IRON CANTILEVER ROOF.

THE cantilever principle has been successfully applied by Mr. C. Doucas in the designing of the roof of the machinery hall of the Geneva Exhibition. The cantilevers rest on columns 124 ft. 8 in. apart and 47 ft. 5 in. high; they are anchored down to standards 35 ft. 6 in. high at the side walls, which are 288 ft. 8½ in. apart. At the centre, between the free ends of the cantilevers, is a space of 25 ft. 3 in. spanned by a ventilator roof. The standards, being designed to resist the whole of the wind-pressure, have a base of 5 ft. 7 in., and are anchored on to blocks of concrete. The length of the building, 490 ft. 6 in., is divided into nine intermediate bays of 47 ft. 7 in., and two end bays of 31 ft. 2 in. The cantilever principals enclosing the end bays meet in an expansion-joint in the centre, the ventilator only extending over the inner nine bays. In this part there are ten latticed purlins. The intermediate rafters supported by the purlins are 15 ft. 10 in. apart and 3 ft. 3 in. deep, and carry intermediate H-bar purlins. There is no wind-bracing except in the two end bays.

The main bracing in the principals, purlins and intermediate rafters is arranged in single triangulation, and generally consists either of two angle bars riveted together, or of single angle bars, the length of these members varying from 4 ft. to 10 ft. Columns and standards are also made of single triangulation lattice-work. The lightness of the structure is remarkable.

Before carrying out the design, the committee of the Exhibition submitted it to the criticism of Professor Ritter, of Zurich, who approved of it, and recommended the following factors for the calculation of strength:—Snow load, 6·14 lb. per superficial foot; wind-pressure, 16·38 lb. per superficial foot; tension or compression on wrought iron, seven tons per square inch. The total weight of wrought iron is about 500 tons—i.e., 7·78 lb. per superficial foot, or 0·135 lb. per cubic foot inclosed. The iron structure, after having served its purpose, became the property of the contractors.

Mr. D. Stevens, of Chesley, Ont., is rapidly pushing to completion the new Public School building in that town, for which he was given the contract.