3. In Pine, screws driven *parallel* to the grain developed 3% to 28% greater strength than those driven *across* the grain.

4. In Oak, screws driven *across* the grain developed 3% to 16% greater strength than when driven *parallel* to the grain.

5. *The strength developed varies as the circumferences of the screws and hence as the diameters*, the length of thread being the same. Thus taking 2688 as the unit theoretical load:

Size of screw.....	=	$\frac{3}{8}''$	$\frac{1}{2}''$	$\frac{5}{8}''$	$\frac{3}{4}''$
Ratio of diameters.....	=	3	4	5	6
Loads	=	2688	3890	4520	5430
Theoretical loads.....	=	2688	3584	4480	5376
Error.....		00	306	40	54
Per cent. of error		0%	8%	.9	.9%

This ratio is a simple one, and agrees well with the results of our tests. The strength developed appears to be independent of the number of threads per inch. The finer the pitch of the thread of the screw the more bearing area will it have, but there is then the danger of injuring the fibres of the wood to such an extent as to vitiate the benefits of the larger bearing area.

6. All but two of the $\frac{3}{8}''$ screws driven in oak failed in tension at an average load of 55,000 lbs. per sq. in.

Table IV. gives in compact form the absolute maximum loads borne by each size of screw: (*a*) driven in oak, (*b*) driven in pine, both parallel and across the grain.

The last column gives the absolute load per inch of thread.

Curves.—A sheet of curves is also given showing the work done on a $\frac{3}{8}''$ screw driven 3″ parallel to the grain in Red Pine. The area of the average curve computed by the method of average ordinates gives:

Work done..... = 1400 ft. lbs.

When driven across the grain the work done would be much greater, because the maximum load was, in almost all cases, maintained for quite an appreciable distance of travel of the screw, although, as was the case with Pine, the maximum load was not as great as when driven parallel to the grain. This is doubtless due to the greater elasticity and lesser rigidity of the fibres transversely than when edgewise to the action of the load. The curve would then at the maximum load show an almost horizontal line somewhat similar to that shown in dotted *black*, only more marked, and would, moreover, fall away less abruptly than those shown on the sheet, thus enclosing a much greater area and hence a greater amount of work done.