

TIMELY SUGGESTIONS to the REBUILDERS

BY C. G. HIGHTOWER

C. G. Hightower is a local superintending engineer of wide repute, who has had practical experience in the construction work on some of the most formidable steel structures of San Francisco, notably the St. Francis Hotel and the Shreve building, both of which withstood the recent quake and passed through the attending fire in a remarkable state of preservation. In the accompanying article he deals in a somewhat technical, although comprehensive manner, with the safe and unsafe buildings of this city from a structural viewpoint, deducing many valuable conclusions from the information he has gleaned from a careful inspection of the foundations and structural portions of the buildings that were destroyed and those that remained standing after the calamity. Among those he examined was the old Valencia Hotel, of which so much has been written, and from which many rather vague and indefinite theories have emanated. Between these ruins and the foundations of some of the stronger structures that are soon to be restored to their former conditions, Engineer Hightower has drawn some interesting comparisons, and to these he has added some timely suggestions as to how the buildings of San Francisco should be constructed in the future in anticipation of any possibility of further visitations of temblors or devastating conflagrations.

The fact that the Pacific Coast is subject to earth motion, "temblors" and shock, has again been shown by the event of April 18. A careful examination of the area covered by the city of San Francisco, however, shows that this last shock, although severe in its effect at some points, in no locality assumed the proportions of an earthquake, in the accepted and popular definition of that term, viz.: A forcible tearing apart or opening up of the solid natural soil

or rock and the formation of crevasses or fissures, the phenomenon of subterranean noises, the appearance of fire, etc. The only effect of the shaking of the earth on April 18 was the rupture, shaking up, sliding and partial displacement of unstable artificial areas which in every case consisted of "filled ground." This ground taken from the higher places and spread to depths of

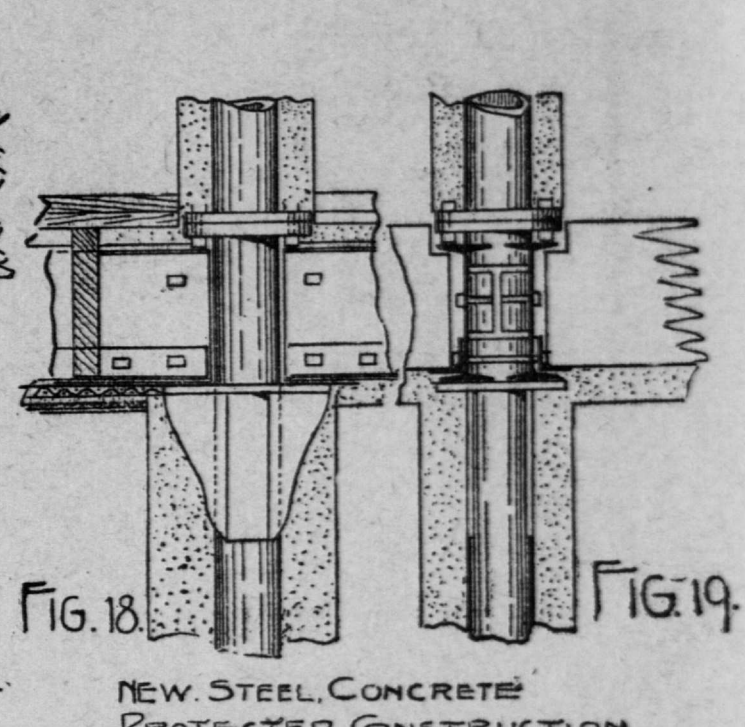
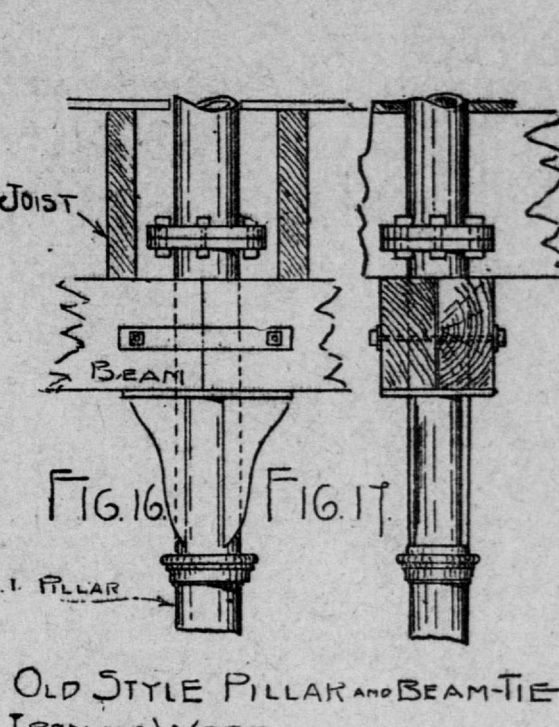
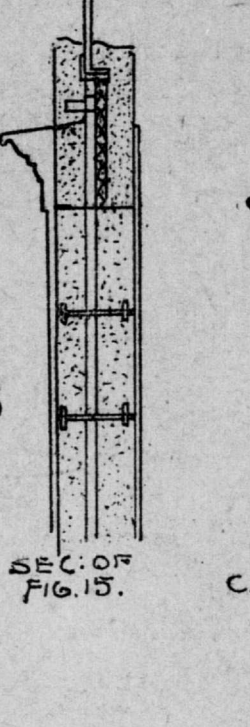
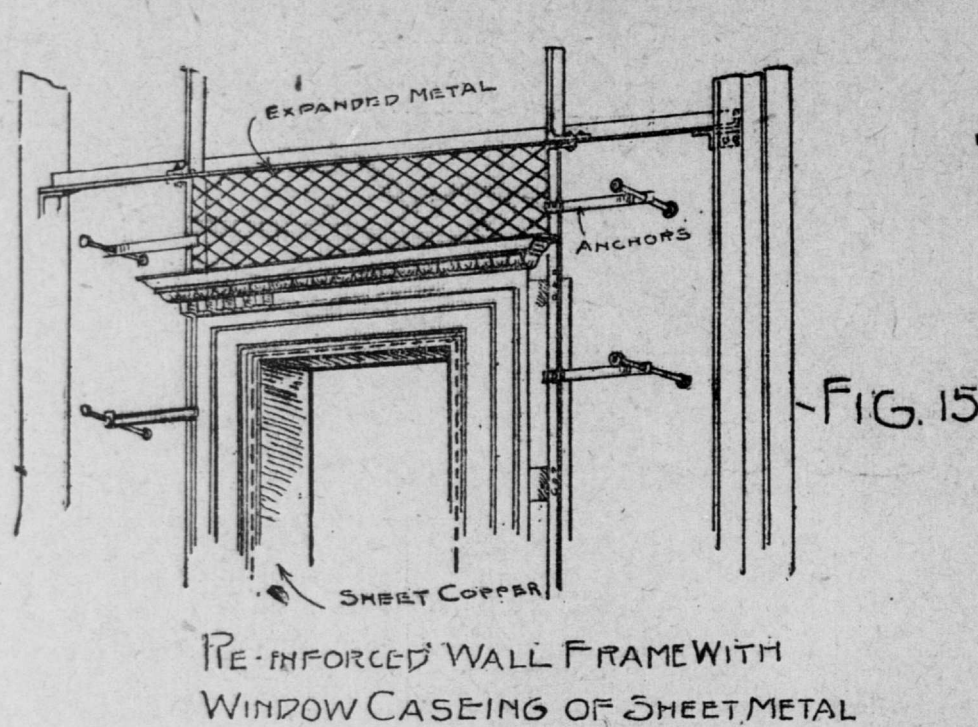
one to twenty feet, in the lower places to bring the streets up to certain grades and above highwater mark, or even higher, in all originally marshy localities (as for example the "Mission District"), lay as so many loose surface scales within or bordering on the solid natural depression of the hills, and whereas the earth shock had little or no effect upon the latter or the structures erected upon their solid slopes,

covered by a substantial culvert or sewer and then filled up to required street grade. Figure 1 shows a fair sample of unsafe foundation. Figure 2 shows how the same building could have been built safe and secure by the use of piling. Seismic shocks travel in waves and practically at right angles to the vertical walls of buildings. The direction of travel on April 18 was generally

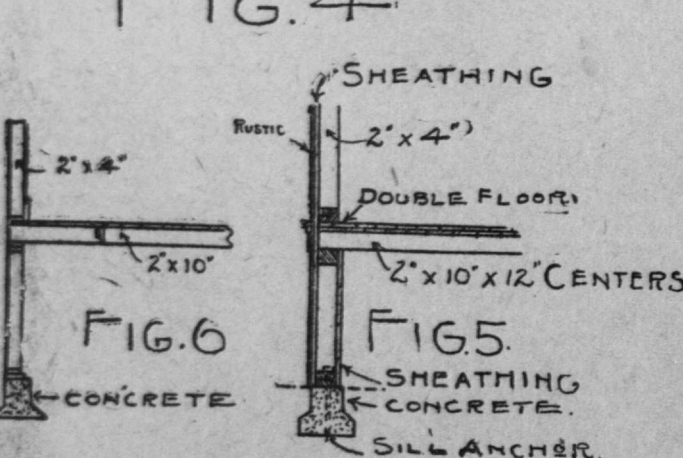
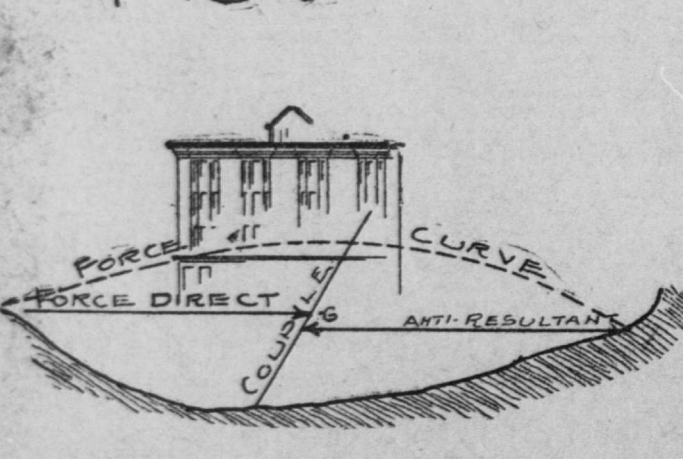
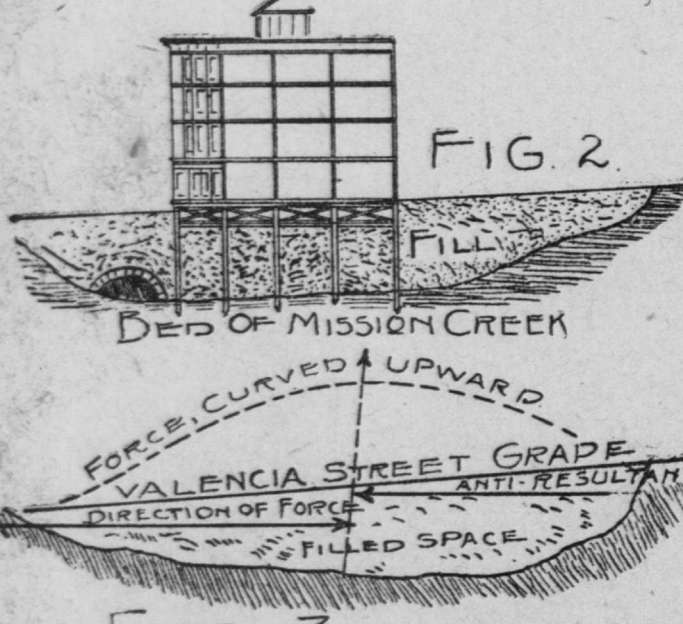
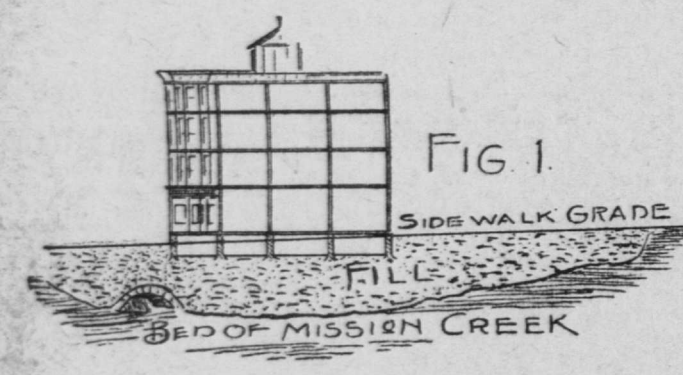
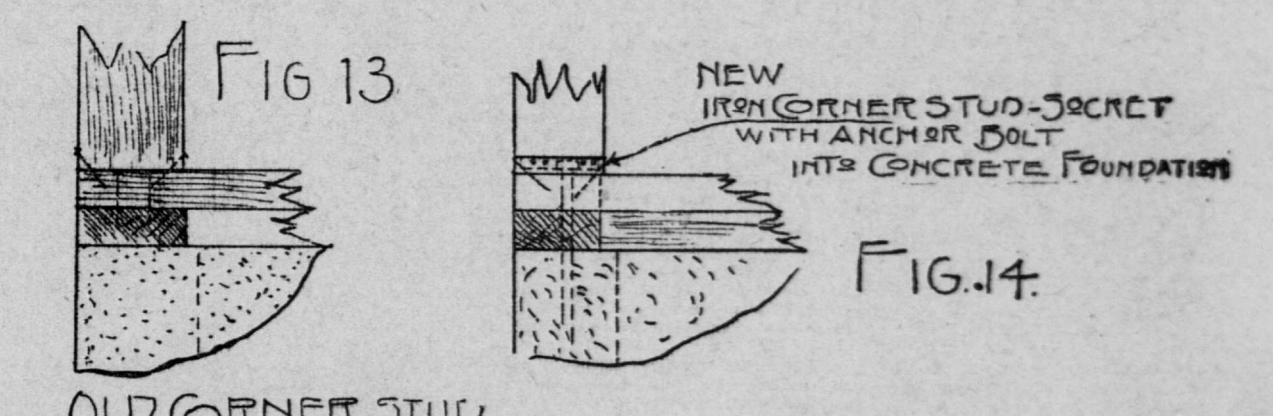
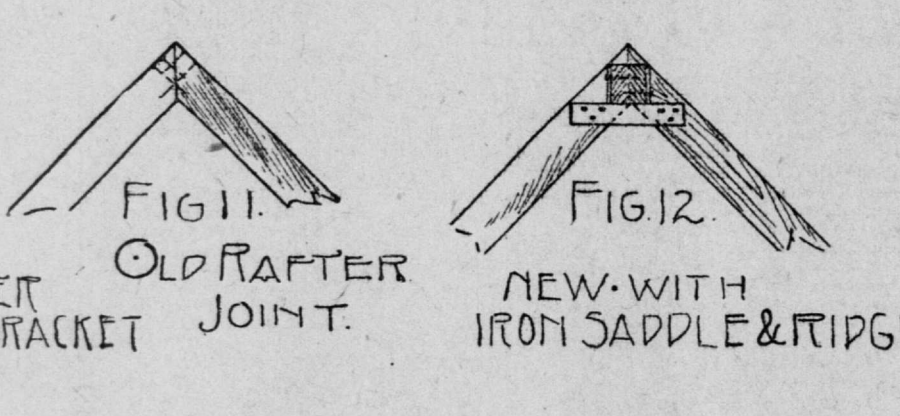
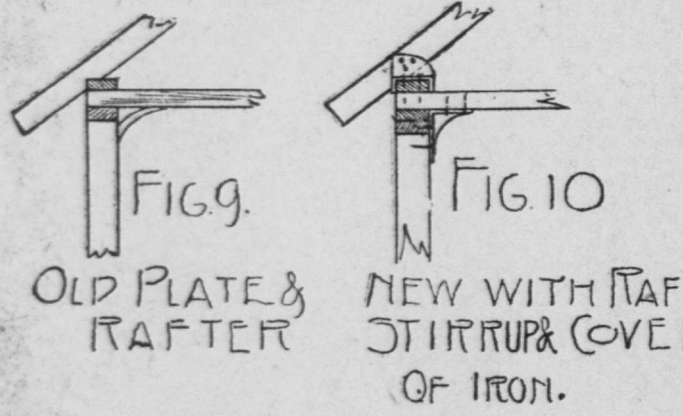
from south to north, although deflections of the force due to varying resistance are known on every hand. A destructive upward deflection followed by collapse of structures is, however, only possible when conditions are as noted in the case of the Valencia Hotel, for when the force waves traverse a friable fill and then rebound against a solid natural surface, the reaction equals the force of impact minus the force passing through the more solid natural material, or as shown in

Figure 3, the force is deflected upward, forming couples or a radiant force curve, first lifting the filled ground and any structure resting on it, then dropping it. At the point occupied by the Valencia Hotel the force undoubtedly formed a couple as shown in Figure 4, the center of gravity of fulcrum of which was near the original solid surface of the bed of Mission Creek. With proper

cross-section of foundation and ground down to solid soil or bed-rock should be verified by comparison with street profiles in the city engineering department; and further, when the foundation is built, the City Inspector should see that the plans are strictly followed out. All foundations to be hereafter built should be designed with an eye to more homogeneity than heretofore. Dwelling of shock had practically no effect upon them. Therefore, if the New San Francisco is erected on similar lines, no visitation such as that through which we have just passed will be experienced by posterity. Concrete, or the material composing it, viz.: sand, crushed rock and cement, are and will be available in any quantity required, and as cheaply as can be



DETAILS OF OLD AND NEW CONSTRUCTIONS.



the filled ground with the buildings erected thereon, and with no foundations resting on the solid foundation soil under the filling, was affected more or less, ranging from a shaking down of chimney tops to a complete collapse of the entire building. An illustration and explanation of this severest effect is found in the illustrated Valencia Hotel, of which Figure 1 is a cross section of the building, filling and subsoil. It stood near the old Mission Creek, which had been

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John Henry on Summer Resorts

BY GEORGE V. HOBART.
Me for that summer resort gag—Oh! fine!
I fell for a Saratoga setba; this summer, but never no more for mine.
At night I used to sit up with the rest of the social push and drink highballs to make me sick, so I would drink Saratoga water in the morning to make me well.
That's what is called reciprocity, because it works both ways against the middle.
Isn't it the limit the way people from all over the country will rush to these fashionable summer resorts with wide-open pocketbooks and with their bank accounts frothing at the mouth?
The most popular fad at every summer resort I've ever climbed into is to watch the landlord reaching out for coin.
Husbands make bets with their wives whether the landlord of the hotel will get all their money in an hour or an hour and a half.
Both husband and wife lose; because the landlord generally gets it in ten minutes.
A some of the hotel dining-rooms it costs \$6 to peep in, \$8 to walk in and \$15 to get near enough to a waiter to talk soup.
You can see lots of swell guys in the dining-rooms who are now using a fork in public for the first time.
This reminds me of an experience I had in a certain summer resort dining-room not long ago.
At a table near me sat Ike Gooseheimer.
Ike is a self-made man and he made a quick job of it.
Ike was eating with his knife and doing it so recklessly that I felt like yelling for the sticking plaster.
After I had watched him for about five minutes trying to juggle the new peas on a knife, it got on my nerves, so I spoke to him.
"Ike," I said, thinking possibly I might cure him with a bit of sarcasm, "aren't you afraid you will cut yourself with the sword?"
"Oh! no, no," Ike answered, looking at the knife with contempt, "there is no danger at all. But at the Palmer House in Chicago—Ah! there they have sharp knives!"
Ike is beyond the breakers for mine. The races at Saratoga were extremely exciting.
A friend of mine volunteered to pick out the winners for me, but after I lost \$8 I decided that it would be cheaper to pick out a new friend.
But I do love to mingle with society at the summer resorts.
It isn't generally known, but one of my great-grandfathers was present when the original 400 landed at Plymouth Rock.
My great-grandfather owned the rock.
A couple of nights after the original 400 landed on Plymouth Rock the leader of the smart set, Mrs. von Tweedum, gave a full dress ball.
My great-grandfather looked in at the full dress ball and was so shocked that he went and opened a clothing store next day.
Society never forgave him for this insinuation.
But say, isn't it immense the way the doings of these society dubs are chronicled in the society papers?
In case you haven't noticed them I would like to put you wise to a few:
Among the smart setters now present at Saratoga is John J. Sousebuilder, the

well known millionaire from Cincinnati. He is here to follow the races, but he seems to have an idea that the horses live in the hotel barroom, because that is where he does most of his following.
Cornelius Sudsifter, the well known inventor of the patent chowless chowder, is paying deep attention to Esmeralda Ganderface, the brilliant daughter of old man Tightfit Ganderface, the millionaire inventor of a system of opening clams by steam. Cornelius and Esmeralda make a sweet and beautiful picture as they stroll arm in arm to the postoffice, where Cornelius mails a check for the week's alimony to his former wife, who is visiting lawyers in South Dakota.
Hector J. Koobernik, well known in society, is spending the summer at Atlantic City. Hector was formerly a Bohemian glass blower, but he is now rich enough to leave off the last part of his occupation, so he calls himself just a bohemian—which is different.
Hector is paying deep attention to Phyllis Kurdsheimer, the daughter of Mike Kurdsheimer, the millionaire inventor of the slipper elm shoehorn.
Gus Beanolster, the widely known bunion broker and society man of South Newark, is summering at Cape May, where he mingles with the other pets of fashion.
Gus finds it very hard to refrain from looking at people's feet during the bathing hours, but otherwise is doing quite well.
Hank Schmitpickle and his latest wife from Chicago sailed on the steamship Minnehaha last week to spend the season in the British capital. The Schmitpickles will occupy the villa at No. 714 Cottagecheese place, Blitheringham Park, near Speakeasy Towers on the Old Kent road, Bayswater, across from Shore-ditch—And save the King!
Mercedes Cauliflower is summering at Narragansett Pier, and her fiance, Mr. Peter Cuekoobird, is dancing attendance upon her. It will be remembered that Mercedes is the daughter of the eminent and famous cauliflower, the millionaire manufacturer of boneless tripe, which has become quite a fad in society since the beef trust got chasty. Peter Cuekoobird is a rising young bricklayer on the father's side, but on account of the fortune left him by his mother, he is now butter-flying through life in a gasoline barouche with diamond settings in the tires.
Hank Dobbs and his daughter, Crystaline, sailed on the Oceanic yesterday for the Riviera. Before the steamship pulled out Hank admitted that he didn't know whether the Riviera was a city or a new kind of cheese, but if money could do the trick he intended to know the truth.
Mr. and Mrs. James Shine von Shine were divorced yesterday at the home of the bride's parents in Newport. The ceremony was very simple but expensive to the ex-husband. Considerable alimony changed hands.
The private cottage of Mrs. Ofulrich Swellsell at Bar Harbor has been beautifully decorated in honor of the approaching divorce of their daughter, Gladys, from her husband, Percy Skiddoo. Percy is the well-known manufacturer of the reversible two-step so much used by society.
Gardie are all out for a divorce in the family of the Von Guzzles, but owing to a typographical error in the cards it is impossible to say whether it is the old man or the son. Both employ blonde typewriters.
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