Between the first and second readings the specimen was under 100 lbs. for 3 hours, the final reading varying from – .00005 to + .00002. Between the second and third readings the specimen was left under 100 lbs. for 25 minutes, the reading varying from – .00005 to + .00002. The specific weight of the dried specimen was 32.559 lbs. per cubic foot.

After $f_1$, had been tested the injured portion was removed and the remainder retested, with the following results :—

Coefficient of elasticity = 1,972,390 (forward). 1,962,020 (return); compressive strength = 3521.4 lbs. per square inch; specific weight = 36.777 lbs. per cubic foot.

After 2 had been tested the injured portion was removed and the remainder re-tested, with the following results :—

Coefficient of elasticity = 1,733,480 (forward), 1,727,000 (return); compressive strength = 3736.7 lbs. per square inch; specific weight = 37.602 lbs. per cubic foot.

The injured portion was removed from the last and the remainder dried at 212° F., when it was tested, with the following results :—

Coefficient of elasticity = 2,699,130 (forward), 2,699,970 (return); compressive strength = 8465 lbs. per square inch; specific weight = 30.253 lbs. per cubic ft.

Specimen 2 contained the heart, and shews the least compressive strength.

*Remarks on E.*—It may be observed that the coefficient of elasticity and strength often differ widely in value, even in the case of specimens which were in the same alignment in the original beam, and which had been treated, as far as practicable, in a precisely similar manner. This may be due to a number of uncontrollable causes, as, for example, an inherent weakness or a want of parallelism in the grain, but it is certainly largely due to the proportion of moisture present in the specimen and perhaps to some but a much smaller extent, to a variation in the temperature.

Again the difference between the means of the forward and return observations diminishes as the moisture is eliminated, and as the material approaches the normal state, that is, the state in which it contains the greatest amount of moisture consistent with the hygrometric condition of the surrounding atmosphere. The same is true also of kiln-dried specimens, but the latter, on account of their small section, rapidly absorb moisture until the normal state is reached. The rate of loading was kept as uniform as possible, the average time per reading being ½ minute for tension and ¾ minute for compression specimens. The following examples will serve as illustrations :—

## A.—SPECIMEN OF WHITE PINE MARKED I. (KILN-DRIED).

This specimen was taken out of the kiln on March the 28th, 1895, and allowed to cool in the Laboratory during the night.

Its sectional area = .7288 square inches, and its specific weight = 24.788 lbs. per cubic foot.

| Date. | No. of readings. | Mean forward reading. | Mean return reading. | Temp. (Fahr.) of Laboratory. | Mean pressure of vapour. | Mean relative humidity. | Dew point. |
|---|---|---|---|---|---|---|---|
| Mar. 29 | 96 | 691.702 | 698.572 | 28.8 to 30.1 | .2 | | |
| " 30 | 30 | 699.113 | 699.267 | 45.3 to 46.8 | .2152 | 88.3 | 36.2 |
| " 30 | 54 | 705.153 | 704.163 | 68.1 to 68.3 | " | " | " |
| " 31 | 10 | 688.342 | 688.175 | 67.4 to 68° | .1793 | 87.3 | 31.5 |
| Apr. 1 | 50 | 673.958 | 673.6 | 33 to 37.5 | .1082 | 83.0 | 19.7 |
| " 2 | 30 | 686.5 | 686.066 | 67° to 68 | .170 | 93.7 | 30.3 |
| " 3 | 20 | 685.111 | 685.3 | 64.5 | .1173 | 88.7 | 22 |
| " 4 | 29 | 670.65 | 670.25 | 34.5 to 37.8 | .1202 | 89 | 22.2 |
| | 26 | 669.5 | 669.5 | 33 to 35.3 | | | |
| " 7 | 30 | 682.5 | 682. | 64 to 67.8 | .1557 | 89 | 28.3 |
| " 8 | 30 | 678.857 | 678.228 | 65.2 | .1498 | 86 | 27.3 |
| " 9 | 34 | 666.469 | 666.147 | 35° | .1382 | 80 | 25.3 |
| " 9 | 15 | 676.643 | 676.443 | 61°5 | | 71.7 | |

Tensile strength of specimen = 12,294 lbs. per sq. inch.