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# List of Publications on FUNGUS DEFECTS IN FOREST PRODUCTS AND DECAY IN TREES

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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, Wisconsin.

Federal Government bulletins, circulars, and leaflets, 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 check or money order made payable to Superintendent of Documents, stamps 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 which in its judgment will 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.

# LIST OF PUBLICATIONS ON FUNGUS DEFECTS IN FOREST PRODUCTS AND DECAY IN TREES

(It is impracticable to provide a complete list of citations. This partial list, arranged chronologically, is furnished for your information. Other citations may be obtained by consulting the bibliographies in the publications listed below.)

FUNGUS DEFECTS IN FOREST PRODUCTS AND THEIR CONTROL

### Airplane Woods

- \*The significance of the discolorations in aircraft veneers: Mahogany and khaya, by J. R. Hansbrough and R. L. Krause. FPL Rept. No. 1379. Information Reviewed and Reaffirmed 1956.
- \*The significance of the discolorations in aircraft veneers: Yellow birch, by J. R. Hansbrough, A. M. Waterman, and R. F. Luxford. FPL Rept. No. 1377. Information Reviewed and Reaffirmed 1956.
- \*The significance of the discolorations in aircraft veneers: Sweetgum, by
  T. C. Scheffer and J. R. Hansbrough. FPL Rept. No. 1376. Mar. 1956.
- \*The significance of the discolorations in yellow-poplar veneers, by G. H. Hepting, E. R. Roth, and R. F. Luxford. FPL Rept. No. 1375.
  Information Reviewed and Reaffirmed 1958.
- \*The significance of black line stain in yellow birch propeller lumber, by J. R. Hansbrough. For. Path. Spec. Release No. 23. Feb. 1945.
- \*The significance of the discolorations in aircraft lumber: Noble fir and Western hemlock, by G. H. Englerth and J. R. Hansbrough. For. Path. Spec. Release No. 24. June 1945.
- \*Breaking radius of discolored wood in aircraft veneers, by T. C. Scheffer and C. G. Duncan. For. Path. Spec. Release No. 22. Nov. 1944.
  - Temperature and moisture relations in plywood aircraft structures, by G. H. Hepting. For. Path. Spec. Release No. 20. Sept. 1944.
- \*The significance of the discolorations in aircraft lumber: Sitka spruce, by J. R. Hansbrough and G. H. Englerth. For. Path. Spec. Release No. 21. June 1944.

- \*The significance of the discolorations in aircraft veneers: American beech, by J. R. Hansbrough, A. M. Waterman, and R. L. Krause. For. Path. Spec. Release No. 16. Apr. 1944.
- \*Diagnostic features of some discolorations common to aircraft hardwoods, by T. C. Scheffer. For. Path. Spec. Release No. 19. Mar. 1944.
  - Preventing decay in wood aircraft, by G. H. Hepting. Aero Digest 44:126, 128, 142, 213. Illus. Feb. 15, 1944.
- \*Decay of wood in aircraft, by J. S. Boyce and G. H. Hepting. For. Path. Spec. Release No. 12. June 1943.
  - Common stains and decays, in "Manual for the Inspection of Aircraft Wood and Glue for the U. S. Navy," by the Forest Products Laboratory.
    U. S. Navy Dept., Bur. Aeronautics. Second edition 1941. \$1.00.
  - Decays and discolorations in airplane woods, by J. S. Boyce. U. S. Dept. Agr. Bull. 1128. 1923. Out of print.

#### Boats

- Treatment of bilgewater to control decay in the bilge area of wooden boats, by T. C. Scheffer. Jour. For. Prod. Res. Soc. 3(No. 3) 72-78, 95. Sept. 1953.
- Wooden hulls and decay prevention, (Carl Hartley Anonymous), Bureau of Ships Journal 2(No. 1) 35-38. May 1953.
- Fungi causing decay in wooden boats, by R. W. Davidson, F. F. Lombard, and R. R. Hirt. Mycologia 39:313-327. Illus. May-June 1947.
- Moisture content of wood boats, by R. R. Hirt. For. Path. Spec. Release No. 18. Mar. 1944.
- \*Decay of wood in boats, by Carl Hartley and Curtis May. For. Path. Spec. Release No. 8. Feb. 1943.

# Buildings and Building Materials

- \*Decay Resistance of Experimental and Commercial Particle Board, by J.W. Clark. FPL Report No. 2196. August 1960.
- \*Preventing Moisture Problems in Wood Siding in the South, by A.F. Verrall. For. Prod. Journal 10(3):148-151. March 1960.

- \*Wood Decay in Houses, by U.S. Forest Service, U.S. Dept. Agr. Home & Garden Bulletin No. 73. October 1960.
- \*Subterranean Termites -- Their Prevention and Control in Buildings, by R.A. St. George, H.R. Johnston, & R. J. Kowal. U.S. Dept. Agr. Home & Garden Bulletin No. 64, January 1960.
- \*Making Log Cabins Endure, by G.M. Hunt. Amer. Forests 39:265. June 1933. Also FPL Rept. No. 982. Revised 1960.
- \*Protecting Green Lumber from Decay during Shipment, by Carl Hartley. For. Path. Spec. Release No. 26. 1958.
- \*Deterioration of wood in cooling towers, by R. H. Baechler and C. A. Richards. Preprint Amer. Soc. of Mechan. Eng. 1951. Information Reviewed and Reaffirmed 1958.
  - Decay in exterior millwork, by R. M. Lindgren. For. Prod. Jour. 5(3): 163-164. June 1955.
- \*Decay and permeability tests of sheet materials used as soil covers in basementless houses, by C. S. Moses. FPL Rept. 2007. May 1955.
- \*Condensation and decay prevention under basementless houses, by C. S. Moses. FPL Rept. No. 2010. Information Reviewed and Reaffirmed 1959.
  - Preventing and controlling water-conducting rot in buildings, by A. F. Verrall. So. For. Exp. Station Occasional Paper No. 133. June 1954.
- \*Decay prevention in wooden steps and porches through proper design and protective treatments, by A. F. Verrall. Jour. For. Prod. Res. Soc. 3: (No. 4) 54-60. 1953.
- \*Factors leading to possible decay in wood siding in the South, by A. F. Verrall. For. Path. Spec. Release No. 39. May 1953.
- \*Soil cover reduces decay hazard of basementless houses, by J. D. Diller. For. Path. Spec. Release No. 38. Apr. 1953.
- \*Preservative treatment and staining of shingles, by F. L. Browne. FPL Rept. No. 761. Information Reviewed and Reaffirmed 1960.
- Recent investigations on the avoidance of decay in exterior woodwork of buildings, by A. F. Verrall. Jour. For. Prod. Res. Soc. 2:32-33. 1952.

- \*Control of wood decay in buildings, by A. F. Verrall. Ag. Eng. 33(No. 4) 217-219. April 1952.
- \*Prevention and control of decay in dwellings. U.S. Forest Service, FPL Technical Note 251. 1952.
- \*Permanence for wood siding, by A. F. Verrall. For. Path. Spec. Release No. 36. Aug. 1951.
- \*Reduction of decay hazard in basementless houses on wet sites, by J.D. Diller. For. Path. Spec. Release No. 30. Revised Aug. 1950.
- Preservative treatments for use on wood off the ground, by A. F. Verrall. Reprint Ag. Eng. 27(8): 367-368, 370. Aug. 1946.
- \*Significance of air-dry wood in controlling rot caused by <u>Poria incrassata</u>, by T. C. Scheffer and M. S. Chidester. South. Lumberman 166(2091): 53-55. May 15, 1943. Reprinted as For. Path. Spec. Release No. 17. May 1943.
  - Decay in buildings, by C. A. Richards. Amer. Wood-Preservers' Assn. Proc. 29:389-398. 1933.
  - Dry rot in buildings and stored construction materials and how to combat it, by C. J. Humphrey and L. E. Miles. Alabama Polytechnic Institute Circ. 78. 1925. Reprinted 1929.
  - Studies of certain fungi of economic importance in the decay of building timbers, by W. H. Snell. U. S. Dept. Agr. Bull. 1053. 1922. 15 cents.
  - Timber storage conditions in the eastern and southern states with reference to decay problems, by C. J. Humphrey. U. S. Dept. Agr. Bull. 510. 1917. Reprinted 1929.

# Cross Ties

- Railroad tie decay: and The decay of ties in storage, by C. J. Humphrey. Special publication by Amer. Wood-Preservers' Assn. 1939. \$2.00.
- Defects in cross ties, caused by fungi, by C. A. Richards. Cross Tie Bull. 19:3-6, 8, 10-31. Mar. 1938.
- Fungus forms in more important tie woods, by C. A. Richards. Cross Tie Bull. 12:2-16. Dec. 1931.

#### Lumber, Logs, and Bolts

- \*Protecting bulk-piled green lumber from fungi by dip treatment, by T.C. Scheffer and J.T. Drow. FPL Report No. 2201. October 1960.
- \*Water sprays protect hardwood logs from stain and decay, by P.H. Lane and T.C. Scheffer. For. Prod. Jour. 10(6):277-282, June 1960.
- \*Fungus sap-stains of hardwoods, by R.N. Campbell. Southern Lumberman 199(2489):115-120, Dec. 1959.
- \*Sprinkling to prevent decay in decked western hemlock logs by E. Wright, A.C. Knauss, & R.M. Lindgren. Research Note No. 177, Pac. NW For. & Range Exp. Station, Dec. 1959.
- \*Control of decay and sap stain in logs and green lumber, by T.C. Scheffer. FPL Report 2107. April 1958.
- \*Protecting green lumber from decay during shipment, by Carl Hartley. For. Path. Spec. Release No. 26. Rev. & Reaf. March 1958.
- \*Cause and prevention of blue stain in wood. FPL Technical Note 225. 1958.
- \*A gray non-fungus seasoning discoloration of certain red oaks, by Joe W. Clark. South. Lbrmn., 194(2418):35-38, Jan. 1, 1957.
- \*Sapstain control treatments before or after dressing, by Carl Hartley. For. Path. Spec. Release No. 27. Revised 1955.
- \*Mineral stain in hard maples and other hardwoods, by T. C. Scheffer. FPL Rept. No. 1981. Information Reviewed and Reaffirmed 1960.
- Storage of northern hardwood logs and bolts, by J. R. Hansbrough. Jour. For. Prod. Res. Soc. 3(No. 3) 33-35, 92. Sept. 1953.
- \*Control of decay in bolts and logs of northern hardwoods during storage, by T. C. Scheffer and T. W. Jones. N. E. For. Exp. Sta. Paper No. 63. 16 pp. 1953.
  - Why use sapstain chemicals, by A. F. Verrall. South. Lumberman 184 (2309):66, 68. 1952.
- \*Sapstain and decay control tests, by Ernest Wright. The Timberman 53 (No. 6). Apr. 1952.

- Storage of beech logs and bolts in the Northeast, by T. C. Scheffer and R. A. Zabel. Beech Util. Series No. 2. Northeastern Technical Comm. on Util. of Beech in cooperation with Northeastern For. Exp. Sta. Dec. 1951.
- Research on chemical control of fungi in green lumber, by A. F. Verrall. and P. V. Mook. U. S. Dept. Agr. Technical Bull. 1046. Dec. 1951.
- Fungus control in unseasoned forest products, by R. M. Lindgren and A. F. Verrall. Forest Farmer 9, 53-54. Feb. 1950.
- Adsorption of sap stain and mold-control chemicals by wood, by A. F. Verrall and P. V. Mook. Reprint from Indus. & Eng. Chem., Vol. 42, p. 1350. July 1950.
- Protection of green forest products from fungus damage, by A. F. Verrall. Forest Farmer 8(7): 4, 10. Apr. 1949.
- Fungi associated with certain ambrosia beetles, by A. F. Verrall. Jour. Agr. Res. 66:135-144. Feb. 1, 1943.
- Dissemination of fungi that stain logs and lumber, by A. F. Verrall. Jour. Agr. Res. 63(9): 549-558. Nov. 1, 1941.
- Fungi associated with stain in chemically treated green lumber, by A. F. Verrall. Phytopath. 31(3):270-274. Mar. 1941.
- A pink stain of wood caused by a species of Geotrichum, by M. S. Chidester. Phytopath. 30(6): 530-533. June 1940.
- Stains of sapwood and sapwood products and their control, by T. C. Scheffer and R. M. Lindgren. U. S. Dept. Agr. Technical Bull. 714. Mar. 1940.
- Dipping helps to conserve strength of lumber, by T. R. C. Wilson and C. A. Richards. South. Lumberman 156(1973): 30. June 15, 1938. American Lumberman 3126:68. May 21, 1938. Timberman 39(7): 44. May 1938.
- Three blue-staining fungi, including two new species, associated with bark beetles, by C. T. Rumbold. Jour. Agr. Res. 52:419-437. 1936.
- Fungi causing stain in logs and lumber in the Southern States including five new species, by R. W. Davidson. Jour. Agr. Res. 50:789-807. May 15, 1935.
- Prevention of interior brown stain in persimmon sapwood during seasoning, by T. C. Scheffer and A. D. Chapman. Hardwood Record 72:17, 1934.
- Some minor stains of southern pine and hardwood lumber and logs, by T. C. Scheffer and R. M. Lindgren. Jour. Agr. Res. 45: 233-237. Aug. 1932.

- Timber storage conditions in the eastern and southern states with reference to decay problems, by C. J. Humphrey. U. S. Dept. Agr. Bull. 510. May 17, 1917. Reprinted 1929.
- Five molds and their penetration into wood, by E. Gerry. Jour. Agr. Res. 26:219-229. 1923.
- Interior dote in elm, by E. E. Hubert. Hardwood Record 54:18-20. Jan. 10, 1923.
- The control of sap stain, mold, and incipient decay in green wood, with special reference to vehicle stock, by N. O. Howard. U. S. Dept. Agr. Bull. 1037. 1922. Out of print.

#### Mine Timbers

- A study of timber decay in the Crucible mine of the Crucible Fuel Co., by E. R. Maize, T. C. Scheffer, and H. P. Greenwald. U. S. Dept. of the Interior Report of Investigations 3544. 17 pp. Jan. 1941.
- Decay of mine timber, by C. J. Humphrey. Amer. Wood-Preservers' Assn. Proc. 18:213-222. Illus. 1922.
- Life of timber mines and methods of increasing it, by G. M. Hunt. Third Standardization Bull., American Mining Congress. 1922.

# Plywood and Containers

- \*Preservative moisture-repellent treatments for wooden packing boxes, by A. F. Verrall. For. Prod. Jour. 9(1):1-22. Jan. 1959.
- \*Molds and bacteria that delaminate plywood bonded with casein and soybean glues, by C. M. Christensen and C. S. Moses. For. Path. Spec. Release No. 25. Oct. 1957.
- \*Effect of moisture on bacterial weakening of casein-bonded plywood, by C. G. Duncan. FPL Rept. 2077, 8 pp., Apr. 1957.
- \*Procedures for measuring the mold resistance of protein glues. FPL Rept. No. 1344. 1955.
  - Decay resistance of plywood bonded with various glues, by G. H. Englerth. For. Prod. Res. Soc. Proc. 4:248-253. 1950.
- Box mold and stain controlled by various chemical treatments, by T. C. Scheffer. Wooden Box and Crate 9(1): 23-26. 1947.

- \*Deterioration of fiberboard by molds, by G. H. Englerth. For. Path. Spec. Release No. 29. Oct. 1946.
- \*Chemical dipping treatments for controlling molding and staining of wood boxes and crates, by T. C. Scheffer. For. Path. Spec. Release No. 28. June 1946.

#### Poles and Posts

- \*Decay and toughness losses in southern pine infected by peniophora, by R. M. Lindgren and E. C. O. Erickson. For. Prod. Jour. 6(6): 201-204.

  June 1957.
- \*Influence of fungus infection associated with chemipeeling on pressure impregnation and cold soaking of Jack pine posts, by Edward Panek. For. Prod. Jour. 7(4): 124-27. April 1957.
- \*Exploratory tests to increase preservative penetration in spruce and aspen by mold infection, by Georg Schulz. For. Prod. Jour. 6(2):77-80. Feb. 1956.
- \*Service records on treated and untreated fence posts, by J. O. Blew and J. W. Kulp. FPL Rept. No. 2005. Dec. 1954.
  - Increased absorptiveness of molded Douglas-fir posts, by R. M. Lindgren and Ernest Wright. Jour. For. Prod. Res. Soc. 4(4):162-164. Aug. 1954.
  - Decay control and increased permeability in southern pine sprayed with fluoride solutions, by R. M. Lindgren and G. M. Harvey. Jour. For. Prod. Res. Soc. 2: 250-256. Dec. 1952.
- \*Preservative treatment of fence posts and farm timbers, by J. O. Blew and F. J. Champion. U. S. Dept. Agr. Farmers' Bull. 2049. 1952.
  - Decay of poles and the fungi which cause it, by C. J. Humphrey. Amer. Elect. Ry. Eng. Assn. Proc. 312:52-69, Appendix A. Illus. 1923.

# Pulp and Pulpwood

- \*The effects of outside storage on slash pine chips in the South, by C.W. Roth-rock, W.R. Smith, and R.M. Lindgren, Alkaline Pulping Conference, Portland, Oregon, August 1960.
  - Effects of a decay producing organism, Peniphora gigantea (Fr.) Massee, on quality of pulp from jack pine, by W. McNeel, Jr., R. D. Shenefelt, T.A. Pascoe, and T.C. Scheffer. Tappi, Vol. 43, No. 4, April 1960.

- \*Sprinkling to prevent decay in decked western hemlock logs, by E. Wright, A.C. Knauss, and R.M. Lindgren. Research Note No. 177, Pac. N.W. For. & Range Exp. Station, Dec. 1959.
- \*Deterioration losses in stored southern pine pulpwood, by R.M. Lindgren, Tappi 36:(No. 6)260-263. June 1953.
- Reducing deterioration in stored pine pulpwood, by R. M. Lindgren. So. For. Notes 76, 1-3, Nov. 1951.
- \*Deterioration of southern pine pulpwood during storage, by R. M. Lindgren. For. Prod. Res. Soc. Proc. 5:169-181. 1951.
  - Jack pine pulpwood deterioration in yard storage, by T. C. Scheffer and T. A. Pascoe. Paper Trade Jour. 131(2):16-21. July 13, 1950.
- Blue stain development in peeled shortleaf and loblolly pine pulpwood, by G. H. Hepting. The Paper Industry 17: 402-404. 1935.
- Decay in pulpwood, by C. A. Richards. Paper Mill & Wood Pulp News 52:14, 33-34. Oct. 12, 1929.
- Control of decay in pulp and pulpwood, by O. Kress, C. J. Humphrey, C. A. Richards, M. W. Bray, and J. A. Staidl. U. S. Dept. Agr. Bull. 1298. 80 pp. 1925. 25 cents.
- Control of decay and molding of wood pulp, by C. A. Richards. Paper Trade Jour. 78:55-60. Illus. May 1, 1924. Paper Makers' Jour. 62:254-256. June 1924. World's Paper Trade Rev. 81:1799, 1800, 1802. May 1924. Tech. Assn. Pulp & Paper Indus. Papers 7:94-99. June 1924.
- Decay of wood and groundwood pulp: Relation of loss in weight to chemical properties, by M. W. Bray. Paper Trade Jour. 78:58-60. June 5, 1924.
- Decayed wood for sulphite pulp, by J. S. Rue, R. N. Miller, and C. J. Humphrey. Pulp & Paper Mag. of Can. 22:93-101. Jan. 24, 1924.
- The utilization of decayed wood in the chemical processes, by J. D. Rue, R. N. Miller and C. J. Humphrey. Paper Trade Jour. 78:44-48.

  May 15, 1924.

- The relation of moisture content of wood to its decay, with special reference to the spraying of log piles, by W.H. Snell. Paper Trade Jour. 72:44,46. Illus. Apr. 28, 1921.
- Some observations on the deterioration of wood and wood pulp due to infection by fungi with suggestions as to their control by O. Kress, C.J. Humphrey, and C.A. Richards. Paper 26:13-15. Oct. 1919. The Paper Indus. 1:526-531. Oct. 1919.

#### NATURAL DECAY RESISTANCE OF WOOD

- \*Decay resistance of baldcypress heartwood, by R.N. Campbell and J.W. Clark. For. Prod. Jour. 10(5):250-254. May 1960.
  - Nature of some decay-retardant extractive components in incense cedar (Libocedrus decurrens Torrey), by Arthur B. Anderson, Eugene Savarin, and Theodore C. Scheffer. Nature 181:1275-1276. 1958.
- \*Effect of time of cutting timber on its durability. FPL Technical Note F-15. 1958.
- \*Comparative durability of green and seasoned timber. FPL Technical Note F-33. 1958.
- \*Comparative value of timber cut from live and dead trees. FPL Technical Note 101. 1958.
- \*Factors that influence the decay of untreated wood in service and comparative decay resistance of different species. FPL Rept. No. 68. Revised Oct. 1958.
- \*Comparative decay resistance of some common pines, hemlock, spruce, and true fir, by Joe W. Clark. For. Science, 3(4):314-320. Dec. 1957.
- \*Decay resistance of western redcedar, by T.C. Scheffer. Jour. of For. 55(6):434-442, June 1957.
- \*Weathering and decay. FPL Technical Note 221. 1956.
- \*Tests of decay resistance of four western pole species, by G.H. Englerth and T.C. Scheffer. Jour. Forestry 53(8):556-561, Aug. 1955.

- \*Laboratory decay test of some commercial species of "mahogany," by C. S. Moses. For. Prod. Jour. 5(2):149-152, Apr. 1955.
- \*Iron stain from metal fastenings may accelerate decay in some woods, by R. L. Krause. Jour. For. Prod. Res. Soc. 4(2):103. Apr. 1954.
- \*Comparative decay resistance of heartwood of different native species when used under conditions that favor decay. FPL Technical Note 229, 1953.
- \*Decay resistance of second-growth Douglas-fir, by T. C. Scheffer and G. H. Englerth. Jour. For. 50:439-442. June 1952.
- \*Differences between heartwood and sapwood. FPL Technical Note 189. 1952.
  - Decay resistance of plywood bonded with various glues, by G. H. Englerth. For. Prod. Res. Soc. preprint. June 1950.
- \*Decay resistance of heated and unheated mesquite and Utah juniper post wood, by T. C. Scheffer. For. Path. Spec. Release No. 34. Feb. 1950.
- \*Decay resistance of black locust heartwood, by T. C. Scheffer and Henry Hopp. U. S. Dept. Agr. Technical Bull. 984. Aug. 1949.
- \*Decay resistance of seven native oaks, by T. C. Scheffer, G. H. Englerth, and C. G. Duncan. Jour. Agr. Res. 78:129-152. 1949.
- \*The decay resistance of certain Central American and Ecuadorian woods, by T. C. Scheffer and C. G. Duncan. Tropical Woods, No. 92. Dec. 1947.
- \*Relation between hot-water extractives and decay resistance of black locust wood, by T. C. Scheffer, H. G. Lachmund, and Henry Hopp. Jour. Agr. Res. 68: 415-426. June 1, 1944.
- The durability of untreated oak posts in the southwest, by W. H. Long. Jour. For. 39(8):701-704. Aug. 1941.
- The effect of steaming on the durability of unseasoned sap gum lumber, by T. C. Scheffer and R. M. Lindgren. Jour. For. 34:147-153. Feb. 1936.
- Effect of steam sterilization on susceptibility of wood to blue-staining and wood-destroying fungi, by A. D. Chapman. Jour. Agr. Res. 47:369-374. Sept. 15, 1933.
- The relation between durability and chemical composition in wood, by L. F. Hawley, L. C. Fleck, and C. A. Richards. Indus. & Eng. Chem. 15: 699-706. July 1924.

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- What makes a pine stump last, by E. Bateman. So. Lbrman. 115:51. July 5, 1924.
- Tests on the durability of greenheart, by C.J. Humphrey, Mycologia 7:204-209. 1915.

# EFFECT OF FUNGI ON STRENGTH AND OTHER WOOD PROPERTIES

- Deterioration of wood by terrestrial Ascomycetes and Fungi Imperfecti, by C.G. Duncan. Developments in Industrial Microbiology, Plenum Press, New York. Vol. I, pp. 147-156, 1960.
- \*Wood-attacking capacities and physiology of soft-rot fungi, by Catherine G. Duncan. FPL Rept. No. 2173, 71 pp., Jan. 1960.
- \*Evaluation of wood decay in experimental work, by Carl Hartley. FPL Rept. 2119. Oct. 1958.
- \*Decay and toughness losses in Southern pine infected by peniophora, by R. M. Lindgren and E. C. O. Erickson. For. Prod. Jour. 6(6): 201-04, June 1957.
- \*Influence of fungus infection associated with chemipeeling on pressure impregnation and cold soaking of Jack pine posts, by Edward Panek. For. Prod. Jour. 7(4):124-27, Apr. 1957.
  - Physical and chemical changes associated with wood decay, by T. C. Scheffer. Proc. Third Northeastern Wood Pres. Conf. New Haven, Conn. Bulletin 45, p. 125-135. April 1957.
- \*Exploratory tests to increase preservative penetration in spruce and aspen by mold infection, by Georg Schulz. For. Prod. Jour. 6(2):77-80. Feb. 1956.
- Common molds affect wood properties, by R. M. Lindgren. So. For. Notes 83, 1-2. Jan. 1953.
- \*Permeability of southern pine as affected by mold and other fungus infection, by R. M. Lindgren. Amer. Wood-Preservers' Assn. Proc. 48:158-168. 1952.

- The effect of a mold, <u>Trichoderma lignorum</u>, on loblolly pine sapwood, by M. S. Chidester. Amer. Wood-Preservers' Assn. Proc. 38:134-138. 1942.
- \*The effect of certain heart rot fungi on the specific gravity and strength of Sitka spruce and Douglas-fir, by T. C. Scheffer, T. R. C. Wilson, R. F. Luxford, and Carl Hartley. U. S. Dept. Agr. Technical Bull. 779. 1941.
  - Drying rates of blue-stained and bright lumber, by T. C. Scheffer. Wood Prod. 46(3): 23-25. Mar. 1941. So. Lbrman. 162(2039): 46-48. Mar. 15, 1941.
- Effect of blue stain on specific gravity and strength of southern pine, by A. D. Chapman and T. C. Scheffer. Jour. Agr. Res. 61(2):125-133. July 15, 1940.
- The effect of Peniophora gigantea and Schizophyllum commune on strength of southern yellow pine sapwood, by C. A. Richards and M. S. Chidester. Amer. Wood-Preservers' Assn. Proc. 36:24-31. 1940.
- Effect of blue stain on the penetration of liquids into air-dry southern pine wood, by R. M. Lindgren and T. C. Scheffer. Amer. Wood-Preservers' Assn. Proc. 35:325-336. 1939.
- Mineral stain in hard maples and other hardwoods, by T. C. Scheffer. Jour. For. 37(7): 578-579. July 1939.
- \*Penetration of Trichoderma lignorum into sapwood of Pinus taeda, by M. S. Chidester. Jour. Agr. Res. 52:541-546. 1936.
- \*Progressive effects of Polyporus versicolor on the physical and chemical properties of red gum sapwood, by T. C. Scheffer. U. S. Dept. Agr. Technical Bull. 527. 1936.

#### PHYSIOLOGY OF WOOD-ATTACKING FUNGI

- \*Soft-rot in wood and toxicity studies on causal fungi, by Catherine G. Duncan. Amer. Wood-Preservers Assn. Proc. 1960. 8 pp.
- \*Wood-attacking capacities and physiology of soft-rot fungi, by Catherine G. Duncan. FPL Rept. No. 2173, 71 pp., Jan. 1960.

508

- Nutrient requirements for the production of perithecia by ceratocystis

  Variospora and other species, by R.N. Campbell. Amer. Jour. of

  Botany 45(4):263-270. Apr. 1958.
- \*Temperatures necessary to kill fungi in wood. FPL Tech. Note 259. Feb. 1956.
  - The viability of spores and mycelium of Endoconidiophora virescens on sugar maple lumber, by E.R. Roth. Plant Disease Reporter 35:379-381. 1951.
- Some molds on wood favored by certain toxicants, by A. F. Verrall. Jour. Agr. Res. 78:695-703. June 15, 1949.
- Survival of decay and blue-stain fungi in air-dry wood, by T. C. Scheffer and M. S. Chidester. So. Lbrman.; Christmas Issue, 110-112. Dec. 15, 1948.
- A survey of some wood-destroying and other fungi for antibacterial activity, by W. J. Robbins, Annette Hervey, R. W. Davidson, Roberta Ma, and W. C. Robbins. Torrey Botanical Club. Bull. 72:165-190. 1945.
- \*Temperature, moisture, and penetration studies of wood-staining Ceratostomellae in relation to their control, by R. M. Lindgren. U. S. Dept. Agr. Tech. Bull. 807. 1942.
  - Further studies on temperatures necessary to kill fungi in wood, by M. S. Chidester. Amer. Wood-Preservers' Assn. Proc. 35:319-324. 1939.
  - Temperatures necessary to kill fungi in wood, by M. S. Chidester. Amer. Wood-Preservers' Assn. Proc. 33:316-324. 1937.
  - Relation of temperature and time to carbon dioxide production and growth in continuously aerated malt-agar cultures of Polystictus versicolor, by T. C. Scheffer. Plant Physiology 11: 534-564. 1936.
  - Temperature relations of wood-destroying fungi, by C. J. Humphrey and P. V. Siggers. Jour. Agr. Res. 47:997-1008. 1933.
- Decay of wood and growth of some Hymenomycetes as affected by temperature, by R. M. Lindgren. Phytopathology 23:73-81. Jan. 1933.
- \*Relation between moisture content of the wood and blue stain in loblolly pine, by R. H. Colley and C. T. Rumbold. Jour. Agr. Res. 41:389-399. 1930.
- The heat treatment of infected wood, by E. E. Hubert. Hardwood Record 57:15, 18, 20. Oct. 10, 1925. Timberman 26:52, 54. May 1925.
- Effect of kiln drying, steaming, and air seasoning on certain fungi in wood, by E. E. Hubert. U. S. Dept. Agr. Bull. 1262. 1924. 10 cents.

-16-

# EVALUATION OF PROTECTIVE CHEMICALS

- \*Decay resistance and dimensional stability of 5 modified woods, by A. J. Stamm and R.H. Baechler. For. Prod. Jour. 10(1):22-26, Jan. 1960.
- \*Soft-rot fungi in wood and toxicity studies on causal fungi, by Catherine G. Duncan. Amer. Wood-Pres. Assn. Proc. 1960, 8pp.
- \*Improving wood's durability through chemical modification, by R.H. Baechler, For. Prod. Jour. 9(5):166-171, May 1959.
- \*Studies of the methodology of soil-block testing, by Catherine G. Duncan. FPL Rept. 2114. June 1958.
  - Their garden grows new knowledge of wood, by Lida W. McBeath. Amer. Forests. 64(1):26-27, 63-65, Jan. 1958.
- \*The relative preservative tolerances of 18 wood-destroying fungi, by Ellis B. Cowling. For. Prod. Jour. 7(10): 355-359. Oct. 1957.
- \*Laboratory leaching and decay tests on pine and oak blocks treated with several preservative salts, by R. H. Baechler and H. G. Roth. Amer. Wood-Preservers' Assn. Proc. 52:24-33. 1956.
- \*Tests of some superficial treatments of exposed wood surfaces for their protection against fungus attack, by T. C. Scheffer and F. L. Browne. Jour. For. Prod. Res. Soc. 4(3):131-132. June 1954.
- \*Some toxicity data and their practical significance, by E. Bateman and R. H. Baechler. Amer. Wood-Preservers' Assn. Proc. 33:91-104. 1937; also FPL Rept. No. 1222. Apr. 1953.
- \*Soil-block and agar-block techniques for evaluation of oil-type wood preservatives: creosote, copper naphthenate and pentachlorophenol, by C. G. Duncan. For. Path. Spec. Release No. 37. Jan. 1953.
- \*Evaluating wood preservatives, by J. O. Blew, C. A. Richards, and R. H. Baechler. For. Prod. Res. Soc. 5:230-238. 1951.
- \*Evaluating wood preservatives by soil-block tests:
  - 1. Effect of the carrier on pentachlorophenol solutions.
  - Comparison of a coal tar creosote, a petroleum containing pentachlorophenol or copper naphthenate and mixtures of them, by
     G. G. Duncan and C. A. Richards. Amer. Wood-Preservers' Assn. 15 pp. Illus. 1950.
  - The effect of mixing a coal tar creosote and a pentachlorophenol solution with a petroleum; a creosote with a coke-oven tar or pentachlorophenol solution, by C. G. Duncan and C. A. Richards. Amer. Wood-Preservers' Assn. Proc. 47:264-274, 1951.
  - 4. Creosotes, by C. G. Duncan and C. A. Richards. Amer. Wood-Preservers' Assn. Proc. 47: 275-287. 1951.

- \*Evaluating wood preservatives by soil-block tests (continued):
  - 5. Lignite-tar and oil-tar creosotes, by C.G. Duncan. Amer. Wood-Preservers' Assn. Proc. 48:99. 1952.
  - 6. Exploratory tests toward improving the method, by C.G. Duncan. Amer. Wood-Preservers' Assn. Proc. 49:49-55. 1953.
  - 7. Progress on the development of a laboratory weathering method, by C.G. Duncan. Amer. Wood-Preservers' Assn. Proc. 50:41-51.
  - 8. Low-temperature coal-tar creosote, by C.G. Duncan. Amer. Wood-Preservers' Assn. Proc. 51:11-15. 1955.
  - Influence of different boiling fractions of the petroleum carrier on the effectiveness of pentachlorophenol and copper naphthenate, by C.G. Duncan. Amer. Wood-Preservers' Assn. Proc. 53:13-20, 1957.
  - Effect of species of wood on preservative threshold values, by C.G. Duncan. Amer. Wood-Preservers' Assn. Proc. 54:172-177, 1958.
- The toxicity of preservative oils before and after artificial aging, by R. H. Baechler. Amer. Wood-Preservers' Assn. Proc. 1949.
- \*Methods for evaluating wood preservatives: weathered impregnated wood blocks, by C. G. Duncan and C. A. Richards. Amer. Wood-Preservers' Assn. Proc. 44:1-5. Apr. 1948.
- \*Fungistatic vapors for control of mold in packages and equipment, by T. C. Scheffer and C. G. Duncan. Indus. & Eng. Chem. 38:619-621. June 1946.
  - The decay resistance of wood impregnated with fire-retarding ammonium salts, by T. C. Scheffer and Arthur Van Kleeck. Amer. Wood-Preservers' Assn. Proc. 41:204-210. 1945.
- \*Toxicity of normal aliphatic alcohols, acids, and sodium salts, by R. H. Baechler. Amer. Wood-Preservers' Assn. Proc. 35:364-372. 1939. Inf. Rev. & Reaf. 1956.
- A calculation of the toxicity curve from solubility data, by E. Bateman and R. H. Baechler. Amer. Wood-Preservers' Assn. Proc. 32:136-145. 1936.
- A relation between chemical constitution and toxicity, by R. H. Baechler and Ernest Bateman. Amer. Wood-Preservers' Assn. Proc. 32:178-181. 1936.
- \*Toxicity in relation to the position and number of chlorine atoms in certain chlorinated benzene derivatives, by Ira Hatfield. Amer. Wood-Preservers' Assn. Proc. 31:57-66. 1935.
- The effect of concentration on the toxicity of chemicals to living organisms, by Ernest Bateman. U. S. Dept. Agr. Tech. Bull. 346. 1933. Out of print.

  -18-

- \*Further experiments with chemicals suggested as possible wood preservatives, by Ira Hatfield. Amer. Wood-Preservers' Assn. Proc. 28:330-340. 1932.
  - Comparative resistance of 18 species of wood-destroying fungi to zinc chloride, by C. A. Richards. Amer. Wood-Preservers' Assn. Proc. 21: 18-22. 1925.
  - The comparative resistance of 17 species of wood-destroying fungi to sodium fluoride, by C. A. Richards. Amer. Wood-Preservers' Assn. Proc. 20:37-44. 1924.
  - Methods of testing the relative toxicity of wood preservatives, by C. A. Richards. Amer. Wood-Preservers' Assn. Proc. 19:127-135. 1923.
  - Studies on the toxicity of wood preservatives III, by C. J. Humphrey, R. M. Fleming, and Ernest Bateman. Jour. Indus. & Eng. Chem. 13-618.

    July 1921.
  - The toxicity to fungi of various oils and salts, particularly those used in wood preservation, by C. J. Humphrey and R. M. Fleming. U. S. Dept. Agr. Bull. 227. 1915. 10 cents.

#### SPECIAL TECHNIQUES IN PRODUCTS PATHOLOGY

- \*Detection of brown rot with osmium tetroxide stain, by E.B. Cowling and I.B. Sachs. For. Prod. Jour. 10(11) Nov. 1960.
- \*Using a resistance-type wood moisture meter to appraise decay hazard, by C.S. Moses and T.C. Scheffer. FPL Rept. 2147, 6 pp. April 1959.
- \*Humidity controls for conditioning rooms, by T.C. Scheffer. FPL Rept. No. 2048. Jan. 1956.
- \*Color test for early storage decay in southern pine, by R.M. Lindgren. FPL Rept. No. 2037. Sept. 1955.
- \*Color tests for differentiating heartwood and sapwood of certain oaks, pines, and Douglas-fir. FPL Technical Note 253. 1954.
- Humidifying apparatus for small test rooms, by T.C. Scheffer and O.W. Torgeson. Science, 110:214-215. 1949.
- Discolorations and decay from increment borings, by G.H. Hepting, E.R. Roth, and Bailey Sleeth. Jour. For. 47:366-370. May 1949.

508

- Damage from increment borings, by W.A. Campbell. June 13, 1939.
- Differentiation of wood-decaying fungi by their reactions on gallic or tannic acid medium, by R.W. Davidson, W.A. Campbell, and D.J. Blaisdell. Journal of Agricultural Research 57(9):683-695. November 1, 1938.
- Estimating the length of time that trees have been dead in northern New England, by P. Spaulding. Journal of Forestry 35(4)393-395. April 1937.
- The diagnosis of decay in wood, by E.E. Hubert. Jour. Agr. Res. 29:523-567. December 1, 1924.
- A chisel forceps by E.E. Hubert. Phytopath. 11:175. April 1921.

#### CHEMISTRY OF DECAY

- \*Methods for chemical analysis of decayed wood, by Ellis B. Cowling. FPL Rept. No. 2177. 30 pp., May 1960.
- \*Review of literature on the enzymatic degradation of cellulose and wood, by Ellis B. Cowling. FPL Rept. No. 2116, June 1958.
- \*Progressive effects of Polyporus versicolor on the physical and chemical properties of red gum sapwood, by T. C. Scheffer. U.S. Department of Agriculture Technical Bulletin 527. 1936.
  - The effect of decay on the chemical composition of wood, by L.F. Hawley, L.C. Fleck, and C.A. Richards. Indus. and Eng. Chem. 20:504-507. May 1928.

#### CULL AND DETERIORATION--LIVING AND KILLED TREES

# Hardwood (Deciduous) Trees

Ways to stop losses of tanbark, by M.E. Fowler. USDA Yrbk. 1950-51. 716-718. 1951.

- Discolorations in living yellow-poplar trees, by E. R. Roth. Jour. For. 48:184-185. Mar. 1950.
- Decay in merchantable black cherry on the Allegheny National Forest, by R. W. Davidson and W. A. Campbell. Phytopathology 33:965-985. Nov. 1943.
- Fungi causing decay of living oaks in the eastern United States and their cultural identification, by R. W. Davidson, W. A. Campbell, and D. B. Vaughn. U. S. Dept. Agr. Technical Bull. 785. 1942.
- Stand improvement of northern hardwoods in relation to diseases in the Northeast, by W. A. Campbell and Perley Spaulding. Allegheny For. Expt. Sta. Occasional Paper 5. 25 pp. Feb. 25, 1942.
- Association of Stereum murrayi with heart rot and cankers of living hardwoods, by R. W. Davidson, W. A. Campbell, and R. C. Lorenz. Phytopathology 31:82-87. Jan. 1941.
- Top rot in glaze-damaged black cherry and sugar maple on the Allegheny plateau, by W. A. Campbell and R. W. Davidson. Jour. For. 38:963-965. Dec. 1940.
- External features correlated with top rot in Appalachian oaks, by G. H. Hepting, K. H. Garren, and P. W. Warlick. Jour. For. 38:873-876. Nov. 1940.
- Daedalea unicolor decay and associated cankers of maples and other hardwoods, by W. A. Campbell. Jour. For. 37:974-977. Dec. 1939.
- Two pocket rots of hardwood trees, by W. H. Long. Bull. Torrey Botanical Club 66: 625-627. 1939.
- Sterile conks of Polyporus glomeratus and associated cankers on beech and red maple, by W. A. Campbell and R. W. Davidson. Mycologia 31: 606-611. Sept., Oct. 1939.
- Spongy white rot of hardwoods, by P. Spaulding. Mass. Forest & Park Assn. Tree Pest Leaflet No. 38. July 1939.
- The shoestring root rot of conifers and hardwoods (Armillaria mellea (Vahl.) Quel.), by P. Spaulding. Tree Pest Leaflet No. 21. May 1938.
- White trunk rot of hardwoods (Fomes igniarius (L. ex Fr.) Gill.), by P. Spaulding. Tree Pest Leaflet No. 20. July 1937.

- Decay in merchantable oak, yellow poplar, and basswood in the Appalachian Region, by G. H. Hepting and G. G. Hedgcock. U. S. Dept. Agr. Tech. Bull. 570. 1937.
- A heart rot of magnolia caused by Fomes geotropus, by H. W. Johnson and C. W. Edgerton. Mycologia 28: 292-295. 1936.
- Decay following fire in young Mississippi Delta hardwoods, by G. H. Hepting. U. S. Dept. Agr. Tech. Bull. 494. 1935.
- Stereum guasapatum, cause of heart rot of oaks, by R. W. Davidson.

  Phytopathology 24: 831-832. 1934.
- Revised suggestions for estimating cull in northern hardwoods, by P. Spaulding, G. H. Hepting, and M. Westveld. U. S. Northeastern For. Exp. Sta. Technical Note 14. 1934.
- Eastern forest tree diseases in relation to stand improvement, by G. H. Hepting. C. C. G. Forestry Pub. 2. Partial revision May 1940. 5 cents.
- Deterioration of chestnut in the southern Appalachians, by D. V. Baxter and L. S. Gill. U. S. Dept. Agr. Technical Bull. 257. 1931.
- Quaking aspen: A study in applied forest pathology, by E. P. Meinecke. U. S. Dept. Agr. Tech. Bull. 155. 1929. 10 cents.
- Heart rot of aspen, by H. Schmitz and L. W. R. Jackson. Univ. Minn. Agr. Exp. Station Technical Bull. 50. 1927.
- The heart rot of black ash caused by Polyporus hispidus Fr., D. V. Baxter. Paper of Mich. Acad. Sci., Arts, and Letters 3:39-50. 1923.
- A study of the white heart-rot of locust, caused by Trametes robiniophila, by C. H. Kauffman and H. M. Kerber. Amer. Jour. Bot. 9:493-508. 1922.
- A honeycomb heart-rot of oaks, caused by Stereum subpileatum, by W. H. Long, Jour. Agr. Res. 5: 421-428. 1915.

- The death of chestnuts and oaks due to Armillaria mellea, by W. H. Long. U. S. Dept. Agr. Bull. 89. 1914. Out of print.
- Heart rot of oaks and poplars caused by Polyporus dryophilus, by G. G. Hedgcock and W. H. Long. Jour. Agr. Res. 3:65-80. Oct. 15, 1914.
- Three undescribed heart rots of hardwood trees, especially of oak, by W. H. Long. Jour. Agr. Res. 1:109-128. 1913.
- Wood rots of the hardy catalpa, by N. E. Stevens. Phytopathology 2:114-119. June 1912.
- Diseases of deciduous forest trees, by H. von Schrenk and P. Spaulding. U. S. Dept. Agr. Bur. Plant Indus. Bull. 149. 1909. Out of print.
- Sap rot and other diseases of the red gum, by H. von Schrenk. U. S. Dept. Agr. Bur. Plant Indus. Bull. 114. 1907. Out of print.
- A disease of the white ash caused by Polyporus fraxinophilus, by H. von Schrenk. U. S. Dept. Agr. Bur. Plant Indus. Bull. 32. 1903. Out of print.
- The hardy catalpa. II. Diseases of the hardy catalpa, by H. von Schrenk. U. S. Dept. Agr. Bur. Forestry Bull. 37. 1902. Out of print.

# Softwood (Coniferous) Trees

- Decay of wind-thrown timber in western Washington and northwestern Oregon, by T. W. Childs and J. W. Clark. For. Path. Spec. Release No. 40. Sept. 1953.
- New information concerning balsam fir decay in eastern North America, by J. T. Basham, P. V. Mook, and A. G. Davidson. Canadian Jour. Bot. 31:334-360. May 1953.
- Rate of deterioration of beetle-killed Engelmann spruce, by J. L. Mielke. Jour. For. 48: 882-888. 1950.
- Cull factors for forest tree species in northwestern California, by J. W. Kimmey. Cal. For. & Range Exp. Sta. For. Survey Release No. 7, June 1950.

- Decay of Sitka spruce in southeastern Alaska, by G. H. Englerth. Jour. For. 45(12): 894-900. Dec. 1947.
- Decay losses following logging injury in partially cut stands of western hemlock and Sitka spruce, by Ernest Wright, A. S. Rhoads, and L. A. Isaac. Timberman 48(10): 52, 54, 72, 74, 76. Aug. 1947.
- Decay in balsam fir in New England and New York, by P. Spaulding, and J. R. Hansbrough. U. S. Dept. Agr. Technical Bull. 872. May 1944.
- Decay of western hemlock in western Oregon and Washington, by G. H. Englerth. Yale University, School of Forestry Bull. 50. 1942.
- Western red rot control for the Black Hills, by S. R. Andrews and L. S. Gill. Jour. For. 39:817-823. Oct. 1941.
- Decay and other volume losses in wind-thrown timber on the Olympic Peninsula, Wash., by T. S. Buchanan and G. H. Englerth. U. S. Dept. Agr. Tech. Bull. 733. Dec. 1940.
- Losses from heart rot in two shortleaf and loblolly pine stands, by G. H. Hepting and A. D. Chapman. Jour. For. 36:1193-1201. Dec. 1938.
- Red ring rot of conifers (Fomes (Trametes) pini (Thore) Lloyd), by P. Spaulding. Tree Pest Leaflet No. 17. July 1937.
- Heart rot of balsam fir in the Lake States, with special reference to forest management, by F. Kaufert. Minn. Agr. Exp. Sta. Tech. Bull. 110. Illus. Sept. 1935. Pulp & Paper Mag. of Canada 37: 450-466. July 1936.
- Stereum sanguinolentum, a dangerous fungus in pruning wounds on Northern white pine, by P. Spaulding, H. J. MacAloney, and A. C. Kline. Northeastern For. Exp. Sta. Tech. Note 19. 1935.
- Decay and other losses in Douglas-fir in western Oregon and Washington, by J. S. Boyce. U. S. Dept. Agr. Technical Bull. 286. 1932.

- Disease and decay, by J. R. Weir. In "Southern White Gedar," by C. F. Korstian and W. D. Brush. U. S. Dept. Agr. Tech. Bull. 251. 1931. 25 cents.
- The brown heart rot of California redwood, by E. Fritz and L. Bonar. Jour. For. 29:368-380. Mar. 1931.
- Decay in Pacific Northwest conifers, by J. S. Boyce. Yale Univ. Osborn Bot. Lab. Bull. 1. 1930. 60 cents.
- Lentinus lepideus Fr.: A cause of heart rot of living pines, by W. W. Wagener. Phytopathology 19:705-712. Aug. 1929.
- Deterioration of wind-thrown timber on the Olympic Peninsula, Washington, by J. S. Boyce. U. S. Dept. Agr. Tech. Bull. 104. Feb. 1929.
- Manual of wood rots for cruisers and scalers in the Inland Empire, by E. E. Hubert. Timberman. 1927. \$1.00.
- The deterioration of felled western yellow pine on insect-control projects, by J. S. Boyce. U. S. Dept. Agr. Bull. 1140. Mar. 29, 1923.
- The dry-rot of incense cedar, by J. S. Boyce. U. S. Dept. Agr. Bull. 871. 1920. 15 cents.
- A study of the rots of western white pine, by J. R. Weir and E. E. Hubert. U. S. Dept. Agr. Bull. 799. 1919. Out of print.
- A study of heart-rot in western hemlock, by J. R. Weir and E. E. Hubert. U. S. Dept. Agr. Bull. 722. 1918.
- Incense cedar, by J. A. Mitchell. U. S. Dept. Agr. Bull. 604. 1918. Out of print.
- A preliminary report on the occurrence of western red rot in Pinus ponderosa, by W. H. Long. U. S. Dept. Agr. Bull. 490. 1917. 5 cents.
- The red rot of conifers, by F. H. Abbott. Vermont Agr. Exp. Sta. Bull. 191. 1915.
- Forest tree diseases common in California and Nevada, by E. P. Meinecke. U. S. Dept. Agr. Forest Service Unnumbered Pub. 1914. Out of print.

- Preliminary notes on three rots of juniper, by G. G. Hedgcock and W. H. Long. Mycologia 4:109-114. 1912.
- The "bluing" and "red rot" of the western yellow pine with special reference to the Black Hills Forest Reserve, by H. von Schrenk. U. S. Dept. Agr. Bur. Plant Indus. Bull. 36. 1903. Out of print.
- Two diseases of red cedar caused by <u>Polyporus juniperinus</u> n. sp. and <u>Polyporus carneus</u> Nees., by H. von Schrenk. U. S. Dept. Agr. Div. Veg. Phys. and Path. Bull. 21. 1900. Out of print.
- Some diseases of New England conifers, by H. von Schrenk. U. S. Dept. Agr. Div. Veg. Phys. and Path. Bull. 25. 1900. Out of print.
- A disease of <u>Taxodium distichum</u> known as peckiness, also a similar disease of Libocedrus decurrens known as pin rot, by H. von Schrenk. Missouri Bot. Gard. Rept. 11:23-77. 1899. Out of print.

#### CHEMICAL DISCOLORATIONS OF WOOD

- \*The significance of the discolorations in yellow-poplar veneers, by G. H. Hepting, E. R. Roth, and R. F. Luxford. FPL Rept. No. 1375. 1958.
- \*The significance of the discolorations in aircraft veneers: Mahogany and khaya, by J. R. Hansbrough and R. L. Krause. FPL Rept. No. 1379. Information Reviewed & Reaffirmed 1956.
- \*The significance of the discolorations in aircraft veneers: Yellow birch, by J. R. Hansbrough, A. M. Waterman, and R. F. Luxford. FPL Rept. No. 1377. Information Reviewed and Reaffirmed 1956.
- \*The significance of the discolorations in aircraft veneers: Sweetgum, by
  T. C. Scheffer and J. R. Hansbrough. FPL Rept. No. 1376. Mar. 1956.
- \*A gray non-fungus seasoning discoloration of certain red oaks, by Joe W. Clark. Southern Lbrmn., Dec. 15, 1956.
- \*Mineral stain in hard maples and other hardwoods, by T. C. Scheffer. FPL Rept. No. 1981. Information Reviewed & Reaffirmed 1960.
- \*Chemical brown stain in sugar pine, by Merrill A. Millett. For. Prod. Res. Soc. Jour. 2(5):, Dec. 1952.

- \*The significance of black line stain in yellow birch propeller lumber, by J. R. Hansbrough. For. Path. Spec. Release No. 23. Feb. 1945.
- \*The significance of the discolorations in aircraft lumber: Noble fir and Western hemlock, by G. H. Englerth and J. R. Hansbrough. For. Path. Spec. Release No. 24. June 1945.
- \*The significance of the discolorations in aircraft lumber: Sitka spruce, by J. R. Hansbrough and G. H. Englerth. For. Path. Spec. Release No. 21, June 1944.
- \*The significance of the discolorations in aircraft veneers: American beech, by J. R. Hansbrough, A. M. Waterman, and R. L. Krause. For. Path. Spec. Release No. 16, Apr. 1944.
- \*Diagnostic features of some discolorations common to aircraft hardwoods, by T. C. Scheffer. For. Path. Spec. Release No. 19. Mar. 1944.
  - Prevention of interior brown stain in persimmon sapwood during seasoning, by T. C. Scheffer and A. D. Chapman. Hardwood Record 72(11): 17. 1934.

#### ADDITIONAL LITERATURE

- A partial list of fungi associated with decay of wood products in the United States, by E. B. Cowling. Plant Disease Reporter 41(10): 894-96, Oct. 15, 1957.
- \*Protection from wood-destroying organisms. Separate from the Forest Products Laboratory's "Wood Handbook," U. S. Dept. Agr. Handbook No. 72. 1955.
- \*An overall look at wood deterioration, by R. M. Lindgren. FPL Rept. No. 1966. Nov. 1953.
  - Pathology in forest practice, by D. V. Baxter. 2nd edition. New York. John Wiley & Sons. 601 pp. 1952.
  - Deterioration of wood and wood products, by Carl Hartley. Preprint NRC-ONR Symposium on Wood. June 16-17, 1949.
- Fungi and wood, by Carl Hartley. U. S. Dept. Agr. Yearbook 1949. 630-633. 1949. (Separate 2150).

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Available from the Superintendent of Documents, Government Printing Office, Washington 25, D. C. \$2.00.

- Fungi in forest products, by Carl Hartley. U. S. Dept. Agr. Yearbook 1943-47. 883-889. 1947. (Separate 1996).
- Decay of timber and its prevention, by K. St. G. Cartwright and W. P. K. Findlay. Dept. Scientific & Industrial Research Publ. 294 pp., illus. London. 1946.
- Reducing losses from tree diseases in eastern forests and farm woodlands, by G. H. Hepting. U. S. Dept. Agr. Farmer's Bull. 1887. Jan. 1942.
- A decade of research in forest pathology, by Carl Hartley. Jour. For. 36: 908-912. Sept. 1938.
- Forest pathology, by J. S. Boyce. New York. McGraw-Hill Book Co. 600 pp. Illus. 1938. \$5.00. Revised 1948.
- A survey of forest tree diseases and their relation to stand improvement in the Lake and Central States, by R. C. Lorenz and C. M. Christensen. U. S. Dept. Agr. Bur. Plant Indus. in cooperation with C. C. C., U. S. Forest Service, Region 9, and Univ. of Minn. 52 pp. Illus. Oct. 1937.
- Fungus control as one means of safeguarding future markets for wood, by R. M. Lindgren. Jour. For. 33:474-480. May 1935.
- The progress of forest pathology. Pp. 695-722 in "A National Plan for American Forestry." Senate Document 12 (73rd Congress), 2 vols., 1,677 pp. Illus. 1933. \$1.75 a set. Reprinted as Separate 28a. 1933.
- Outline of forest pathology, by E. E. Hubert. New York. John Wiley & Sons. 543 pp. Illus. 1931. \$6.00.
- Manual of tree diseases, by W. H. Rankin. 398 pp. Illus. New York. Macmillan & Co. 1918. \$3.25.
- Forest Pathology in forest regulation, by E. P. Meinecke. U. S. Dept. Agr. Bull. 275. 62 pp. 1916. Out of print.
- Textbook of the diseases of trees, by Robert Hartig. Trans. by W. Som-merville. 331 pp. Illus. London. Macmillan & Co. 1894. Out of print.

#### OTHER PUBLICATION LISTS ISSUED BY

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- Building Construction Subjects -- Partial list of Government publications of interest to architects, builders, engineers, 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.
- Furniture Manufacturers, Woodworkers and Teachers of Wood Shop 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.
- Growth, Structure, and Identification of Wood -- Structure and identification of wood; the effect of 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.
- 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.

#### OTHER PUBLICATIONS LISTS ISSUED BY

# THE FOREST PRODUCTS LABORATORY (continued)

- 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.
- 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 papermaking 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 material; 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.
- Note: Since Forest Products Laboratory publications are so varied in subject matter no single big list is issued. Instead a list is made up for each Laboratory division. Twice a year, December 31 and June 30, a list is made up showing new reports for the previous 6 months. This is the only item sent regularly to the Laboratory's mailing list. Anyone who has asked for and received the proper subject lists and who has had his name placed on the mailing list can keep up to date on Forest Products Laboratory publications. Each subject list carries descriptions of all other subject lists.