THE STRENGTH OF BEAMS.

(Continued from last week.)

To find the load W (including five-eighths of the weight of the beam itself) on the centre of a rectangular beam supported at each end that will produce a deflection of 1-40 in. for every foot of length, we obtain the following rule: Divide the product of the breadth into the cube of the depth (in inches) by the square of the length (in feet), the quotient multiplied by E and divided by 17,280 will give the load, W; E W being both in tons or both in pounds. For example, let a beam of timber 10 in. square and 18 ft. long have a safe load at the middle of 3,173 lb. (including five-eighths of its own weight,) which produces a deflection of ½ in.; but by Tredgold's rule the deflection ought not to exceed 45 n., consequently, in order to comply with hat rule, the load must be reduced in the proportion of forty-five to eighty, and must not exceed nine sixteenths of 3,173 lb., or 1,785 lb.

Suppose a beam 20 ft. long, 10 in. broad, and 15 in. deep, and weighing 625 lb., to be loaded with a weight that produces a deflection of ½ in., then we find W to be 8,484 lb., and deducting five eighths of 625, or 391 lb. from this, we have 8,093 lb. for the load at the middle of the beam.

If the load is uniformly distributed over the entire length of the beam, the weight which would produce ½ in. of deflection in the last example will be eight-fifths of 8,093, or 12,949 lb.

By applying the above rule to floor joists of fir, we can find the necessary scantlings for stiffness, if we suppose that they have to carry a load of 120 lb. per foot of length. For a bearing of 10 ft. they should be 7 in. by 2 in. or 6 in. by 3 in; for a 14 ft. bearing the scantling should be either 10 in. by 2 in. or 9 in. by 3 in.; for 18 ft. bearing the scantling should be 10½ in. by 3 in. or 9½ in. by 4 in.

A rolled iron beam of I section is 10 ft. long and has a load of three and a half tons at the centre, its own weight being 1-10 ton, five weights of which is ·0625 ton, and the weight at the centre becomes 3·5625 tons. The deflection in the middle with this load is one-seventh of an inch, and by Tredgold's rule it should not exceed ¼ in., so that a heavier load might have been put upon it.

A steel girder 25 ft. long, five-eighths of whose weight is 1·2 ton, is loaded at the middle with 35.4 tons, or the total load is 36.6 tons; the deflection with this load amounts to ·86 in., but by Tredgold's rule it should not exceed ·625 in.; consequently the load should be reduced by one-third.

REAL ESTATE TRANSFERS.

The following transfers of vacant property in Toronto are reported since last issue:

Hepburn street, n. s., Thomas Milburn estate to Robert B. Younghusband, 108.4 132, being lots 5 and 6, block S, plan 329, assessed at $1,083; no improvements.

Beatrice street, w. s., E. O. Bickford estate to John Robson, 22x102, being part o 132, plan 7, 48, assessed at $264; no improvement.

Cobourg avenue, s. s., Thomas Handley to James Armstrong and John J. Cook, lot 21, plan 587, 20x120.

Roncesvalles avenue, w. s., Mary M. Barfoot to York County Loan & Savings Co., 100x150, being parts lots 10 and 11, plan 485, assessed at $1,000; no improvements.

Sunnyside avenue, w. s., Mary McDonnell to Rich. McDonell, 35x120, being part of township lot 35, assessed at $70.

Rusholme road, w. s., Arthur J. Husband to Annie J. Miles, 36.8x147, being parts lots 83 and 84, plan 405, assessed at $293; no improvements.

Dupont street, n. s., Horace Thorne to John Ferling Reeve, 100x125, being lots 54 and 55, plan 698, assessed at $700.

Kendal avenue, e. s., 50x128, beir lot 66, plan 698, assessed at $300; no improvements, total assessment of parcel $1,000.

Victor avenue, s. s., Bristol and West of England Loan Co. to Eliza M. Millard, 50x100, being part lot 31, plan 516, assessed at $300; no improvements.

Margueretta street, w. s., Toronto Land and Investment Corporation to Wm. H. Marks, 25x100, being south half of lot 50, plan M36, assessed at $100.

Millicent street, n. s., John Kerr estate to Jessie Gray, 20x132, being part lot 32, plan 862, assessed at $60; no improvements.

Avenue road, w. s., Wm. J. Bredin to Mark Bredin, 127.10x180, being block A, plan 199 E, assessed at $4,474.

Bernard avenue, s. s., north of Scotland Canadian Mortgage Co. to Harry Ford, 45x100, being easterly portions of lots 148, 149 and 150, plan M6, assessed at $1,154; no improvements.

Spadina road, w. s., John W. Langmuir to Isaac W. W. Plewes, 50x127, being north parts 178 and 179, plan 698, assessed at $900.

Spencer avenue, e. s., John Joseph Walsh to Ellen Walsh, 60x200, being lot 80, plan 431, assessed at $1,800; no improvement.

Bank street, s. s., Lucy Rankin to John A. Nesbitt, 19.10x132, being west part lot 48, plan 438, assessed at $200.

Callender street, e. s., John A. Nesbitt to Lucy Rankin, 50x113, being lots 18 and 19, plan 397, assessed at $750; no improvements.

Hepburn street, n. s., Robert B. Younghusband to James Nesbitt, 108.4x132, being lots 5 and 6, block S, plan 329, assessed at $1,083; no improvements.

Osler street, e. s., John Stark to Arthur W. Wills, 17x113, being north part lot 8, plan 797, assessed at $51; no improvements.

The Canadian Revolving Door Company, Limited, has been incorporated in Toronto, with a capital of $40,000. The members include J. Hillock, M. Hillock, T. VanKannel, J. W. Farrell, and D. Urquhart.