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## AMERICAN STEEL STRUCTURES.

*Structural Design. Vol. ii. Design of Simple Structures.* By Prof. H. R. Thayer. Pp. ix + 495. (London: Constable and Co., Ltd., 1914.) Price 16s. net.

THIS is a second volume of a treatise, of which another volume is to follow. It can be heartily commended as a competent attempt to grapple with, and reduce to order, a wide and difficult subject. No English book known to us deals in similar detail with the considerations which should be present in the mind of a designer, or gives equal help in dealing with practical problems. A large number of examples of design are worked out in numerical detail, and this gives the author an opportunity of introducing the discussion of various matters which cannot be reduced to exact rule, but are such as would be pointed out by a chief draughtsman to his subordinate or by a professor to his student at the drawing-board. Thus tips can be given by which difficulties can be obviated or evaded, and modifications indicated where rational formulæ lead to unpractical dimensions. Not only rules of applied mechanics are attended to, but considerations of weight, cost, durability, and convenience of erection are equally stated.

The technical terms may present difficulty to some English readers, and a bilingual glossary would be useful. Ties (sleepers), cords, bents, girts, dapped ties, splice (for joint), and kips (as units of load) are foreign in this country. Probably unavoidably a very large number of empirical formulæ are introduced, and the basis for these or the reason for the selection of the constants suggested is not generally clear. They must be taken on the authority of the author. It is not obvious why the weights of single, double, or treble I beams for the same load should be as 21, 30, and 36, and a built beam as 32 (p. 7), and so in other cases. There are other cases where abbreviation has been carried to a point which will give trouble to readers, but this but little detracts from the considerable merit of the book.

Naturally the chief subjects treated are bridges, plate and braced, for roads and railways, and viaducts for elevated railways. But steel-framed mill and office buildings are treated fairly fully, and railroad stations, mine structures, stand pipes, and steel tanks more briefly. A feature of the work is the tabulation of references to technical journals and memoirs.

An interesting chapter is that on high steel-

framed buildings. The author points out that the executive offices of great corporations must be in large cities, and central to facilitate intercourse. Hence arise sections of a city where land is very valuable and high buildings are necessary to secure a fair return on the property. In America there has been a steady drift towards higher buildings, the highest being the Woolworth building with fifty-five stories or 775 ft. high. On the other hand, the disadvantages of the system seem serious enough—exclusion of sunlight from streets, difficulty of fire protection, overcrowding of the water and sewer systems. In the prevalent "cage construction" all loads, including the weight of the walls, are carried at each floor-level by the steel. From the large and increasing sum bringing no return during erection, the work has to be done with remarkable speed.

The author states that it is possible to replace an old building by a new one twenty-five stories high in a year. Work at different heights is prosecuted simultaneously, and as concerns the steelwork, two to four stories may be erected per week. Many of the details of floors and fire protection of steelwork, etc., for high buildings will be new to English readers. The provisions required in the United States for water, drinking water, hot water, elevators, heating (by waste-steam radiators), lighting, telephone, and telegraph are more elaborate than anything exacted in this country.

## CANADA.

*Stanford's Compendium of Geography and Travel.* (New Issue.) *North America. Vol. i. Canada and Newfoundland.* Edited by Dr. Henry M. Ami. Second edition, revised. Pp. xxviii + 1069. (London: E. Stanford, Ltd., 1915.) Price 15s. net.

IT is inspiring, in these times of national self-questioning, to turn to a book like this, in which a true Canadian tells with glowing pride of the magnificent and continuous growth of the great Dominion as an integral part of our Empire. The book has been written to replace an earlier edition by Dr. S. E. Dawson, published in 1897; and it shows that the interval has been characterised by a national vitality and progress even more vigorous than those of any previous period. Exploration pushed forward everywhere; old boundaries changed; new territories settled; population enormously increased; fresh industries established; railway and shipping enterprises of world-importance planned and carried through; old political difficulties swept away and others, formerly unthought of, now to the fore; and, through all, as a dominant note, an ever-increasing