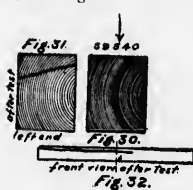Beam XIX. This beam was of exceptionally good quality, with clear close grain and       nots. It was tested Oct. 2nd, 1894, with the annular rings near       tional, as in Fig. 30.



The load on the beam was gradually increased up to 16,000 lbs., when it was gradually relieved from load, the readings being taken for each diminution of 4000 lbs. The corresponding readings are indicated in Table F.

When it was completely relieved from load, the scales showed readings of .005-in at the centre, .001-in and .003-in at the ends. These readings were probably due to inequalities in the timber or a possible sliding of the scales, as the beam showed no evident sign of set.

The load was again immediately increased gradually from nil until it amounted to 59,540 lbs., when the beam failed by longitudinal shear, followed by the splintering of the upper edges on the tension side, Figs. 31, 32. Fracture was also indicated by the crippling of the fibres on the compression side taking place between 58,000 and 59,540 lbs.

The distance between the portions of the beam above and below the plane of shear at the end was .36-in. as in the figure.

The maximum skin stress corresponding to the breaking load is 9043 lbs. per square inch.

The co-efficient of elasticity, as deduced by an increase in the deflection of .3-in. between the loads of 2000-lbs. and 16,000 lbs., is 1,934,600 lbs.

Table F shows the several readings.

The time occuped by the first loading was 10½ mins., by the relieving from the load 6¾ mins., and by the second loading from nil to the max., 15¼ mins.

The weight of this beam on April 21st, the date of its shipment from Vancouver, was 410 lbs., or 44.99 lbs. per cubic foot. On reaching the laboratory the weight was 392 lbs. 8 ozs., or 43.07 lbs. per cubic foot, and the weight on Oct. 2nd, the date of the test, was 375 lbs. 10 ozs., or 41.22 lbs. per cubic foot, showing a loss of weight at the rate of .0392-lb. per cubic foot per day between Vancouver and the laboratory, and a loss at the rate of .0161-lb. per cubic foot per day while in the laboratory.

Beam XX. This beam was cut from the heart of the tree, and was tested Nov. 3rd., 1894, with the annular rings as in Fig. 33.

It was coarse grained, the grain being very nearly parallel with the axis, and contained a number of knots.
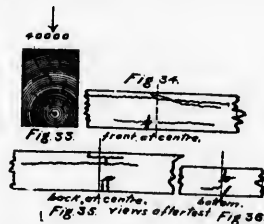


The load was gradually increased until it amounted 12,000 lbs., and at this point the beam was gradually relieved from load, readings being taken for every diminution of 2000 lbs. When the load had been reduced to 500 lbs., the reading at the centre was .001-in., probably due to a movement of the scale. The load was again gradually increased

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