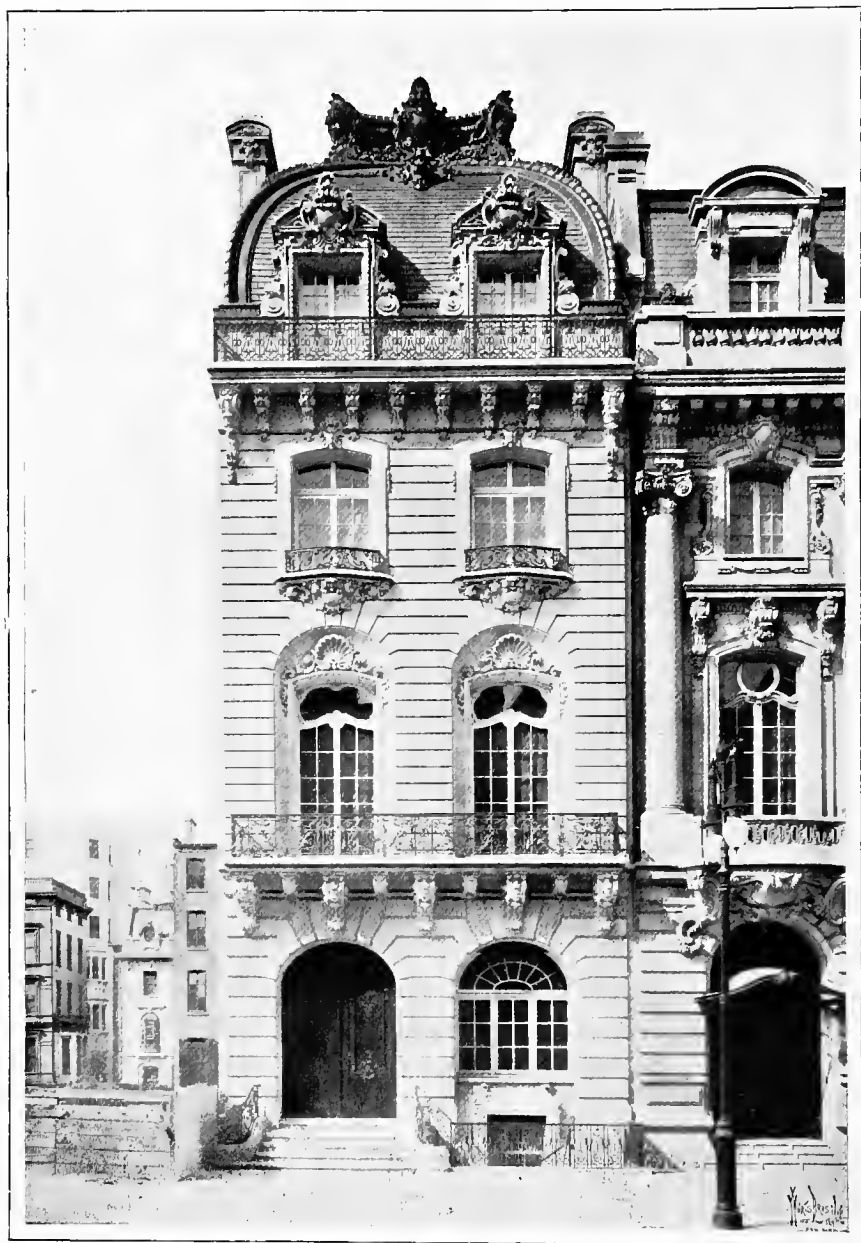


FIG. 51. RESIDENCE OF O. G. JENNINGS, ESQ., NO. 7 EAST 72D STREET, NEW YORK CITY.

Ernest Flagg and W. B. Chambers, Architects.

The facade is 28 feet wide, built of Indiana limestone. The roof is of copper and slate. The alternate stone courses on the lower story are vermiculated. The entrance doors are a beautiful example of wood carving.

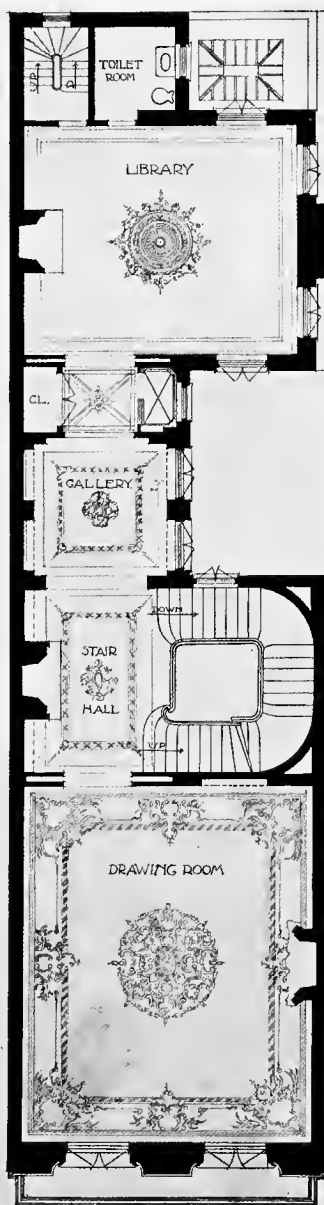


FIG. 52. PLAN OF THE MAIN FLOOR, RESIDENCE OF O. G. JENNINGS, ESQ.,  
NO. 7 EAST 72D STREET, NEW YORK CITY.

Ernest Flagg and W. B. Chambers, Architects.

The lot measures 28 by 100 feet. The drawing room is 25 feet wide and 31 feet long. The library is 20 feet wide and 24 feet long. Considering the size of the lot, the interior of the house appears very spacious. The building is fireproof.

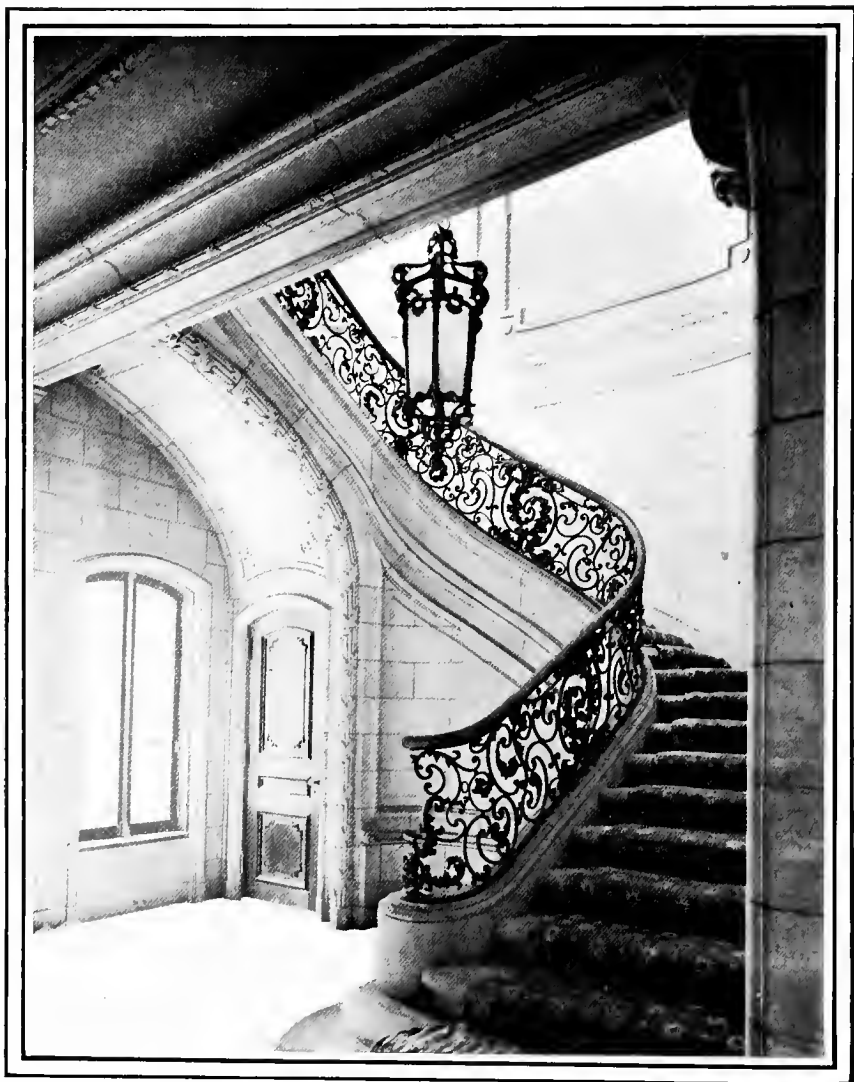


FIG. 53. STAIRCASE OF INDIANA LIMESTONE, RESIDENCE OF O. G. JENNINGS, ESQ.  
NO. 7 EAST 72D STREET, NEW YORK CITY.

Ernest Flagg and W. B. Chambers, Architects.



FIG. 54. DRAWING ROOM, RESIDENCE OF O. G. JENNINGS, ESQ., NO. 7 EAST 72D STREET, NEW YORK CITY.

Ernest Flagg and W. B. Chambers, Architects.



FIG. 55. HALL IN RESIDENCE OF O. G. JENNINGS, ESQ., NO. 7 EAST 72D STREET, NEW YORK CITY.





FIG. 36. ENTRANCE HALL AND STAIRCASE, RESIDENCE OF R. FULTON CUTTING, ESQ., 67TH STREET AND MADISON AVENUE, NEW YORK CITY.

The stairs, walls, fireplace and cornice are all of Caen stone, very beautifully carved. The railings are of wrought iron. The floor is of marble, the borders being inlaid in colors.

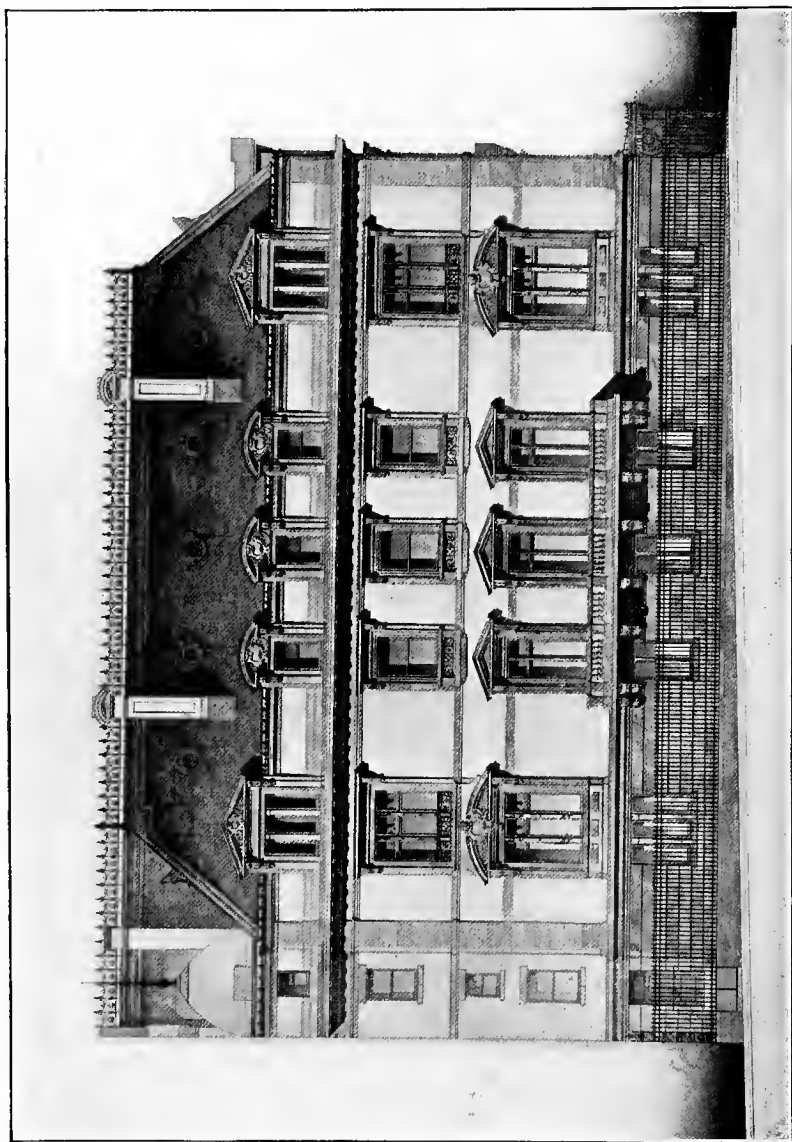


FIG. 57. MADISON AVENUE ELEVATION, RESIDENCE OF R. FULTON CUTTING, ESQ., 67TH STREET AND MADISON AVENUE, NEW YORK CITY.

The material is limestone and light brick for the walls. The roof is of slate and copper.

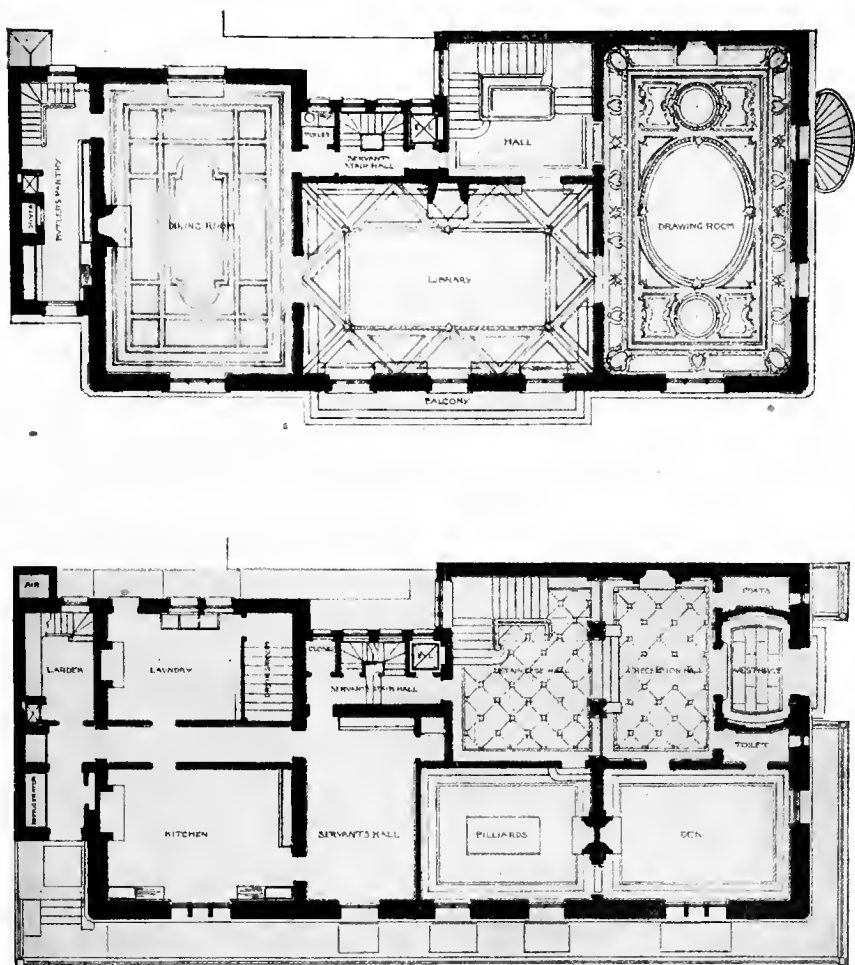


FIG. 38. PLANS OF RESIDENCE OF R. FULTON CUTTING, ESQ., 67TH STREET AND MADISON AVENUE, NEW YORK CITY.

The lot is 44 feet wide and 100 feet long. About one-half of the ground floor is given up to the kitchen and its dependencies. The entrance to this section is at the rear on Madison avenue. The main entrance is on 67th street. The den and billiard room adjoin the entrance hall on this floor.

On the first floor the three principal rooms are handsomely decorated and unusually large for the size of the house. The drawing room occupies the 67th street end, the dining room is in a similar position at the other end, and the library is between them on the Madison avenue side.

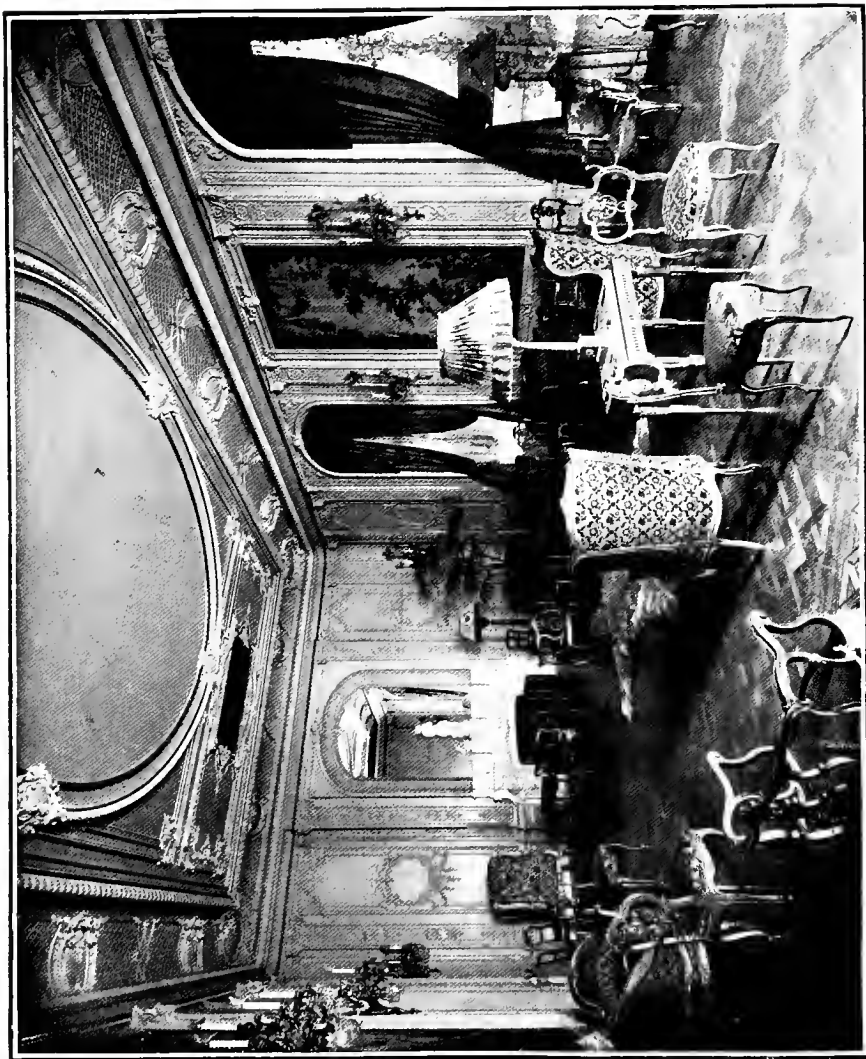


FIG. 39. DRAWING ROOM, RESIDENCE OF R. FULTON CUTTING, ESQ., 67TH STREET AND MADISON AVENUE.

This room is 24 feet wide and 40 feet long. The walls are of carved cherry covered with enamel of about the color of ivory. The ceiling is plaster and the floor is of oak. The mantel is of statuary marble.

The room is lighted by two windows on the side and by one large window at the end.



FIG. 60. LIBRARY, RESIDENCE OF R. FULTON CUTTING, ESQ., 67TH STREET AND MADISON AVENUE.

The room is 22 feet wide and 38 feet long. The woodwork is of oak, richly carved. The fireplace is of Sienna marble. The room is lighted by three windows on the side.



FIG. 61. RESIDENCE OF EDWIN GINN, ESQ., WINCHESTER, MASS.

The house is very finely located in spacious grounds, which nature and art have both combined to make attractive. The house is built of brick, the quoins are of white marble, and the trimmings of wood. The building is about 75 feet wide and somewhat less in depth.

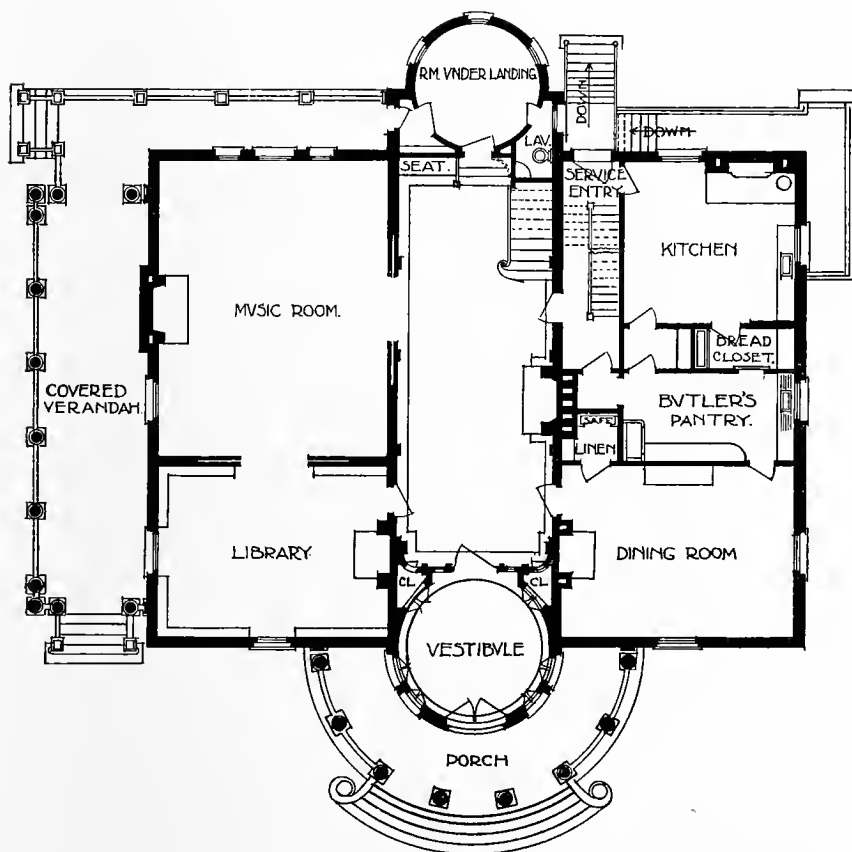


FIG. 62. PLAN OF GROUND FLOOR, RESIDENCE OF EDWIN GINN, ESQ., WINCHESTER, MASS.

The hall is 18 feet wide. The music room is about 25 feet wide and 35 feet long. The library and dining room are each 20 feet wide and 25 feet long. The circular vestibule, 18 feet in diameter, is an effective feature.



FIG. 63. HALL, RESIDENCE OF EDWIN GINN, ESQ., WINCHESTER, MASS.

The hall is 18 feet wide. The woodwork is covered with white enamel and the walls with red stuff. The hearth and facings of the fireplace are of Sienna marble; the floor is of oak, and the doors are of mahogany, as is also the stair rail. The small circular room under the stair landing is several steps below the level of the hall. A very attractive feature of the house is the unusually large stair landing above this room; it is semicircular in plan, with a broad seat below the windows.





FIG. 64. RESIDENCE OF F. G. BOURNE, ESQ., OAKDALE, L. I., NORTHEAST FRONT.

This front is approached by a broad straight avenue 1,700 feet long. The porte-cochere is reached by a circular drive in the courtyard between the projecting wings. The wing to the right of the courtyard contains the kitchen, and the brick wall to the right of this wing encloses the "basse-cour," beyond which can be seen the conservatory. The whole length of the house is about 300 feet. (See photographic illustration, Fig. 63.)



FIG. 65. RESIDENCE OF F. G. BOURNE, ESQ., OAKDALE, L. I.  
(Compare with Fig. 64.)

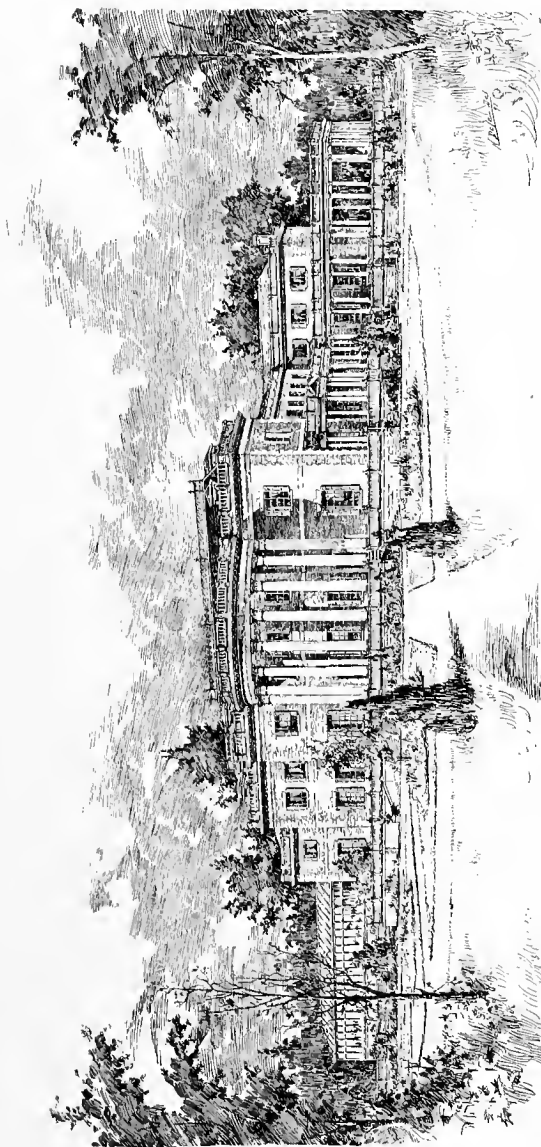


FIG. 66. SOUTHWEST FRONT, RESIDENCE OF F. G. BOURNE, ESQ., OAKDALE, L. I.

The house is built of brick with marble quoins, sills and lintels. The verandas are of wood. This side faces the water. The house stands on a terrace about five feet high. The grounds, which are very extensive, are tastefully laid out, and all the appointments of the place are on a scale of almost regal magnificence.

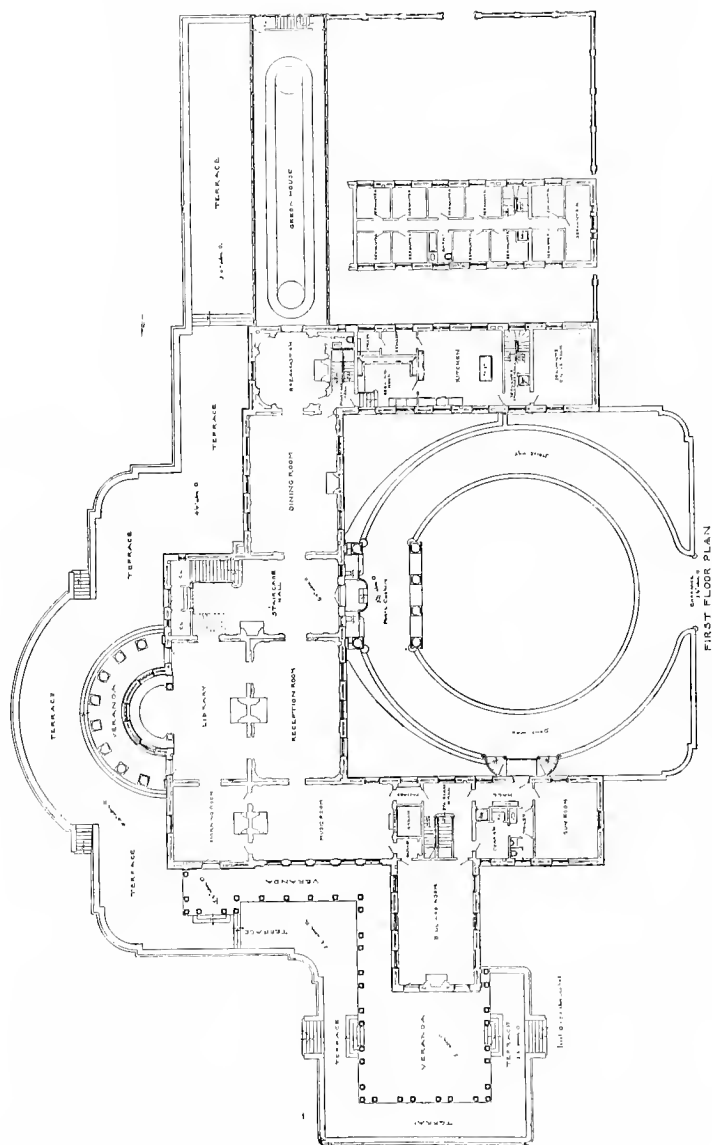


FIG. 67. PLAN OF RESIDENCE OF F. G. BOURNE, ESQ., OAKDALE, L. I.

The courtyard which precedes the main entrance is something over 100 feet square. The entrance hall is about 22 feet wide and 50 feet long. To the right of it are the library, drawing room, music room, morning room, etc.; to the left of it are the dining room, breakfast room and conservatory.

The plan is well arranged for entertainments, as the principal rooms are grouped so that they can all be thrown together, and the dining room, breakfast room and conservatory, being en suite, can be used for the supper. The right wing contains the kitchen and its dependencies on the ground floor; these open upon the basse-cour. The servants' rooms are also in this wing. The dining room, library and drawing room are each about 24 feet wide and 40 feet long. At the end of the music room is a chamber which contains an organ, the pipes of which extend through two stories. The left wing contains the gun room, billiard room, etc.; the lower floor of this wing contains a complete Turkish bath, with a large swimming pool.

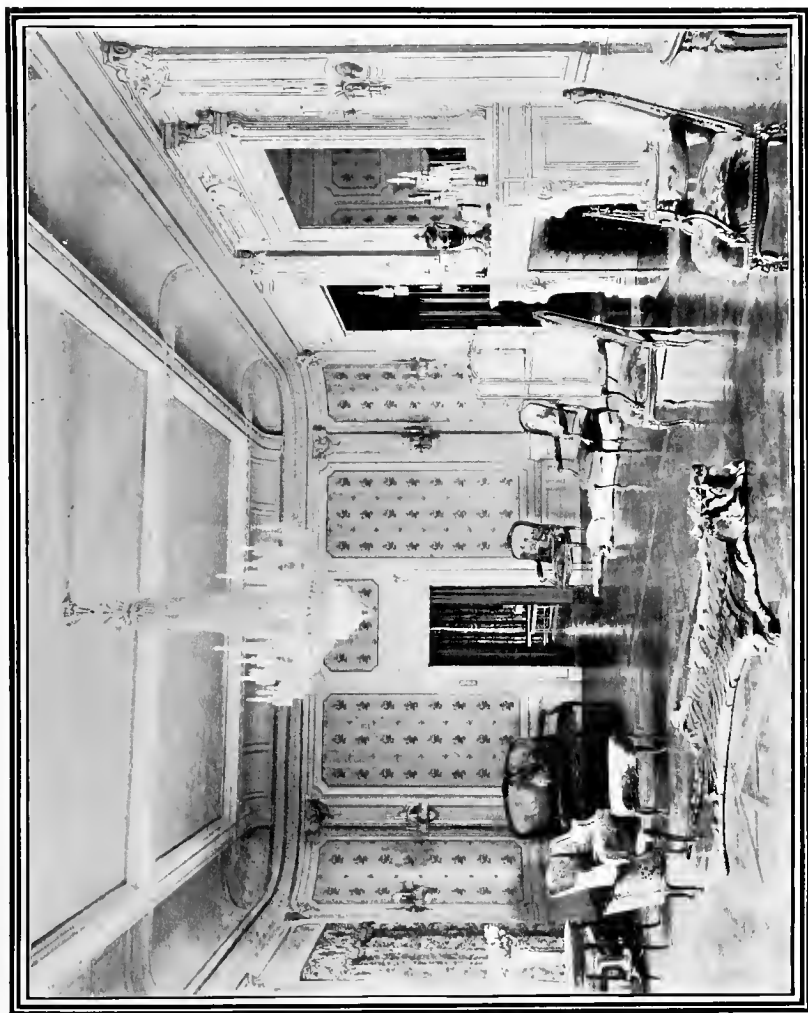


FIG. 68. DRAWING ROOM, RESIDENCE OF F. G. BOURNE, ESQ., OAKDALE, L. I.

The woodwork is of cherry, covered with white enamel; the floor is of oak, and the panels are covered with a rich brocade.

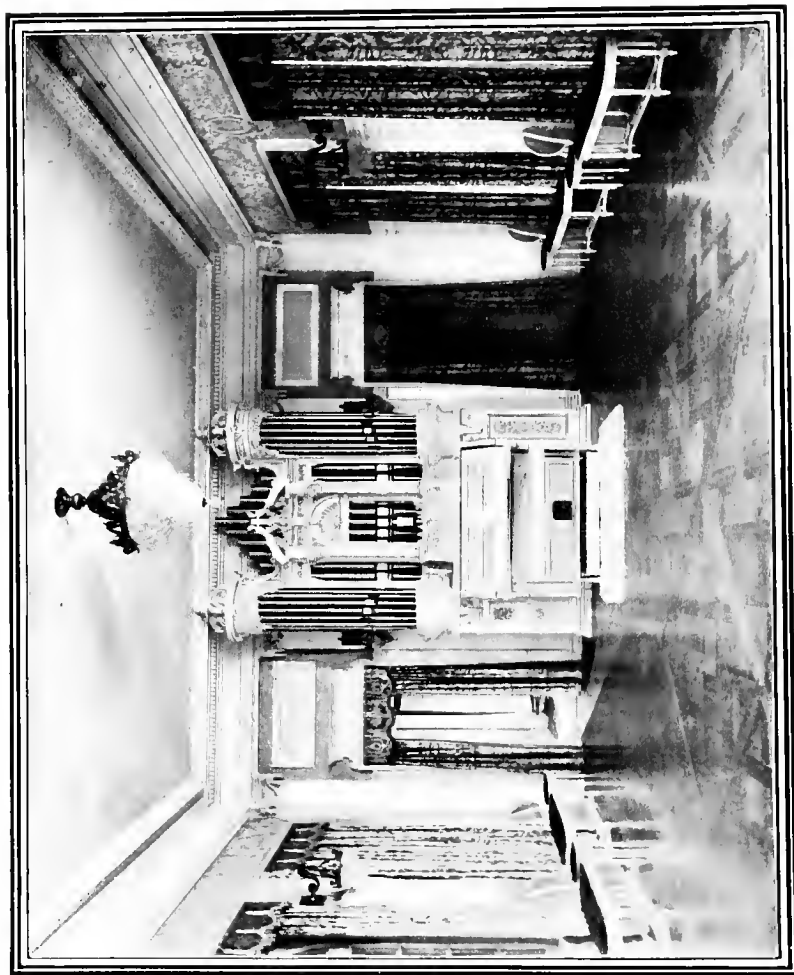


FIG. 69. MUSIC ROOM IN RESIDENCE OF F. G. BOURNE, ESQ., OAKDALE, L. I.  
The organ in this apartment is a very fine instrument, extending through two stories.



FIG. 70. MUSIC ROOM IN RESIDENCE OF F. G. BOURNE, ESQ., OAKDALE, L. I.

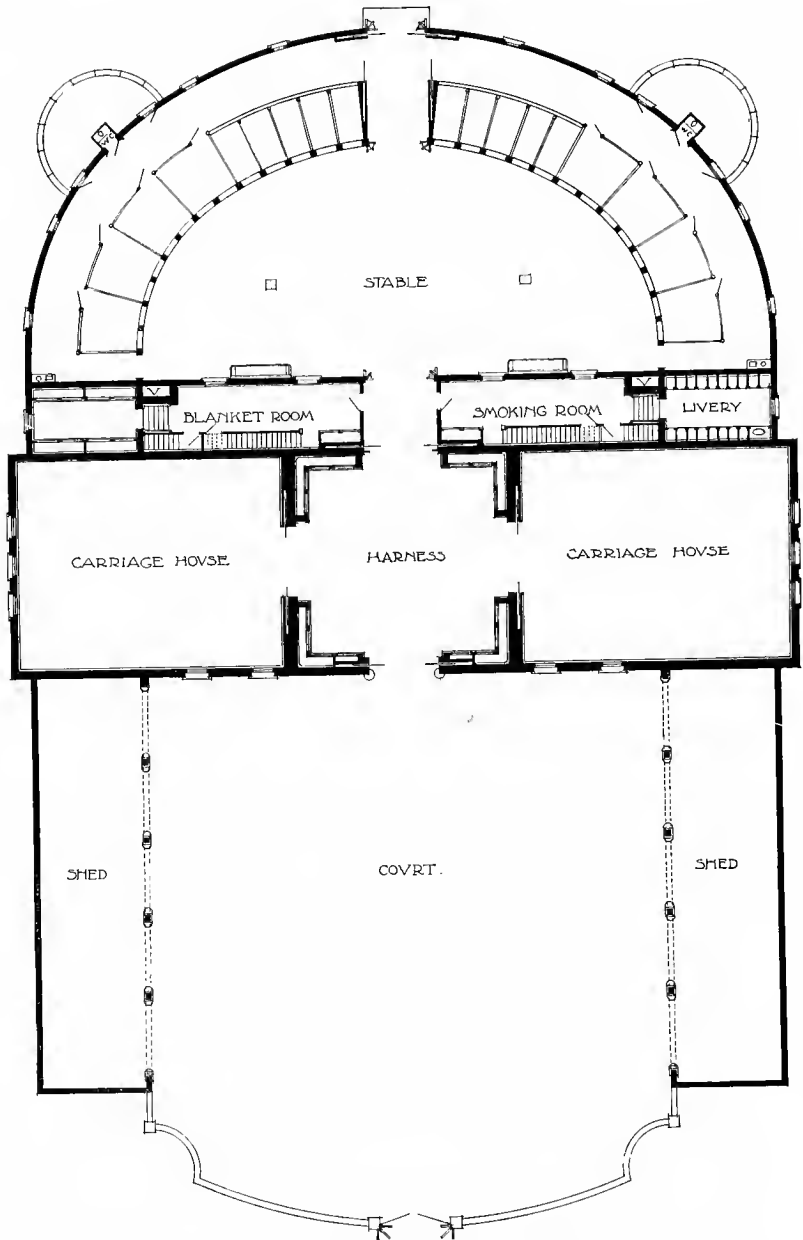


FIG. 71. STABLE OF F. G. BOURNE, ESQ., OAKDALE, L. I.

The building is about 165 feet wide and 200 feet long. The plan is unique. The harness room is of the whole height of the central tower. The upper harness cases are reached by a balcony. Each carriage house is 40 feet wide and 60 feet long. Beyond the harness room the great semi-circular room has an oak ceiling with a large skylight. The horses in the stalls face this room, and can be seen through openings in the arcade which separates it from the stables, so that each horse's head appears to be framed, so to speak, in a brick and marble opening. The effect is fine and unusual; indeed, the whole arrangement of the plan is novel and interesting.





FIG. 72. EXTERIOR OF STABLE OF F. G. BOURNE, ESQ.

The materials are red brick and white marble, to correspond with the house. The central tower contains the harness room.

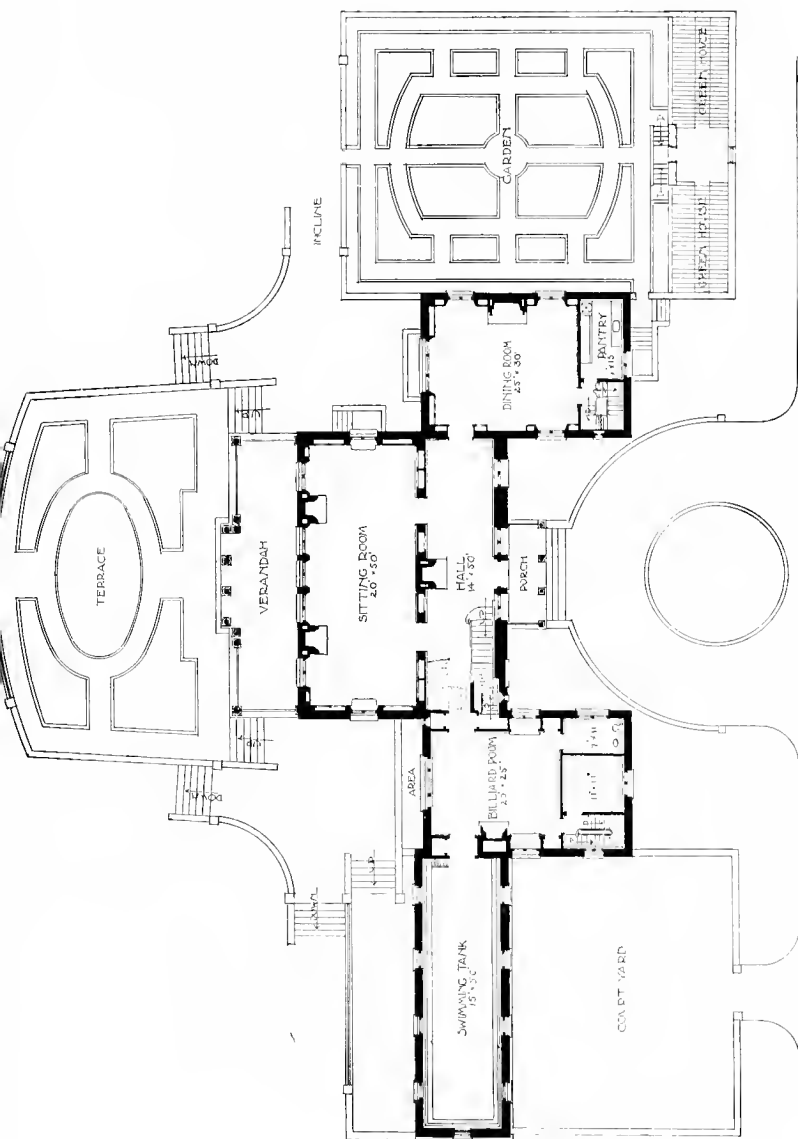


FIG. 72. FIRST FLOOR PLAN OF ERNEST FLAGG'S RESIDENCE, DONGAN HILLS, S. I.

The building stands on a ridge on the southeast side of Staten Island, overlooking the ocean at an elevation of about 200 feet above the sea. A lawn of several acres on the water side slopes gently from the house to the edge of the bluff. On the other side the crest of the ridge is covered by an oak grove, forming a fine background for the building. From the grove the ground inclines gently to the foot of a valley, where there is a brook and artificial pond. On this slope is the orchard, the stable with its enclosures, and an extensive garden laid out with geometrical walks and borders.

The kitchen is under the dining room and the laundry under the billiard room, but the floors of both these rooms are above the level of the ground, the courtyard and garden being sunken. On the second floor there are two bedrooms 20 x 22 feet, one 17 x 20 feet, and two 17 x 12 feet. Each of these has its own bath room. The servants' quarters are over the wings. On the third floor there are six bachelor bedrooms.



FIG. 74. VIEW OF THE RESIDENCE OF ERNEST FLAGG, ESQ., FROM THE LAWN ON THE WATER SIDE, DONGAN, S. I.



FIG. 75. HALL, RESIDENCE OF ERNEST FLAGG, ESQ., DONGAN, S. I.



FIG. 76. LIVING ROOM, RESIDENCE OF ERNEST FLAGG, ESQ., DONGAN, S. I.

The length of this room is exaggerated in the photograph. It is 50 feet long and 20 feet wide. There are five windows on one of the long sides opening upon the piazza and terrace. From these windows there is a superb view of the ocean. One of the end windows overlooks the rose garden, and the other a terrace.

At either end of the room, bookcases, with glass doors, are set into the wall. The woodwork, except the doors, is painted with white enamel. The doors are of mahogany. The wall surface above the wainscoting, the hangings and furniture covering are green. There are two fireplaces and two doors to the hall. The height of the story is about 11 feet.



FIG. 77. CORNER IN HALL, RESIDENCE OF ERNEST FLAGG, ESQ.



FIG. 78. WATER TOWER AND STABLES, RESIDENCE OF ERNEST FLAGG, DONGAN, S. I.



FIG. 79. WATER TOWER, RESIDENCE ERNEST FLAGG, ESQ.

## THE NAVAL ACADEMY DESIGNS.

Regarding the drawings of the Naval Academy herewith given, it is proper to say that some of them represent modifications in the original plan which have come about through further study and changes necessitated by the increase in size required for the marine engineering course. Originally the marine engineering course was followed only by cadet engineers; now it is taken by all the cadets, and this change involved a much larger building. The building is located directly back of the Academic Building on the original plan. The Library and offices for the administration were to have been in the Academic Building. As the new Marine Engineering Building would shut in the Library, it was thought better to make a separate building for it, and place it near the basin on the north-east side of the campus directly opposite the chapel.

The Officers' Mess, which was to have been at the right of the chapel as one faces the campus, has been placed at the end of the main row of officers' houses.

The Administration Building was to have been at the left of the Chapel as one faces it from the campus. This has now been placed to the right of the Chapel. The building to the left is the residence of the superintendent. The superintendent was to have occupied an old Colonial building which was formerly the residence of the governors of Maryland, and which it was proposed to restore to its original condition, but when the work was commenced it was found that the walls were so poorly built that it was impracticable to do anything with it.

The main entrance to the superintendent's residence is from a courtyard on the southeast, arranged very much like the Petit Trianon at Versailles. On the ground floor is the main vestibule, staircase hall, office for the superintendent, the kitchen and laundry with their dependencies. On the first floor, which can be entered from the terrace in front of the house, are the principal rooms of entertainment. The dining-room is at the southwest side and is circular. The second and third floors contain the bedrooms.

The Administration Building at the other side of the chapel resembles the superintendent's residence in appearance, and the size is identical, but it has no courtyard, and the architect has given it more the appearance of a public building, while preserving the same bulk and general outline. The circular room on the first floor, which corresponds to the dining-room in the superintendent's residence, is the meeting room for the Academic board.



In re-arranging the group of buildings which occupy the former site of the Academic Building, the architect has made the most of the new Marine Engineering Building. In order that this may be seen from the campus he placed the Academic Building (now greatly reduced in size) on one side of the court, and the Physics and Chemistry Building on the other, retaining the Observatory Tower in its original place, but detaching it from all the other buildings. We show a plan of this group, and an elevation showing the ends of the Physics and Chemistry Building, the Academic Building, the Observatory Tower, and the Marine Engineering Building in the background. This latter building is at a lower level, there being a road between it and the group just mentioned. As this Marine Engineering Building contains shops, storage rooms, etc., it is somewhat subordinated to the two buildings which stand at either side of the courtyard, and which are used strictly for academic purposes. This subordination is effected by placing it at a lower level than that of the main courtyard, from which it is separated by a sunken road.

The Library, of which plans and elevations are given, is to stand in the center of the river side of the campus. On the side towards the campus, the building is preceded by a terrace from which the main portico is reached. This opens upon a lobby, which contains a staircase at either end. Beyond the lobby is the main reading-room which overlooks the river. The stack rooms project from the main body of the building on either side. On the second floor is to be the rooms of the Naval Institute.

It only remains to speak of the Officers' Mess. This is a long narrow building at the end of the main row of officers' houses and opposite the gymnasium. It has been moved from the place originally assigned for it near the Physics and Chemistry Building, to the water side of the southeast end of the grounds, at the southwest of the parade ground. The football field will be between the gymnasium and the officers' mess. The Officers' Mess is used somewhat as a club house, and contains a billiard room, reading room, card room and various dependencies on the ground floor, while on the two floors above are suites for bachelor officers and for guests.

The gymnasium plan is not yet sufficiently worked out for illustration. These notes with others accompanying the illustrations will make clear the purpose and general scheme of the extensive and noble group of buildings.

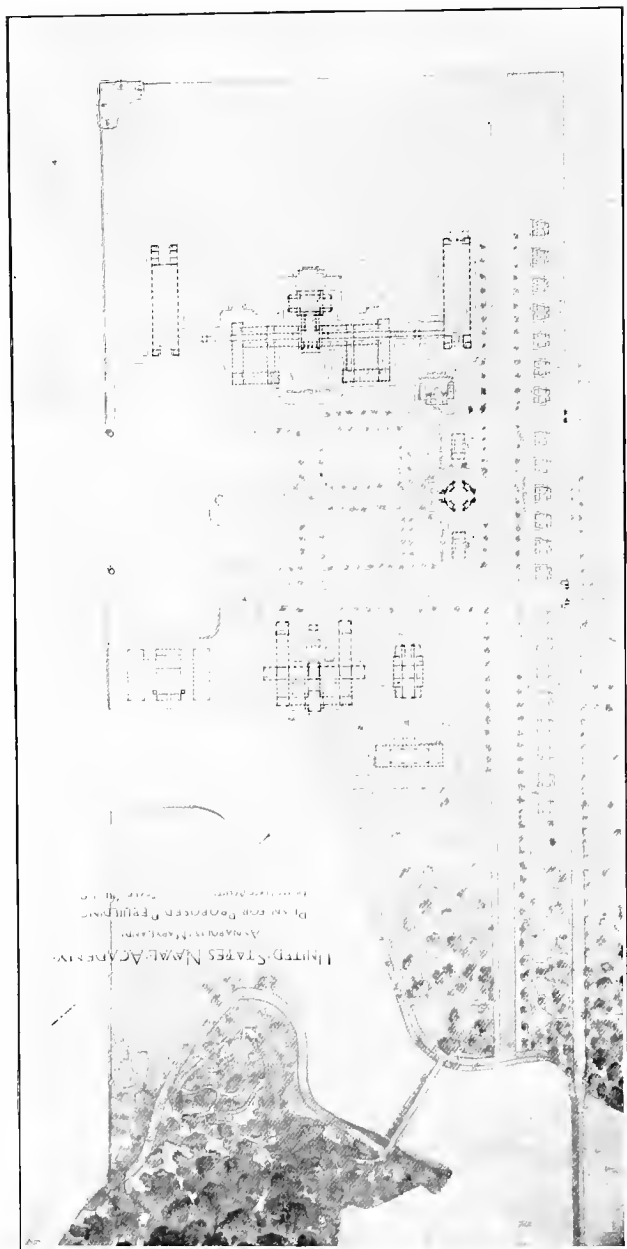


FIG. 80. GENERAL PLAN, NAVAL ACADEMY, ANNAPOLIS, MD.

The plan of improvements contemplates the building of extensive sea walls, the reclaiming of several acres of land now under water, and the almost complete rebuilding. The town of Annapolis lies to the southwest of that part of the ground shown on the plan, Chesapeake Bay to the southeast, the Severn River on the northeast, and other property of the Government on the northwest. The campus occupies the central part of the plan. Upon it face the Academic building, the Physics and Chemistry buildings, the Administration building, the Chapel, the Officers' Mess, the Cadet Quarters building, and the superintendent's or commanding officer's quarters. The latter, a Colonial building, was formerly the official residence of the Governors of Maryland; it is to be restored as far as possible to its original condition. This, and old Fort Severn—shown on the plan by a circle on the parade ground—are the only relics of the old academy which are to remain. The power-house group and the boat house face the basin, which opens upon the Severn River. The officers' quarters are in a row just within the wall which separates the academy from the town. The armory lies to the southwest of the cadet quarters, and faces upon the parade ground.

Congress has authorized contracts for more than \$8,000,000 for this work.

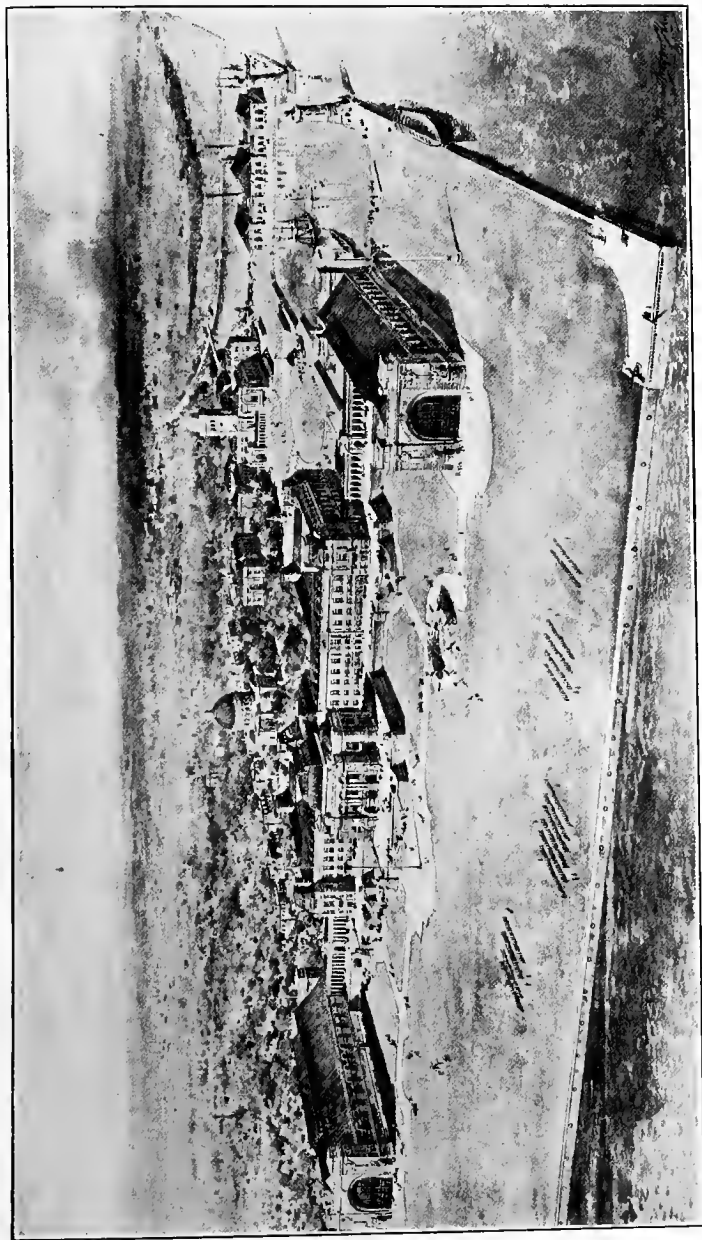


FIG. 81. GENERAL VIEW OF THE BUILDINGS FROM THE SOUTHEAST, ANNAPOLIS, MD.

In this picture the observer is supposed to be stationed some distance out on and above the bay. In the foreground is the parade ground, with the new practice battery on the point. Old Fort Severn, which used to be on the point before the flats were reclaimed, is shown on the parade ground just to the right of the center. It is a curious little circular fort, with immensely thick walls. The large central building facing the parade ground is the cadet quarters. It is connected on the right by a colonnade with the boat house, and a similar colonnade on the left connects it with the armory. The central projecting mass contains the mess hall below and the memorial hall above. The quarters stand on a terrace, which overcomes the difference in level between the made ground of the parade ground and the natural soil of the campus. The building with a tower, beyond the cadets quarters, is the Academic building; to the left of it is the Physics and Chemistry building, and to the right of it on a pier is the power-house group.



FIG. S2. GENERAL VIEW OF THE CADET QUARTERS, BOAT HOUSE AND ARMORY FROM THE DOME OF THE CHAPEL, ANNAPOLIS, MD.

The building at the extreme right is the armory. It is 100 feet wide and 500 feet long. This was the first of the new buildings to be started, and it is now nearing completion.

The boat house, on the other side of the cadet quarters, is of precisely the same dimensions, and is at present well under way. The boat house and armory each cost about \$400,000. The construction of the cadet quarters is just about to begin.

This bird's-eye view gives a good idea of the general arrangement of the building, as it shows the two enclosed courts, each 100 feet square, and the main Cour d'Honneur, which precedes the principal entrance.

At the extreme left of the picture is the basin, partly cut off from the Severn River by piers, which are terminated by stone beacons, one of which appears in the picture.



FIG. S3. THE MAIN ENTRANCE TO THE CADET QUARTERS, ANNAPOLIS, MD.

This design as here illustrated is in the nature of a preliminary study, and it has been very much modified and improved in the working drawings. The three arched openings have given place to square-headed doorways, a great horseshoe-like ramp has taken the place of many of the steps, and the general unstudied appearance of the sketch has disappeared.

This entrance gives access to the great entrance hall or vestibule and the monumental stairway. Both these apartments, like the memorial hall and the mess hall, are to be lined with Indiana limestone. From the vestibule a broad flight of marble steps leads to the memorial hall. Here are to be placed a fine pair of bronze doors by the Sculptor Bartlett, a gift to the academy by Robert M. Thompson, a former graduate.

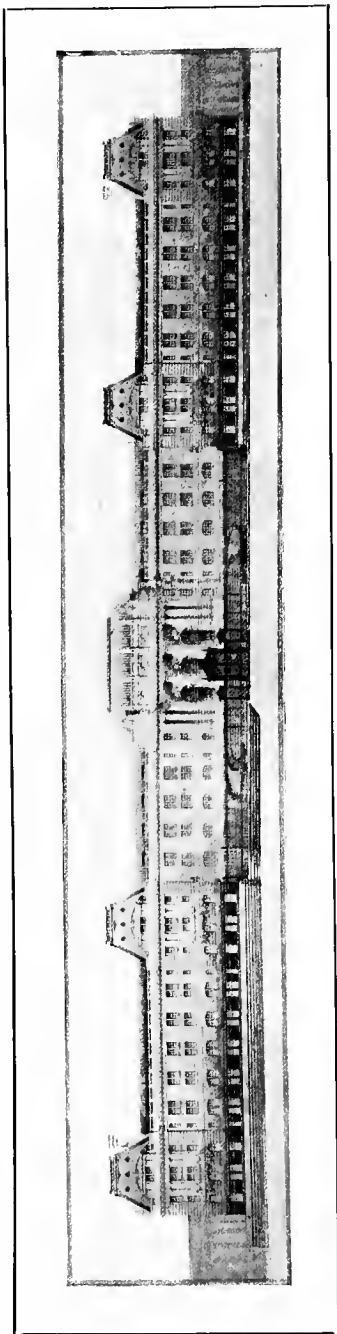


FIG. 84. ELEVATION OF CADET QUARTERS ON THE SIDE TOWARD THE CAMPUS, ANNAPOLIS.

This is the largest of the contemplated buildings. Its extreme length is about six hundred feet, and its extreme breadth is about four hundred feet. It contains accommodations for five hundred cadets. The suites are each for two men, and consist of two bedrooms of about 8 feet by 16 feet, a study about 16 feet by 16 feet, an entry closet and shower bath. The central part contains a grand vestibule and stair hall.

The building, like all the others, is fireproof, and is to be built of brick with granite trimmings. The roofs are of copper and slate. A monumental grille will separate the recessed court from the campus.

The estimated cost of the building, with the terraces and colonnades which connect it with the boat house and armory, is about \$3,000,000.



FIG. 85. INTERIOR VIEW OF THE MEMORIAL HALL, ANNAPOLIS, MD.

This is the chief room of the cadet quarters. It is about 150 feet long and 60 feet wide. The walls up to the top of the main cornice are to be of Indiana limestone. The vault is of concrete, ornamented with relief work in stucco. This will be in a certain sense the show-room of the Institution, for here are to be housed that splendid collection of relics which has been accumulating for years at the academy. Its walls will be decorated with flags, trophies and pictures, while numerous cases will contain arms, historic documents and other mementoes connected with the navy from its foundation. Incidentally, the hall is to be used as the ball room, and as it opens upon the grand staircase hall and vestibule, which are of almost equal area, it will serve admirably for the purpose. The dining or mess hall below it is of the same size and shape.



FIG. 86. THE CHAPEL.

The general plan of the building is a Greek Cross, intersected by two circles. The inner one forms the rotunda, which is about 60 feet in diameter. This sketch was a preliminary study, and the design as it is being carried out has been greatly improved and modified, though the dimensions and general form are the same.

The chapel has a seating capacity of about one thousand. Below the main floor is a crypt, which it is proposed shall contain catacombs and be used as the last resting place of naval heroes. Thus the building will become the Pantheon of the Navy.

This building has been given a place of honor in the general plan, being placed at the center of one side of the campus, on the main transverse axis of the plan, and on the highest land within the enclosure. By its height and form it will, to a certain extent, be the dominating feature of the design. It will be constructed almost entirely of granite. The estimated cost is \$400,000.



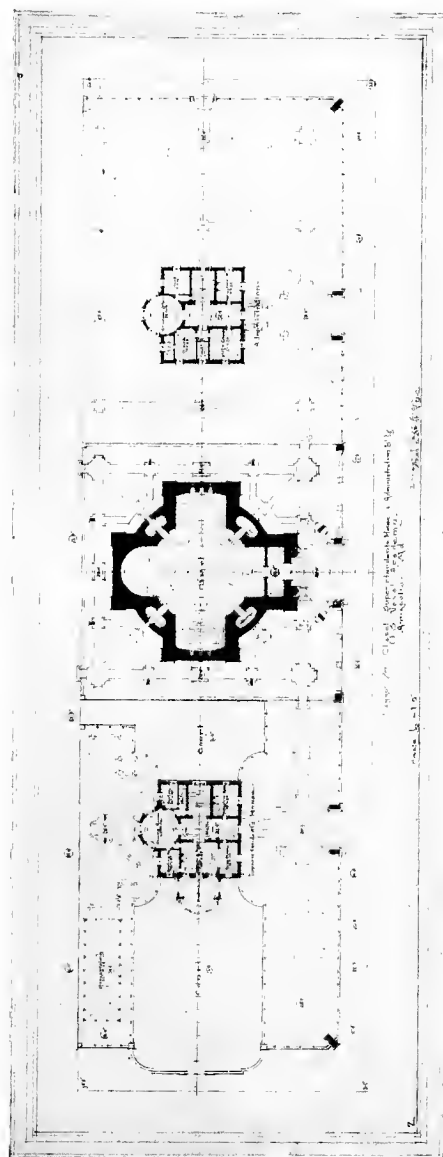


FIG. S7. PLAN OF CHAPEL, SUPERINTENDENT'S HOUSE AND ADMINISTRATION BUILDING, ANNAPOLIS, MD.

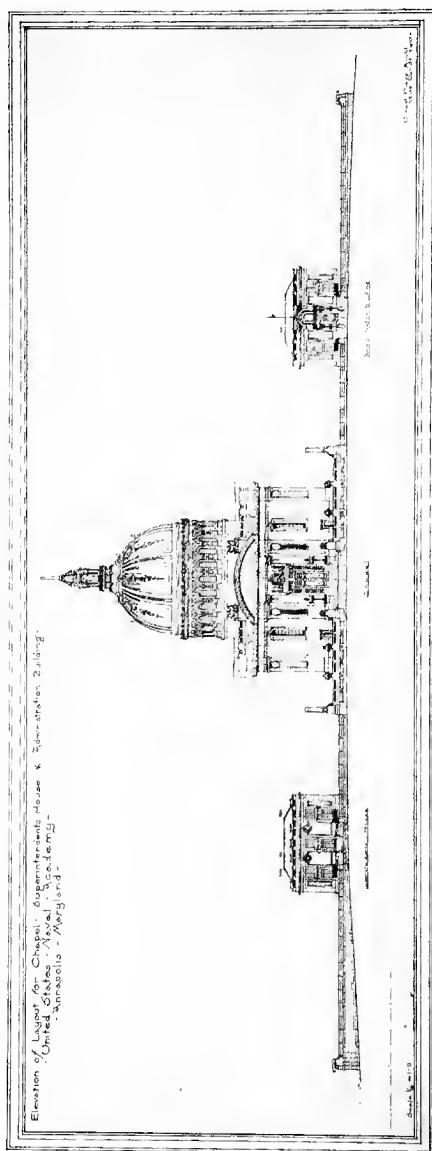


FIG. 88. ELEVATION SHOWING CHAPEL, SUPERINTENDENT'S HOUSE AND ADMINISTRATION BUILDING.  
ANNAPOLIS, MD.

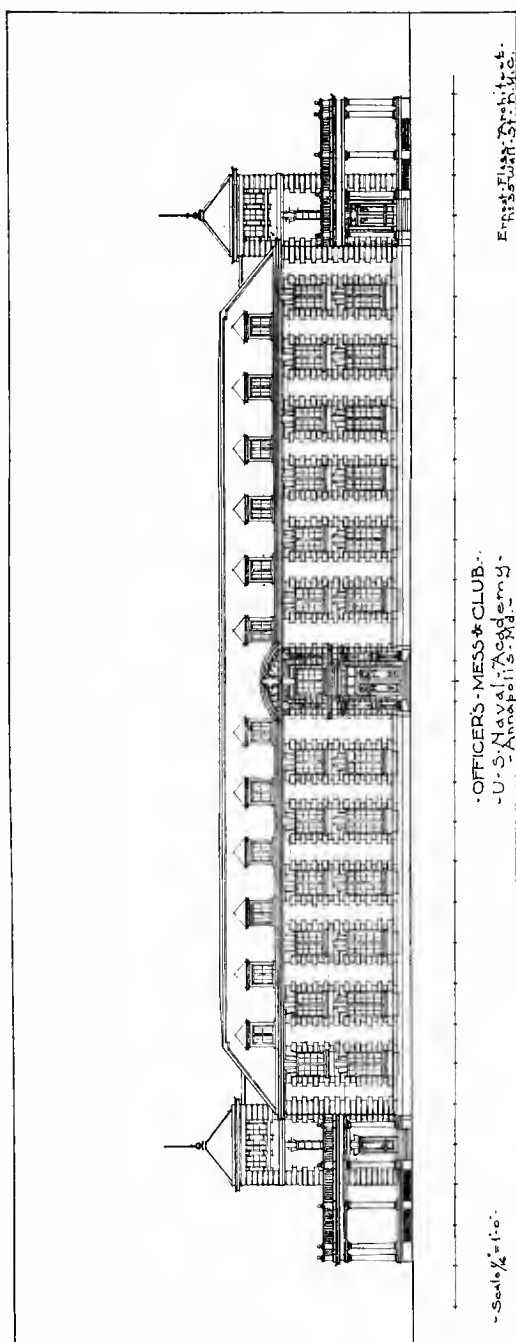


FIG. 89. OFFICERS' MESS AND CLUB, ANNAPOLIS, MD.

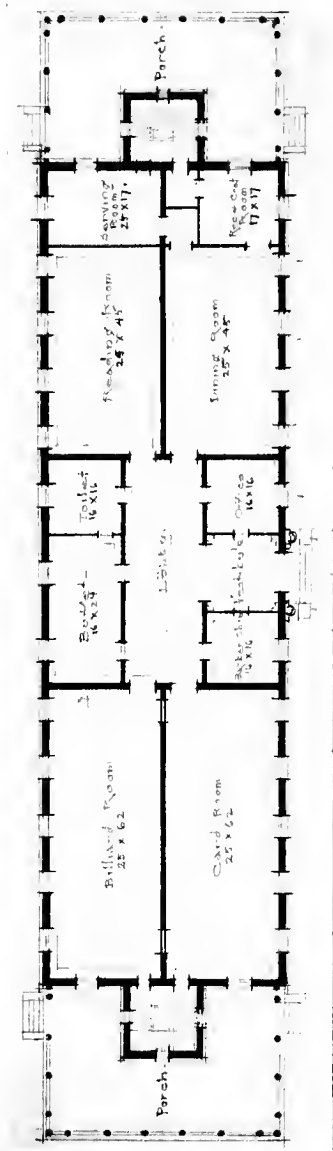


FIG. 90. PLAN OF FIRST FLOOR, OFFICERS' MESS AND CLUB, U. S. NAVAL ACADEMY, ANNAPOLIS, MD.

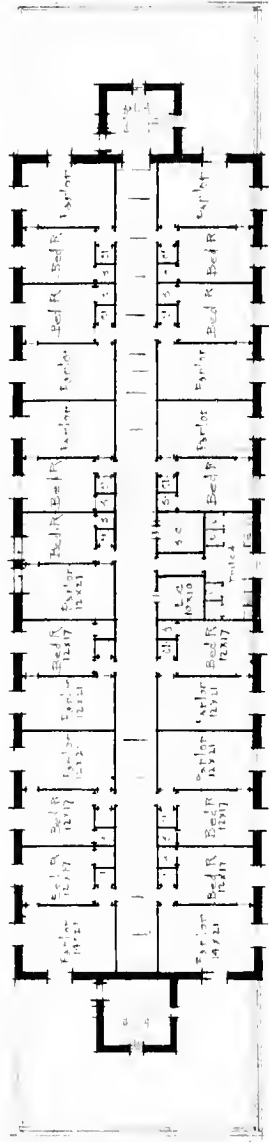


FIG. 91. PLAN OF SECOND FLOOR.

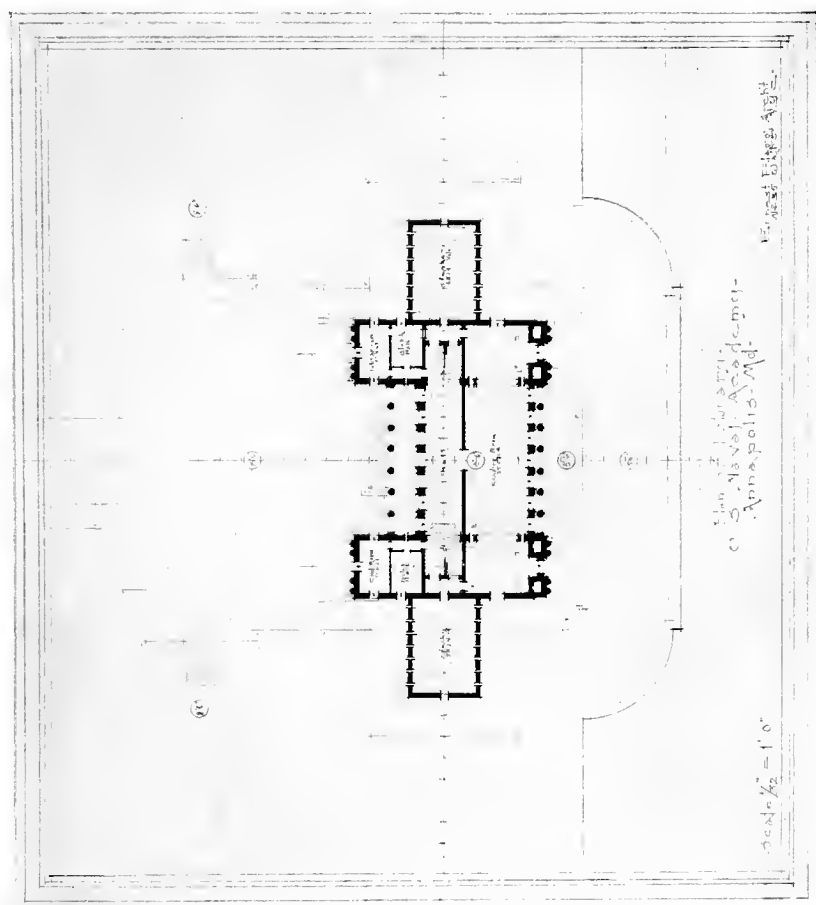


FIG. 92. PLAN OF LIBRARY, ANNAPOLIS.

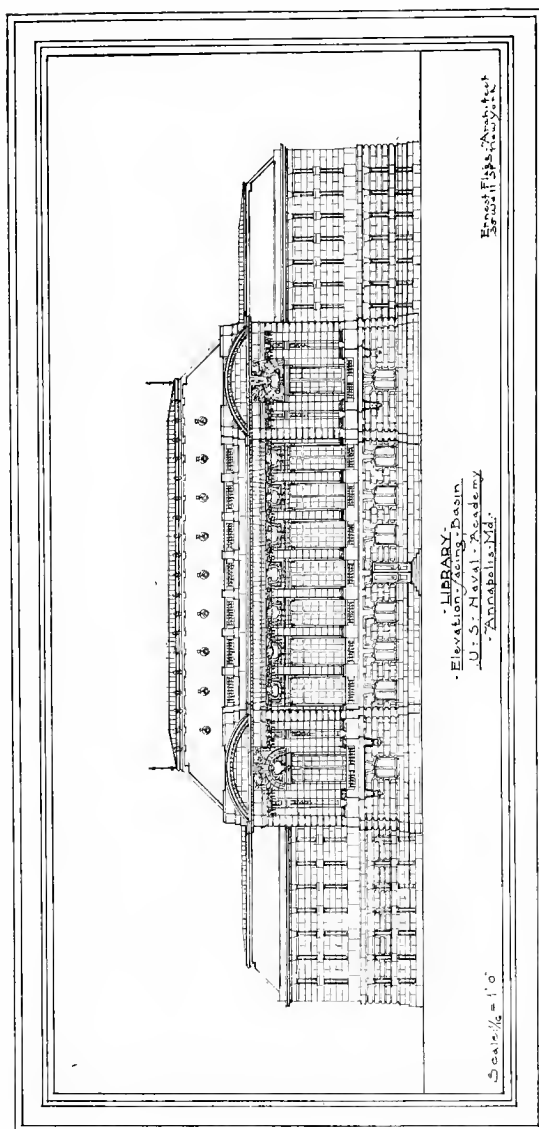


FIG. 93. LIBRARY, ANNAPOLIS.

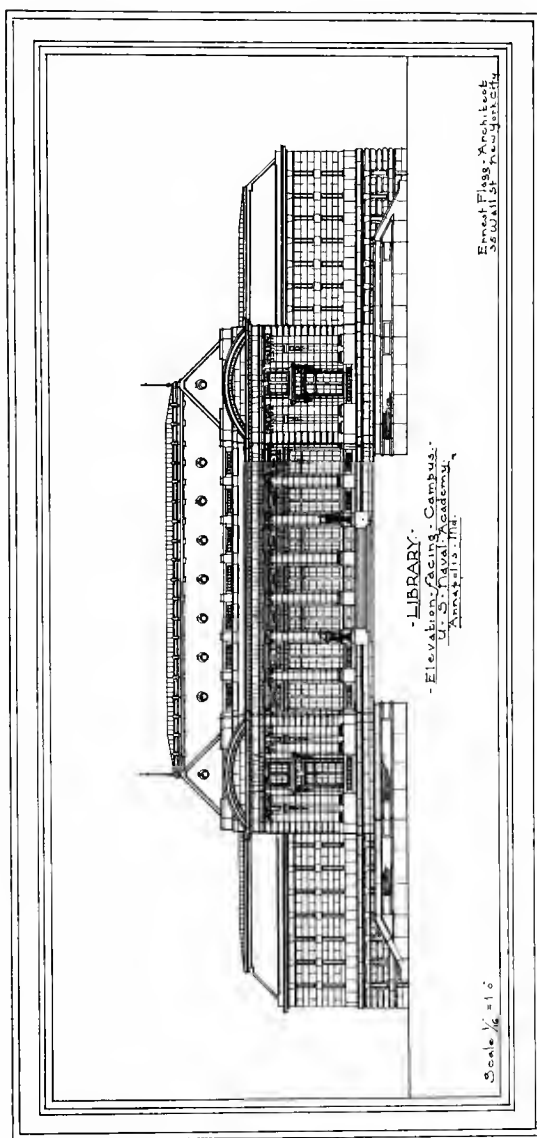
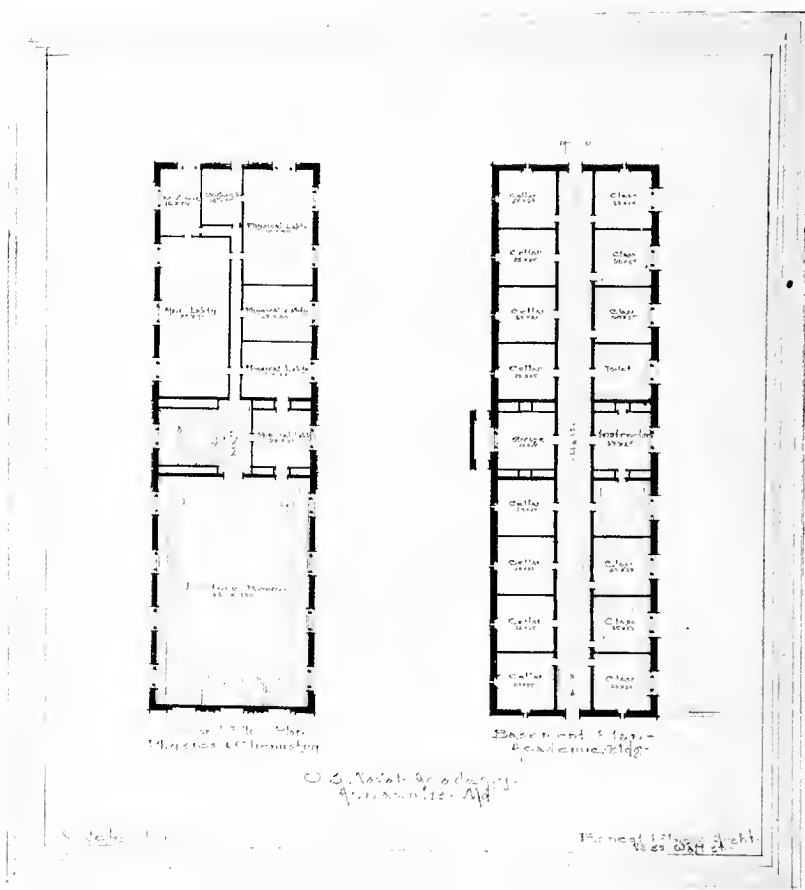


FIG. 94. LIBRARY, ANNAPOLIS.





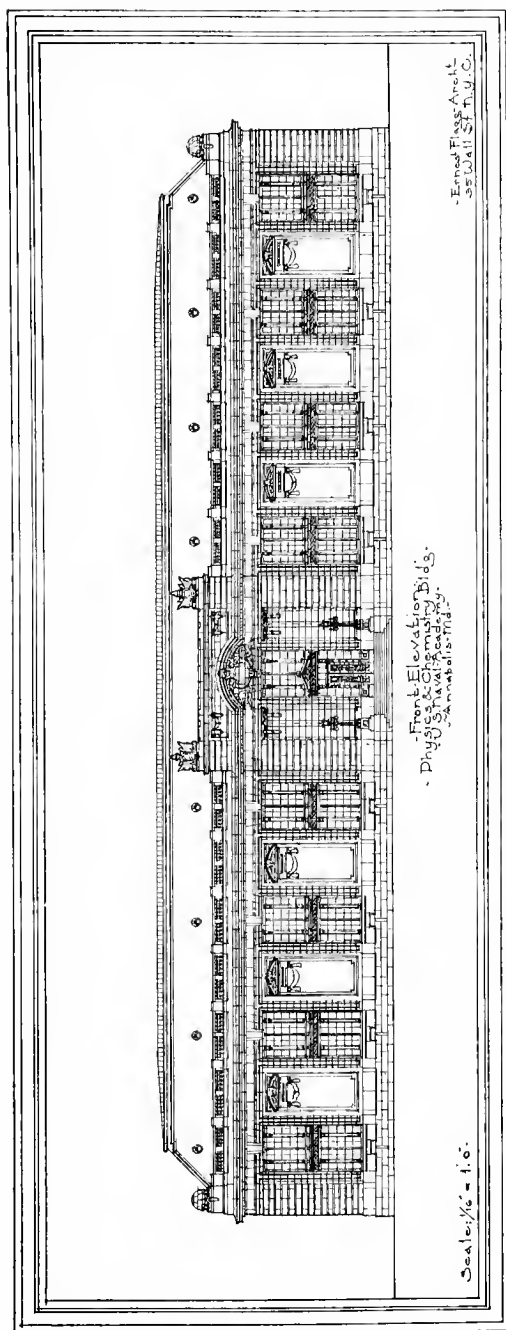


FIG. 96. PHYSICS AND CHEMISTRY BUILDINGS, ANNAPOLIS, MD.

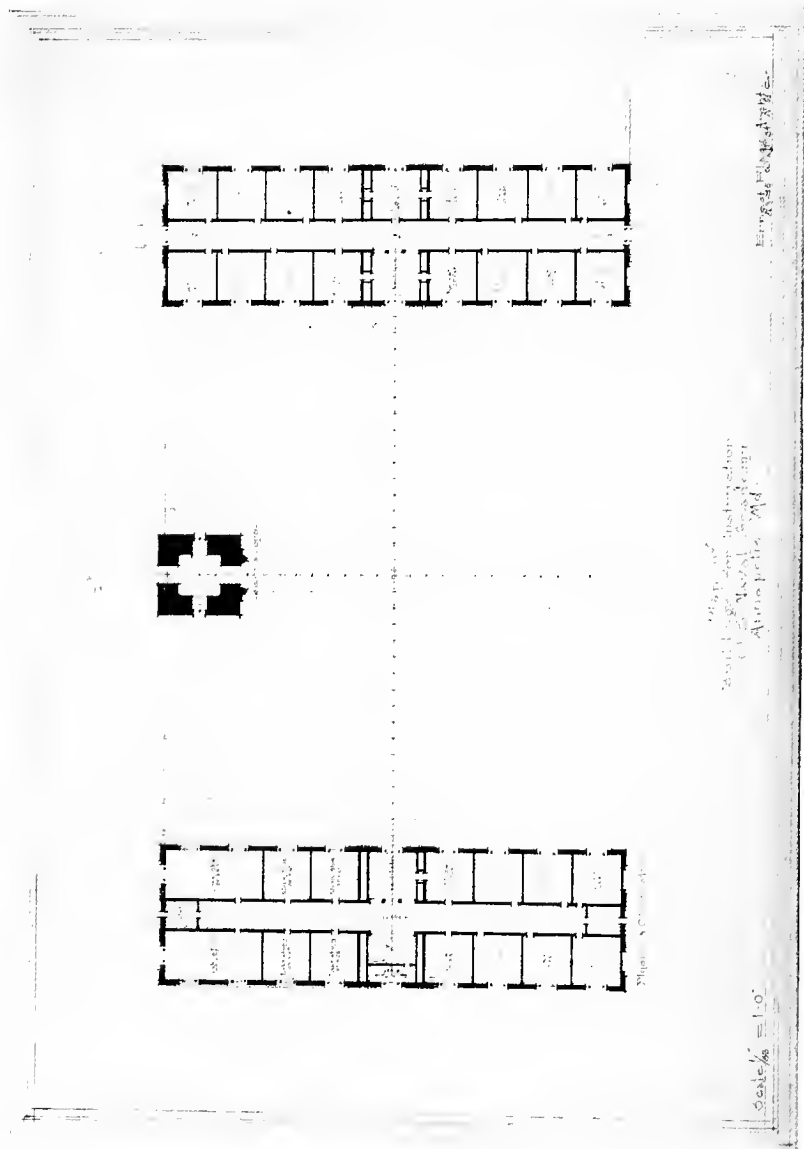


FIG. 97. PLAN OF BUILDING FOR INSTRUCTION, ANNAPOLIS, MD.

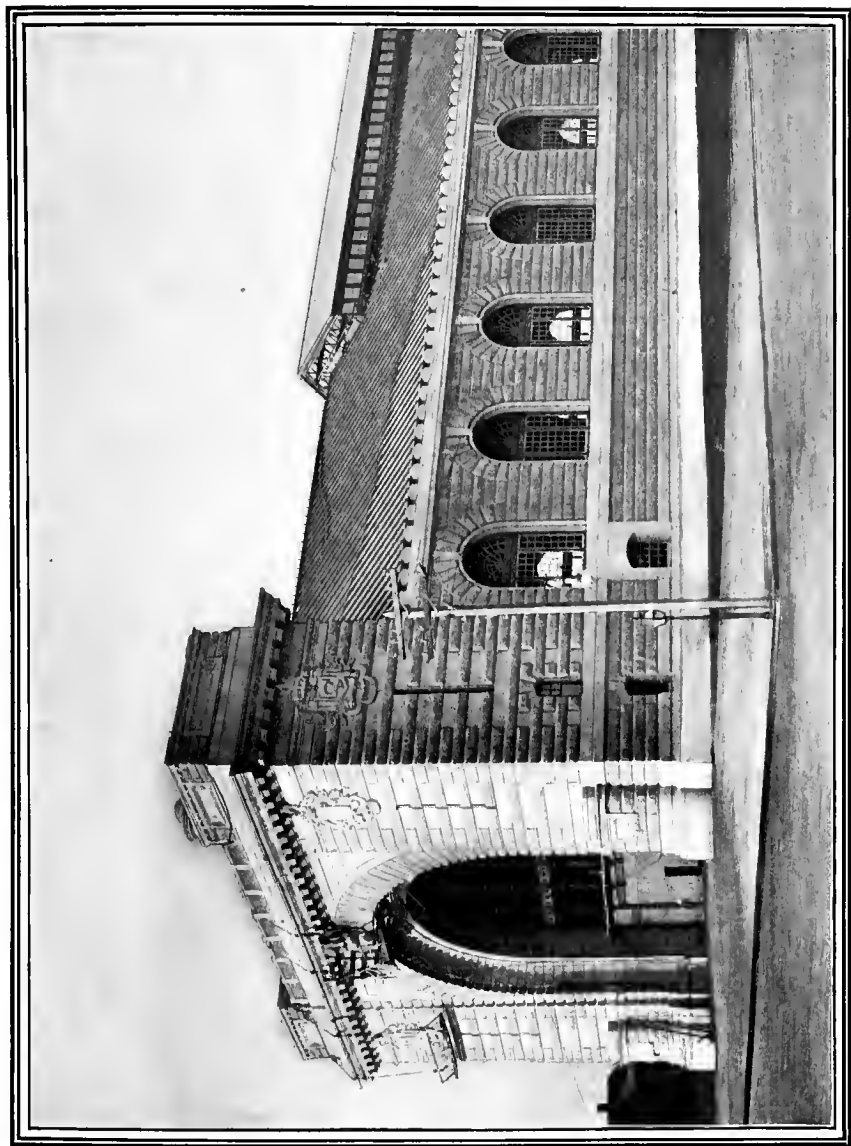


FIG. 98. FROM PHOTOGRAPH OF ARMORY BUILDING, ANNAPOLIS, MD., SHOWING THE BUILDING, RECENTLY COMPLETED.

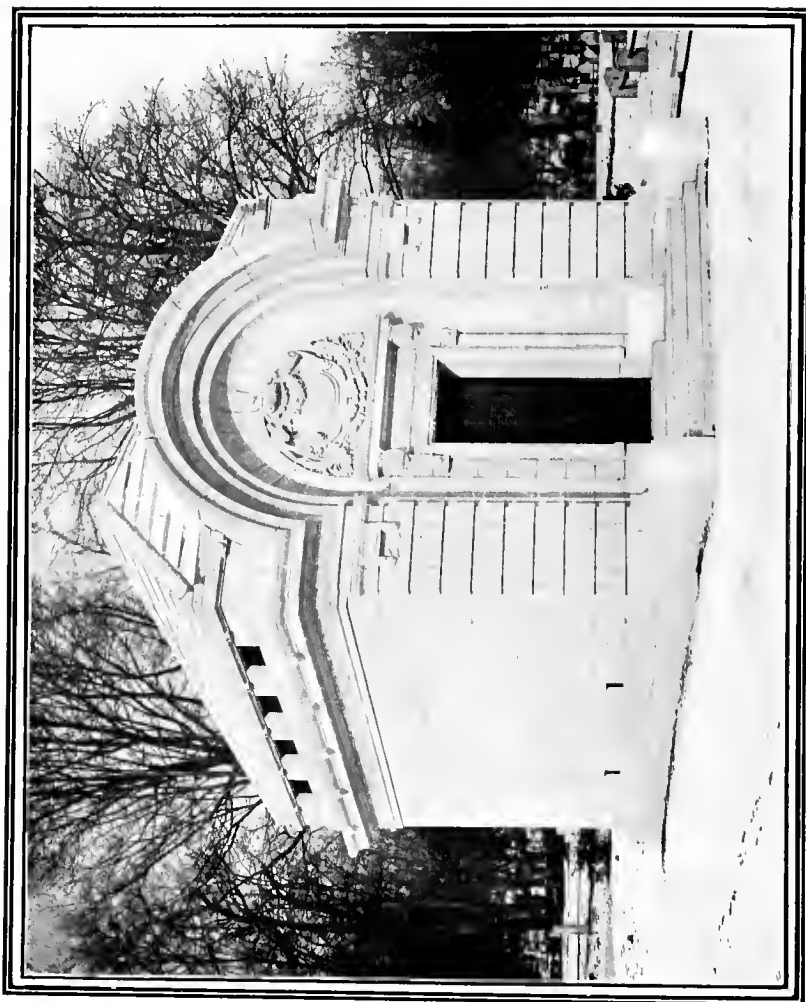


FIG. 99. TOMB.



FIG. 100. SHELDEN LIBRARY, ST. PAUL'S SCHOOL, CONCORD, N. H.

The building was only recently finished. It is built of Concord granite and has a red tile roof. There is a large central hall lighted by semicircular windows, which is used as a reading room. There are other reading rooms at either side of it. The stackroom is back of the rotunda. The small semicircular rooms either side of the stack room are used by the librarian and for cataloguing. There are two other semicircular rooms at either side of the loggia; one contains a staircase and the other a cloak room. The building is located on a point projecting into the lake. It is skirted on one side by the road leading from the upper to the lower school.

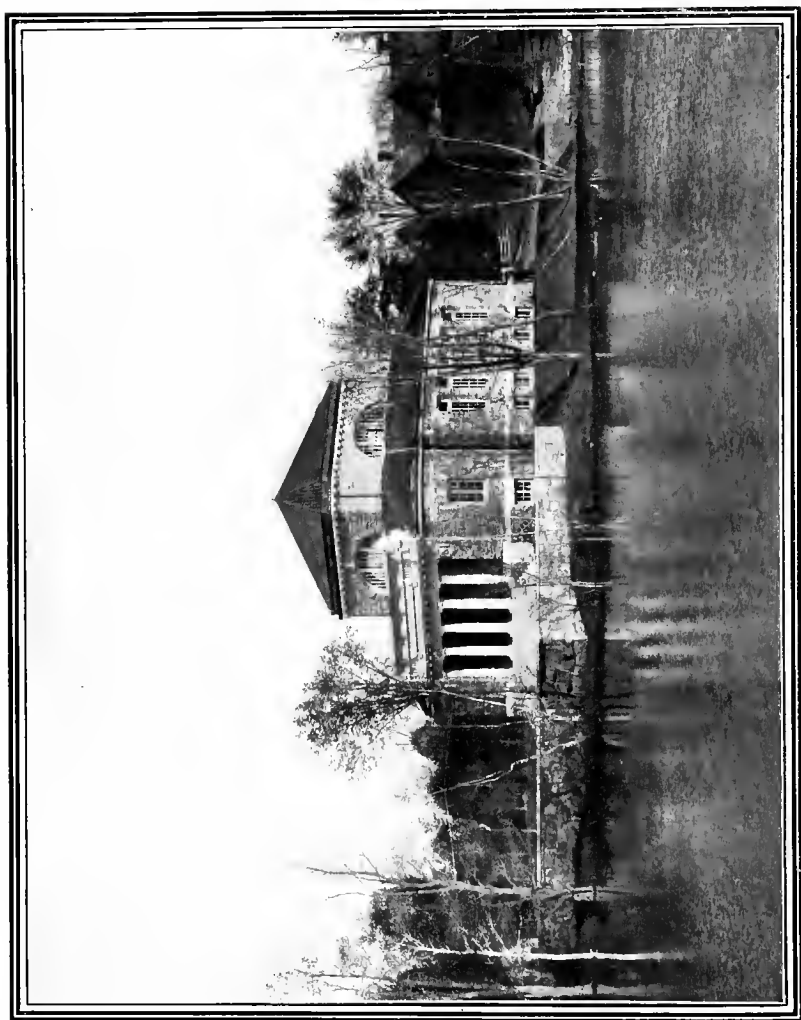


FIG. 101. SHELDEN LIBRARY, ST. PAUL'S SCHOOL, CONCORD, N. H.

## TECHNICAL DEPARTMENT.

### THE WORK OF THE GENERAL CONTRACTOR.



University Club.  
McKim, Mead & White,  
Architects.  
C. T. Wills, Builder.

As our building operations become more complex and expensive, new agencies must be employed to render them more effective. With the increased cost of structures has come the necessity for more perfect mechanical appliances for handling materials, a more highly developed system of operating, and more effective capacity for handling men in large numbers. A few years ago the construction of a million dollar building was regarded as a great undertaking, but to-day there are numerous buildings in New York the cost of which involved the expenditure of several

millions. The modern builder is not only architect, but engineer and artisan as well. In the field of construction he is an operator whose training demands the manipulation in a broad and general way of the whole operation, and the handling of the minutest details as well. One of the most flattering evidences of confidence in a builder is to have a contract awarded him on the merit of his work rather than the fact that he is the lowest bidder. This speaks far more than any testimonial that was ever written, for it shows in the most practical way that his work is worth more to a client at a higher price than that of his competitors. Such a compliment was recently paid to Mr. Charles T. Wills, and no man has taken so large a part in revolutionizing the building trade of New York. After the plans for the New York Stock Exchange were finally accepted, the question came up as to who should have charge of the construction. Some of the committee suggested that the work be let to the lowest bidder, but this suggestion was not received favorably by the majority. They preferred to place the important work in the care of a builder whose works are accepted as the highest type of building construction. Representing an expenditure of three million dollars, with its construction embodying the highest achievements of modern engineering skill, the Building Committee of the Exchange were unanimous in choosing for this important work Mr. Charles T. Wills, and the architect, Mr. George B. Post, heartily endorsed their selection.

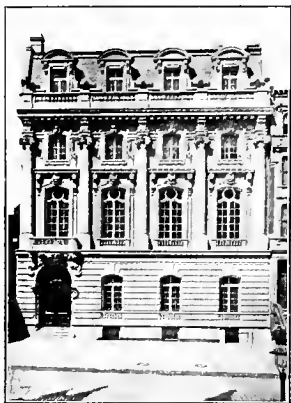
The class of buildings being erected to-day is different from the character of the buildings ten years ago, and each one presents

a special problem. The builder of to-day must be both engineer and architect. He must bring to bear on the difficulties which confront him a trained mind with superior powers of organization and fertility of resource.

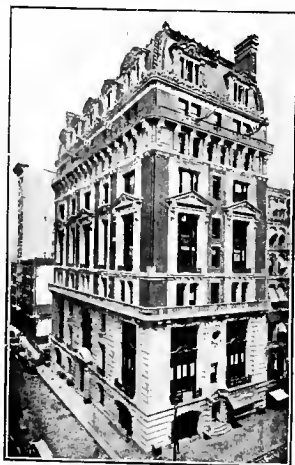
Building in New York has from the beginning been regulated by economic considerations. Ever since the city acquired metropolitan characteristics the work of the builder has been increasing in importance. In no other city in the world has so much capital been used in producing residences and structures dedicated to commercial and pleasure pursuits. The yearly cost of building in the

city of New York amounts to more than the yearly cost of the food for its inhabitants. So the builder is prominent in the metropolitan field. The cause for this is not far to seek. The enormous increase in land values and the improvements made in building construction have turned the buildings erected in New York thirty years ago into simple encumbrances. It is not an unusual thing in New York to see a handsome commercial building torn down to make room for a modern sky-scraper, which will prove more profitable.

In less than twenty-five years a new architecture has been introduced and perfected among us that has practically revolutionized all previous methods of construction. The problems that confront the builder to-day are of such a widely different character from all that the world has ever known before, that they constitute a new era of engineering science. And it is because they are the most varied and difficult problems that any builder ever had to face, because they necessitate greater knowledge, experience, skill and resources than any nation of builders ever had, or dreamed of having, that no fair-



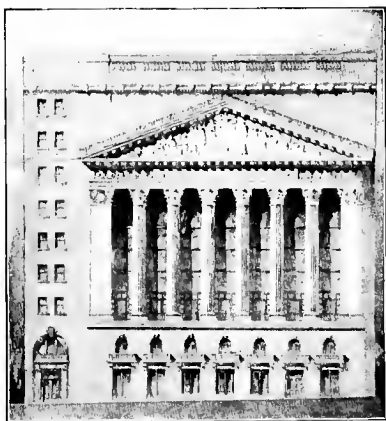
Residence, H. T. Sloane, Esq.  
Carrère & Hastings, Architects.  
C. T. Wills, Builder.



The Singer Building.  
Ernest Flagg,  
Architect.  
C. T. Wills,  
Builder.



mindful judge would hesitate to accord the modern New York builder the very foremost place in all the history of his profession. The high buildings in New York to-day are the architectural features of the city. That they are the safest in the city one has only to inquire the rates of insurance on them to know. The difficulties both of design and construction encountered in our new public and commercial architecture would fill pages, but our builders have attacked the problems of tower construction, overcome every obstacle and silenced every opposing voice. They have erected more imposing structures and contributed more new knowledge of constructive engineering than the world had learned in centuries before. We shall not attempt to describe all the work that Mr. Wills has done, or even allude to the most important of his contracts. From his 'prentice days he has had a liking for the more serious problems of the structural arts, and his ability to overcome obstacles



The New York Stock Exchange.

Geo. B. Post, Architect.

C. T. Wills, Builder.

that would be the despair of less able men has secured him the favor and liking of the most prominent architects. To-day it requires that the contractor shall be not only a man of the most unquestioned financial responsibility, but also one of superior organizing powers and fertility of resource to meet the difficulties that are sure to arise, and which cannot be foreseen. Mr. Charles T. Wills has carried out a surprising number of important contracts, including the finest office buildings, club houses, railway depots, residences, apartment houses, churches, factories and theatres, and to-day, has many large contracts on hand for office buildings particularly. Among his numerous new contracts we must not forget the building to be erected on the corner of Pine Street and Nassau, which will be an addition of which New York may well be proud.

## RECENT BUILDING.



"BILTMORE."

Country House of Geo. W. Vanderbilt, Esq.  
Richard Morris Hunt, Architect.

The requirements for a builder are twofold: First, he must possess a comprehensive and practical working knowledge of the building trades and all the branches thereof; and, second, he must have made a good record for himself. The mammoth strides that have been made in the past twenty and even ten years in

the building business, not only in the extent of work done, but in the character and efficiency of that work as well, have caused the development of the modern builder's resources to an extent which makes this profession one of the most exacting and honored of the day. For the education of the builder, there is only one adequate school, *i. e.*, the building. College training will help him little in the practical work of construction and superintendence. A piece of terse advice on this subject given the writer by a prominent builder is worth quoting: "Take a boy with a good common school education, give him a little higher mathematics, a year or two in an architect's office, and then put him on the building. He can't expect to know it all before he goes there, and must pick it up as he goes along. It's the only way."

The builder's responsibility is greater than that of the architect, not only in the matter of fulfilling his contract, but in the question of his own remuneration, for while the architect's fee is fixed and ordinarily certain, the builder's profit is often a matter of more or less anxious conjecture until his job is finished. Thus, it is obvious that in order to conduct his business on anything like a large scale, he must be able to command a large amount of capital. Fortunate, indeed, is the builder whose reputation is so well established that his contracts are not necessarily the results of his bids having been the lowest. This, to him, means success.

One of the best and most noticeable features of the modern expansion in building operations in the United States is the growth of the country house. Time was, and not so many years ago, when the American country house, although ever so large and comfortable and delightful, could by no means rival, from an archi-

tectural point of view, the villa of Italy or the chateau of France. But with the great increase in prosperity following the Civil War, and its attendant inspiration to culture and refinement, men sought to expend their surplus wealth in the erection of country residences on a scale of elegance and grandeur that should far outclass anything of the kind that this country had ever known. Following the old world plan, many of these palatial homes have become not merely architectural features of the landscape, but also literal storehouses of art treasures and embodiments of every luxury and delight which modern ingenuity has devised.



Residence, Hon. Levi P. Morton.  
McKim, Mead & White, Architects.

Chief among the more recent of these private buildings is the magnificent home of Geo. W. Vanderbilt, at Biltmore, N. C. There is a chain of fortuitous circumstances connected with this building which have combined to make it remarkable in many ways. In the first place it seems particularly appropriate that Mr. Vanderbilt, one of the wealthiest men in this country, a man of artistic and studious temperament, preferring the beauty and quiet of rural life to the gayety and whirl of the town, should dream of building the finest private residence in the United States, if not in the world. Then it was eminently fitting that Mr. Vanderbilt should select for his architect the man who, probably, above all others, was qualified to design such a building, the father (with Richardson) of the Beaux Arts in this country—Richard Morris Hunt. And once again was it fortunate that the man upon whose shoulders should rest the responsibility of executing this glorious creation of the Master Architect's mind, the man to solidify into stone, so to speak, the refined and carefully adjusted ideas of the designer should be Francis M. Weeks, of the long-established firm of D. C. Weeks & Son. It is surely a pleasant commentary on the well-known story of the building of Biltmore, that, during all the five long years of its construction (which Mr. Weeks spent for the most part in the saddle) owner, architect and builder worked together in harmony

that was peculiarly in keeping with the character of the building as it stands to-day.

It may readily be supposed that Biltmore was not the only large contract that Mr. Weeks executed from the designs of Mr. Hunt. A relationship such as existed between these two men could have been severed by but one thing, and in this case, when the sad day came, the relationship was but transferred from the father to the son. Biltmore was the last, in some respects the greatest of Mr. Hunt's works. He barely lived to see it completed.

In previous years Mr. Hunt has designed the country house of Mr. Archibald Rogers at Hyde Park, N. Y., and also the town residence of Mr. C. O. D. Iselin at 53d street and Fifth avenue, New York City, and the man chosen to erect these buildings was the future builder of Biltmore. Within the last five years Mr. Weeks has built three large country houses in quick succession—all from the designs of Richard Howland Hunt, who, during the last years of his father's life, was the latter's only pupil. The first of these residences was that of Oliver Harriman at White Plains, N. Y.; the second was for Richard Mortimer in Tuxedo Park, and the other is the home of Mr. Vanderbilt—Idle Hour, at Oakdale, L. I.

Among the many fine New York City residences erected by the same builder are the Hon. Levi P. Morton's house at 681 Fifth avenue, designed by McKim, Mead & White, and the King residences at Nos. 16, 18 and 20 East 84th street, owned by Mr. Geo. Gordon King and designed by Clinton & Russell. For the last-named architects Mr. Weeks was also the builder of the Morton Building at the corner of Nassau and Ann streets, New York City. Another office building which should not be excepted in this partial list of the work of a famous builder is the Anderson Building, 14 and 16 John street, near Broadway, of which Mr. R. S. Townsend was the architect. These three different classes of buildings, viz.: the large country house, the fine city houses and the high office building presented new and varied fields of building operations, and the man who would successfully master them all must needs have much experience. That Mr. Weeks remains in the front ranks of modern builders—a rank, by the way, that has been much depleted of late years—has been abundantly proved by his success in the works mentioned. Still other fields, however, bear witness to the fruits of his energy and skill. Among the collegiate works that Mr. Weeks has built are Rockefeller Hall at Vassar College, Poughkeepsie, N. Y., which was designed by York and Sawyer and the Administration Building of Drew Seminary at Madison, N. J., designed by Bigelow & Wallis. To show the kind of works done by the Weeks family of builders before Mr. Francis M. Weeks became the head and ruling spirit of the firm, no better examples could be mentioned than that beautiful example of French Gothic at 53d street and Fifth avenue, New York, known as St. Thomas' Church, and the Old Library Building of Columbus College, Charles C. Haight, architect, on 49th street, between Madison and Park avenues, New York.

## ART WORK IN HARDWARE.



An American returning recently from abroad, after an absence of some years, remarked as one of the most conspicuous changes which had taken place during his absence, the increased interest of which there was evidence on every hand, in the artistic fitting, trimming, furnishing and decoration of houses. The amount of old furniture, hangings, and the like, which an observer can see during a visit to the important Fifth avenue and Fourth avenue shops, has probably increased several fold in ten years, and the

quality of this furniture has improved as considerably as its qualities have increased. Much of this larger and better interest in such things, is the result of a general improvement in taste, but much of it also is due to the direct suggestion of leading architects, who urge their clients to fit and furnish their houses either with the best that can be bought abroad, or else with some of the excellent imitations.

An architect for, instance, will plan a room, or group of rooms in a particular style—say that of the Italian or French Renaissance, and in order to carry out that style completely he will



Cartouche for Front Door for O. G. Jennings' Residence. Designed by Ernest Flagg.

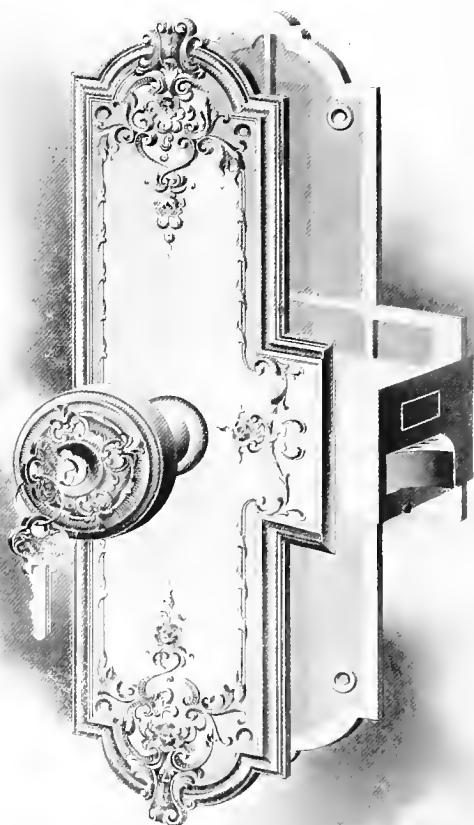


Interior Doors of First Floor  
for  
O. G. Jennings's Residence.

they do not reach modern American standards of mechanical efficiency and convenience. And this assertion is peculiarly true of the builders' hardware that goes into the contemporary American building of the better class. On the one hand, architects demand that this hardware shall be designed in keeping with any particular style, to which the general appearance of the room is to conform. On the other

have the antiquity shops of Europe ransacked in the search for appropriate and fitting mantle-pieces, furniture, tapestries and screens, and the most careful selection is necessary, so that the different objects used will go well together, and will be characterized by the same feeling.

In some of the fittings of a room, however, the old appliances formerly used abroad cannot be transferred to this country in the way furniture and tapestries are transferred, partly because there is much difficulty about transferring them intact, but also, because



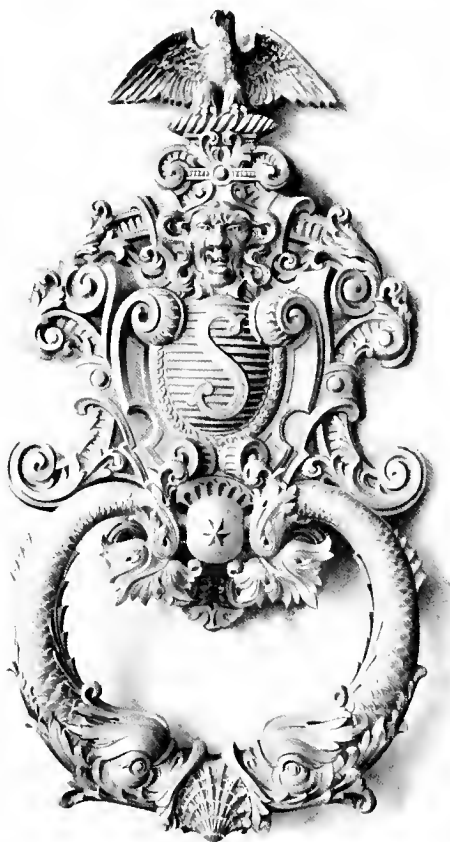
The Corbin Lock Set.  
No. 2045. Namours Front Door Set. School Louis XIV.

hand, their clients demand that the appliances used shall contain the latest improvements of American ingenuity as applied to house hardware—that the locks, door-knobs and metal work generally shall not merely be well designed and carefully finished, but that their mechanism shall be simple and effective.

Among the firms of the manufacturers of builders' hardware, there are none who are more competent to meet the exacting and diversified requirements of contemporary architects than that of P. & F. Corbin, whose offices are at Nos. 11, 13 and 15 Murray street, and whose large and well equipped factories are at New Britain, Connecticut. The long experience of this firm in the manufacture of this hardware, and the large amount of work that they have done is a sufficient guarantee that their product is of the highest standard in point of mechanical excellence. Moreover, they are keeping well up to the needs of the times, both in their ability to furnish hardware of admirable design and superior finish, as well as in their ability to manufacture hardware from special designs supplied by the architects themselves. They are prepared to turn out at the shortest notice and on satisfactory terms anything that an architect may need so that the metal work of a room or a house may be in keeping with its other fittings and furniture. This demand for special designs is a comparatively recent innovation in the business of manufacturing builders' hardware, but it is obviously a demand which is growing, and which must be adequately supplied by the leading firms in the trade. It is the full appreciation of this fact which has led P. & F. Corbin to make special exertions to meet this demand in a manner which will be entirely satisfactory to their customers.

The large number of important buildings into which the artistic hardware of this firm has already been introduced testify to the quality of its work in the past. Among the buildings in New York City may be mentioned the Empire Building, Kimball & Thompson, architects; The Washington Life Building, Cyrus L. W. Eidlitz, architect; The Park Row Building, R. H. Robertson, architect; the Franklin Building, Clinton & Russell, architects; The Dakota Apartment House, Henry J. Hardenbergh, architect; Edison Building, Carere & Hastings, architects; The Shoe and Leather Bank Building, Cady, Berg & See, architects; the Park Building, George B. Post, architect, and the Vanderbilt Building, McKim, Mead & White, architects. It will be noticed that the designers of these buildings include many of the well-known architectural firms in New York City. Among the metropolitan architects, however, there are none for whom P. & F. Corbin have done so much work as for Mr. Ernest Flagg. This architect's work has been very varied, and there is no class of structure

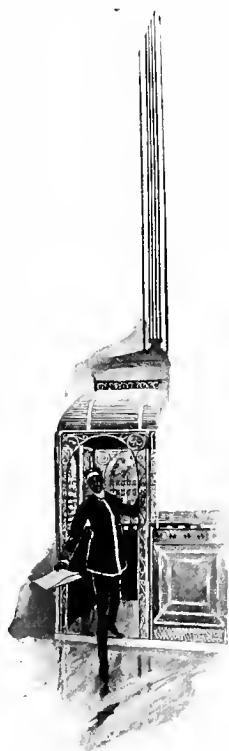
in which examples of their metal work is not to be found. Among these buildings may be mentioned: The Singer and the Bourne Office buildings, New York City; The Corcoran Gallery of Art, Washington; St. Margaret's Memorial Hospital in Pittsburg; the Lawrence Library, Pepperill, Mass.; the First National Bank Building, in Hartford, Conn.; the residence of F. G. Bourne, Oakdale, Long Island, and residences for O. G. Jennings, Ernest Flagg, the Clark Estate and Charles Scribner, all in New York City. In almost all of these buildings the hardware was made from special designs, which is a sufficient indication of the facilities of the firm in turning out this important and growing class of work.



Designed by Ernest Flagg for Main Entrance of Singer Building.



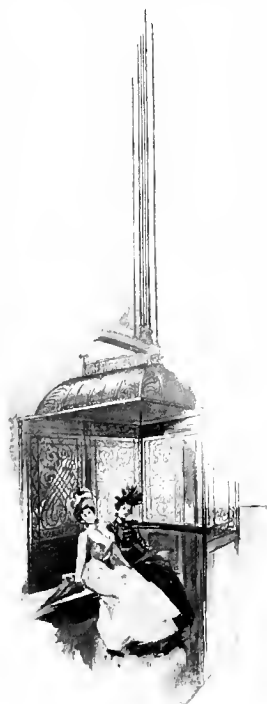
## A NEW TYPE OF ELEVATOR.



SINCE the modern expensive New York residence has tended to become taller, reaching in some cases as high as six stories, a need has existed for a type of elevator which is adapted to the peculiar condition of such a building. An elevator in a residence does not need to be large, neither is it being constantly used; and it seems absurd to have a boy wasting his time around the house for the greater part of the day, merely for the purpose of operating the elevator for twenty or twenty-five trips. In order to meet this need, the "Otis Elevator Company" has been introducing a type of elevator which is operated by the person using it with the help of some ingenious mechanical devices, and which dispense entirely with the elevator boy. Elevators of the same kind have been successfully in use in Paris; but the mechanism of those now being introduced by the "Otis Elevator Company" is superior to that of its Parisian analogue.

The fact, however, that a similar kind of elevator is used in Paris apartment houses suggests the possibility of employing them in small flat houses in New York and other American cities.

This elevator is designed to combine perfect safety with the greatest mechanical simplicity and convenience. It is a case of "Push the button and the electric motor, with automatic safety devices, does the rest." Any one with intelligence enough to count the buttons in the elevator corresponding to the landing or floors of the building, can operate the electric elevator with absolute security. The perfecting of the Electric Elevators



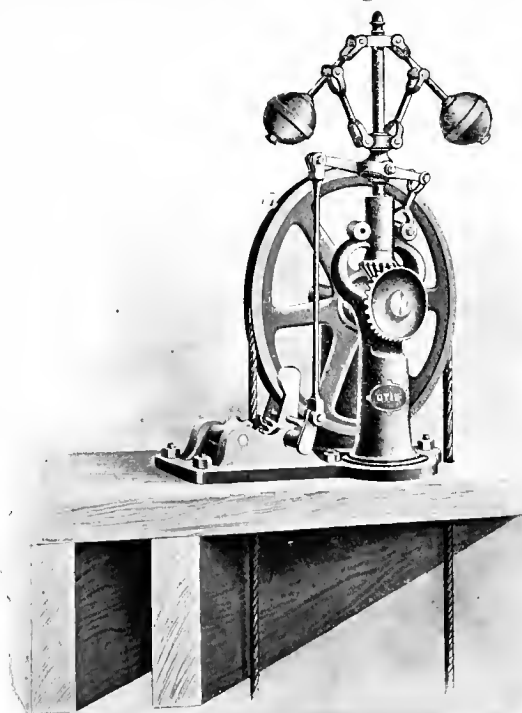


is another feather in the cap of the "Otis Elevator Company," and it is needless to say that within the comparatively short time during which they have been used, these elevators have become extremely popular.

As stated above, the system of operation is entirely by means of push-buttons. After entering the car and closing the door, the passenger presses the push-button inside the car, which corresponds to the landing at which he desires to stop, and the car takes him there and stops automatically. Simple, isn't it? "Yes," the reader will say, "that is simple enough. But think of the danger of having an elevator which can be operated from any floor. Suppose, for instance, the car is at the fourth floor, the landing door is open,

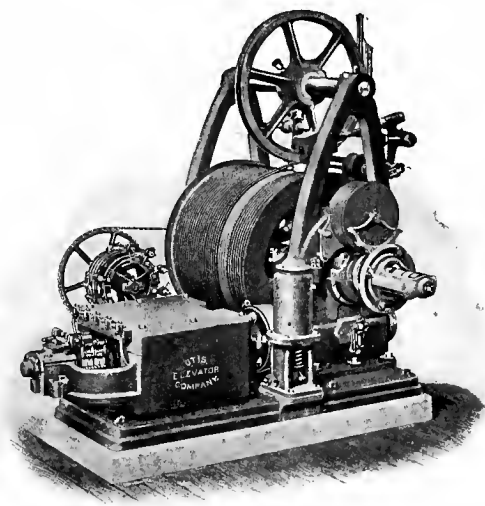
and just as I am stepping into the car somebody on the first floor pushes the button, the car descends and I am caught between the under side of the car roof and the unyielding floor."

In making this objection, the reader fails to remember that the elevator we have been describing is manufactured by the "Otis Elevator Company," which has been making elevators since 1856, which is the leading manufacturer of elevators in the whole world, and which can truthfully state that, during all the time it has been in busi-



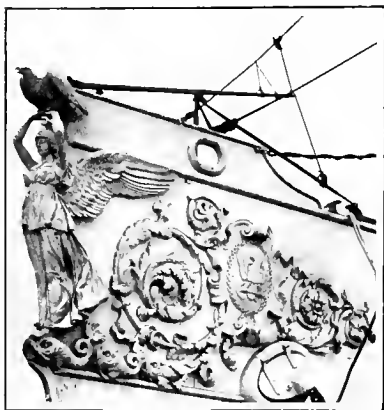
ness, not a single passenger has been seriously or fatally injured. That is a proud boast, and it is all the more wonderful when you take into consideration the fact that in New York alone, the elevators made by the "Otis Company" carry more passengers than all the New York elevated roads.

An accident such as you have imagined is absolutely impossible in one of the "Otis Electric Elevators," because as long as the landing door is open, the car cannot be moved, and in addition, the door cannot be opened until the car comes to a full stop at the landing. This is due to a system of automatic door-locking devices connected with the operating mechanism, by means of



which all danger of falling into the shaft or being struck by the car is eliminated. Furthermore, while the car is in motion, or when it is at a landing, and the door is open, the landing push-buttons are inoperative, allowing full control of the car to its occupant. These safety devices, and the fact that the car is at all times under control of the passengers, does away with the necessity of an attendant, and affords conclusive evidence that the elevator boy will soon be superseded by the push-button in the private residences, as the horse is being superseded by the automobile.

## THE COLLECTION AND DESIGNING OF FURNITURE.



Ornamental design for the bow of the  
U. S. S. Cruiser Cincinnati.  
Designed and manufactured by  
The Hayden Co.

The collecting of antique furniture began some time ago, when it was difficult to obtain good designs in any other way. With the gradual improvement of taste, which has been so noticeable in many departments of American life, people who desired furniture of simple outlines and free from superfluous and showy ornament found the mahogany and oak pieces discarded by our predecessors so much superior to those of contemporaneous manufacture, that they began to make a systematic search for them and to buy them wherever they could. This

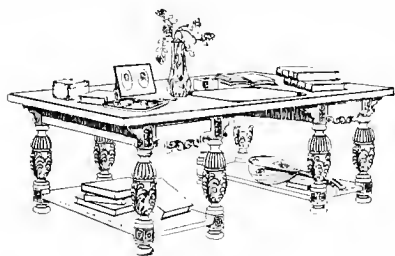
search was a perfectly natural one, and was a justifiable protest against the ugly forms and the over-elaboration of the current machine-made furniture; and it has led to radical changes in the design and construction of much of the furniture that is used in the houses of people of refinement or wealth. The best contemporary dealers in furniture make a specialty of securing old pieces belonging to the best periods of Italian, French and English interior decoration.

But this is not all that is required of the best contemporary collectors and manufacturers of furniture. In an elaborate modern residence, all the furnishing of any one room should belong to the same period, and be planned to occupy a particular place and to produce a certain effect. It is sometimes very difficult, if not impossible, to find old pieces that meet precisely the required conditions, and, as a matter of fact, while there is an abundance of ordinary pieces



Ornamental design for the stern of the  
U. S. S. Cruiser Cincinnati.  
Designed and manufactured by  
The Hayden Co.

of antique manufacture, it is comparatively difficult and costly to obtain pieces of really rare and distinguished design. The consequence is that while dealers and collectors generally prefer the old



Library Table.  
Designed and manufactured by  
The Hayden Co.

furniture, because of the qualities of the wood, and its sober air of distinction, the more enterprising of them are not satisfied merely to collect old examples. They are prepared, not only to copy such pieces with the utmost fidelity and skill, but they make a specialty of designing and manufacturing furniture, which are as good as the old pieces in outlines

and proportions, and which are more precisely adapted to modern needs. The consequence is that both the architects and their clients are tending more and more to give their business to firms and companies that are equal to any emergency in the way of special designs, and who can make in their own shops pieces which they cannot supply out of stock.

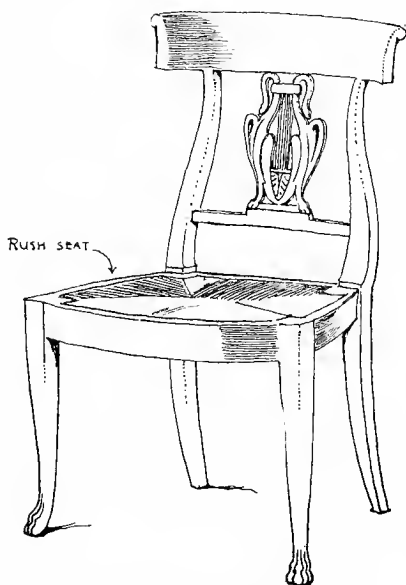
The dealers in furniture of this class are obliged consequently to have a most diversified and complete organization. They are prepared at once to carry out the designs of architects, to interpret the ideas of customers, and to assume the responsibility themselves for the entire furnishing and decoration of the most elaborate houses. They have in their draughting rooms designers who have devoted their lives to the study of the forms and proportions of good furniture. They have in their shops workmen, who have been in their employ for years, and who are in sympathy with their methods. They can control the pieces of furniture they turn out to the smallest detail of their design; and as every one knows, perfection of detail is supremely necessary in the interior arrangements of a house. They are prepared, in addition to supplying furniture, to do all kinds of architectural cabinet work, and if desired, the decorative painting and drapery of a house. Such organization cannot be put together in a few months; it must be the growth of many years, and the product of good taste, labor, study and experience.



Sideboard.  
Designed and manufactured by  
The Hayden Co.

It is safe to say that among

the furniture dealers, designers and makers of the kind above-described, the work of none is more generally and favorably known than that of "The Hayden Company." This company formerly occupied a building on the Stewart property, on the north side of

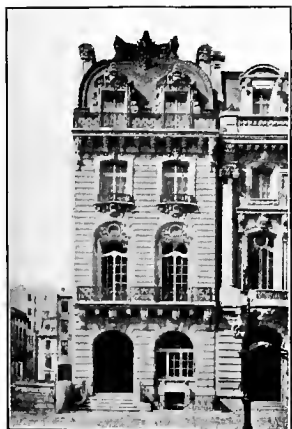


Rush-bottomed Chair.  
Designed and manufactured by  
The Hayden Co.

34th street, near Fifth avenue; but the destruction of the building to make way for a more modern structure, has prompted the removal of the company to, still more desirable quarters at 520 Fifth avenue, between 43d and 44th streets. It has done work for many of the best architects in the city—among them Mr. Ernest Flagg, who awarded them contracts for a large part of the work in the residence of Mr. Fredk. G. Bourne, at Oakdale, L. I.; in that of Mr. A. C. Clark, on Riverside Drive, and in the Connecticut Mutual Life Insurance Building, at Hartford, Conn.

We present herewith illustrations of some representative work which has been designed and manufactured by "The Hayden Co." Of this work there is none which has met with more general approval than the ornamental decoration which it has furnished for the U. S. cruisers, the *Cincinnati* and *Olympia*. The ornamental figurehead and stern-piece, which are reproduced in this article were carved in wood for the *Cincinnati*; and this decoration was so satisfactory that the design was adapted to suit the different conditions of the *Olympia*. In the second case bronze was used instead of wood. It is much to be desired that other vessels in the U. S. navy will be similarly ornamented.

## SOMETHING ABOUT STEEL CONSTRUCTION.

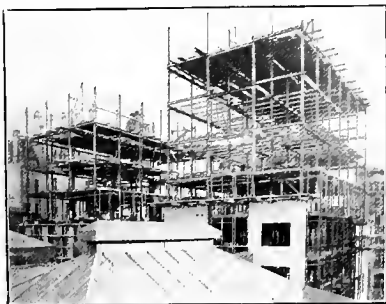


Residence, O. G. Jennings, Esq.,  
7 East 72d Street, New York.

Probably the most spectacular and popularly interesting sight connected with modern American architecture is the bare steel frame of a contemporary "sky-scraper," before the wall or the floors are laid. The public have a vague impression that steel construction is the most important American contribution to the art of fireproof building, and this stimulates them to take an interest in a spectacle which is in itself curious and extraordinary. It is always pleasant to have a difficult scientific or engineering structure exposed plainly to the view; and a careful observer can deduce a tolerably complete concep-

tion of the purposes and advantages of steel construction from a careful scrutiny of one of the steel skeletons, which may be seen arising every year in the central and lower part of New York.

He would notice, for instance, during the first stages of the job that caissons were often sunk to bed rock so as to obtain sufficiently secure foundation for the enormously heavy structure that is to be reared above. He would notice also that the columns and girders of the lower stories are much heavier than those above; and he could not help noticing finally that the walls instead of being built from the ground up, are generally started at different levels, betraying the fact that the walls of each floor are carried by the girders, which mark that story. And he could consequently infer the threefold merit of this method of construction: (1) that since the walls and partitions are carried on the girders they do not appreciably increase in thickness with the height of the building; (2) that it is the great strength of the material, which permits



Connecticut Mutual Building,  
Hartford, Conn.

the structure to be carried to such great heights; and, (3), that construction is facilitated by the fact that if the foundations are placed on difficult ground, the load may be concentrated upon the most available points.

It is obvious that the problems presented by these steel structures are mainly engineering problems; and that an architect in planning a building of this kind cannot get along without expert engineering assistance. The importance of such assistance



Connecticut Mutual Building,  
Hartford, Conn.

can be shown by a short description of some of the conditions, which a stable structure of steel must meet. The arrangement of the columns, both of the outer walls and of the interior distribution must first be laid out upon a general plan, keeping in mind the girder connections, which with columns form the skeleton of

the building. Then a plan must be made of each floor, and the area carried by each column and girder computed. Next, beginning at the top, the weight of the roof, with its load of snow or wind is first computed, and since this weight rests upon the columns of the top story they must be proportioned accordingly. In calculating the size of the columns of the floor below, it must be reckoned that they carry the load coming to them from the columns of the top floor, together with the weight of the floor, and its live load; and this method must be continued from the roof to the foundation. The foundation itself must, of course, be proportioned to the weight of the whole structure.

The amount of assistance, which architects receive from engineers outside their offices in making these calculations and in drawing the plans based upon them varies in different cases; but it is obvious that the work of actually erecting these buildings requires the services of a contractor,



Staircase,  
Bourne Office Building,  
New York.



who is also an engineer—a necessity which has led to the increasing importance of firms of engineering contractors, who make a specialty of work of this kind. These firms are prepared either to work in coöperation with architects, and execute their plans for buildings which require large amounts of structural steel; or they are prepared, if necessary, to furnish as well as to carry out the



Staircase,  
Bourne Office Building,  
New York.

designs for given buildings. They are prepared, moreover, to erect such structures in a space of time, which, considering the amount of material used, and the extent of the structure, seems to be extremely small. They have obtained this facility, and are able freely to handle the heavy steel columns and beams at considerable heights because of improvements in the form and arrangements of the steam hoisting engines and the other erecting machinery. For it must be remembered that the actual work of constructing steel frames offers as many and as complicated and difficult problems as their designing. An office that accepts and performs these jobs on a large scale requires an ex-

traordinary amount of expert knowledge and experience, and an organization of the most complete and varied character.

One of the most important of these firms of contracting engineers is that of Milliken Bros., with offices in the Bowling Green Building, New York. The house of Milliken has been established since 1857, although it has been known as Milliken Bros. only since 1887. It is one of the oldest contracting and engineering houses in this country, and has an enviable record for integrity and ability. The amount of work performed by this firm may be gathered from the fact that it employs in its main offices alone about one hundred engineers and draughtsmen, and still can scarcely keep abreast of its orders. By means of its excellent organization and facilities, it can execute orders very rapidly, turning out the structural steel work for an entire building in five or six weeks. There is no part of the world in which structural and ornamental iron and steel work is used in which it does not do business, for it has branch offices in Honolulu, H. I.; San Francisco, Cal.; Mexico City, Mexico; Havana, Cuba; London, England; Cape Town, South Africa; and Sidney, Australia. The firm designs and constructs iron and steel work for armories, bridges, docks, office

buildings, dwellings and factories. It is prepared to furnish, besides all kinds of structural iron and steel, automatic fireproof and burglar-proof doors, balconies, balustrades, bell-towers, canopies, chimneys, smokestacks, derricks, metal elevator enclosures, fire-towers, fountains, gates and all kinds of ornamental work, either from designs furnished in its office or by the architects. The illustrations are all taken from the work which this firm has done for Mr. Ernest Flagg, which includes the Singer Building, the Bourne Building, the Connecticut Mutual Life Building, the Lawrence Library, and the residence of O. G. Jennings. Among the other buildings, the steel work for which was furnished by the same firm may be mentioned the New Maternity Hospital at Second avenue and 17th street, the Siegel-Cooper Building, Hotel Majestic, Hotel Royalton, the N. Y. Clearing House, the Reade St. and Water-side Stations of the Edison Electric Illuminating Co., the Dun Building, and the Morgenthau Building, 19th street and Sixth avenue, all in New York; the 66th Street Power Station of the Edison Electric Illuminating Co., of Brooklyn; the Wainright Building, St. Louis; 13th and 14th Regiments' armories in Brooklyn; the Buffalo Street Railway Power Station, the Atlas Portland Cement Company's Building, at Northampton, Pa., the Oahu Sugar Company's Boiler and Grinding Mill at Honolulu, and eight other sugar mill buildings. These facts are the best possible testimony to the ability of the firm to perform its varied work cheaply and efficiently.

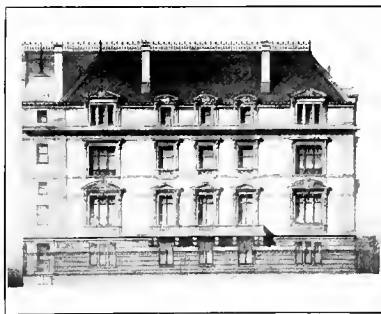
## STONE AS A BUILDING MATERIAL.



Mills Hotel, No. 1.

The whole history of architecture is a sufficient proof of the assertion that there is no great and permanent architecture without the use of stone. The only builders who used clay were the Babylonians and Assyrians; and that is the reason why the architectural remains of their civilization have been ground into dust-heaps instead of remaining comparatively strong and permanent like the stone monuments of Egypt. And so it is with the other great building nations. The Greeks, the Romans, the Mediaeval Frenchmen, and the Italians and Frenchmen of the Renaissance all used stone for their substantial buildings—the buildings that have a permanent place in architectural history. And the reasons are obvious. Stone has the value of durability. In addition it has the value of being massive and structural. It gives the impression of weight, substance and stability. Finally, it has the value of texture and color. This is an aspect of the use of stone which, as yet, has been neglected by American architects; but in all the most important periods of architectural history, stone was used quite as much with an eye to its surface as its structural qualities. Stone, as has been said, is the "epic" material, and the choice of any other has at all times acted as a hindrance to work of the highest character.

Of the increasing use of many varieties of stone in the building work of this city, there can be no manner of doubt. The brown stone, once so universally the favorite of New York builders, has indeed, been entirely superseded; and for a while its place was for the most part taken by brick; but at present the tendency is running strongly in the direction of



Residence R. Fulton Cutting, Esq.



Residence, O. G. Jennings, Esq.

various kinds of light stone—stones of excellent appearance and first-rate architectural value. Even the houses in which brick is used commonly possess a much larger proportion of stone trimmings than formerly; but in a great many cases, no brick is now used at all. This is not only true of public buildings, such as the New Hall of Records, the Appellate Court House, and the Public Library, but it is also true of many office buildings and private houses in all parts of the city. Many of the office buildings, such as the Western Union, the Tribune, and the Mills Buildings were constructed chiefly of brick; and their inferiority of appearance arising from the character of the material, to such structures as the Times and the Union Trust Company Buildings, is considerable and conspicuous. Among the more recent "sky-scrapers," the buildings like those of the Washington Life and the American Exchange National Bank, which are constructed entirely of stone, present a more dignified and impressive appearance than one like the Broad Exchange Building, in which a light brick is used above the lower stories. One of the few buildings on Broadway, in which the combination of a good stone with brick has proved effective, is the Singer Building. The same tendency toward the successful use of stone appears still more strongly in the modern New York residence. It is well known that during recent years the average cost of each private dwelling, erected in Manhattan, has increased from less to \$20,000 to almost \$40,000; and this enlargement of means at the disposal of architects has led, among other things, to the increased use of stone. Among the notable examples of handsome dwellings, in which stone has been used, may be mentioned the residence of O. G. Jennings, on East 72d street; of Isaac Sterne, of Henry T. Sloane, of Senator Clarke, at Fifth avenue and 78th street; of Charles T. Yerkes, and of many others. In fact, one may be tolerably certain that in almost every case when the designer for a rich man of a sumptuous and luxurious mansion has a chance, he will use stone; and this is par-



Singer Building.

ticularly true of the architects who have learned their profession in Paris.

One reason, however, for the increased use of stone is the fact that the product has been cheapened by the much more extensive employment of machinery. It was not so many years ago that very little machinery of any kind was used in the dressing of stone; but a visit to a modern stone yard, such as that of J. J. Spurr & Sons, at Harrison, N. J., would tell a very different tale of the methods of the present day. These works, which are most extensive and most perfectly equipped, are operated entirely by machinery and steam. The great masses of rock are carried to all parts of the building by traveling cranes; they are cut into the sizes desired by saws; and planed by planing machines. The amount of hand labor used is reduced to the lowest possible margin, and the consequence is that a stone yard, such as that of J. J. Spurr & Sons can put stone on the market at a price and deliver it with a promptness which was formerly unknown. Their works being located on the Passaic River and having a railroad switch into their yard, they are enabled to ship their product by vessel or rail, according to the location of the building they are erecting. Among some of the important work done by this firm are as follows:

By Ernest Flagg, Architect: Residence of R. Fulton Cutting, Madison avenue and 67th street; Mills Hotel, No. 1, Bleecker street; residence of O. G. Jennings, No. 7 East 72d street; Singer Building, Broadway and Liberty street; Bourne Building, Liberty street, New York City, and Conn. Mutual Life Ins. Co. Building, Hartford, Conn. By McKim, Mead & White, Architects: Interior hall and stairs of H. C. Villard residence, Madison avenue and 50th street; residence of Henry Fahnestock, East 51st street; residence of J. Coleman Drayton, Fifth avenue, New York City; Stickler Memorial Library, Orange, N. J., and St. Peters Church, Morristown, N. J. By Geo. B. Post, Architect: World Building, Park Row; Mills Building, Broad, Wall and Exchange Place; Schermerhorn Building, Broadway and Fourth street, New York City. By Brite & Bacon, Architects: Residence of George Crocker, Fifth avenue and 64th street, New York City. By R. H. Robertson, Architect: Mohawk Building, Fifth avenue and 21st street; Madison Avenue M. E. Church, Madison avenue and 60th street; residence of W. L. Skidmore, Madison avenue and 67th street; residence of J. J. McCook, West 54th street; N. Y. Academy of Medicine, West 43d street, New York City. By Edward H. Kendall: Residence of Robert Goelet, Fifth avenue and 48th street, New York City. By Bruce Price, Architect: St. Lawrence Building, Broadway and Cedar street, New York City. By

Clinton & Russell, Architects: Fahy's Building, Maiden Lane and Liberty street; Battery Park Building, Bridge, Pearl and State streets; Phelps, Dodge & Co. Building, John and Cliff streets; Woodbridge Building, William and John streets; residence of Charles W. Clinton, No. 39 East 57th street, New York City. By H. J. Hardenbergh, Architect: Waldorf Hotel, Fifth avenue and 33d street, New York City, and Newark Gas Co. Building, Broad street and Central avenue, Newark, N. J. By Richard M. Hunt, Architect: Residence of W. V. Lawrence, Fifth avenue and 78th street, New York City. By Renwick, Aspinwall & Owen, Architects: Christ Church, Amsterdam avenue and 71st street, New York City. By De Lemos & Cordes, Architects: Kuhn, Loeb & Co. Building, Pine street, New York City. By Augustus Laver, Architect: Residence of Hon. J. C. Flood, San Francisco, Cal. By Schickel & Ditmars, Architects: Residence of Wm. Pickhardt, Fifth avenue and 71st street; St. Vincent Hospital, 11th street and Seventh avenue, New York City. By Howells & Stokes, Architects: American Geographical Society Building, 81st street and Central Park West, New York City. By R. Maynicke, Architect: Mercantile Building, Fifth avenue, 17th and 18th streets; Mercantile Building, Fifth avenue and 19th street; Mercantile Building, Broadway and 13th street, New York City. By W. Wheeler Smith, Architect: Mercantile Building, Broadway and Third street, New York City, and many others.



Connecticut Mutual Insurance Building, Hartford, Conn.

## MODERN PLUMBING.

**A**SSUREDLY there is no department of the work of building construction in which progress is more rapid and steady, and results more assured than in the department of plumbing.

In all the different branches of the building construction there is not one that has enlightened the public more than the plumbing, both from a sanitary condition and a decorative appearance. It has all been revolutionized mostly this last ten years, so one would say we are still in our infancy regarding sanitary plumbing.

Every body wants good plumbing; almost every body knows what good plumbing is; and inventors and business men have been, and are the most active agents in originating and introducing improved sanitary devices. They all realize that no matter how well built, a house is unsafe as long as the plumbing is imperfect, and the money which the public is willing to spend for the purpose is every year used with better results.

In order to obtain some notion of improvements which have recently been made in sanitary devices, the writer called recently upon Mr. John Boyd, of No. 274 Columbus avenue, who, probably knows as much about practical plumbing as any man in the United States. Mr. Boyd was perfectly willing to talk about his favorite topic, and agreed to do so, provided the writer would keep him in the background, saying: "I prefer to let my work talk for me," which, as every one is aware who is acquainted with Mr. Boyd's work, does talk most eloquently on his behalf. It has been placed in many of the most important buildings in New York, and has uniformly given satisfaction.

Among other things, Mr. Boyd remarked that the great advance in plumbing and sanitary appliances generally, had come about within the past ten years.

But let Mr. Boyd tell the story in his own way:

"A short time ago I made a smoke test on a large office building, of which I am doing the plumbing work. I was informed by the owners that every part of the plumbing was in perfect condition, but it did not take me long to convince them, by their own personal observation, that they were not so up to date as they thought.

"I discovered a large brick cesspool in front of the cellar underneath the floor, into which all the sewerage matter discharged. It was constructed in such a manner that it could never be entirely emptied. All the drains were built of brick, where a great many leaks were discovered; there were no traps on the leaders, allowing the gases to pass through them and enter through the open win-

dows above the gutter, and many other leaks in the iron soil pipe. Several of the toilet rooms were ventilated by a small 1½-inch lead pipe, branched from the soil pipe, and brought to the external air underneath the windows on the different floors.

"The question was asked me by the owners what I should suggest. I recommended that modern plumbing should be executed in such a building. My views on modern plumbing in any building are that it should be constructed in such a manner as to have proper light and ventilation.

"All the main, soil, waste and ventilating pipes are to be carried through the roof, and the vent branches of the different fixtures to be connected to the crown of the traps or bends, and continued to the nearest main ventilating pipe. The wastes of water closets to be connected independently to the soil lines, and other fixtures may be branched into each other and make a separate connection to the soil line.

"The drainage and sewerage pipes may be either of extra cast-iron pipe with extra heavy fittings, or galvanized wrought-iron pipe with galvanized recessed drainage fittings; but it is more durable to use extra heavy cast iron for drainage purposes, when same are placed under ground.

"For instance, I wish to give a few explanations of the different plumbing fixtures and the various advantages of each.

"WATER CLOSETS.—The wash-out closet, being introduced as the first of our modern plumbing closets, was constructed of one piece of earthenware, but after a few years we improved it by introducing a syphon jet closet, which has advantages over the old wash-out closet used with the cistern. The wash-out closet depended upon the flushing capacity of the rim constructed in the earthenware, and this was very objectionable, on account of the noise when being flushed. Often it was not sufficient to cleanse the trap properly; this was sometimes caused by the valves of the cistern not being properly constructed.

"The syphon-jet closet is constructed similar to the wash-out closet, but has the additional syphon partition made so as to allow the flush of closet to enter half into the trap and half into the flushing rim of the bowl—creating a syphonic action in the trap, which is more reliable in cleansing on account of its construction.

"Of recent years vitreous earthenware has been substituted for common glazed earthenware to prevent crazing.

"The Kenney Flushometer has its advantages over the cistern of the overhead closets, in that it has a solid column of water immediately close to the bowl, and such an arrangement entirely overcomes the several imperfections, which attend the use of a disconnected stream of water released from an overhead tank, as in the case of the numerous other types of apparatus in use at the present time.

"It is designed for use on either direct pressure or tank systems, and to work with ease and efficiency under any pressure, giving a quick flush of large volume at the start, and finishing with a slow after-flush of small volume.

"This system dispenses entirely with the overhead flush-tank, which is a necessary feature of nearly all water closets now on the market, and is highly suitable for dwellings or other buildings in



which there may be closets on each floor, while only a single supply tank is located in the attic or roof space. It is only necessary to connect each closet to the main pipe by a branch flush pipe.

"LAVATORIES.—There is a great difference of opinion as to what should be used in different buildings now being constructed. The old marble slabs with earthen bowls attached with clamps have become things of the past, being superseded by solid earthenware in one piece. The advantages are that the bowl and slab being made of one solid piece of earthenware, which does away with plaster joints between bowl and the slab, and the material being of a non-absorbent nature and the porcelain bowl heavier in construction gives an advantage over ordinary bowls, for there is no chance for any separation to take place between bowl and slab. There is no doubt this makes a more durable and substantial fixture, which harmonizes with the material of other fixtures, and in due justice to decorators of other materials, I can safely say they can duplicate any decoration required. Lavatory fittings for waste and supplies are too numerous to mention at this time, but they have advanced as rapidly as other sanitary appliances.

"BATHS.—The manufacture of baths has created more interest in plumbing industry than any other material, for the reasons that a piece of solid porcelain earthenware of such large magnitude, exposed to such extreme temperature in the kilns, finished in such perfect condition, far surpasses any that ever have been imported, both from workmanship and decorative appearances, thus giving credit to American industry. Baths are now being constructed in one solid piece, and resting on floor, thereby doing away with legs. Moreover, I must make mention of enamelled iron baths, which have reached the same height of perfection as solid porcelain baths, both as regards manufacture and decorations.

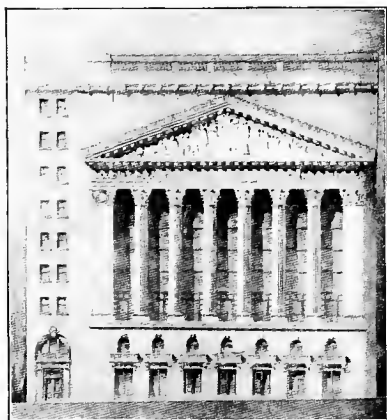
"CONCLUDING, I would say that the improvements as regards rough plumbing now put in buildings are most rapid. Originally lead was used for drainage, soil, waste and supplies. About 1870 cast-iron pipe and fittings of a light weight, now called "Standard," was used, and to protect from decay, were tar-coated. Later, cast-iron pipe and fittings of heavier grade, called "Medium," were manufactured to take the place of "Standard." At this time was also commenced the manufacture of a grade of cast-iron pipe and fittings called "Extra Heavy," which is the grade now used exclusively in New York City, and is the only grade of pipe and fittings which is allowed in construction of plumbing system by the New York Building Department.

"Of recent years, a number of leading architects and plumbers have been advocating the use of galvanized wrought-iron pipe and drainage fittings for soil, waste and vent systems. It is claimed for the galvanized wrought-iron drainage system that more reliance can be placed on a screw joint than on a lead caulked joint. At the present time, drainage soil, waste vent and supplies for plumbing system can be installed either of cast iron, wrought iron or brass, as architect or owner may desire, and when constructed in accordance with rules and regulations of New York Building Department, there is no reason why either of these above-mentioned materials cannot be used and work made perfectly sanitary in all parts."



**I**T is an astonishing feature of the building business that some engineers and architects permit the use of brands of cement which are neither well established nor endorsed by competent chemists. Notwithstanding the important part hydraulic cement

plays in every structure, whether of stone or brick, builders sometimes overlook the importance of specifying the use of the "Dragon" brand of Portland cement. This brand has been on the market for over a dozen years, and its increased sales demonstrate the endorsement given it by all users of good Portland cement.



THE NEW YORK STOCK EXCHANGE.

The multiplication of mills for the manufacture of Portland cement within the past few years is an indication of the increasing popularity of this American product so far as

they were constructed as legitimate business enterprises. When Dragon Cement was first placed on the market, the annual output of American Portland was 275,000 barrels per annum from all the mills, and this had increased to over 12,000,000 barrels in 1901. The finished product of many manufacturing establishments should be carefully examined by the users of cement. If any plants were built by speculators with a view of disposing of them for profit, the quality of the product made by inexperienced hands might be very inferior and treacherous to users.

There are few cities of importance throughout the seaboard states and contiguous territory from Maine to Texas, wherein "Dragon" cement has not been extensively used. Not only does "Dragon" enter into the foundations and superstructures of build-

mgs, but it is well adapted and used for sidewalks, curbing and street pavements. Many of the prominent railroads have used "Dragon" in the construction of their bridges and other heavy masonry. For the foundations of their freight houses, depots and platforms, thousands of barrels of "Dragon" Portland have been satisfactorily used.

The United States Government selected "Dragon" cement for the erection of many of its heaviest fortifications and sea walls and other harbor work. The building of the new Custom House in New York City in 1901 calls attention to the fact that this same company furnished the cement used in the construction of the old



LAWRENCE CEMENT CO.

Custom House in 1840. The Lawrence Cement Company furnished the cement used on the Wall Street building in the forties, and are now supplying their "Dragon" Portland brand in the erection of the new Custom House, at Bowling Green and the Battery. It is used as well for the foundations of the new Stock Exchange, the Chamber of Commerce Build-

ing and the East River Bridge, and the Muscot Dam, on the Croton Water-shed.

The extensive cement plant where "Dragon" brand is made, is situated in the Lehigh Valley on the line of the Central Railroad of New Jersey. The company has acquired the property on which the first cement stone was discovered. They control about two hundred acres of land, containing an inexhaustible supply of the best cement rock in the Lehigh Valley, and own also enormous deposits of a superior quality of limestone. Their quarries are admitted to be superior to most others in that region. They are open to the inspection of engineers and architects who would like to know something regarding the inside merits of "Dragon" cement which they should specify and use.

"Dragon" cement exceeds all the requirements of the American Society of Civil Engineers, both for neat and sand tests. The testing laboratories of the best well-known chemists confirm these facts.

Scientific examination of the natural rock, sampling of the composition and complete analysis of the finished product are made every hour throughout the day and night, as the cement plant runs continuously the whole twenty-four hours.

The company's laboratory tests include not only the chemical

analysis of the cement, but also the cold water, steam and boiling test and the usual tests for tensile strength, both neat and with sand. "Dragon" cement exceeds by a liberal percentage the maximum standard for fineness, and strength, and its specific gravity comes fully up to the standard.



A TRAIN OF 27 CARS TO ONE CUSTOMER IN THE WEST.

"Dragon" cement has attained that degree of perfection in its manufacture which places it beyond rivalry. It is in a high class by itself. The company's assurance goes with every barrel of "Dragon" Portland. The present managers of The Lawrence Cement Company have the benefit of the experience of more than fifty years in the manufacture of cements, during which time the company has superintended the making of over 20,000,000 barrels of Portland and natural cements. If wisdom follows experience, it should be conceded that their "Dragon" cement ought to possess all the excellent merits attributed to this popular brand.

### "PARAGON" PORTLAND.

Another brand of Portland cement made by this company is known as "Paragon." Its increased shipments every year prove its value by engineers and contractors. "Paragon" Portland being uniform in fineness and having excellent sand carrying capacity, makes a very plastic mortar, which masons are pleased to use. "Paragon" answers the demand of builders for a Portland cement that possesses a tensile strain of about 500 lbs. to the square inch in one week.

"Paragon" recommends itself for use to bricklayers and other masons, as it makes a very safe mortar that is readily applied with the trowel.

Quite a number of engineers and contractors prefer a moderately high testing cement like the "Paragon," instead of the record-breaking brands of extremely strong tensile strength.

The greatest usefulness and moderate cost of a standard cement are not always nor easily combined in one brand. "Paragon" Portland possesses these precise particulars, and for this reason is very popular with architects in their specifications.

"Paragon" is an easy-selling brand, and gives satisfactory results in the construction of culverts, conduits, cistern-linings, cellar floors and sewers.

By many of its users, "Paragon" is regarded as one of the best Portland cements in the market, even in comparison with higher

grades, and for nine years past has been handled with increasing pleasure and profit to themselves and excellent results in the work performed.

### IMPROVED SHIELD.

To meet the requirements of builders for a good cement of less strength and quicker setting properties than Portland possesses, the Lawrence Cement Company have manufactured a brand for the last eleven years known as "Improved Shield." It is an excellent cement, and in many places gives as good satisfaction as some brands of Portland. For fineness, it equals any other cement, ex-



READING TERMINAL.

cept high-grade artificial products, and far surpasses most brands of so-called Rosendale cements.

"Improved Shield" invariably shows the following good record: Ninety-nine per cent. passes a No. 50 sieve; 95 per cent. passes No. 100 sieve; 81 per cent. passes No. 200 sieve. What Rosendale cement can equal this? For strength in 24 hours, "Improved Shield" breaks neat over 100 pounds; in seven days the breakage averages 175 pounds, and 275 pounds in 30 days. With two parts sand, its tensile strain is 100 pounds in seven days; 200 pounds in 30 days and 400 pounds in six months.

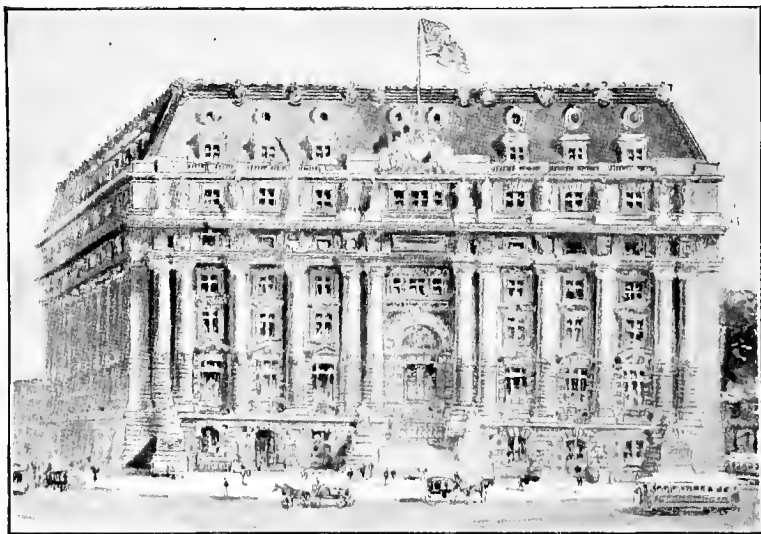
"Improved Shield" is the strongest of natural rock cements, and its adhesiveness and resistance to compression have won for it a first place among the best enduring cements.

"Improved Shield" can be relied upon to grow harder every year, and produce the strongest work for superstructures.

"Improved Shield" cement is manufactured with the same care and attention in all details that are given to higher-priced cements. It has surpassed the expectations of architects and shown valuable qualities, exceeding the guarantees of its manufacturers.

The conclusion of the whole subject is that the best business interests of architects, engineers, contractors and other users of hydraulic cement will demand that only reliable, standard brands be employed in their work. This should direct their attention to the experience and long time service of the cement manufacturer. Some business men are willing to take large risks in order to save a few dollars. They frequently sacrifice a reputation for reliability without adequate returns. In order to place its product on the market already occupied, most new business enterprises are compelled to offer inducements in one form or another. Either the new goods must be better than those already for sale, or the price must be lower. The risk to the purchaser in handling the new product must be more or less commensurate with the inducement.

Good judgment demands the best material procurable in the building line. The reader may feel sure he is using excellent judgment when he specifies that the cements mentioned in this article be used on all future contracts.



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Havemeyer Building.	George B. Post, Architect.
Union Trust Building.	George B. Post, Architect.
New York Life Insurance Building.	McKim, Mead & White, Architects.
Madison Square Garden.	McKim, Mead & White, Architects.
Metropolitan Club.	McKim, Mead & White, Architects.
Townsend Building.	Cyrus L. W. Eidlitz, Architect.
Washington Life Insurance Building.	Cyrus L. W. Eidlitz, Architect.
New York Bar Association.	Cyrus L. W. Eidlitz, Architect.
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McIntyre Building.	R. H. Robertson, Architect.
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New York Clearing House.	R. W. Gibson, Architect.
Onondaga County Savings Bank, Syracuse, N. Y.	R. W. Gibson, Architect.
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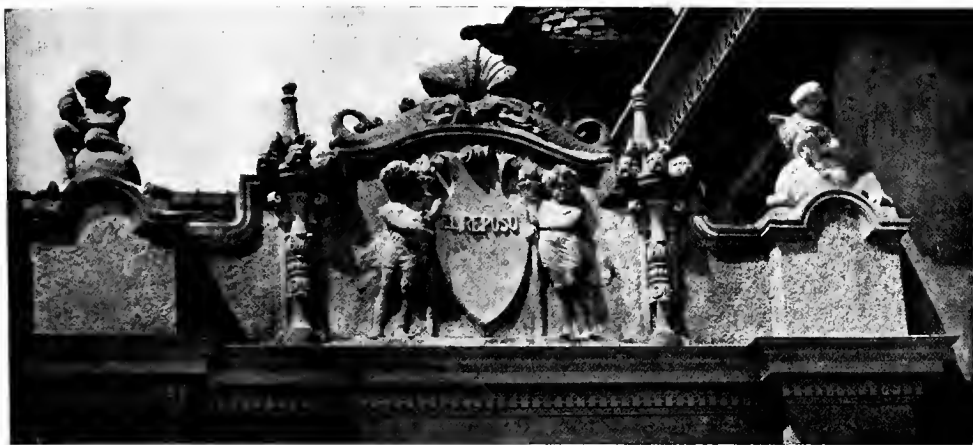
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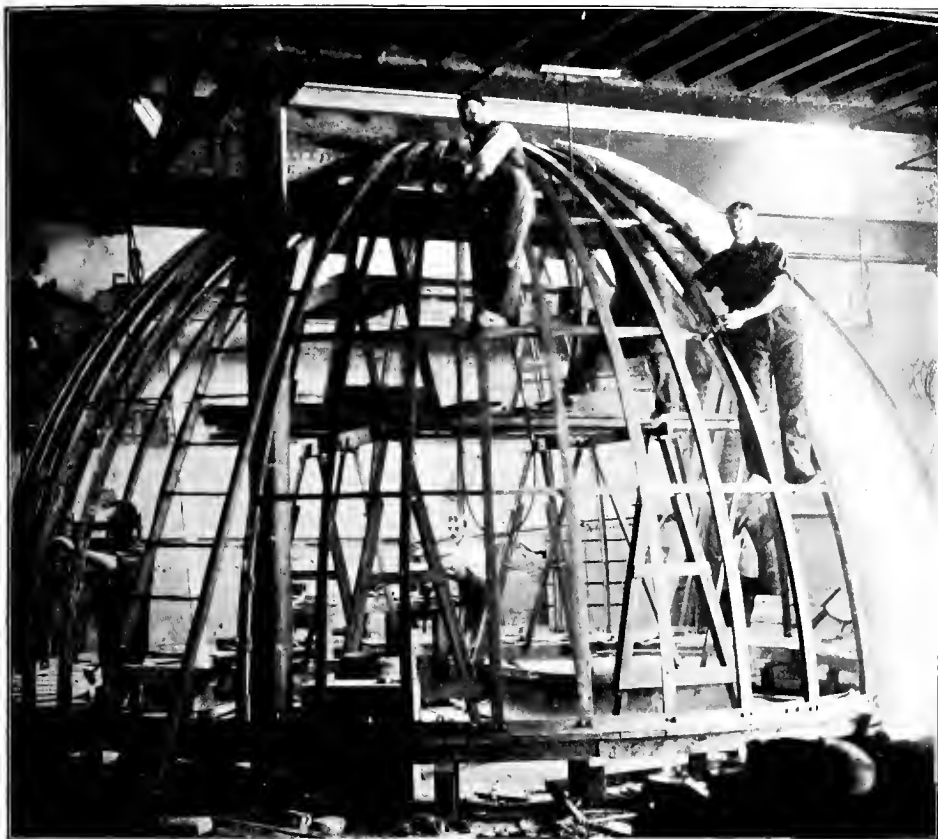
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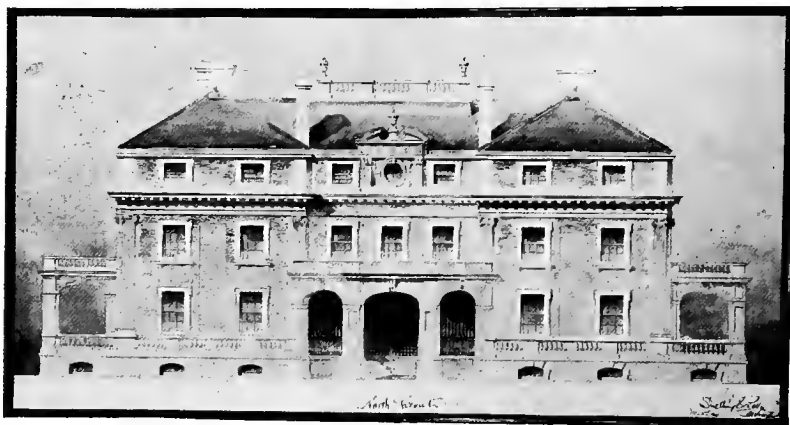
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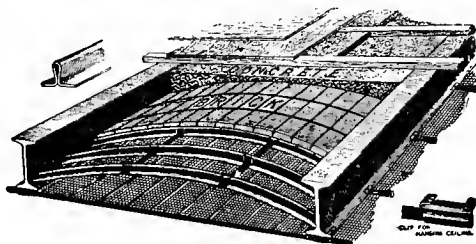
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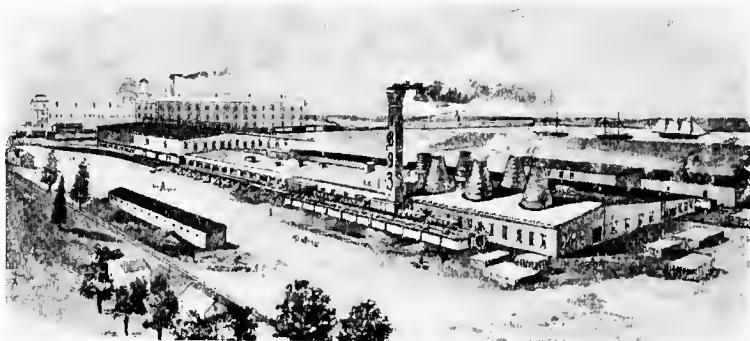
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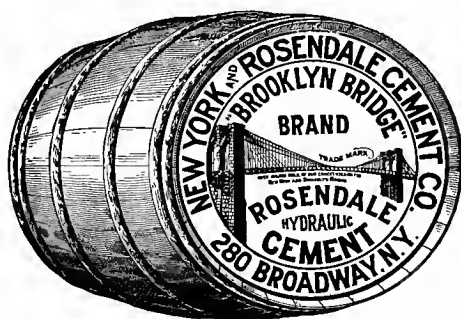
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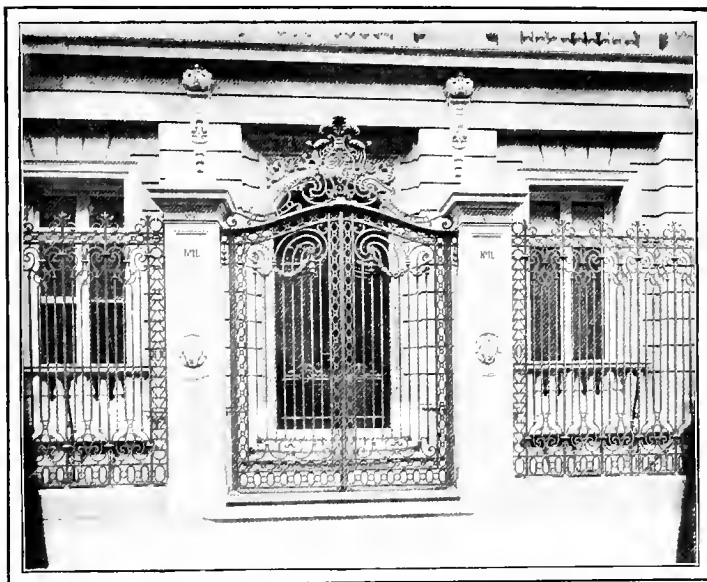
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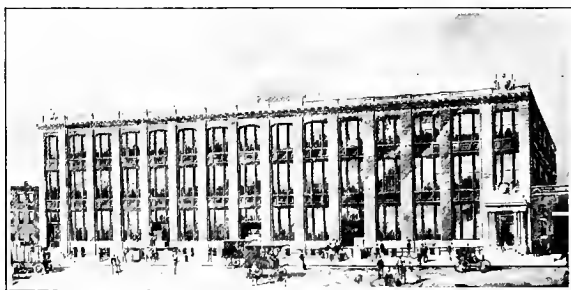
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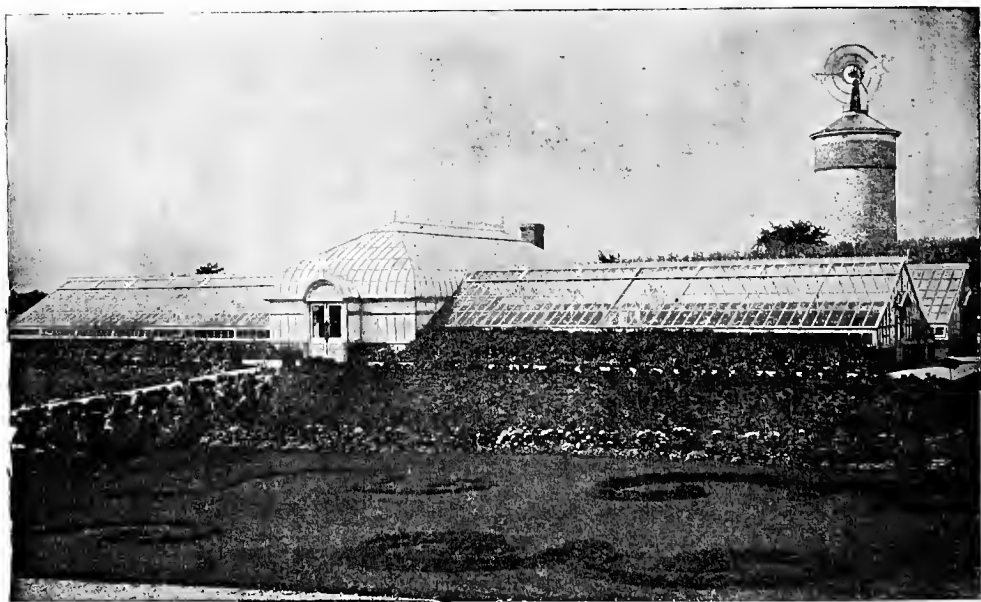
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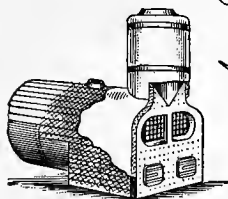
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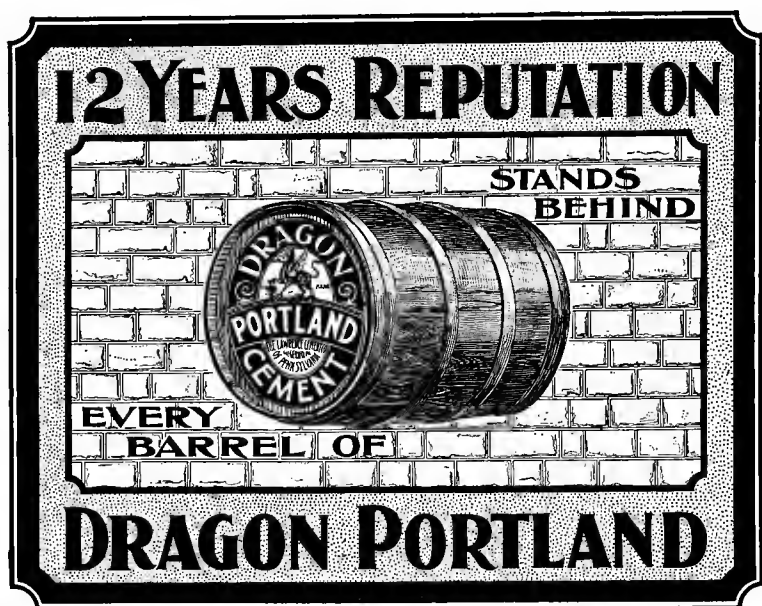
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