TH



## STANDARD OF THE WORLD

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### AGAINST EARTHQUAKES

There is no reason to fear struce tural damage in tall buildings in San Francisco or anywhere else by earthquake as severe as that of April 18th, 1906, provided these buildings are pos perly designed and constructed. The is the opinion of Frank B. Gilbreth, & New York contractor, who is recenstructing the eight-storey steel-frame Mutual Life building in San Francisco. Mr. Gilbreth has been in San Francisco for several months, where he is taking a leading part in the work of reconstruction, and during that time has had exceptional opportunities for studying the effects of seismic disturbances and conflagrations upon various types of structures.

The Mutual Life building, which is taller than the average ten-storey building, was built thirteen years ago on

THE

1854

1854

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JAMES MASON General Manager. made ground, and survived the earthquake without a structural blemish. During the subsequent conflagration, however, it sustained damage sufficient to necessitate the removal of the upper six stories.

When it was known that Mr. Gilbreth had received the contract for reconstructing the building, he was at once besieged from all sides for information Engineers and architects wanted to know about the condition of the steel frame. Paint manufacturers and dealers enquired as to the brand of protective paint which had been used to prevent rust, while representatives of other lines overwhelmed him with questions as to what had happened to other materials which had been used. The evidence collected by Mr. Gilbreth is of the utmost value to the building industry, and is one of the first cases where it has been found possible to make a thorough investigation as to the condition of structural steel and iron after having been imbedded in a building for a term of years-a much-mooted question among engineers, architects, and builders.

Mr. Gilbreth, due to his investigations, believes that:-

1. A steel frame, properly painted and buried in masonry, will not rust enough in thirteen years to affect its strength any measurable amount.

2. The better the steel is coated with mortar the less it will rust.

3. Portland-cement is better than lime mortar for embedding steel to prevent it from rusting.

4. Unpainted iron rods buried in mortar composed of lime and a large proportion of Portland cement rust very little, certainly not enough to impair their strength.

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