

TECHNICAL NOTE NUMBER 205

FOREST PRODUCTS LABORATORY · U. S. FOREST SERVICE · MADISON, WISCONSIN

SIMILARITY OF DEFECTS IN LUMBER

No kind of tree produces lumber that is entirely free from defects and blemishes. The same irregularities in the wood, natural and accidental, are likely to occur in all species; and in all woods used for the same purpose the effect of a certain defect on the strength and quality is about the same.

Knots are probably the most common of the natural defects in lumber. Most branches of forest-grown trees originate at the center of the trunk and grow in diameter and length so long as conditions are favorable. The branch end or knot in the trunk is therefore typically shaped like a cone with its apex at the pith. A branch end when sawed through appears on a flat-grain surface as a round knot and in vertical-grain material as a spike knot. Many of the lower branches in forest-grown trees die and fall off when the upper branches cut off too much of their light. As the tree continues its diameter growth, new wood surrounds the stubs of the old branches. When the log is cut up these covered stubs are found in the lumber as encased knots.

All trees do not have pitch streaks or pitch pockets, but such blemishes are found in the majority of softwoods. The amount of pitch often varies as much within a species as it does between species. A typical pitch pocket in southern yellow pine may be shorter and wider than one in Douglas fir, but if they are equal in area they are practically equivalent in damaging effect.

The same kind of blemish-producing accidents happen to all kinds of wood. Holes produced by loose knots falling out, by grubs, insects, and birds, and by

tools appear in all kinds of lumber. Fire scars are found in all species of trees.

All woods are more or less subject to the attack of some decay-producing fungi that work in the sapwood or in the heartwood. Checks, cracks, splits, casehardening, honeycombing, warping, and other seasoning defects are likely to be found in any kind of wood. Manufacturing defects, such as planer skips, - the result of cup, bow, crook and twist - may occur in all species. All lumber may have cross grain, shake, and stain.

Certain defects may be more prominent in one wood than in another, but there are more points in similarity than dissimilarity in the defects present in different species. The U. S. Forest Products Laboratory, Madison, Wisconsin, has made use of this fact in the drawing up of standardized grading rules for the grading and selection of softwood lumber. These rules recognize certain defects as the equivalent of others and limit the size and number of defects permissible in each grade. They are applicable to all softwoods and might be extended to cover many hardwoods.