THE USE OF STEEL IN AMERICAN LOFTY-BUILDING CONSTRUCTION.

Mr. B. H. Tdwaite read a paper on this subject recently before the British Iron and Steel Institute, which contained some interesting figures relative to the effect upon the steel industry of the employment of steel in modern building construction. These steel structures, said the author, have been rendered possible by the work of Bessemer and Siemens (past-presidents of the institute), and by the encouragement of the present president (Mr. Carnegie). The earliest structures of this sort were English—those of Pritchett, in York, of Sir W. Fairbairn, at Saltaire, the Crystal Palace (1851) for example. America, however, took hold of the idea and developed it, producing Jenney's frame system, Burham's grille foundation, and later the table-leg wind-bracing method, consisting of making each floor rigid of itself. The effect of the steel-frame system has been to add some 200 acres of habitable land to the business area of New York City, representing a yearly rental of 1¾ million pounds sterling. Moreover, enabling a lower rate to be charged to occupants; offices in old buildings cost 12s. per square foot, in the new buildings, including conveniences and advantages unknown in the old places, 6s. per square foot. But the point of interest to the members of the Iron and Steel Institute is the effect this system has on the consumption of steel and iron, and on an average it may be taken that 200,000 tons have been absorbed in steel-frame structures in the United States annually during the last five years. An 18-storey building of 6,000 to 7,000 square feet will require, according to depth of foundations, between 1,200 and 2,000 tons of structural steel, in exceptional cases even more. The Park-row building in New York is said to have absorbed in its framework 9,000 tons of steel. In addition, there is the piping for all sorts of purposes, amounting to 20 or 30 miles per building, and more in hotels, and averaging 3½ to 4 tons per mile run. Then there is the mechanical equipment, including provision for ventilation, heating, fire protection, refrigeration, thousands of electric lights, telephones, electrical services, and the lifts which travel from eight to twenty miles per hour—600 h.p. or 700 h.p. in boilers is not unusual—all meaning a large consumption of iron and steel. Then there are tanks, pits, vents, drains, chimney stacks to be considered as well.

The steel-framed structural system, more over, permits of a considerable amount of the mechanical fitting work being done at the iron or steel works, so that when the columns, girders, etc., arrive at the site they are rapidly put together, hence a 20-storey building can be erected in less than six months, and with but slight interference with the customary traffic of the neighborhood; and an additional factor is that returns in the form of rents come in sooner than is the case in other systems of building. Certain points raised against these structures are not substantiated on closer examination—e.g., the variable dilatation of the steel, the concrete, and the masonry shell does not exist—and by covering the columns or embedding them in Portland cement or in concrete inside a fire-guard of terra cotta, it is found that danger from fire contact is satisfactorily obviated, and oxidation of the metal surfaces is prevented.

The annual convention of the Master Plumbers and Steam-fitters of Canada will be held in Toronto during the third week in July.