

Assuming the ordinary law to hold good for the whole of the effective depth, the maximum skin stress would be 8511 lbs. per sq. in.

The co-efficient of elasticity as determined by an increment in the deflection of .755 ins. between the loads, 2000 lbs. and 18,000 lbs., is 1,989,400 lbs.

Table E shows the several readings.

The time occupied by the test was 30 minutes.

The weight of the beam was 445 lbs. 6 ozs., or 39.99 lbs. per cubic foot on Oct. 3rd, and 433 lbs. 13 ozs., or 38.92 lbs. per cubic foot on Nov. 17th, showing a loss of weight in the laboratory at the rate of .0237 lbs. per cubic foot per day.

Beam XVI. This is really Beam XV re tested, the second test having been made on Dec. 8th, 1893. In the first test the beam had failed by crippling on the compression face; the beam was now reversed, and under a load of 25,580 lbs. it failed by the tearing apart of the fibres on the tension face along the surface at which the crippling had previously taken place. The tensile fracture extended 2 inches below the skin. The jockey weight was now run back until the lever again floated, and the load was gradually increased until it amounted to 32,000 lbs., when the beam fractured a second time on the tension side, the fracture extending to a depth of 5 inches below the skin. The first fracture was accompanied by a longitudinal opening (as in Fig.) about 60 inches in extent. A second longitudinal opening, also about 60 inches long, occurred at the second fracture.

The maximum skin stress corresponding to the breaking load of 25,580 lbs. is 5466 lbs. per square inch.

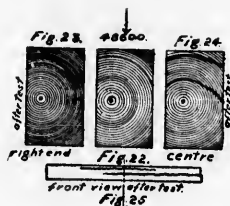
The co-efficient of elasticity, as determined by an increment in the deflection of .54 ins. between the loads of 1,000 lbs. and 11,500 lbs., was 1,825,450 lbs.

Table B gives the several readings.

The weight of the beam was reduced to 428 lbs., or 38.40 lbs. per cubic foot, showing a loss between the test on Nov. 17th, and that on Dec. 8th, at the rate of .02476 lbs. per cubic foot per day.

Beams XVII to XXI were sent to the testing laboratories by the British Columbia Mills Timber & Trading Company through Mr. C. M. Beecher. The whole of these timbers were cut on the coast section of British Columbia. The trees from which Beams XVII, XVIII, XX and XXI were cut, were felled during the summer of 1893, and came from Hartney's Camp, Seymour Creek, while Beam XIX was cut from a tree felled in the spring of 1894, and came from Rowling's Camp, Salmon Arm.

Beam XVII was tested June 24th, 1894. This beam was coarse grained, the grain running very nearly parallel with the axis, and it contained a number of small knots on the compression side. It was cut from the heart of the tree, and was tested with the annular rings as in Fig. 22.



Under a load of 48,600 lbs. it failed by the tearing apart of the fibres on the tension face, the corresponding maximum skin stress, neglecting the compression of the timber, being 4906 lbs. per square inch. The tensile fracture was followed immediately by a longitudinal shear, coincident with the neutral plane at the centre of the beam, and extending for a distance of 8 feet from the end, Fig. 25. The distance between the portions of the beam above and below the plane of shear at the end