25,965 lbs. per cubic foot and its compressive strength 4849 lbs. per square inch.

The injured portion was removed from this last, and the remainder again tested, when its weight was 26,024 lbs. per cubic foot and its compressive strength 6621.2 lbs. per square inch.

Specimens 3, c_6, c_8, c_{11} all contain the heart and shew the least compressive strength.

AIR-DRIED SPECIMENS FROM SPRUCE BEAM 30.

Spec.	Tension Tests. Coefficients of elasticity. Forward.	Tension Tests. Coefficients of elasticity. Return.	Tension Tests. Tensile strength in lbs. per sq. in.	Tension Tests. Sp. wt. in lbs. per cub. ft.	Spec.	Compression Tests. Coefficients of elasticity. Forward.	Compression Tests. Coefficients of elasticity. Return.	Compression Tests. Compressive strength in lbs. per sq. in.	Compression Tests. Sp. wt. in lbs. per cub. ft.	Spec.	Shearing Tests. Shearing strength in lbs. per sq. in. of mat.	Shearing Tests. Sp. wt. in lbs. per cub. ft.
c_1	2,263,580	2,305,180	13,380	29,666	d_1	.....	.....	6651	32,447	s_1	375.88	32,012
c_2	2,385,260	2,029,010	22,153	30,592	d_2	.....	.....	6933	31,237	s_2	377.29	32,056
c_3	2,370,480	2,386,600	8,053	30,341	d_3	.....	.....	4986	32,005	s_3	376.51	31,148
c_4	2,139,490	2,151,460	12,470	30,367	d_4	.....	.....	7664	31,352	s_4	391.12	29,899
c_5	2,323,210	2,343,300	14,397	29,263	d_5	.....	.....	5185	31,076			
c_6	2,372,570	2,104,210	16,571	31,943	d_6	2,202,770	2,262,500					

SPECIMENS KILN-DRIED AT 212 F. FROM SPRUCE BEAM 30.

Spec.	Coefficients of elasticity. Forward.	Coefficients of elasticity. Return.	Tensile strength in lbs. per sq. in.	Sp. wt. in lbs. per cub. ft.	Spec.	Coefficients of elasticity. Forward.	Coefficients of elasticity. Return.	Compressive strength in lbs. per sq. in.	Sp. wt. in lbs. per cub. ft.	Spec.	Shearing strength in lbs. per sq. in. of mat.	Sp. wt. in lbs. per cub. ft.
c_7	2,759,620	2,765,020	13,932	29,571	d_7	2,243,550	2,237,150	9202	28,671	s_7	233.66	31,241
c_8	2,647,010	2,650,330	19,102	30,284						s_8	246.40	31,173
c_9	2,817,550	2,868,760	16,797	29,925						s_9	324.56	31,133
										s_{10}	296.21	28,729
										s_{11}	347.69	29,240
										s_{12}	303.03	29,243

Remarks.—The mean direct tensile strength of the air-dried specimens was 3.9 times the calculated mean skin-stress of the beam, and 2.35 times the mean direct compressive strength.

By the kiln-drying, the mean tensile strength seems to have been increased, but specimen c_6 failed under an abnormally small load, probably because of some inherent weakness. The compressive strength was increased 77 per cent., and the mean shearing strength diminished more than 22 per cent.

The ratio of the length of d to its least transverse dimension was 20.925.

The ratios of the length to the least transverse dimension in the remainder of the compression members varied between 2.06 and 10.1, and in each case the failure was due to direct crushing.