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The maximum skin stress corresponding to the breaking load of 76,900 lbs. was 6135 lbs. per square inch.

The total compression under a load of 41,000 lbs. at the centre was 1.7 in., and taking the effective depth of the beam to be 14.5 ins., the corresponding maximum skin compressive stress is 6495 lbs. per square inch, the corresponding skin tensile stress being 8221 lbs. per square inch.

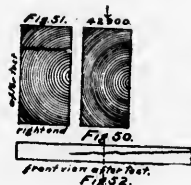
Assuming the ordinary law to hold good for the whole of the effective depth, the maximum skin stress would be 7662 lbs. per square inch.

The co-efficient of elasticity, as determined by an increase in the deflection of .16-in. between the loads of 11,000 and 22,000 lbs., is 1,199,741 lbs.; as determined by an increment of the deflection of .33-in. between the loads 10,000 lbs. and 32,000 lbs., it is 1,163,384 lbs.; and as deduced from an increment in the deflection of .29 in., the mean between .285-in. and .295 in., the increments between the loads of 5,000 and 25,000 lbs. and 10,000 and 30,000 lbs. respectively, it is 1,203,500 lbs.

Table II shows the several readings.

The total weight of the beam on Nov. 25th, the date of test, was 331 lbs. 9 ozs., or 32.8 lbs. per cubic foot. After cutting off the ends, the weight of a length of 9 feet was 262 lbs. 5 ozs., or 33.4 lbs. per cubic foot. The total weight of the beam on October 3rd was 339 lbs. 9 oz.

Beam XXV from Trestle 316. This beam was tested Nov. 28th, 1893, with the annular rings as in Fig. 50, and showing the heart on one of the faces.



It contained one vertical bolt hole, several knots, and many season cracks. The grain was straight.

The load upon the beam was gradually increased until it amounted to 42,900 lbs., when a large splinter broke off on the tension face, and the beam failed by longitudinal shear, as in Figs. 51, 52.

The maximum skin stress corresponding to this breaking load is 4613 lbs. per square inch.

The co-efficient of elasticity, as determined by an increment in the deflection of .335-in. between the loads of 4,000-lbs. and 20,000 lbs., is 949,720 lbs.

Table I shows the readings for the several loads.

The total weight of the beam on October 3rd was 422 lbs., or 34.44 lbs. per cubic foot, and on Nov. 28th, the date of test, the weight was 406 lbs., or 33.11 lbs. per cubic foot, showing a loss of weight in the Laboratory at the rate of .237-lbs. per cubic foot per day.

The time occupied by the test was 30 minutes.