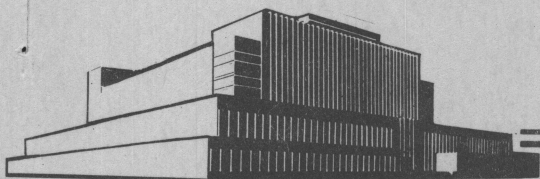


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List of Publications on THE GROWTH, STRUCTURE, AND IDENTIFICATION OF WOOD

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FOREST PRODUCTS LABORATORY
MADISON 5, WISCONSIN

UNITED STATES DEPARTMENT OF AGRICULTURE
FOREST SERVICE

In Cooperation with the University of Wisconsin

TABLE OF CONTENTS

This list, which begins on page 3, includes publications that give general information and the results of research by the U. S. Forest Service on the structure and the identification of wood; the effect of the cellular structure of wood on its strength, shrinkage, permeability, and other properties, the influence of environmental factors, such as light, soil, moisture, and fire, on the quality of wood produced; and secretions of economic value produced by trees and their exploitation.

	<u>Page</u>
Instructions for obtaining publications.....	2
General and miscellaneous.....	3
The structure and identification of wood (For additional references on wood structure, see also other headings)	
General -- not pertaining to individual species or genera...	5
American woods--By Species	7
Foreign woods.....	11
Fiber lengths.....	14
The relation of wood structure to its properties and uses.....	14
The relation of growth conditions to wood quality.....	20
Technique.....	28
Some books about wood.....	30
Other publication lists issued by the Forest Products Laboratory..	33

INSTRUCTIONS FOR OBTAINING PUBLICATIONS

Publications available for distribution at this Laboratory are marked with an asterisk (*).

Single technical notes, reprints, and processed reports may be obtained free upon request from the Director, Forest Products Laboratory, Madison 5, Wis.

Federal Government bulletins, circulars, leaflets, etc., if not available for free distribution at this Laboratory, may be purchased at the prices indicated from the Superintendent of Documents, Government Printing Office, Washington 25, D. C. Send money order, draft, or cash; stamps or personal checks are not accepted.

Trade journals containing articles herein listed may often be purchased from the publishers or may be consulted in various libraries.

The Forest Products Laboratory reserves the right to furnish only those publications that will, in its judgment, give the information requested. Blanket requests or requests for a large number of copies of any individual article will not be filled except in unusual cases.

GENERAL AND MISCELLANEOUS

Title	Author	Publication and date
*The Forest Products Laboratory: A Golden Anniversary Record.		: 108 pp., June 2, 3, and 4, 1960.
*Opportunities for graduate studies in forest products.		: 24 pp., January 1960.
*Recent progress in forest products research.	: Locke, E. G.	: Southern Lumberman 199 (2489):104-7, Dec. 1959.
*Opportunities and problems in utilizing wood products of the southern and south central forests.	: Hall, J. A.	: Soc. of Amer. Foresters Proc. 1956.
*Wood: colors and kinds.		: USDA Handbook 101, 1956.
*Timber resources.	: Hall, J. A.	: FPL Rept. 2080. 1957.
*Forestry and the forest products industry in Liberia.	: Fobes, E. W.	: South. Lbrmn. 193(2417): 185-186, Dec. 1956.
*The U. S. Forest Products Laboratory.	: Champion, F. J.	: FPL Rept. 1698. 1960.
*Some books about wood (a list).		: FPL No. 399. 1955.
*Characteristics of some important commercial woods.		: Sep. from For. Prod. Lab. "Wood Handbook," USDA Handbook No. 72. 1955.
*Structure of wood.		: Sep. from For. Prod. Lab. "Wood Handbook," USDA Handbook No. 72. 1955.
*Some common fallacies about wood.		: FPL Rept. 1167. 1959.

GENERAL AND MISCELLANEOUS (continued)

Title	Author	Publication and date
*Wood--a simple explanation, what it is and how we use it.	Champion, F. J.	FPL Rept. 1972. 1954.
The U. S. Forest Products Laboratory.	Champion, F. J.	Jour. For. Prod. Res. Soc. 4(4):153-57, Aug. 1954.
*The sap or moisture in wood.	Peck, E. C.	FPL Rept. 768. 1959.
*A hundred definitions pertaining to wood and other forest products.		Tech. Note 240. 1958.
*Technique used in tracing the Lindbergh kidnaping ladder.	Koehler, Arthur	Jour. of Criminal Law & Criminology, 1937. Rept. R1420. 1958.
*Southern cypress terminology.	Gerry, Eloise	FPL Rept. SR-20. 1953.
Products of American forests.	Hall, J. A., & Mosley, T. J.	USDA Unno. Pub. 1939. (slightly revised 1946.) 20 cents.
Effect of heating wet wood on subsequent dimensions.	Koehler, Arthur	Amer. Wood-Preservers' Assn. Proc., 1933.
Staining living trees on the stump.	Brown, W. R.	Jour. Forestry, Nov. 1928.

THE STRUCTURE AND IDENTIFICATION OF WOOD

(For additional references on wood structure, see also other headings)

General -- not pertaining to individual species or genera

Title	Author	Publication and date
<hr style="border-top: 1px dashed black;"/>		
*Specific gravity of <u>Populus</u> species and hybrids.	Paul, B. H.	FPL Rept. 2060. 1956.
Bark structure of North American conifers.	Chang, Ying-Pe	USDA Tech. Bull. 1095. Dec. 1954. 35 cents.
*Inside wood -- a short trip into the interior for the layman.	Champion, F. J.	FPL Rept. 1995. Information Reviewed and Reaffirmed 1960.
*Differences between heart-wood and sapwood.		FPL Tech. Note 189. 1952.
*The structure of a hardwood.		FPL Tech. Note 210. 1958.
*The structure of a softwood.		FPL Tech. Note 209. 1958.
*What is meant by "hard-woods" and "softwoods?"		FPL Tech. Note 187. 1960.
*Distribution of hot-water soluble material in cell walls and cavities of redwood.	Tarkow, H. & Krueger, J.	For. Prod. Jour. 11(5): 228-9, May 1961.
*Determining the distribution of interstructural openings in wood.	Stamm, A. J. & Wagner, E.	For. Prod. Jour. 11(3): 141-144, Mar. 1961.
*Identification of coniferous woods.	Kukachka, B. F.	Tappi, Vol. 43, No. 11, pp. 887-896, Nov. 1960.
Arrangement of the cellulose crystallites in ray cells of white oak as determined by X-rays.	Gross, S. T., Clark, G. L., & Ritter, G. J.	Paper Trade Jour., Dec. 7, 1939.

THE STRUCTURE AND IDENTIFICATION OF WOOD (continued)

General (continued)

Title	Author	Publication and date
Crystal arrangement and swelling properties of fibers and ray cells in basswood holocellulose.	: Ritter, G. J., : & Mitchell, : R. L.	: Paper Trade Jour., Feb. : 9, 1939.
Microstructure of a wood pulp fiber.	: Ritter, G. J., & : Chidester, : G. H.	: Paper Trade Jour., Oct. : 1928.
*The identification of furniture woods.	: Koehler, A.	: U.S. Dept. of Agr. Misc. : Cir. No. 66. 1926.
Chemistry of wood:	:	:
IX - Springwood and summerwood.	:) :) :) Ritter, G. J.,	: Indus. & Eng. Chem. 18: : 608-9. 1926.
VIII - Further studies of sapwood and heartwood.	:) & :) Fleck, L. C.	: Indus. & Eng. Chem. 15: : 1055. 1923.
VI - The results of analysis of heartwood and sapwood of some American woods.	:) :) :)	: Indus. & Eng. Chem. 15: : 1055. 1923.
V - Results of analysis of some American woods.	:) :)	: Indus. & Eng. Chem. Nov. : 1922.

THE STRUCTURE AND IDENTIFICATION OF WOOD (continued)

By Species

American Woods

Species	Title	Author	Publication and date
Ash	*How to distinguish : black ash from com- : mercial white ash : lumber.		FPL Tech. Note : D-11. 1958.
Basswood	Utilization of basswood : (1 page, 1 plate on : structure)	Brush, W. D.	USDA Bull. 1007. : 1922. Out of print.
Beech, birch (see maple)	Some physical and : mechanical properties : of American beech. : (Copies available from: : the Northeastern For- : est Experiment Station, : 102 Motors Ave., : Upper Darby, Pa.)	Paul, B. H., & Drow, J. T.	Northeast Tech. : Com. on the Utili- : zation of Beech : Series No. 1, 17 : pp., 1951.
Douglas-fir	*The identification of : Douglas-fir wood.		FPL Tech. Note : 198. 1958.
Elm	Utilization of elm (1 : page, 3 plates on : structure).	Brush, W. D.	USDA Bull. 683. : 1918. Out of print
Fir	*Some physical and : mechanical properties : of noble fir.	Paul, B. H., Dohr, A. W., & Drow, J. T.	FPL Rept. 2168. : 1959.
Hemlock	*"Black streak" in : western hemlock: its : characteristics and in- : fluence on strength. *Western hemlock : "floccosoids" (white : spots or streaks). *Properties of western : hemlock and their re- : lation to uses of the : wood (2 plates on : structure).	Luxford, R. F., Wood, L. W., & Gerry, Eloise Gerry, Eloise Johnson, R. P. A. & Gibbons, W. H.	FPL Rept. 1500. : 1960. : : FPL Rept. 1392. : Inf. Rev. & Reaf. : 1960. USDA Tech. Bull. : 139. 1929.

THE STRUCTURE AND IDENTIFICATION OF WOOD (continued)

By Species (continued)

American Woods (continued)

Species	Title	Author	Publication and date
Larch	*Properties of western larch and their relation to uses of the wood (2 plates on structure).	Johnson, R. P. A. & Bradner, M. I.	USDA Tech. Bull. 285. 1932.
Maple	*How to tell birch, beech, and maple apart. *Bird's eye in maple are not due to dormant buds ... Same. Dormant buds are not the cause of bird's-eyes in maple.	Pillow, M. Y.	FPL Tech. Note 116. 1952. Hardwood Record, Sept. 1930. Wood Working Indus., Sept. 1929.
Oak	*Identification of oak woods. *Occurrence of tension wood and related seasoning defects in California black oak. *Second-growth oak Part 1 (white oaks) Part 2 (red oaks) *Some properties of California white oak and Oregon white oak. *Specific gravity, shrinkage, age, and strength of tanoak.	Wahlgren, Harold E. Paul, B. H. Paul, B. H., & Dohr, A. W., & Drow, J. T.	FPL Tech. Note 125. 1961. FPL Rept. 2106. 1958. South. Lbr. Jour. 63(1):14-15, 30, Jan. 1959. South. Lbr. Jour. 63(2):16-18, Feb. 1959. FPL Rept. 2135. 1958. FPL Rept. 2041. Inf. Rev. & Reaf. 1960.
Pine	*The white pine group. *Resin distribution in second-growth ponderosa pine.	Paul, B. H.	FPL Tech. Note 215. 1957. FPL Rept. 2046. Inf. Rev. & Reaf. 1960.

THE STRUCTURE AND IDENTIFICATION OF WOOD (continued)

By Species (continued)

American Woods (continued)

Species	Title	Author	Publication and date
Spruce	*Radial streak (red) and giant resin ducts in spruce.	Gerry, Elois	FPL Rept. 1391. 1956.
Walnut	*Black walnut for gun- stocks.	Paul, B. H.	South. Lbrman., Apr. 15, 1943.
Willow	*Some physical proper- ties of Gulf black willow.	Paul, B. H.	South. Lbrman, Dec. 1959.

THE STRUCTURE AND IDENTIFICATION OF WOOD (continued)

By Species (continued)

American Woods (continued)

***AMERICAN WOODS Series:** Common and scientific names, distribution and growth, production, products, properties, uses and references for species and species groups following:

Alder, red
Aspen
Baldcypress
Basswood, American
Beech, American
Buckeye
Butternut
Cedar, incense-
 eastern red
 western red
 Atlantic white-
 northern white-
 Port Orford white-
 Alaska
Cherry, black
Chestnut
Cottonwood
Fir, balsam
 Douglas-
 noble
 white
Hackberry
Hemlock, eastern
 western
Holly, American
Larch, western

Locust, black
Magnolia
Maple
Oaks, eastern
Osage-orange
Pecan
Persimmon
Pine, jack
 lodgepole
 ponderosa
 red
 southern
 sugar
 eastern white
 western white
Poplar, balsam
 yellow-
Redwood
Spruce, eastern
 Sitka
Sweetgum
Sycamore, American
Tamarack
Tupelo
Walnut, black
Willow, black

THE STRUCTURE AND IDENTIFICATION OF WOOD (continued)

Foreign Woods

Title	Author	Publication and date
*The woods of Liberia.	Kryn, J.M.	FPL Rept. 2159. 1959.
	& Fobes, E.	
*Puerto Rican woods and their utilization (a bibliography).	Gerry, Eloise	FPL Rept. 1793. 1957.
	& Flick, F. J.	
*Some publications on domestic and foreign woods.		FPL Rept. 1479. 1956.
*Exploratory tests on machining and related properties of fifteen tropical American hardwoods.	Davis, E. M.	FPL Rept. 1744. 1956.
*How to distinguish mahogany and walnut from sweetgum.		FPL Tech. Note 103. 1953.
*Distinguishing characteristics of mahogany and woods commonly called mahogany.		FPL Tech. Note 162. 1952.
*Some characteristics of Brazilian parana pine affecting its use for millwork.	Pillow, M. Y.	For. Prod. Res. Soc. Proc., Vol. 5. pp. 297-302. 1951.

By Country of Origin

FOREIGN WOODS Series:

Africa

- *Agba, Gossweilerodendron balsamiferum (Verm.) Harms, by B. F. Kukachka. FPL Rept. 2024. 1961.
- *Avodiré, Turraeanthus africana (Welw. ex C. DC.) Pellegrin, by R. C. Koeppen and B. F. Kukachka. FPL Rept. 1905. 1961.

THE STRUCTURE AND IDENTIFICATION OF WOOD (continued)

By Country of Origin (continued)

FOREIGN WOODS Series: (continued)

Africa (continued)

- *Kokrodua, Afrormosia elata Harms, by B. F. Kukachka. FPL Rept. 1978.
1960.

Asia

- *Klinki, Araucaria klinkii Lauterbach, by Eloise Gerry. FPL Rept. 1987.
Information Reviewed and Reaffirmed 1960.
- *Palosapis, Anisoptera spp., by B. F. Kukachka. FPL Rept. 2051. 1956.
- *Sen, Kalopanax pictus (Thunb.) Nakai, by B. F. Kukachka. FPL Rept.
1979. 1957.

Introduced Species

- *Athel tamarisk, Tamarix aphylla (L.) Karst, by Eloise Gerry. FPL Rept.
1986. 1959.

Tropical America

- *Albarco, Cariniana pyriformis Miers, by Eloise Gerry. FPL Rept. 1921.
1952.
- *Alerce, Fitzroya cupressoides (Molina) Johnston, by Eloise Gerry. FPL
Rept. 1982. Information Reviewed and Reaffirmed 1961.
- *Angelique, Dicorynia guianensis Amsh., by B. F. Kukachka. FPL Rept.
1787. 1958.
- *Balsa, Ochroma lagopus SW., by W. D. Brush. Unnumbered leaflet. 1945.
- *Brazilian araucaria ("Parana pine"), Araucaria angustifolia (Bert.) O.
Kuntze, by W. D. Brush. Unnumbered leaflet. 1945.

THE STRUCTURE AND IDENTIFICATION OF WOOD (continued)

By Country of Origin (continued)

FOREIGN WOODS Series: (continued)

Tropical America (continued)

- *Cativo, Prioria copaifera, by B. F. Kukachka and J. M. Kryn. FPL Rept. 1998. 1958.
- *Corisa, Chorisia insignis HBK, by B. F. Kukachka. FPL Rept. 1996. 1961.
- *Crabwood Carapa guianensis Aubl., by Eloise Gerry and J. M. Kryn. FPL Rept. 1991. 1957.
- *Courbaril, Hymenaea spp., by J. M. Kryn. FPL Rept. 1942. Revised 1956.
- *Espave, Anacardium excelsum (Bert. & Balb.) Skeels, by Eloise Gerry and J. M. Kryn. FPL Rept. 1932. 1952.
- *Greenheart, Ocotea rodioei (Schomb.) Mez., by W. D. Brush. Unnumbered leaflet. 1944.
- *Guanacaste, Enterolobium cyclocarpum (Jacq.) Gris., by Eloise Gerry. FPL Rept. 1985. Information Reviewed and Reaffirmed 1960.
- *Ipe peroba, Paratecoma peroba (Record) Kuhlmann, by Eloise Gerry. FPL Rept. 2000. 1954.
- *Ishpingo, Amburana acreana (Ducke) A. C. Smith, by B. F. Kukachka. FPL Rept. 1915. 1961.
- *Mahogany, Swietenia macrophylla King, by B. F. Kukachka. FPL Rept. 2167. 1959.
- *Marupa, Simarouba amara Aubl., by B. F. Kukachka. FPL Rept. 1956. 1960.
- *Primavera, Cybistax donnell-smithii, by B. F. Kukachka. FPL Rept. 2021. 1958.
- *Spanish cedar, Cedrela spp., by J. M. Kryn. FPL Rept. 1948. 1957.
- *Yemerí, Vochysia hondurensis Sprague, by J. M. Kryn. FPL Rept. 1946. 1956.

THE STRUCTURE AND IDENTIFICATION OF WOOD (continued)

Fiber Lengths

*American woods for paper making. Tech. Note 212. 1953.

Length of fibers in certain Yucatan hardwoods, by M. Y. Pillow. Tappi 35(5):238-40, May 1952.

THE RELATION OF WOOD STRUCTURE TO ITS PROPERTIES AND USES

Title	Author	Publication and date
-----	-----	-----
*Tension wood in cottonwood : its effect on density, tough- ness, and compression.	Lassen, L. E. :	For. Prod. Jour. March : 1959.
*Occurrence of tension wood : and related seasoning de- fects in California black oak.	Wahlgren, H. E. :	FPL Rept. 2106. 1958.
*Juvenile wood in conifers.	Paul, B. H. :	FPL Rept. 2094. 1957.
*Lengthwise shrinkage in ponderosa pine.	Paul, B. H. :	For. Prod. Jour. 7(11): : 408-10, Nov. 1957.
*Swelling of springwood and summerwood in softwood.	Browne, F. L. :	For. Prod. Jour. 7(11): : 416-24, Nov. 1957.
*Growth and specific gravity responses in a thinned red pine plantation.	Paul, B. H. :	Jour. Forestry 55(7): : 510-12, July 1957.
*Effect of condition and kind of wood on groundwood pulp quality.	Schafer, E. R. :	FPL Rept. 2220. 1961.
*Significance of tension wood in furniture cuttings of red oak .	Lassen, L. E. & Cooper, G. A. :	FPL Rept. 2193. 1960.

THE RELATION OF WOOD STRUCTURE TO ITS PROPERTIES AND USES (continued)

Title	Author	Publication and date
*Tension wood in overcup oak.	: Wahlgren, H. E.	: FPL Rept. 2089. 1957.
*The longitudinal shrinkage of cativo.	: Fleischer, H. O.	: Tropical Woods 105:1-5, Oct. 1956.
*Specific gravity of <u>Populus</u> species and hybrids.	: Paul, B. H.	: FPL Rept. 2060. 1956.
*Changes in spiral grain direction in ponderosa pine.	: Paul, B. H.	: FPL Rept. 2058. 1956.
*Variations in fiber length of eastern cottonwood.	: Kaeiser, M.	: FPL Rept. 2047. 1956.
*Comparisons of species of wood for gunstocks.	: Paul, B. H.	: FPL Rept. 1723. : Information Reviewed & Reaffirmed 1960.
*Detection of compression failures in wood.	:	: FPL Rept. 1588. Information Reviewed & Reaffirmed 1961.
*Longitudinal shrinkage of wood.	:	: FPL Rept. 1093. 1960.
*Seasoning green-wood carvings with polyethylene glycol-1000.	: Mitchell, H. L. & Iversen, E. S.	: For. Prod. Jour. 11(1):6-7, Jan. 1961.
New antishrink treatment improves wood for gunstocks, other uses.	: Mitchell, H. L.	: Wood and Wood Products, 65(11):50, 52, 102, Nov. 1960.
*New chemical treatment curbs shrink and swell of walnut gunstocks.	: Mitchell, H. L. & Wahlgren, H. E.	: Forest Products Jour. 9(12):437-441, Dec. 1959 and Supplement, Aug. 1961.
Effect of condition and kind of wood on groundwood pulp quality.	: Schafer, E. R.	: Mechanical Pulping Manual, Chapter III, Tappi Monograph Series No. 21, 1960.
*Same	:	: FPL Rept. 2220. 1961.

THE RELATION OF WOOD STRUCTURE TO ITS PROPERTIES AND USES (continued)

Title	Author	Publication and date
*Occurrence of compression wood in black spruce and its effect on properties of groundwood pulp	Pillow, M. Y., Schafer, E. R., & Pew, J. C.	Tech. Assn. Pulp & Paper Indus. Tech. Papers, June 1936; Paper Trade Jour., Apr. 16, 1936, Paper Mill & Wood Pulp News, Apr. 11, 1936. FPL Rept. 1288. 1959.
.... Same: Compression wood in mechanical pulp		
*Grain separation and related defects in Douglas fir door stock.	Davis, E. M.	The Wood-Worker 74(11): 12-13, 26-30, Jan. 1956.
*Presence of tension wood in mahogany in relation to longitudinal shrinkage.	Pillow, M. Y.	FPL Rept. 1763. 1959.
*Studies of compression failures and their detection in ladder rails.	Pillow, M. Y.	FPL Rept. 1733. 1956.
*Guide to determining slope of grain in lumber and veneer.	Koehler, Arthur	FPL Rept. 1585. Inf. Rev. & Reaf. 1960.
*Detection of figured wood in standing trees.	Pillow, M. Y.	FPL Rept. 2034. Inf. Rev. & Reaf. 1960.
Tension wood in eastern cottonwood.	Kaeiser, M., & Pillow, M. Y.	Central States For. Expt. Sta. Tech. Paper 149, 9 pp. illus., Nov. 1955.
*Relationship between specific gravity and percentage of summerwood in wide-ringed, second-growth Douglas-fir.	Smith, Diana	FPL Rept. 2045. Inf. Rev. & Reaf. 1960.
*Raised, loosened, torn, chipped, and fuzzy grain in lumber.	Paul, B. H.	FPL Rept. 2044. 1959.

THE RELATION OF WOOD STRUCTURE TO ITS PROPERTIES AND USES
(continued)

Title	Author	Publication and date
*Specific gravity, shrinkage, and strength of tanoak.	Paul, B. H.	FPL Rept. 2041. 1960.
*Variations in fibril angles in slash pine.	Hiller, C. H.	FPL Rept. 2003. 1959.
*Longitudinal shrinkage of wood.		FPL Rept. 1093. 1960.
*Compression wood: Importance and detection in aircraft veneer and plywood.	Pillow, M. Y.	FPL Rept. 1586. 1959.
*How growth of white pine affects its properties for matches.	Pillow, M. Y.	FPL Rept. 1950. 1959.
*Patterns of variation in fibril angles in loblolly pine.	Pillow, M. Y. Terrell, B. Z., & Hiller, C. H.	FPL Rept. 1935. 1959.
*Effects of tension wood in hardwood lumber and veneer.	Pillow, M. Y.	South. Lbrman., Aug. 1, 1952. FPL Rept. 1943. 1958.
*Chemical analyses of wood.		FPL Tech. Note 235. 1952.
*Distribution of tension wood and its relation to longitudinal shrinkage in aspen.	Terrell, B. Z.	FPL Rept. 1917. 1958.
*Longitudinal shrinkage of wood.		FPL Tech. Note 234. 1952.
*Some characteristics of young plantation-grown red pine in relation to properties of the wood.	Pillow, M. Y.	For. Prod. Res. Soc. Jour. 2(1):25-31, Apr. 1952.

THE RELATION OF WOOD STRUCTURE TO ITS PROPERTIES AND USES

(continued)

Title	Author	Publication and date
*Selecting white oak trees for bending lumber.	Pillow, M. Y.	For. Prod. Res. Soc. Proc. Vol. 5, pp. 87-92. 1951.
*Some comparative characteristics of second-growth and old-growth redwood.	Paul, B. H.	For. Prod. Res. Soc. Proc., 1951.
What is compression wood and tension wood; and what is their practical significance?	Pillow, M. Y.	South. Lbrman. 182(2277): 52, Feb. 15, 1951.
*Guides for selecting tough ash.	Pillow, M. Y.	South. Lbrman., Aug. 1, 1956.
*Occurrence of gelatinous fibers and their effect upon properties of hardwood species.	Akins, Virginia, & Pillow, M. Y.	For. Prod. Res. Soc. Proc., 1950.
Variations in longitudinal shrinkage of second-growth Douglas-fir.	Pillow, M. Y.	Jour. Forestry, May 1949.
*The need of quality control in future timber crops.	Paul, B. H.	Published in Soil, Food & Health, papers delivered at the Conf. on Conserva., Nutrition & Health, Athens, Ohio. June 1948. Pub. 1949.
Discoloration of swamp black gum pulpwood in storage.	Schafer, E. R., Pew, J. C., & Pillow, M. Y.	Tech. Assn. Pulp & Paper Indus. Tech. Papers, Series 22, 1939.
Variation in the specific gravity of the summerwood of 4 species of southern pines.	Paul, B. H.	Jour. Forestry, June 1939.

THE RELATION OF WOOD STRUCTURE TO ITS PROPERTIES AND USES
(continued)

Title	Author	Publication and date
Structure, occurrence, and properties of compression wood.	Pillow, M. Y.	USDA Tech. Bull. 546. 1937. Out of print.
*Properties and sulphate pulping characteristics of compression wood.	Pillow, M. Y., & Bray, M. W.	Paper Mill & Wood Pulp News, Dec. 21, 1935; Paper Trade Jour., Dec. 26, 1935.
*Compression wood cause of bowing and twisting.	Pillow, M. Y.	Wood Work. Indus. Nov. 1930; Timberman, Nov. 1930; Wood Constr., Nov. 1, 1930; Jour. For., Dec. 1930; South. Lbrman., Mar. 1, 1931.
Cause and prevention of raised grain.	Koehler, Arthur	Timberman, Feb. 1930; South. Lbrman., Dec. 15, 1929.
.... Same: Raised grain: its cause and prevention.		Lbr. Trade Jour., Dec. 15, 1929.
Effect of high temperature on the mode of fracture and other properties of a hard-wood.	Pillow, M. Y.	Wood Work. Indus., Oct. 1929; Hardwood Rec., June 1930; South. Lbrman. Oct. 15, 1929.
*The effect of spiral grain on the strength of wood.	Wilson, T. R. C.	Jour. Forestry, Nov. 1921.

THE RELATION OF GROWTH CONDITIONS TO WOOD QUALITY

Title	Author	Publication and date
*Growth factors influencing the value of jack pine for kraft and sulfite pulps.	: Chidester, G. H., : : Bray, M. W., : : & Curran, C. E.:	: FPL Rept. 1286. 1959. : :
*The relation of rate of growth to the production of white wood in hickory trees.	: Paul, B. H.	: Lumber Trade Jour., Oct. 1, 1929. FPL Rept. 1605. 1956.
*Quality control in manufacture of lumber from second growth.	: Paul, B. H. & Sweet, C. V.	: South. Lbrman., Mar. 1, 1949. FPL Rept. 1781. 1956.
*Specific gravity relative to characteristics of annual rings in loblolly pine.	: Pillow, M. Y.	: FPL Rept. 1989. 1959.
*Growth, specific gravity, and chemical composition of quaking aspen on different soil types.	: Wilde, Sergius A., & Paul, B. H.	: FPL Rept. 2144. 1959.
*The effect of environmental factors on wood quality.	: Paul, B. H.	: FPL Rept. 2170. 1959.
*Training teen-aged trees.	: Paul, B. H.	: FPL Rept. 2176. 1959.
*Method of determining specific gravity of small wood chips.	: Smith, D. M.	: FPL Rept. 2209. 1961.
*Importance of wood quality in tree breeding.	: Paul, B. H.	: Jour. of For. 53(9):659-61, Sept. 1955.
Early pruning improves lumber grades.	: Paul, B. H.	: South. Lbrman., 202(2516): 29-30, 32, Feb. 1, 1961.
*Some anatomical responses of loblolly pine to soil-water deficiencies.	: Smith, D. M., & Wilsie, M. C.	: Tappi 44(3):179-185, Mar. 1961.

THE RELATION OF GROWTH CONDITIONS TO WOOD QUALITY (continued)

Title	Author	Publication and date
Black maple: specific gravity and shrinkage.	: Paul, B. H.	: Northeastern Logger 9(1): 10-11, 38-39, July 1960.
*How growth affects quality in hardwood lumber.	: Paul, B. H.	: South. Lbrman. 201(2512): 31-32, Dec. 1, 1960.
Importance of the width of growth rings in lumber.	: Paul, B. H.	: South. Lbrman. 201(2504):34, Aug. 1, 1960.
*The juvenile core in conifers.	: Paul, B. H.	: Tappi 43(1):1-2, Jan. 1960.
*Machining ponderosa pine and Douglas-fir: Effect of growth rate and density.	: Davis, E. M.	: For. Prod. Jour. 10(1):1-3, Jan. 1960.
Wood density shows wood quality.	: Mitchell, H. L.	: Pulpwood Annual--1959, & Wheeler, P. R: pp. 144-147.
Specific gravity--a measure of intrinsic wood quality.	: Mitchell, H. L.	: Proc. Soc. of Amer. & Wheeler, P. R: For. Meet., Nov. 15-19, 1959. pp. 53-57.
Specific gravity variation in Mississippi pines.	: Wheeler, P. R. & Mitchell, H. L.	: Proc. of the Fifth South. Conf. on For. Tree Improvement, School of For., N. C., State College, Raleigh, N. C. June 11-12, 1959. pp. 87-96.
The possibilities of using forest survey to locate individual trees that are superior with respect to wood quality as well as form and growth rate.	: Mitchell, H. L.	: Proc. Sixth Northeastern For. Tree Improvement Conference, Beltsville, Md., Aug. 21-22, 1958. pp. 8-20.

THE RELATION OF GROWTH CONDITIONS TO WOOD QUALITY

Title	Author	Publication and date
*Estimating tree specific gravity from a single increment core.	Wahlgren, H. E. ; & Fassnacht, Donald L.	FPL Rept. 2146. 1959.
*Wood quality of Mississippi's pine resources.	Mitchell, H. L. ; Wheeler, P. R.	FPL Rept. 2143. 1959.
*The search for wood quality	Mitchell, H. L. ; Wheeler, P. R.	Forest Farmer, Jan. and Feb. 1959.
Putting quality back in the forest	Hall, J. A.	Ames Forester 45:8-11, 1958.
*Wood quality evaluation from increment cores.	Mitchell, H. L.	Tappi 41(4):150-56, Apr. 1958.
*Specific gravity changes in southern pines after release	Paul, B. H.	South. Lbrman. 197(2465): 122-124, Dec. 15, 1958.
*Applying forest tree improvement practices in the Lake States: Production of quality wood.	Mitchell, H. L.	FPL Rept. 2103. 1957.
*Second growth is good.	Paul, B. H.	FPL Rept. 2083. 1957.
*Double branch whorls in white pine.	Paul, B. H.	Forest Science 3(1), Mar. 1957.
*Variability in wood of southern pines as influenced by silvicultural practices.	Paul, B. H.	FPL Rept. 1923. 1957.
*"Virgin growth" and "second growth."		FPL Tech. Note 153. 1957.

THE RELATION OF GROWTH CONDITIONS TO WOOD QUALITY (continued)

Title	Author	Publication and date
One careless ax cut can de- grade an entire veneer bolt.	Paul, B. H.	South. Lbrmn. 193(2410): 63-64. Sept. 1, 1956.
*Effect of growth zone on spec- ific gravity and percentage of summerwood in wide- ringed Douglas-fir.	Smith, Diana M.	FPL Rept. 2057. 1956.
*Breeding for high-quality wood.	Mitchell, H. L.	FPL Rept. 2050. 1956.
*Statistical evaluation of the effect of age on specific gravity in loblolly pine.	Yandle, D. O.	FPL Rept. 2049. 1956.
*Summary on growth in rela- tion to quality of southern yellow pine.	Paul, B. H., & Smith, Diana M.	FPL Rept. 1751. 1956.
*Knots in second-growth Douglas-fir.	Paul, B. H.	FPL Rept. 1690. 1960.
*Plans for research on forest genetics at the Forest Products Laboratory.	Mitchell, H. L.	Tappi 39(1):26A-58A, Jan. 1956.
*Knots vs. clear lumber: pic- turing the influence of prun- ing -- good, bad, and indif- ferent.		FPL Pamphlet, 16 pp., reissued 1955.
*Guides for the selection of tough hickory.	Paul, B. H.	South. Lbrmn., Aug. 15, 1947. FPL Rept. 1683. 1960.
*Controlling the proportion of summerwood in longleaf pine.	Paul, B. H., & Marts, R. O.	FPL Rept. 1988. 1959.

THE RELATION OF GROWTH CONDITIONS TO WOOD QUALITY (continued)

Title	Author	Publication and date
*Comparative value of timber cut from live and dead trees.		FPL Tech. Note 101. 1958.
*Effect of time of cutting timber on its durability.		FPL Tech. Note F-15. 1953.
*Red hickory as strong as white hickory.		FPL Tech. Note 171. 1953.
*Light weight ash should be separated in shipping.	Paul, B. H.	Wood Working Indus., Mar. 1930. FPL Rept. 1153. 1959.
*Second-growth southern hardwood timber.	Paul, B. H.	South. Lbrmn., Dec. 15, 1936; Wood Prod., Jan. 1940; FPL Rept. 1120. 1958.
*Influence of crown reduction on spring and summerwood distribution in longleaf pine.	Marts, R. O.	Jour. Forestry 49(3):183-89, Mar. 1951.
*Healing time for pruned Douglas-fir	Anderson, E. A.	Timberman 52(12):74-80, Oct. 1951. FPL Rept. 1907, 1958.
Rate of growth and composition of wood of quaking and large-tooth aspen in relation to soil fertility.	Wilde, S. A., & Paul, B. H.	Transactions of the Wis. Academy of Sciences, Arts and Letters, Vol. XI, pt. 2, pp. 245-50, Madison, Wis. 1951.

THE RELATION OF GROWTH CONDITIONS TO WOOD QUALITY (continued)

Title	Author	Publication and date
Yield and quality of jack pine pulpwood produced on different types of sandy soils in Wis.	Wilde, S. A., Paul, B. H., & Mikola, P.	Jour. of Forestry, Vol. 49, No. 12, pp. 878-81, Dec. 1951.
*Quality of second-growth Douglas-fir and suggested means of improvement.	Paul, B. H.	For. Prod. Res. Soc. Proc., 1950.
*Wood quality of bud-pruned longleaf pine.	Marts, R. O.	South. Lbrmn., Dec. 15, 1950.
Wood quality in relation to site quality of second-growth Douglas-fir.	Paul, B. H.	Jour. Forestry, Mar. 1950.
*Effect of crown reduction on taper and density in longleaf pine.	Marts, R. O.	South. Lbrmn., Dec. 15, 1949.
Growth-quality study of ponderosa pine.	Paul, B. H., & Meagher, Geo.	West Coast Lbrman., June 1949.
Some results of artificial pruning of ponderosa pine.	Olsen, D. S., & Paul, B. H.	West Coast Lbrman., May 1948.
*Better timber from farms.	Paul, B. H.	USDA Yearbook, 1943-47, pp. 455-460.
Certified logs from pruned trees.	Paul, B. H.	Tree Tips, July 1947.
Lumber grades vs. site quality of second-growth Douglas-fir	Paul, B. H.	West Coast Lbrmn., Nov. 1947.

THE RELATION OF GROWTH CONDITIONS TO WOOD QUALITY (continued)

Title	Author	Publication and date
*Open-grown sugar maple for textile shuttles.	: Paul, B. H., & Baudendistel, M. E.	: South. Lbrmn., Dec. 15, 1945.
Second growth may supply timber of exceptional quality.	: Paul, B. H.	: Trans. of the Wis. Academy of Sciences, Arts & Letters, 1944, pp. 269-71.
*Southern hard elms as substitutes for rock elm.	: Baudendistel, M. E., & Paul, B. H.	: South. Lbrmn., Dec. 15, 1944.
*Black walnut for gunstocks.	: Paul, B. H.	: South. Lbrmn., Apr. 15, 1943.
*Variation in the porosity of 12 species of oak.	: Paul, B. H.	: Barrel & Box & Packages, June 1942. South. Lbrmn., Mar. 15, 1942. Wooden Barrel, Feb. 1942.
*Quality comparisons of hardwoods from the southern Appalachians with that of northern origin.	: Paul, B. H.	: Wood Products, July 1941. South. Lbrmn., Aug. 1, 1941.
Thinning and quality: sudden acceleration of diameter growth in vertical and leaning longleaf pine trees in relation to quality of lumber.	: Paul, B. H.	: South. Lbrmn., Dec. 15, 1941.
*Characteristics of ash from southern bottomlands.	: Pillow, M. Y.	: South. Lbrmn., Dec. 15, 1939.
Heredity versus environment in improving wood in forest trees.	: Koehler, Arthur	: Jour. Forestry, Sept. 1939.

THE RELATION OF GROWTH CONDITIONS TO WOOD QUALITY (continued)

Title	Author	Publication and date
Shrinkage of white oak as affected by position in the tree.	Paul, B. H.	Jour. Forestry. July 1939.
Knots in second-growth pine and the desirability of pruning.	Paul, B. H.	USDA Misc. Pub. 307. 1938. 10 cents.
*Reducing bowing and crooking of lumber cut from second-growth southern yellow pine.	Paul, B. H.	South. Lbrmn., Jan. 1, 1938.
*When to prune southern pine.	Paul, B. H.	South. Lbrmn., Dec. 15, 1938.
Variations in the wood of yellow-poplar from the southern Appalachian Region.	Paul, B. H., & Norton, N. A.	South. Lbrmn., Mar. 1937; Jour. Forestry, Oct. 1936; Hardwood Rec., Jan. 1937.
*Judging the quality of sugar maple.	Paul, B. H., & Norton, N. A.	Wood Products, Mar. 1936.
A method of studying knot formation.	Koehler, Arthur	Jour. Forestry, Dec. 1936.
Evaluation of southern pines for pulp production. III, Shortleaf pine (<u>Pinus echinata</u>).	Bray, M. W., & Paul, B. H.	Paper Trade Jour., Aug. 2, 1934.
Growth, specific gravity, and shrinkage of 12 Delta hardwoods.	Paul, B. H., & Marts, R. O.	Jour. Forestry, Nov. 1934.
A new hypothesis as to the cause of shakes and rift cracks in green timber.	Koehler, Arthur	Jour. Forestry, May 1933.
The application of silviculture in controlling the specific gravity of wood.	Paul, B. H.	USDA Tech. Bull. 168. 1930.

THE RELATION OF GROWTH CONDITIONS TO WOOD QUALITY (continued)

Title	Author	Publication and date
*The quality of Appalachian hickory.	Paul, B. H.	South. Lbrmn., Apr. 6, 1929.
Shortleaf pine: the lumber-making qualities of second-growth and of virgin-growth timber.	Davis, E. M.	South. Lbrmn., Dec. 15, 1929.

TECHNIQUE

Title	Author	Publication and date
*Methods of determining the specific gravity of wood.		FPL Tech. Note B-14. 1956.
*A rapid method of determining the specific gravity of veneer.	Paul, B. H., & Limbach, J. P.	FPL Rept. 1397. 1956.
*Detection of compression failures in wood.		FPL Rept. 1588. Inf. Rev. & Reaf. 1961.
*A field method of determining specific gravity by use of inclement cores or auger chips	Paul, B. H., & Baudendistel, M. E.	FPL Rept. 1587. 1956.
*Western hemlock "floccosoids" (white spots or streaks).	Gerry, Eloise	FPL Rept. 1392. Inf. Rev. & Reaf. 1960.
*Flotation method of determining the specific gravity of wood.	Paul, B. H.	FPL Rept. 1398. 1955.
*Instruments for rapidly measuring slope of grain in lumber.	Anderson, Eric A; Koehler, Arthur; & Krone, R. H.	FPL Rept. 1592. 1960.

TECHNIQUE (continued)

Title	Author	Publication and date
*Guide to determining slope of grain in lumber and veneer.	Koehler, Arthur	FPL Rept. 1585. 1960.
*Wood and fiber structure by incident fluorescence microscopy.	Marts, R. O.	Biological Photographic Assn. Jour. 23(4):151-155, Nov. 1955.
*Some structural details of Douglas-fir pit membranes by phase contrast.	Marts, R. O.	For. Prod. Jour. 5(5): 381-82, Oct. 1955.
*Fluorescence microscopy for measuring fibril angles in pine tracheids.	Marts, R. O.	Stain Technology 30(5): 243-248, Sept. 1955.
*Comparison of methods of estimating summerwood percentage in wide-ringed, second-growth Douglas-fir.	Smith, Diana M.	FPL Rept. 2035. 1960.
*Color tests for differentiating heartwood and sapwood of certain oaks, pines, and Douglas-fir.		FPL Tech. Note 253. 1954.
*Compression wood: Importance and detection in aircraft veneer and plywood.	Pillow, M. Y.	FPL Rept. 1586. 1959.
*Maximum moisture content method for determining specific gravity of small wood samples.	Smith, Diana M.	FPL Rept. 2014. 1959.
*Rapid specific gravity determinations.	Heinrichs, J. Frank	Jour. For. Prod. Res. Soc. 4(1):68, Feb. 1954.
*Annotated list of references on the preparation of wood for microscopic study.	Kryn, Jeannette M.	FPL Rept. 1939. Inf. Rev. & Reaf. 1960.

TECHNIQUE (continued)

Title	Author	Publication and date
*A simple device for detecting compression wood.	Pillow, M. Y.	FPL Rept. 1390. 1959.
*Simplified procedure for determining oven-dry specific gravity of flitches and bolts.	Pillow, M. Y.	FPL Rept. 1790. Inf. Rev. & Reaf. 1960.
Application of fluorescence microscopy and photomicrography to woody tissues.	Marts, R. O.	Stain Technology, Jan. 1950.
Device for detecting and measuring short grain in veneer. Patent No. 2436653.	Limbach, J. P., & Paul, B. H.	Wood Products. Feb. 1946. Feb. 1948.
Slope of grain meter. Patent No. 2413424.	Anderson, Eric A.	Jan. 1947.
FPL springwood-summerwood measuring instrument.	Pew, J. C., & Schafer, E. R.	South. Pulp & Paper Jour. Jan. 1939.

SOME BOOKS ABOUT WOOD

- Boas, I. H. The commercial timbers of Australia, their properties and uses. 1947. Commonwealth Sci. & Indus. Res. Organiz., Melbourne, Australia.
- Brown, H. P., Panshin, A. J., and Forsaith, C. C. Textbook of wood technology. 1949-52. American Forestry Series, Vol. 1, Vol. 2, McGraw-Hill Book Co., New York.
- Bruce, H. D., Cockrell, R. A., and Cummings, L. J. Properties and uses of commercially important Japanese woods. 1951. The Adjutant General, Attn. AGAO-X, Dept. of the Army, Washington 25, D. C.
- Desch, H. E. Timber, its structure and properties. 2d ed., 1947. Macmillan, New York.

SOME BOOKS ABOUT WOOD (continued)

- Dickinson, F. E., Hess, R. W., and Wangaard, F. F. Properties and uses of tropical woods I. Tropical Woods No. 95 (June). 1949. Yale University, School of Forestry, 205 Prospect St., New Haven 11, Conn.
- Eames, A. J., and McDaniels, L. H. Introduction to plant anatomy. rev. ed., 1947. McGraw-Hill Book Co., New York.
- Fine Hardwoods Assn., 666 Lake Shore Drive, Chicago 11, Ill. Fine hardwoods selectorama. \$1.50.
- Harlow, W. M., and Harrar, E. S. Textbook of dendrology, covering the important forest trees of United States and Canada. 3d ed., 1950. American Forestry Series. (External characteristics.) McGraw-Hill Book Co., New York.
- Hess, R. W., Wangaard, F. F., and Dickinson, F. E. Properties and uses of tropical woods II. Tropical Woods No. 97 (Nov.). 1950. Yale University, School of Forestry, 205 Prospect St., New Haven 11, Conn.,
- Howard, A. L. A manual of the timbers of the world. 3d ed., 1948. Macmillan Co., New York.
- Howard, A. L. Studies in the identification of timbers. 1942. Macmillan, New York. \$7.
..... Supplement, 1944.
- Johnson, A. P., and Sironen, M. K., (comps.). Manual of the furniture arts and crafts. 1928. (Contains 6 chapters on wood, by Arthur Koehler.) A. P. Johnson Co., Grand Rapids, Mich.
- Kraemer, J. Hugo. Trees of the Western Pacific Region. 1951. Sold by Tri-State Offset Co., 817 Main St., Cincinnati, Ohio.
- Kribs, David A. Commercial foreign woods on the American market. 1959. Edwards Bros., Inc., Ann Arbor, Mich.
- Jay, B. Alwyn. Timbers of West Africa. 3d ed., 1950. Timber Development Assn., Ltd., 21 College Hill, London, E. C. 4, England.
- Mahogany Association, Inc., 666 Lake Shore Drive, Chicago 11, Ill. Mahogany Book, 8th ed. \$1.

SOME BOOKS ABOUT WOOD (continued)

- Metcalf, C. R., and Chalk, L. *Anatomy of the Dicotyledons*. 1950. Oxford University Press, London, England. 2 volumes.
- Pearson, R. S., and Brown, H. P. *Commercial timbers of India: their distribution, supplies, anatomical structure, physical and mechanical properties, and uses*. 1932. Oxford University Press, Bombay, India. 2 volumes.
- Phillips, E. W. J. *The identification of softwoods by their microscopic structure*. 1948. 1s. 3d. *Gt. Brit. Dept. Sci. & Indus. Res. Forest Products Res. Bull. No. 22*. London, England.
- Record, S. J., and Hess, R. W. *Timbers of the New World*. 1943. Yale Univ. Press, New Haven, Conn.
- Record, S. J. *Identification of the timbers of temperate North America*. 1934. John Wiley & Sons, New York.
- Roddie Plywood Corp., Marshfield, Wis. *Characteristics of modern woods*. 5th ed., 1956.
- Sargent, C. S. *A manual of the trees of North America, exclusive of Mexico*. 2d ed., 1922. Houghton, Mifflin & Co., Cambridge, Mass. (Contains much valuable information on trees and where they grow, but little on wood.).
- Same title. Popular edition. Houghton, 1933.
- Schoonover, S. E. *American Woods*. 1951. Watling, Santa Monica, Calif.
- Union of South Africa. Dept. of Forestry. *The pines of Mexico and British Honduras*, by E. E. M. Looock. Pretoria, S. Africa. 1950. (Bull. No. 35.)
- Wangaard, F. F. *The mechanical properties of wood*. 1950. John Wiley & Sons, Inc., New York.
- Wangaard, F. F., and Muschler, A. F. *Properties and Uses of Tropical Woods III. Tropical Woods No. 98 (Nov.)*. 1952. Yale University School of Forestry, 205 Prospect St., New Haven 11, Conn.
- Wimbush, S. H. *Catalogue of Kenya Timbers*. 1950. Nairobi, E. Africa.
- Woods, R. P. *Timbers of South America*. 1949. Timber Development Assn., Ltd., 21 College Hill, London, E. C. 4, England.

OTHER PUBLICATION LISTS ISSUED BY
THE FOREST PRODUCTS LABORATORY

The following lists of publications that deal with the other investigative projects of the Forest Products Laboratory are obtainable upon request:

Boxing and Crating -- Strength and serviceability of shipping containers, methods of packing.

Building Construction Subjects -- Partial list of Government publications of interest to architects, engineers, builders, and retail lumbermen.

Chemistry of Wood and Derived Products -- Chemical properties and uses of wood and chemical wood products, such as turpentine, alcohol, and acetic acid.

Fire Protection -- Fire test methods, fire retarding chemicals and treatments and fire behavior of treated and untreated wood, wood products, and wood structures.

Fungus Defects in Forest Products -- Decay, stains, and molds in timber, buildings, and various wood products; antiseptic properties of protective materials.

Furniture Manufacturers, Woodworkers and Teachers of Woodshop Practice -- Partial list of Government publications on growth, structure, and identification of wood; moisture content, physical properties, air seasoning, and kiln drying; grading, manufacturing, and waste utilization; strength and related properties and joints and fastenings; glues and gluing, veneer and plywood fabrication; box and crate construction.

Glue and Plywood -- Development of waterproof glues, preparation and application of various glues, plywood manufacturing problems.

Logging, Milling, and Utilization of Timber Products -- Methods and practices in the lumber-producing and wood-consuming industries; standard lumber grades, sizes, and nomenclature; production and use of small dimension stock; specifications for small wooden products; uses for little-used species and commercial woods; and low-grade and wood waste surveys.

Mechanical Properties of Timber -- Strength of timber and factors affecting strength; design of wooden articles or parts where strength or resistance to external forces is of importance.

OTHER PUBLICATION LISTS ISSUED BY
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Pulp and Paper -- Suitability of various woods for pulp and paper; fundamental principles underlying the pulping and bleaching processes; methods of technical control of these processes; relation of the chemical and physical properties of pulps and the relation of these properties to the paper making qualities of the pulps; waste in the industry, for example, decay in wood and pulp, utilization of bark, white water losses, etc.

Seasoning of Wood -- Experimental and applied kiln drying, physical properties, air drying, steam bending.

Structural Sandwich, Plastic Laminates, and Wood-Base Aircraft Components -- Strength, selection, and character of aircraft wood, plywood, and wood and composite laminated and sandwich materials; fabrication and assembly problems; methods of calculating the strength.

Wood Finishing Subjects -- Effect of coatings in preventing moisture absorption; painting characteristics of different woods and weathering of wood.

Wood Preservation -- Preservative materials and methods of application; durability and service records of treated and untreated wood in various forms.

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