

The load was gradually increased until it amounted to 12,950 lbs., when it failed by shearing longitudinally.

The maximum skin stress corresponding to the breaking load is 10,441 lbs. per square inch.

The co-efficient of elasticity, as determined by an increment in the deflection of .2-in. between the loads of 500 and 4500 lbs., is 2,173,100 lbs.

Table B gives the several readings.

Beams IV to VIII were sent to the laboratory by the British Columbia Mills Timber & Trailing Company through Mr. C. M. Beecher.

These beams were cut out of trees grown on the coast section of British Columbia, and felled in the fall or during the winter. The whole of the beams were free from knots, of good quality, and with the grain running straight from end to end.

Beam IV was tested May 17th, 1893, with the annular rings somewhat oblique as shown in Fig. 6. Under a load of 16,720 lbs. it

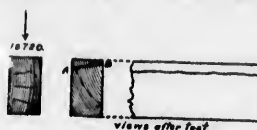


Figure 6.

failed by shearing longitudinally along a plane AB at right angles to the annular rings, the distance between the ends of the portions above and below the plane of shear being $\frac{1}{4}$ -in. The plane of shear extended to a distance of about 3d ins. from the end of the beam.

The maximum skin stress corresponding to the breaking load is 4156 lbs. per square inch.

The co-efficient of elasticity, as determined by an increase in the deflection of .14-in. between the loads of 2,000 and 8,000 lbs., is 926,500 lbs.

Table B shows the several readings.

After the beam had sheared longitudinally, the jockey weight was run back, and the load again gradually applied until it amounted to 15,000 lbs., when fracture occurred by the tearing apart of the fibres on the tension face. Under this load of 15,000 lbs. an opening of $\frac{1}{4}$ -in. was developed in the end at the plane of shear.

On May 11th this beam weighed 56 lbs. 13 ozs., or 28.59 lbs. per cubic foot. On May 17th, the weight of the beam was 56 lbs. 3 ozs., or 28.27 lbs. per cubic foot, so that while in the laboratory this beam lost in weight at the rate of .0533-lb. per cubic foot per day.

Beam V was tested on May 19th, 1893, with the annular rings somewhat oblique as shown in Fig. 7. It failed by the tearing apart of the fibres on the tension face under a load of 23,610 lbs.



Fig. 7 Fig. 8.

The maximum skin stress corresponding to this load is 5869 lbs per square inch.

The co-efficient of elasticity, as determined by an increase in the deflection of .24-in. between the loads of 1000-lbs. and 11,500-lbs., is 946,270 lbs.

Table B shows the several readings.

The weight of the beam on May 11th was 59 lbs., or 29.59 lbs. per cubic foot. The weight of the beam on May 19th was 58 lbs. 3 ozs., or 29.18 lbs. per cubic foot, so that the loss in weight in the laboratory was at the rate of .05125-lb. per cubic foot per day.