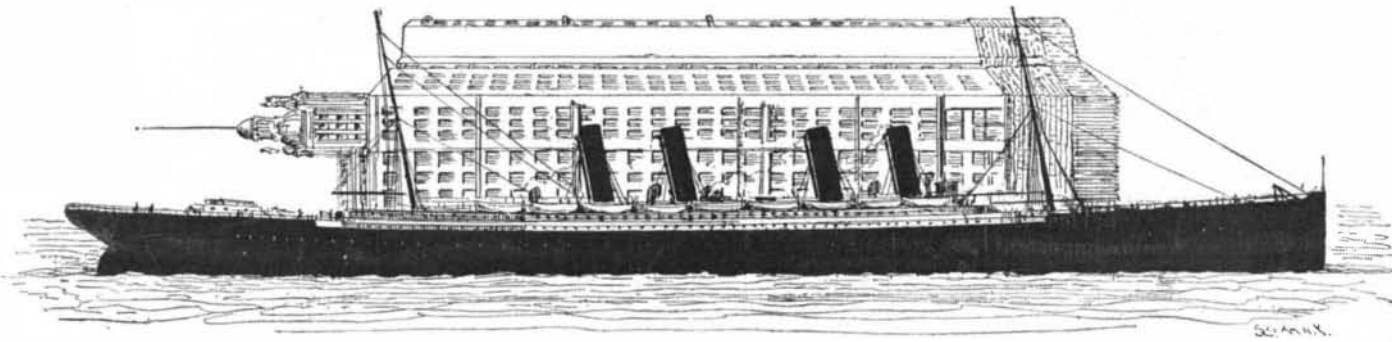


THE TALLEST OF MODERN OFFICE BUILDINGS.

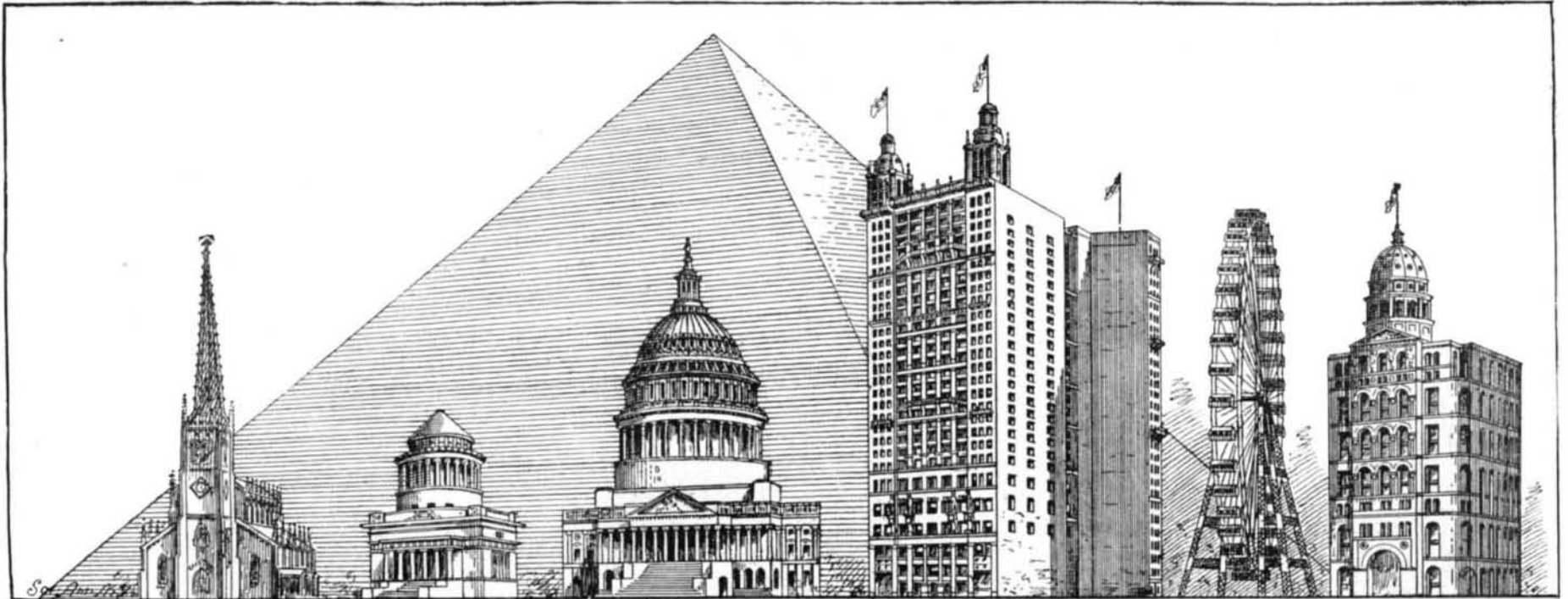
Although New York city did not undertake the construction of lofty office buildings until they had become a familiar feature in the architecture of some Western cities, it has run them up in such numbers and to such unprece-



PARK ROW BUILDING COMPARED WITH THE "KAISER WILHELM DER GROSSE."

Park Row Building: Distance from bottom of piles to top of flagpole, 501 feet; weight, 20,000 tons.
 "Kaiser Wilhelm": Extreme length on deck, 649 feet; weight, 20,000 tons.

sight of the Park Row building to exclaim, "What a monstrosity!" And it cannot be denied that their exaggerated vertical proportions render it impossible to judge these buildings by the ordinary canons and pronounce them beautiful. The modern office building, however, is not to be



Trinity Church, New York. 288 feet. Grant's Tomb, New York. Dome of Capitol, Washington. 287½ feet. Park Row Building, New York. 390 feet. The Paris Wheel. 305 feet. World Building, New York. 294 feet.

NOTABLE BUILDINGS COMPARED WITH THE GREAT PYRAMID OF EGYPT—HEIGHT, 450 FEET; BASE, 746 FEET.

dent heights in the last ten years that they have now become the most characteristic and obtrusive feature of its architecture. The sky line of New York to-day is so changed from that of twoscore years ago that a former resident, returning from abroad after an absence of twenty years, would be quite unable to recognize the city as he steamed up the waters of the bay. The sky line of former years was determined by the uniform level of the five-story buildings which composed the bulk of the down-town districts, broken by such familiar landmarks as the spires of Trinity Church and St. Paul's Chapel, one or two shot towers, and a few church and chapel towers of less conspicuous height. To-day the eye follows a picturesquely irregular line of cornice and roof tops, much of which is over two hundred feet and not a little of it over three hundred feet above the street level.

Towering high above the tallest of these great structures is the vast bulk of the Park Row building, which lifts its twin towers 390 feet into mid-air and unfurls its two flags over the city at a height of 447 feet above the sidewalk!

We can imagine that the New Yorker already referred to, on returning to his native city after twenty years of absence, especially if he had lived among the exquisite architecture of the old world, would be tempted at first



Astor House. Erected 1834. Park Row Building. Erected 1898. St. Paul Building. Erected 1896. St. Paul's Chapel. Erected 1764.

THE OLD AND THE NEW, AS SEEN FROM ST. PAUL'S CHURCHYARD.

judged by the usual architectural standards. It professes to be nothing more or less than it is—a strictly utilitarian structure, admirably adapted to its purpose of housing the greatest possible number of business men upon a limited area in the city's busiest center. The ever-increasing value of property, the tendency of business to concentrate within certain circumscribed areas, and the possibility opened up by the modern fast-running elevator, have conspired to render necessary and possible the stupendous office buildings of to-day.

As regards the engineering and architectural problems presented, it must be confessed that the first have been easier of solution than the second. It is a simple matter to pile story upon story and so proportion columns and girders to loads that the structure shall possess eternal stability; but it is an altogether different problem for the architect to clothe the "skeleton" with a mantle of stone and glass that shall appear diversified, yet dignified and appropriate.

It will, we think, be admitted that in his treatment of the towering pile of the Park Row building, the architect, Mr. R. H. Robertson, has produced a very satisfactory effect. The bald, tower-like impression which would naturally be conveyed by a façade nearly 400 feet high on a base of about

100 feet is modified by treating these stories in sets of four or five and accentuating the width of the building by heavy mouldings and projecting balconies. This accentuation of the horizontal as against the perpendicular lines is successful, for, impressive as it is, the building does not really "look" its full height of 447 feet to the top of the flagpole.

It is not our intention in the present article to enter into a detailed description of the constructional features of the building, which do not differ in any important particulars from the standard work put into buildings of this class. We will rather draw attention to what might be called the sensational and spectacular features of this, the most remarkable commercial building ever erected, or, in respect of its height, likely to be erected.

The plan of the building, as will be seen from the engraving, presents much irregularity, due to the cupidity of some of the adjoining property owners, who asked prohibitive prices. It has a frontage of 108 feet 11 inches on Park Row, 23 feet on Ann Street, and 47 feet 10½ inches on Theater Alley. Two of our illustrations were taken from the Ann Street side, another was taken from the western end of St. Paul's Churchyard, while that on the front page was taken from the roof of the Astor House, looking across the junction of Park Row and Broadway. The area of the lot is 15,000 square feet, and the vast bulk that towers above it, weighing, with the maximum loads that can be placed on the twenty-nine floors, some 54,000 tons, stands (it may surprise some of our readers to know) upon a foundation of sand. No such fate as befell the Biblical house that was built, not upon the rock, but upon the sand, will ever overtake this "end of the century" structure, for the duty of carrying the building is intrusted to some four thousand 12-inch piles, which were driven into the sand by the pile-driver until they refused to budge any further. As the average load that is ever likely to come upon the piles is about 7 tons, while their maximum bearing capacity is over 20

"distributing girders" were placed between the foundations and the footings of the vertical columns of the building. These girders are from 8 feet to 47 feet long and vary from 4 feet to 8½ feet in depth. The heaviest of these, which is placed beneath the wall on Theater



STATUE FOR FACADE BY J. MASSEY RHIND.

Alley, weighs 52½ tons. While on the subject of the steel work, it will be of interest to state that the heaviest load borne by any one column is 1,450 tons.

VERTICAL HEIGHT.—The Park Row building is considerably the tallest commercial building in the world. The following table gives the names and heights of those New York office buildings whose highest point is 300 feet or more above the street level.

The sketch on the adjoining page, which is drawn strictly to scale, shows the relative height above ground level of several notable structures in this country compared with that favorite reference-scale for height and bulk—the Great Pyramid of Egypt. It will be seen that while the Park Row building greatly exceeds the

Name.	Number of Stories.	Tower.	Height.
Park Row.....	29	Yes	390
Manhattan Life.....	18	Yes	348
St. Paul.....	26	No	313
American Surety.....	21	No	312
Commercial Cable.....	20	Yes	304
Gillender.....	19	Yes	300

World building, the dome of the Capitol at Washington, and the spire of Trinity Church, New York, it requires all of its 57 feet of flagstaff to bring its highest point within 3 feet of the top of the Pyramid. Omitting the Pyramid, however, it is conspicuously the tallest inhabited building in the world, for while the cornice of the American Surety building is 313 feet above the level of the street, the floor of the restaurant at the top of the Park Row building will be 308 feet above the street, while the floor of the topmost offices in the towers (fine, well-lighted rooms 24 feet in diameter) will be 340 feet above the same level. The main part of the building will have twenty-five stories, while the Park Row front will be twenty-seven stories high, the space between the two towers being occupied by a kitchen for use in connection with a restaurant below it, which will occupy the full width of the building. The cornice of this front is 336 feet above the sidewalk, while the top of the cupola on the towers is 390 feet above the same level. The flagpole truck is 57 feet above the cupola, while the feet of the piles are 54 feet below the street level; hence the total height of the building from shoe of piling to truck of flagpole is over 500 feet.

The point of view from which the building shows its



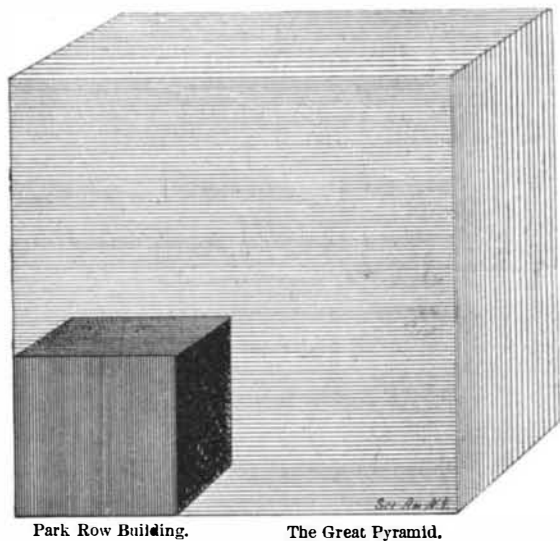
TYPICAL PLAN OF A FLOOR.

vast proportions to best advantage is that from which our front page engraving was made. The adjoining five-story buildings on either side act as an admirable foil to set off the imposing height. By far the most striking effect, however, is that obtained by standing on the opposite side of Ann Street, which is very narrow, and letting the eye range up the full sweep of

twenty-nine stories. The Ann Street frontage is only 20 feet, and, looking up from the street, it has for all the world the appearance of some factory chimney of extremely lean proportions.

Our readers will agree with us that the photograph mentioned, taken with the lens looking almost plumb into the heavens, may be reckoned as among the most original curiosities of the art.

VOLUME AND WEIGHT.—Although the



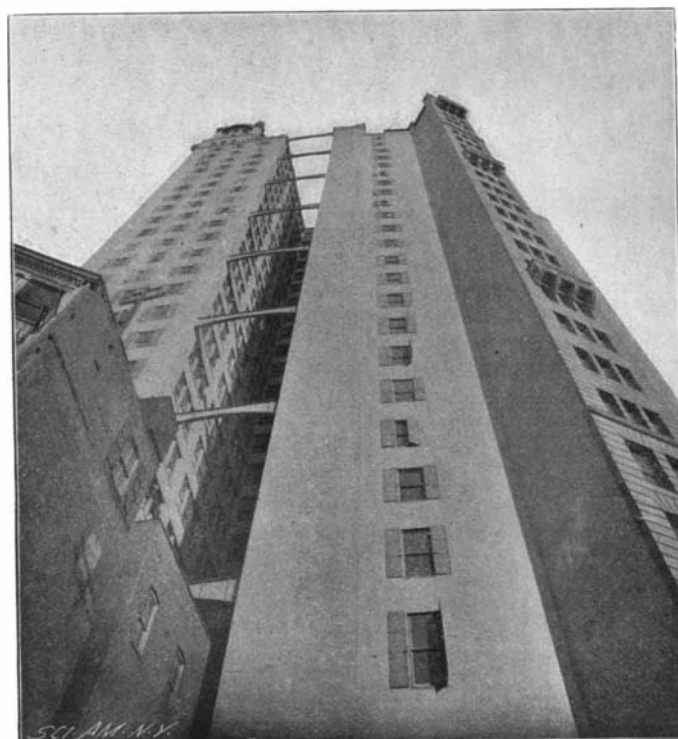
COMPARATIVE BULK OF PARK ROW BUILDING AND THE GREAT PYRAMID.

tons, it will be seen that even if the rain descends, and the floods come, and the winds blow and beat upon that house, it will not fall. The piles are spaced 16 inches between centers immediately beneath the vertical columns, and the rows of piles will be about 2 feet apart. Moreover, as the piles are cut off below the level of ground water, they are absolutely indestructible. After the piles were cut off, the sand was removed to a depth of one foot below the top of the piles and concrete was rammed in between them and finished off flush with the top of the piles. Above the piles and concrete were laid large granite blocks to form the bases of the brick piers, the piers being finished off with granite capstones upon which was laid a grillage of 12-inch I-beams.

To insure an even distribution of the pressure, huge



THE FACADE FROM THE ADJOINING SIDEWALK.



THE VERTICAL PERSPECTIVE OF A MODERN SKYSCRAPER. View taken from Ann Street.

building admits of comparison in respect of height with the Pyramid, when we come to the question of volume and weight our nineteenth century effort sinks into positive insignificance. The Pyramid, in its present mutilated condition, has a base of about 746 feet square and a vertical height of about 450 feet. Its present volume is estimated at about 82,000,000 cubic feet and its weight at 6,316,000 tons. The Park Row building has a volume of 3,906,580 cubic feet and a total dead weight of 20,000 tons, so that the ancient structure has about twenty-one times the volume and over three hundred times the weight of the modern building.

Evidently in respect of the bulk and weight of our buildings we cannot compete with the ancients, and as the Pyramid is no longer a popular form of mausoleum, it is not likely that we shall ever attempt to.

It is a curious fact, which will come as a surprise to many of our readers, that for all its great size and mass this building is no heavier than the latest ocean liner, the "Kaiser Wilhelm der Grosse." The building contains about 8,000 tons of steel and 12,000 tons of other material, chiefly brick and terra cotta, making a total weight for the building of 20,000 tons. The "Kaiser Wilhelm" displaces 20,000 tons of water, and therefore equals the towering "skyscraper" in weight. The extreme length of the liner is 649 feet, measured on deck, so that she exceeds the greatest dimensions of the building by 148 feet. The total cost of the building was \$2,400,000, and that of the ship probably a million or even a million and a half more, the greater cost of the ship being due chiefly to the greater power and weight of machinery, of which about 27,000 horse power is in the ship as against 1,000 horse power in the building. Brick and terra cotta, moreover, are cheaper materials than ship frames and plating.

POPULATION.—This extraordinary building, with its modest frontage of 104 feet on Park Row, and of 20 feet and 48 feet on a side street and an alley, will accommodate the floating population of a fair-sized country town. That this is no exaggeration, the following figures will show. There are in the whole building 950 separate offices. As most of these are of generous proportions, a fair estimate of their capacity would be an average of four people to each office. Now, it is reasonable to assume that there will be at any given hour of the day an average of one visitor in the building on business for each person employed. This would make a total number of persons in the building at any period of the day of 8,000. If we assume that on an average five persons would call at each office during the day, for each person employed, we get a total of about 25,000 souls making use of the building in the course of every working day of the year.

HISTORICAL SURROUNDINGS.—In concluding we draw particular attention to the reproduction of a photograph taken from St. Paul's Churchyard. It would be impossible to find in all America a spot where the old and the new are so strangely blended as here. The venerable ecclesiastical building was erected in 1764 and was originally known as Trinity's St. Paul's Chapel. The site selected was a field of wheat opposite the Common, now the City Hall Park. It was opened for service on October 30, 1766, the sermon being preached by Samuel Auchmuty, D.D., "Rector of Trinity Church and Chaplain to the Right Hon. William, Earl of Stirling." The churchyard sloped westward to the Hudson River, whose shoreline was located where Greenwich Street now extends. The steeple of the church was added in 1794. At that time the church was beyond the city limits, and history records that the people "scrupled not to comment with just severity upon the folly of that visionary set of men, the vestry of Trinity Church, who had put so large and ornate a building in a place so remote and sequestered, so difficult of access, and to which the population could never extend."

Could the captious critic but stand to-day and look around in this "place so remote and sequestered"!

The oldest pew-book extant commenced in 1828 and contains such names as that of Thomas Barclay, the first British consul in the early days of the republic, and other names more or less conspicuous in the history of the city, such as Haight, Larogue, Edward Bacon, Beekman, Stuyvesant, Schuyler, Kip, Lorillard, Golet, and Stewart. Earlier pewholders in 1787, when the population of New York was only 30,000, were Isaac Jones; Peter Goelet, who lived at 48 Hanover Square; Mayor Richard Varick; Abraham Lawrence; and Mayor James Duane, who lived at 26 Nassau Street (at that time the upper Fifth Avenue of New York.)

On April 30, 1789, immediately after Washington's inauguration, he and both houses of Congress went in procession to St. Paul's and attended appropriate services.

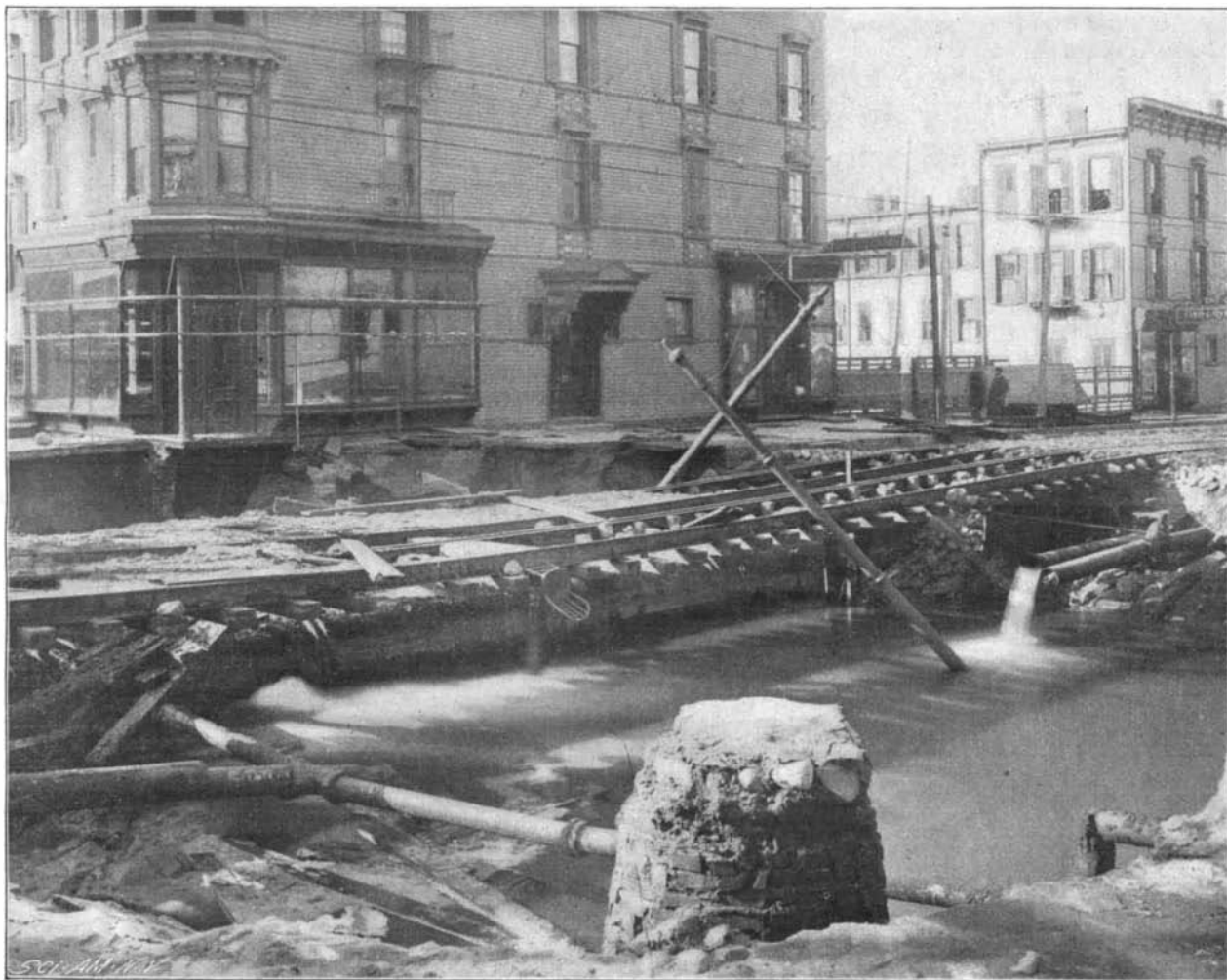
The remains of Montgomery, who fell at Quebec, were, in 1818, deposited beneath the monument erected by Congress to his memory. Other notable monuments are that erected by Edmund Kean in memory of the actor George Frederick Cooke, and that of Bechet, Sieur de Rochefontaine, who served in the revolution. In the burial ground rest not a few other soldiers who fought on one or other side in the revolutionary struggle.

Across the street to the left is seen a portion of the famous Astor House, built in 1834, once the most

THE BURSTING OF A WATER MAIN IN BROOKLYN.

A 48-inch water main at the corner of Central Avenue and Covert Street, Brooklyn, New York, broke on Sunday, December 11, and did great damage. The pipe was of cast iron and was placed in position about eight years ago. It runs from the Ridgewood reservoir, which is not far distant, to the Prospect Hill pumping station. As a result of the fracture the houses in the neighborhood were undermined and rendered untenable. For blocks around all the water was cut off and, owing to the break in the supply, a considerable section of Brooklyn was much restricted in the use of water. The gas mains were broken by the caving in of the street and the electric light and the trolley systems were also disorganized. The soil at the point of the break was sandy, which accounts for the fact that the street had been undermined long before the break showed on the surface. As near as could be ascertained it occurred about five o'clock in the morning. The local fire house was notified, and a number of firemen at once ran to the scene of the break to render aid. When they reached the place of the accident, they found the street car tracks on Central Avenue had disappeared and the trolley poles had toppled over, forming a letter A. There was a number of live wires, which made any attempt to render assistance dangerous. In a few moments there was a roaring torrent and the people were fleeing for

their lives from adjacent buildings. On the northeast corner there was a four-story tenement house, the ground floor being occupied by a mission chapel. Fortunately, there was no one in the chapel, but the floors above were tenanted, and as it was evident the flood had undermined the building, the police and firemen at once aroused and ordered out all of the occupants. The cellars in the vicinity were flooded to a depth of six feet, and the foreman of the fire engine company informed headquarters that there was danger of a water famine; so that a large part of the chemical apparatus in the city was sent to the fire engine houses in that section. A detail of laborers from the water department at once proceeded to the scene of the accident. It was known at the pumping station that there was already trouble, for the pumps had been



BREAK IN A 48-INCH WATER MAIN IN BROOKLYN, N. Y.

famous hotel in America, and still a popular resort with those travelers who delight to house themselves amid historical surroundings. The tower-like building across Broadway, 313 feet in height, was the tallest office building in the world until it was overshadowed by its colossal neighbor in the adjoining square.

Our thanks are due to Mr. R. H. Robertson, the architect, and Mr. A. Pauli, who had charge of the erection of the building, for courtesies extended in the preparation of this article.

Gelatine in Gum.

A. Trillat employs commercial formaldehyde solution to render gelatine insoluble, so that it may be detected and the amount present determined, in mixtures containing gum, sugar, or other bodies not precipitated by formaldehyde. The substance to be tested is dissolved in water, and the clear solution evaporated to a sirupy consistence: a little formaldehyde solution is then added and evaporation continued until a pasty consistence is reached. The residue is finally washed by decantation with boiling water, dried, and weighed.—Comptes Rendus, cxxvii., 724.

AN order for 2,500 tons of 83-pound steel rails for an Irish railway has been placed with the Maryland Steel Company. American rails have before this gone to British colonial possessions, but this is understood to be the first time that they have been bought for use in the United Kingdom.

drawing nothing but air for an hour. Steam was at once shut off and the water was diverted to other conduits, but for a long time the flood in the Central Avenue main continued to flow, for there was enough water in the huge pipe to still cause trouble. In three hours the flood had assumed the proportions of a spectacle worthy of traveling a long distance to see. At the point of the break the water was surging and boiling like the rapids of a river. The surplus was running over the curbs and sidewalks of the adjacent streets. Vacant lots were submerged and cobblestones, sidewalks, and car tracks were undermined by the flow of the water. During the morning there were a number of narrow escapes, as the sandy soil had been washed away, and a few pedestrians provided with boots, while attempting to ford the street, were almost engulfed, and were rescued with difficulty. Every few minutes the sidewalk would fall in on Central Avenue and the foundations of buildings were carried away. After several hours the water began to recede, and as it went down, the full extent of the damage could be seen. The whole crossing was undermined from one side to the other, making a pit measuring 100 feet in each direction and fully 20 feet deep. As the water fell back it revealed the skeleton of the car tracks and gas and water pipes. Out of one of the 4-inch mains gas was pouring from a fracture, and the odor of the illuminant nearly stifled the crowd at the corner. Finally the gas main was disconnected and all the gas in the neighborhood was cut off. The break in the water pipe was finally discovered. Water was pouring