subscribers to read the address of Mr. Frederic Nicholls, on page 233, for the business ethics of this great question; and for the Engineer's view, the figures cited in the series of articles appearing in our columns, on European Hydro-Electric plants, from the pen of C. H. Mitchell, C.E.-the Canadian authority on this important subject.

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EDITORIAL NOTES.

The Steam Turbine: Justified.

In our May number we copied a newspaper report, in which the general failure of the steam turbine was implied, Our Protest because it was alleged, some U.S.A. Naval Engineer had seen 'broken blades

taken out of the turbines by the shovelful. The very remarkable experience, (see p. 226), at the Kent Avenue Station of the Brooklyn Rapid Transit Company, with a 5,500-K.W., Allis-Chalmers steam turbine, in which a knife had been accidentally dropped among the blades, should discount waggon loads of newspaper gossip like that quoted. Although the engine ran for nearly a month under this adverse condition, no destruction of the parts had occurred, and no distortion of the blading." This is a case where shovelfuls of loose broken blades might very reasonably have been expected. We once more affirm, that the steam turbine is here to stay; even knives can not put the Parsons' engine out of business.

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Through the courtesy of Dr. Electric Smelting: Haanel, Dominion Eugene Sweden Following Superintendent of Mines, we are Canada's Example. enabled to give the following communication received at the

Department of the Interior, from Sweden, May 17th :---

The Stora Kopparbergs Aktiebolag, in Sweden, has voted a sum of 100,000 kronor, (about \$28,000), to be expended during two years, in making experiments with electric smelting of iron ores. The same company has also made a contract with the inventor (Mr. Gronvall), for the erection of an electric furnace with a production of 10,000 tons a vear.

Commenting on this important movement in Sweden, Dr. Haanel says :--

From this you will see that the iron men in Sweden have been thoroughly awakened on the subject of electric smelting. Sweden, in fact, is in the same position as Ontario, Quebec, and Manitoba, possessing abundant water-powers, and iron ore deposits, but without metallurgical coal. The firm which is undertaking these experiments is one of the oldest and largest iron producing corporations in Sweden. having been incorporated in the twelfth century. When such a firm-which includes some of the ablest ironmasters in Sweden-appropriates \$28,000 for experiments in electric smelting of iron ores, we may pass over the crude criticisms of "The Times" with a smile.

In view of this forward movement in Sweden, and our own successful experiments at Sault Ste. Marie, the Blast Furnace plant at St. Catharines, seems like turning back the clock.

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San Francisco: Opportunity to Remedy a Great Engineering Mistake.

The advocates of buildings erected with a framework of structural steel, have been greatly elated by the fact, that after the earthquake, the only public buildings left standing were those made of con-

crete steel. As a consequence, the larger part of the buildings to arise on the ashes of the old city will be constructed of steel. Another engineering lesson is, that the outcry made sometime ago,

about the rapid oxidation and decay of steel has been considerably discounted by the fact, that uncovered parts of steel structures encased in concrete, have been found in good condition; proving the value of concrete even as a preservative. On the other hand, wooden ioundations, and indeed, all timber structures located in or next the Pacific Coast soils, have suffered badly from these pests-almost as destructive as the white ants of Africa-the Teredo and Limnoria. The illustrations by F. B. Gilbreth on page 219, show the terrible ravages of these minute organisms on wharves, etc. That the New San Francisco will consist of buildings in which orthodox wood, brick, and stone will be largely displaced by concrete, is a foregone conclusion. Our aim in this note, however, is not to particularize the materials of which the new city will probably be built; but to draw attention to an idea with regard to the orientation of the buildings and general civic plan, which should be of interest to Engineers generally, and to Municipal Engineers in particular. In the planning of the old city, a fatal error was made in the lay out, and it seemed that a splendid opportunity of making a city of surpassing scenic beauty was lost forever. The best statement of the case, was that made by Horace Bushnell* in 1864:-

It is another requisite in the planning of a city, that it be so arranged as to serve the purposes of convenience. Rectangular blocks and structures have so great an advantage in this respect, that squares and parallelograms must and will predominate in all well-planned cities. In this rectangular form architects and builders are best accommodated. The rectangular plan also furnishes most easily, and is well nigh indispensable to an elegant and attractive interior. The shops of trade require the same. Conceding then so much, in regard to the better convenience of the rectangular form, it becomes a problem, requiring only to be the more carefully studied, how, or by what means, it may be so far modified as to save it from the insufferable tameness and stupidity of a mere gingham city, of the Babylonian or Philadelphian type.

Not seldom will convenience itself require a deviation, as where there is some circulinear sweep of low ground along which a principal avenue will most naturally trace itself, covering some principal sewer of drainage. Sometimes there will be a steep-faced bluff, round the foot of which a quay, or general landing place for merchandise, may sweep, conforming to its lines. Sometimes there will be round-sided hills in the background, rising it may be, into rocky summits, such as would command a fine outlook over the city and harbor, if only the ascent could be made easy for accommodation of residences. To lay a covering of squares, on the faces of such bluffs and rounded hills, would even be absurd; for the ascent of their heights can be made only by straight lines that are very oblique, and cut each other diamond-wise, or by a spiralling in curve lines that cut each other in acute angles. By the neglecting of this very obvious expedient, the noble background of the fine city of San Francisco is sacrificed and for ever lost. Lying in a capacious bowl of concave between the hills and the bay, the city is laid off, as it should be, in parallelograms, with only here and there a deviation from uniformity, and, as everything passing on the concave length of every street is visible, of course, in every part of it, there is a wonderful vivacity in the circulations. But as soon as the rectangular form, pushing up the steep hill-sides, reaches a point where the ascent for carriages is no longer possible, the whole space above, which ought to have been covered with residences of the highest character, loses value, and is occupied only by cheap tenements, such as mules and footmen, climbing up as best they can, are able to furnish with supplies. So far, the rectangular plan is the enemy of all convenience. Nay, it is even the final destruction of the finest possibilities of beauty. Had the engineers of San Francisco, when reaching a certain point, deflected

*Work and play : "City Plans," p. 180.