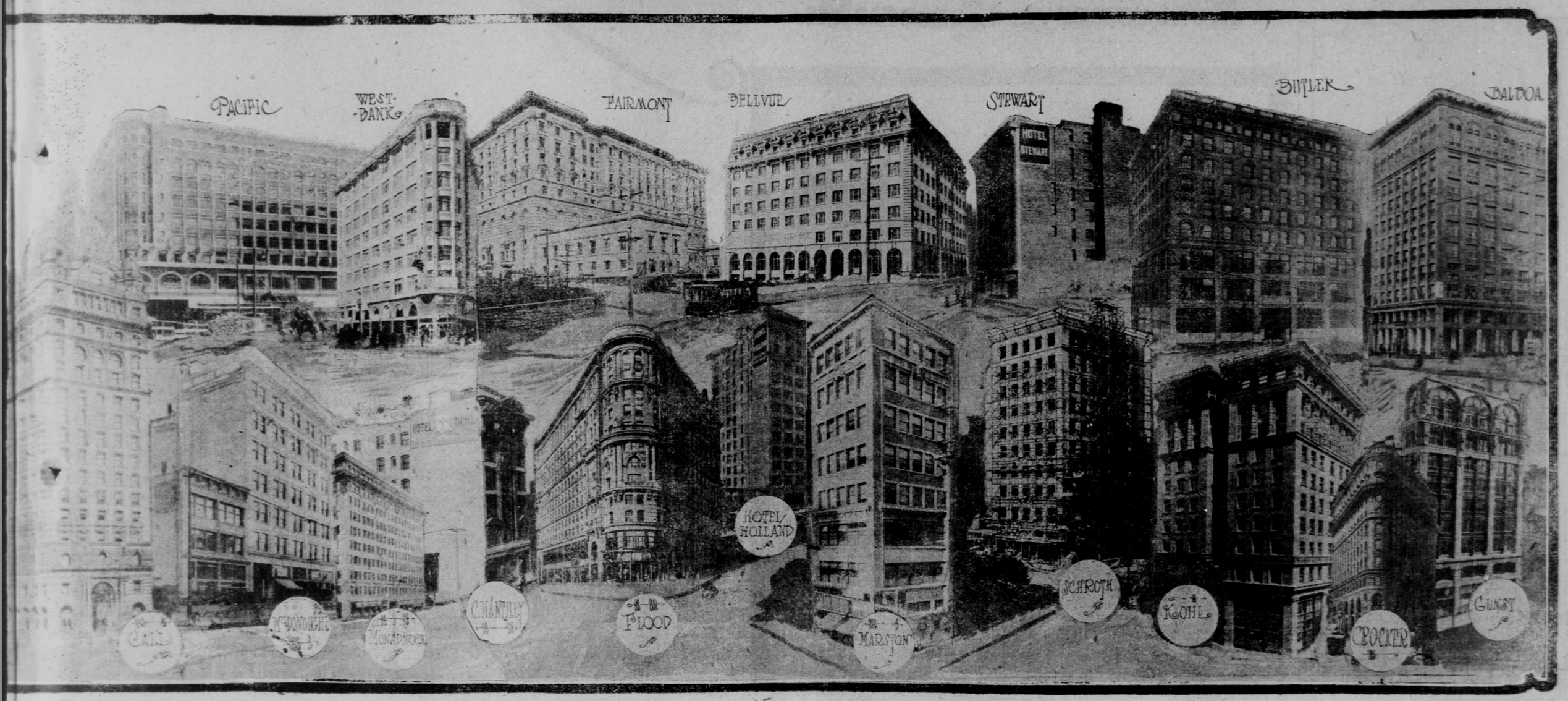
# Days of Unrivaled Reconstruction




## Big Business Buildings of San Francisco

the right principle has been discovered. After flower pots came sewer pipes. Lines that were laid down 40 years ago and which have been subject to a 75 foot water head, are as good today as they were in the beginning. An examination that was made recently shows that the iron rods used for reinforcing have not corroded at all. After reinforced pipe lines had come into use engineers made use of the material for bridge building and from bridge work to buildings was the next step.

Today, both in Europe and in America, reinforced concrete is used in buildings of the greatest magnitude, for factories, flouring mills, foundries and machine shops, with heavy traveling cranes running on concrete beams, warehouses, smokestacks, theaters, museums, aerial bridges, railway stations and churches with high domes. Some of the bridges have clear spans 160 feet in length. These have stood the strain test for a dozen years. Evidently it is a method of construction that has come to stay.

The Baltimore fire showed the fireproof qualities of reinforced concrete. It is also economical as to cost of construction and in time, and it endures. These are its characteristics: It will withstand a temperature of 2,500 degrees Fahrenheit for days without serious damage.

An exhibition test was made in Belgium nine years ago. A building 15 feet by 20 feet, two stories high, built of reinforced concrete entirely, with doors and windows of wire glass, was erected. The upper floor was loaded with inflammable goods, 300 pounds to the square foot, which was 50 per cent more than the working load for which it was calculated. This produced a slight deflection. Wood and coal were piled in the lower story and saturated with petroleum, then ignited and allowed to burn for an hour, producing a temperature of 1,300 degrees Fahrenheit. The walls, which were 4¾ inches thick, were red hot on the inside, but the hand could be held against the outside without discomfort. The temperature in the second story rose only four degrees, which would not damage the most perishable merchandise. The upper floor deflected more than a half inch, but after the fire went out it recovered completely. Three weeks later the floor was loaded again as before, and the resulting deflection was the same as in the first instance. This load was increased to 400 pounds to the square foot and the deflection then was only an eighth of an inch.

Then the lower story was filled again with fuel and the upper story partly filled. The roof was loaded with 200 pounds to the square foot and a fire started. It burned two and a half hours. The wire glass of the doors and windows melted, the thin walls expanded outward slightly, but showed only fine fissures, no cracks through which hot air could escape. The palm of the hand could endure easily contact with the outside surface. The maximum deflection of the second floor was less than an inch. A stream of cold water put out the fire and the next day the building showed no injury in its general structure. The temperature had been 2,200 degrees Fahrenheit.

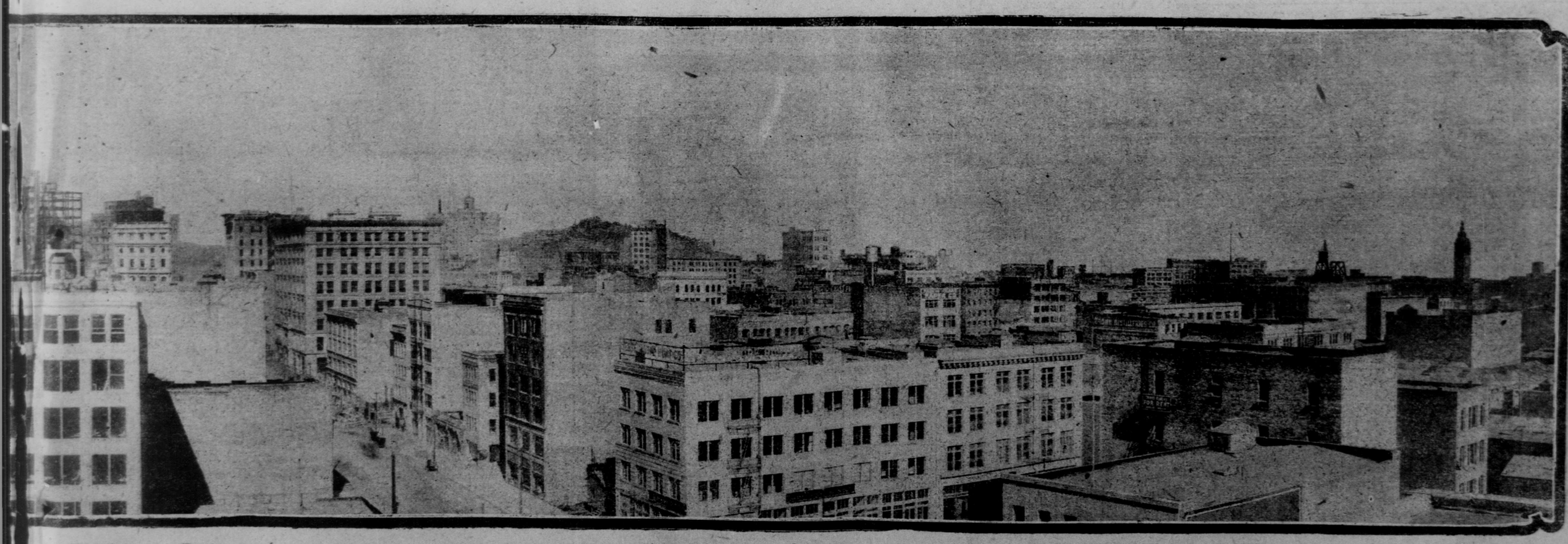
Steel and concrete expand and contract almost identically, and this accounts for the absence of the formation of cracks and fissures in reinforced concrete buildings. Tiles buckle, burst and fly off from steel because of the difference in rate of expansion between the two materials. This is not so where concrete is used.

Much of the work done when using concrete in building can be done by unskilled labor, when with other material skilled labor would be necessary, so that a reinforced concrete building, one that is absolutely fireproof—class AA, so to speak—can be put up at not much greater cost than what is known as the class C building. The materials for reinforced concrete building can be had on short notice; the steel rods for the reinforcing, for instance, require little time compared to the time necessary for getting the frame for a steel frame building. They go directly to the building from the cars; they require no shop work, drilling, riveting, etc., and can be put in position by the common laborers. As the structure rises it is complete, ready for plastering, with all the plumbing and heating pipes and electric conduits in place. Each concrete floor slab forms a good roof, so that the finishing of the lower stories may be completed and occupied while the structural part of the upper stories is being erected.

Another point that recommends the new buildings of San Francisco to investors and investigators is that these concrete structures are by far the most rigid and the freest from vibration of any buildings possible to erect. The steel sinews forming the reinforcement give to the concrete sufficient elasticity to withstand the strains produced by seismic disturbance. With the simple bracket connections between columns and floor beams which the reinforcement supplies, it would require a greater shock than any of which there is record to produce any sign of failure. Even though the strain were sufficient to produce cracks, the strength of the structure would be little impaired because of the reinforcing metal. This metal is in small parts imbedded in comparatively large bodies of concrete, and so free from vibration and consequently from crystallization. The concrete absorbs the vibration and, being crystalline in its nature, is not affected, a happy combination that should be most gratifying to all interested in the welfare of the new city. Indeed, the limit to the height to which a reinforced concrete building may go and yet be safe, even if we have a tremor now and again, is surely far greater than that of any other possible structure.

That those who have financial interest in San Francisco have confidence is evidence enough to any one who notices the figures of the building permits which have been issued. These number in the neighborhood of 14,000 since the fire, and the total value approaches $112,000,000. Among the new buildings nearing completion or already completed are over 60 of class A, more than 90 class B, and considerably over a thousand of class C. Good, clean, conscientious work. Whatever she may have done in the past, San Francisco is not taking chances in these days. Then there is an interesting item of something over 12,000 new frame buildings with a value of about $10,000,000. If "money talks," here is a good declaration for prosperity.

PANORAMA FROM THE CALL DOME.



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