latter city, where its progress was more gradual but not the less certain. Streets a hundred feet wide offered no obstruction to the fire spreading, for the intense heat of the redwood caused the buildings opposite to ignite as soon as the fire gained requisite strength. On Mission Street wood construction predominated, and with this street as an axis the conflagration spread in other directions. Had there been no redwood the business district might have been saved.

Among the more prominent buildings destroyed, taking them in regular order, was the New Merchants' Exchange, finished January 1, 1905, fourteen stories in height and of steel construction, faced with granite on the first floor and with terra-cotta brick for those above. The earthquake caused the building but incidental damage, but fire subsequently gutted it completely. It is now believed that the frame of the structure is intact and can be used again. The terra-cotta is apparently but little injured.

The Union Trust Company's bank, at Market and Montgomery Streets, fifteen stories, lately completed, steel frame, terra-cotta facing, will be occupied for business in a few days, as, the writer is informed, will the Crocker Building, opposite, of like construction, which stands but little injured, apparently only needing new finishing for the inside.

The Palace Hotel was built before the adoption of steel-frame construction, but with solid brick walls which stand and can be made available if desired.

The new Chronicle Building, unfinished, sixteen stories, steel and terra-cotta, will be as good as new with interior furnishings replaced; the old part, however, fifteen years old, steel and brick, is in a precarious condition and will probably have to be demol ished.

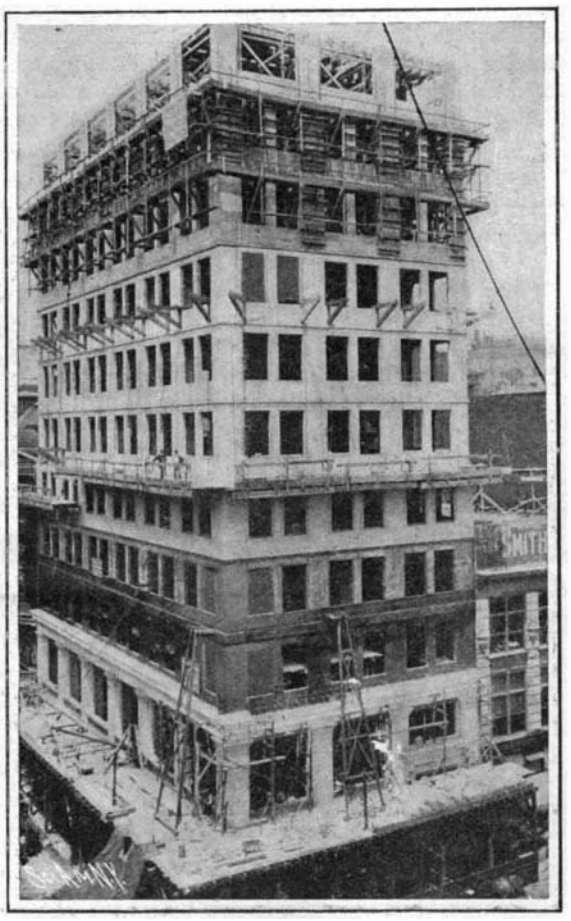
The lofty Call Building was subjected to an intense redwood flame, but stands upright and majestic. The Colusa sandstone with which the structure was faced is badly disintegrated by heat, but the frame is said to be intact and may be used again.

The James L. Flood Building, Market and Powel, just completed at a cost of $2,500,000, was badly gutted, though the steel frame is in perfect condition as far as can be judged. This building was faced with Colusa sandstone, which offered but little protection owing to the intense heat.

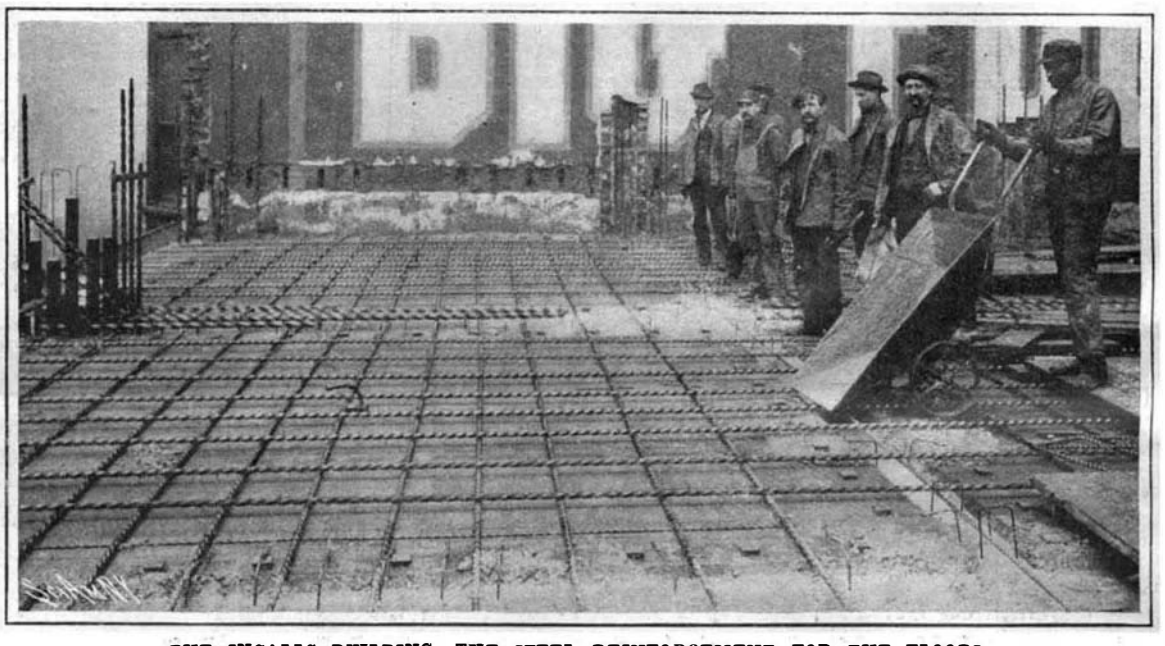
The Ahronsen Building at Mission and Third Streets, finished one year ago, ten stories, steel frame, terra-cotta brick faced, with interior replaced will be good as new, though not subjected to the intensest heat, as it was surrounded with low buildings in every direction.

The "Fairmount," of steel and terra-cotta, unfinished, is comparatively little injured, and with interior renovated can soon be occupied.

With these examples it would appear that terra-cotta is far and away the best exterior material for buildings of any height. No stone that was ever quarried can withstand the intense heat of a general conflagration. Though ordinary clay brick of good quality is almost equal in fine-resistance to terra-cotta, as proof against an earthquake shock brick is no better, if as good, as stone.

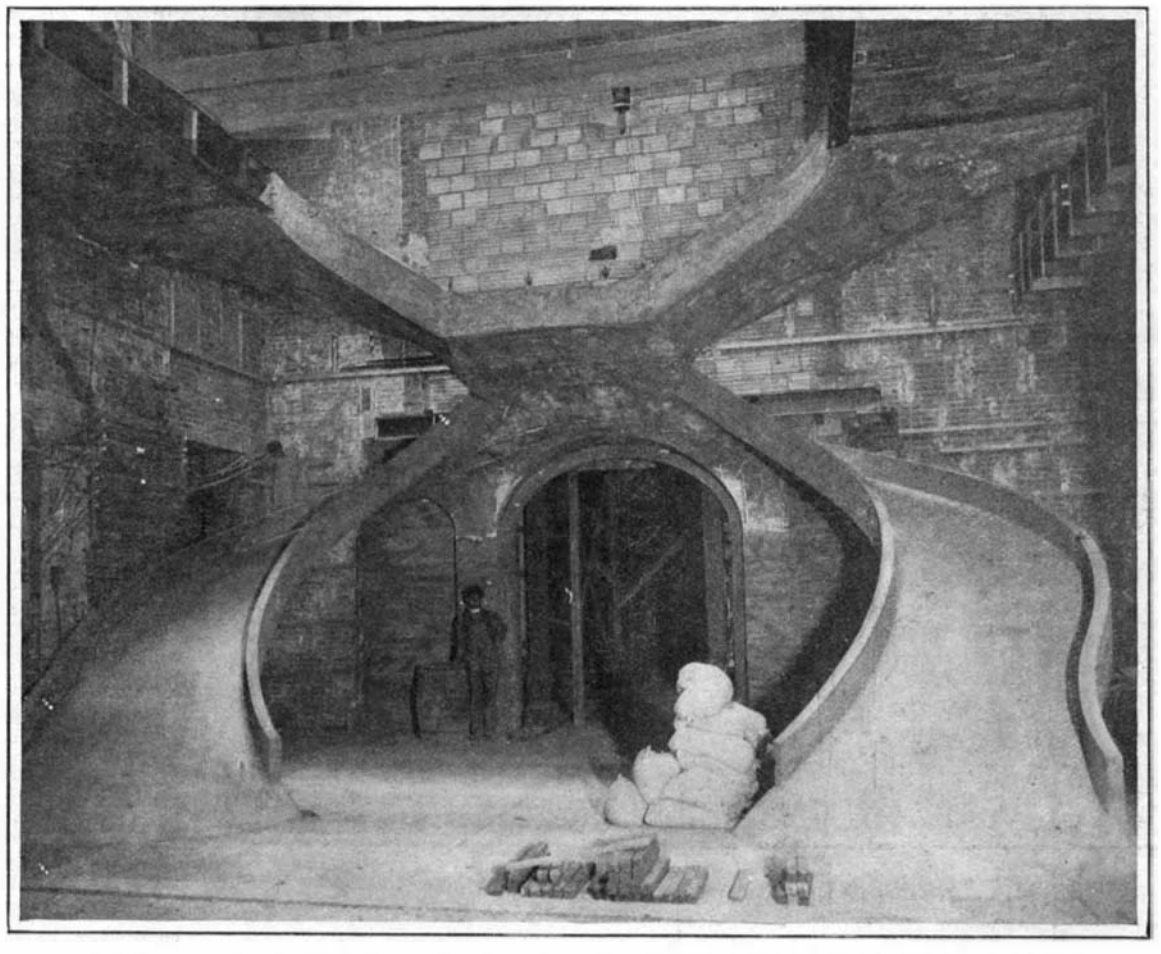


THE INGALLS BUILDING—COMPLETING THE ELEVENTH FLOOR.



THE INGALLS BUILDING—THE STEEL REINFORCEMENT FOR THE FLOORS.

Brick and stone buildings of the past were useless, and as easily demolished in the San Francisco fire as a paper box.



CONCRETE STAIRWAY CONSTRUCTION IN THE NEW YORK HOUSE OF G. W. VANDERBILT.

A STAIRWAY OF REINFORCED CONCRETE.

One of the possibilities of reinforced concrete is interestingly shown in the accompanying illustration from photograph taken during the construction of the main stairway in the New York house of Mr. George W. Vanderbilt. The stairway was designed by Hunt & Hunt, architects, and was built by the Turner Construction Company as sub-contractors. In the engraving the body structure of the stair is shown completed, but without the treads, sides, rails, etc. The stair is double, two branches starting from the ground floor, and rising in graceful reverse curves to meet at a landing somewhat more than half way to the story above. At the point of meeting of the two branches the stair touches the wall toward which the two lower branches curve, and is supported by the wall at the point of contact. Two branches again start from the landing, curving in a direction transversely across the corresponding lower arms to the floor above. The entire stair is supported at only one point between the floors, and that is where it abuts against the wall. All intermediate columns have thus been avoided, for these would not have been in harmony with the design. Had the stair been built of steel, it would have been impossible to obviate the intermediate supports except by making the structure exceedingly heavy and bulky, a feature which would have been objectionable.

The construction is on the Ransome system, in which the concrete is reinforced by longitudinal and transverse bars of twisted steel carried into the supports where necessary, and with the individual members, where possible, tied together by wire. The longitudinal bars, both in the body and the sides, are bent to conform to the curvature of the stair, and are continuous from the intermediate landing to the floor above and the floor below. The transverse rods are spaced short distances apart, and have their ends bent at right angles to project into the lateral flanges, clearly shown in the photograph. The concrete construction is carried out to engage with the I beams in the wall and at the second floor landing, and thus is formed an extremely solid bond. The design is not considered by engineers a difficult one to execute, notwithstanding that the result is rather a freak structure. It merely proves that it is possible to build anything of concrete for which a mold can be constructed and set up, and that with the steel reinforcement the resulting structure is not only strong, and solid, but is often less cumbersome than a corresponding one built entirely of metal. In the present case, if the stair had been built of steel, it would have been necessary to design and manufacture each piece separately, with a consequent loss of time and at greatly increased expense.

The stair is designed for a live load of about 150 pounds per square foot, and was found to answer all requirements in a thorough series of tests, in which heavy bags of cement were dropped upon it at various points from a height of some 12 feet. The stairway was finished in white marble with brass railings, and the structure has turned out to be not only a pre-eminently practical one, but an extremely handsome piece of work as well.

THE INGALLS BUILDING — THE LARGEST CONCRETE OFFICE BUILDING IN THE WORLD.

Among the earlier large concrete buildings in this country is the Ingalls Building, of Cincinnati, designed for office, banking, and telephone exchange purposes, and undoubtedly the most ambitious structure of this kind up to the time of its construction. It was begun on October 2, 1902, and completed late in the following year. It has sixteen stories, a basement, a sub-basement, and an attic, measures 100 x 50½ feet, and rises to a height of 210 feet from the sidewalk