

RESULTS.

As a result of these investigations, reliable strength values for the principal timbers of the Southern and Eastern States are now available.

Another and more valuable result is the establishment of general laws regarding the strength of timber, the most important of which may be stated as follows:—

1. A difference in strength values derived from a few specimens of the same kind of wood, up to 10 per cent. for coniferous woods, and to 15 per cent. for hard woods, cannot be considered a difference of practical importance; such differences cannot be relied upon as furnishing a criterion of the quality of the material.

2. The size of the test piece does not in itself influence strength values (except in columns, and in compression blocks shorter than cubes).

3. Small test pieces judiciously selected, furnish a better statement of average values of a species than tests on large beams and columns in large numbers.

4. A large series of tests on small pieces will give practically the same result as such a series on large beams and columns; hence there is no need of finding a co-efficient, with which to relate the results of the former to construction members.

5. The presence of moisture greatly reduces the stiffness and the compression and cross-breaking strength, but has very little influence on the tensile strength. Yard dried timber is about 50 per cent.; and house (or kiln) dried, 80 per cent. stronger than green or saturated timber. The manner of drying has no effect on the compression strength. The strength is reduced by the re-absorption of moisture to the same extent, as it is increased by drying.

6. The percentage of moisture being the same, the compression strength of conifers is proportional to the specific gravity.

7. The specific gravity of dry wood depends upon the ratio of summer to spring wood in the annual growth rings.

8. An inspection of the relative amount of summer wood furnishes the most delicate and accurate measure of differences in the specific gravity and strength, and is the surest criterion for ocular inspection of quality.