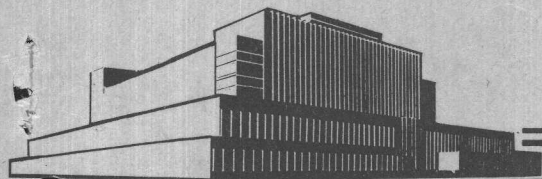
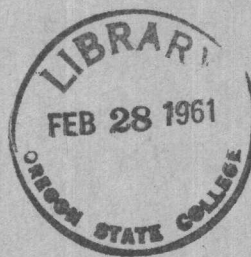


List of Publications on PULP AND PAPER

August 1960

No. 444



FOREST PRODUCTS LABORATORY
MADISON 5, WISCONSIN

UNITED STATES DEPARTMENT OF AGRICULTURE
FOREST SERVICE

In Cooperation with the University of Wisconsin

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, 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 money order, draft, or cash; stamps or personal checks are not accepted.

Trade journals containing articles herein listed, if not available from the publishers, 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.

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- Relation of wood properties to pulp yield and quality, by G. H. Chidester, Pulpwood Annual pp. 50-52 (1954), American Pulpwood Assn., New York, N. Y.
- Anatomy of common North American pulpwood barks, by Ying-Pe Chang, TAPPI Monograph Series No. 14 (1954).
- Deterioration losses in stored southern pine pulpwood, by R. M. Lindgren. Tappi, June 1953.
- *Portable barking equipment, by E. W. Fobes. Forest Products Research Society Proceedings, 1952.
- Deterioration of southern pine pulpwood during storage, by R. M. Lindgren, Div. of Forest Pathology, So. For. Exp. Sta., New Orleans 12, La., Forest Products Research Society Proceedings, 1951.
- *Effect of storage of slash pine pulpwood on sulfate and groundwood pulp quality, by J. N. McGovern, J. S. Martin, and A. Hyttinen. Forest Products Research Society Proceedings, 1951.
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- Status of portable wood chippers, by E. W. Fobes. Forest Products Research Society Proceedings, 1949.
- *Influence of volume of summerwood and rate of growth on the specific gravity of southern pine pulpwood, by E. R. Schafer. South. Pulp & Paper Mfr., Oct. 31, 1949.
- Microstructure of wood and wood fibers, by G. J. Ritter. Tappi, Jan. 1949.
- Use and adaptation of power saws for pulpwood harvesting, by J. Harry Rich. South. Lbmn., Dec. 15, 1944.
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- Method of integrating concentric ring areas, by E. R. Schafer and J. C. Pew. (Applicable to the measurement of springwood.) Instruments, May 1939.
- Forest Products Laboratory springwood-summerwood measuring instrument, by J. C. Pew and E. R. Schafer. South. Pulp & Paper Jour., Jan. 1939.
- Relation of growth characteristics of southern pine to its use in pulping, by C. E. Curran. Paper Trade Jour., June 9, 1938.
- Some relations between growth conditions, wood structure, and pulping qualities (of southern pine), by C. E. Curran. Paper Trade Jour., Sept. 10, 1936.
- Decay in pulpwood, by C. A. Richards. Paper Mill & Wood Pulp News, Oct. 12, 1929.

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- *P&I-60 Partial list of references on the chemical debarking of trees. 1955.
- *PP-88 Physical characteristics of ponderosa pine pulpwood from Black Hills, South Dakota, by E. R. Schafer and A. Hyttinen. Inf. Rev. & Reaf. 1960.
- *PP-107 Summary of certain physical properties of domestic hardwoods and foreign woods used in pulping experiments at the Forest Products Laboratory July 1927 to December 1940.
- *PP-108 Summary of certain physical properties of softwoods (except pines) used in pulping experiments at the Forest Products Laboratory--July 1927 to July 1935.
- *PP-109 Summary of certain physical properties of domestic and foreign pine woods used in pulping experiments at the Forest Products Laboratory--July 1927 to July 1935.

PULPWOOD (continued)

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- *PP-110 Physical characteristics and chemical analysis of certain domestic hardwoods received at the Forest Products Laboratory for pulping from October 1, 1948 to November 1957.
- *PP-111 Physical characteristics and chemical analysis of foreign pine woods received at the Forest Products Laboratory for pulping from October 1, 1948 to June 15, 1957.
- *PP-112 Physical characteristics and chemical analysis of certain domestic pine woods received at the Forest Products Laboratory for pulping from October 1, 1948 to September 4, 1956.
- *PP-113 Fiber length, specific gravity, and chemical analysis of certain foreign hardwood pulpwoods received at the Forest Products Laboratory from October 1, 1948 to December 31, 1957.
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- *1390 A simple device for detecting compression wood. Inf. Rev. & Reaf. June 1959.
- *1417 Procedure for determining the properties and characteristics of pulpwood. 1955.
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- *R1637-21 Log measuring instrument, by E. W. Fobes. Inf. Rev. & Reaf. 1960.
- *1730 Bark-peeling machines and methods, by E. W. Fobes. 1957.
- *2038 Debarkers used in the South and East, by R. H. P. Miller. 1955.
- *2071 Developments in debarking, by E. W. Fobes. 1956.

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- *Summary of chemical and color properties of various woods used in pulping experiments at the Forest Products Laboratory, July 1927 to July 1935. M 27582 F.
- *Physical and chemical properties of various pulping hardwoods and softwoods received at Forest Products Laboratory from July 1935 to October 1, 1948. M 85183 F, -4 F, -5 F.
- *Amount and moisture content of bark on pulpwood received at the Forest Products Laboratory, July 1927 to July 1946. M 80571 F.

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- *B-14 Methods of determining the specific gravity of wood.
- *189 Differences between heartwood and sapwood.
- *218 Weights of various woods grown in the United States.
- *229 Comparative decay resistance of heartwood of different native species when used under conditions that favor decay.

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- Evaluation of the SEMC-TAPPI drainage-time tester, by C. E. Hrubesky. Tappi 37:425-27, Oct. 1954.
- *Comparison of several freeness testers on board stock--Williams freeness values, by C. E. Hrubesky. Tappi 32(7):315-318, July 1949.
- Comparison of several freeness testers on board stock, by C. E. Hrubesky. TAPPI Papers 31, 1948.
- *Length and width of unbleached sulphate pulp fibers from certain western woods, by Melburn Heinig and F. A. Simmonds. Paper Indus. & Paper World, Aug. 1948.

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Measurement of the stiffness in bending of single fibers, by C. O. Seborg and F. A. Simmonds. Paper Trade Jour., Oct. 23, 1941.

Screen analysis as an aid in pulp evaluation, by E. R. Schafer and L. A. Carpenter. Paper Trade Jour., May 8, 1930.

*Cross-sectional dimensions of fibers in relation to paper-making properties of loblolly pine, by J. C. Pew and R. G. Knechtges. Paper Trade Jour., Oct. 12, 1939.

Properties of wet fiber mats: Relation of recovery from compressive deformation to sheet properties, by C. O. Seborg, F. A. Simmonds, and P. K. Baird. Paper Trade Jour., Aug. 24, 1939; TAPPI Papers, 1939.

Drainage characteristics of pulps and stuffs: I, Effect of acids and other electrolytes on freeness, by S. R. Adams, F. A. Simmonds, and P. K. Baird. TAPPI Papers, 1939; summary in Paper Indus. & Paper World, Apr. 1939.

Comparison of sheet machines for pulp evaluation by R. H. Doughty and C. E. Curran. Paper Trade Jour., Dec. 21, 1933.

Effect of different-sized fibers on the physical properties of ground-wood pulp, by E. R. Schafer and Matti Santaholma. Paper Trade Jour., Nov. 9, 1933.

The microstructure of a wood pulp fiber, by G. J. Ritter and G. H. Chidester. Paper Trade Jour., Oct. 25, 1928; Pulp & Paper Mag. of Canada, Nov. 15, 1928.

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- *Photometric determination of the solubility of pulp in sodium hydroxide solutions, by R. M. Kingsbury. Tappi 37(8):353-355, Aug. 1954.
- *Techniques for the determination of pulp constituents by quantitative paper chromatography, by J. F. Saeman, etc. Tappi 37(8):336-343, Aug. 1954.
- *Determination of copper in wood pulps with tetraethylenepentamine, by R. M. Kingsbury and C. L. Lake. Tappi 35(11):527-528, Nov. 1952.
- *Determination of iron in wood and wood pulp, by R. M. Kingsbury. Tappi 34(8):382-384, Aug. 1951.
- Douglas-fir heartwood flavanone: Its properties and influence on sulfite pulping, by J. C. Pew. Tappi 32, Jan. 1949.
- Chemical properties of screen fractions of black gum and slash pine groundwood pulps, by E. R. Schafer and Matti Santaholma. Paper Trade Jour., Nov. 9, 1933.
- Decay of wood in groundwood pulp: Relation of loss in weight to chemical properties, by M. W. Bray. Paper Trade Jour., June 5, 1924.

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Suitable papers and wrappings for meat in cold storage lockers, by M. Heinig. Proc. 1st Cold Storage Lockers Operators Conf., May 2-3, 1939; Paper & Twine Jour., Dec. 1939.

Sorption of water vapor by paper-making materials: (See Section II for Parts 1 and 3.)

Part 2. Effect of physical and chemical processing, by C. O. Seborg, F. A. Simmonds, and P. K. Baird. Indus. & Eng. Chem., Nov. 1936.

Part 4. Irreversible loss of hygroscopicity due to drying, by C. O. Seborg, F. A. Simmonds, and P. K. Baird. Paper Trade Jour., Nov. 10, 1938.

Capillary rise of water in fibrous sheets and possible applications, by F. A. Simmonds. Paper Trade Jour., Sept. 7, 1933.

Relation of sheet properties and fiber properties in paper:

Part 1. A qualitative study of the tensile strength-solid fraction relation, by R. H. Doughty. Paper Trade Jour., July 9, 1931.

Part 2. The variation of ultimate tensile strength with basis weight and related factors, by R. H. Doughty. Paper Trade Jour., Oct. 8, 1931.

Part 3. The effect of fiber length on sheet properties: Preliminary experiments, by R. H. Doughty. Paper Trade Jour., Mar. 3, 1932.

Part 4. The use of structural concepts in pulp evaluation and paper design, by R. H. Doughty. Paper Trade Jour., Sept. 8, 1932.

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- *R1739 Utilization of farm woodlot woods for roofing felt, by E. A. Anderson and C. E. Hrubesky. Inf. Rev. & Reaf. 1960.
- *1750 Effect of phenolic resins on physical properties of kraft paper, by P. K. Baird, R. J. Seidl, and D. J. Fahey. Inf. Rev. & Reaf. Mar. 1956.
- *2066 Method for determining tensile properties of paper, by V. C. Setterholm and E. W. Kuenzi. 1956.
- *2130 Apparatus for determination of surface profile, by V. C. Setterholm and W. L. James. 1958.

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- *Linerboards from jack pine and hardwood semichemical pulps, by J. N. McGovern, G. E. Mackin, and G. H. Chidester. Fibre Containers, Oct. 1948; Tappi, Apr. 1949.
- *Effect of relative humidity on the moisture content and bursting strength of four container boards, by C. O. Seborg, R. H. Doughty, and P. K. Baird. Paper Trade Jour., Oct. 12, 1933.

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- *PP-118 Use of sweetgum and aspen cold soda pulp in making box-board. 1959.
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- *Building Fiberboards. Separate from U. S. Dept. Agr. Handbook No. 72. 1955.

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- *Application of refining energy index concept to experimental evaluation of strength-yield relations for hardboard stocks, by H. Dale Turner. Tappi 36(12), Dec. 1953.
- *Evaluation of refiner-plate designs used for experimental processing of hardboard stocks, by H. Dale Turner. Tappi 36(11):513-17, Nov. 1953.
- *Preparation of hardboard from white oak, by S. L. Schwartz. Tappi 36(10):445-51, Oct. 1953.
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- Features of hardboard industry in Scandinavia and their application to the United States development, by H. Dale Turner. Forest Products Research Society Jour. 2(3):62-64, Sept. 1952.
- *Suitability of sand hickory for insulating board and hardboard, by S. L. Schwartz and P. K. Baird. South. Pulp & Mfr. 15(4):68-74, Apr. 10, 1952.
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- *1931 Insulating board and hardboard from four common hardwoods of northeastern farm wood lots, by S. L. Schwartz. Inf. Rev. & Reaf. 1960.
- *2123 Hardboard from lodgepole pine, Engelmann spruce and Douglas-fir, by S. L. Schwartz. 1958.
- *2125 Hardboard from red alder and from a mixture of slow-growth southern oaks, by S. L. Schwartz. 1958.

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- *Modified woods and paper-base laminates. Separate from U. S. Dept. Agr. Wood Handbook No. 72. 1955.
- *Structural sandwich construction. Separate from U. S. Dept. Agr. Wood Handbook No. 72. 1955.

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No. 7. Physical properties and fabrication details of experimental honeycomb-core and sandwich house panels. 1948.

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Potentialities of paper-base laminates as compared with other laminates, by A. J. Stamm. *Paper Trade Jour.*, May 25, 1944.

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- *1385 The electrical resistivity of resin-treated wood (impreg and compreg), hydrolyzed-wood sheet (hydroxylin), and laminated resin treated paper (papreg), by R. C. Weatherwax and A. J. Stamm. *Inf. Rev. & Reaf.* Mar. 1956.
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- *1521 Some strength properties of papreg at elevated and sub-normal temperatures, by H. R. Meyer and E. C. O. Erickson. *Inf. Rev. & Reaf.* Jan. 1959.
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- *1577 Preparation of lignin-filled paper for laminated plastics. 1957.

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- *1623 Resin-treated pulpboard core material for sandwich constructions, by G. E. Mackin, R. M. Kingsbury, P. K. Baird, and E. C. O. Erickson. Inf. Rev. & Reaf. Mar. 1956.
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Wetting agents in sulfite pulping: The effect of certain wetting agents on the sulfite penetration and pulping of various woods, by J. N. McGovern and G. H. Chidester. Paper Trade Jour., Dec. 12, 1940.

Effect of acid concentration and temperature schedule in pulping resinous woods, by G. H. Chidester and J. N. McGovern. Paper Trade Jour., Mar. 7, 1940; South. Pulp & Paper Jour., June 1940.

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Comparison of calcium with sodium base liquors in sulfite pulping, by J. N. McGovern and G. H. Chidester. Amer. Pulp Supts. Assn. Yearbook & Program 1939, pp. 274-278.

Rate of temperature rise in sulfite pulping of Western hemlock, by J. N. McGovern and G. H. Chidester. Paper Trade Jour., Sept. 29, 1938.

*Effect of varying the concentration of combined sulfur dioxide in soda base sulfite pulping, by G. H. Chidester and P. S. Billington. Paper Trade Jour., Feb. 11, 1937; Pulp & Paper Mag. of Canada, Feb. 1937.

Effect of high sulfur dioxide concentration and high pressures in sulfite pulping, by J. N. McGovern. Paper Trade Jour., Nov. 12, 1936.

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PULPING CHARACTERISTICS OF WOODS (continued)

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- *1407 Groundwood and sulfate pulping and newsprint papermaking experiments on Engelmann spruce, by E. R. Schafer, J. C. Pew, A. Hyttinen, J. S. Martin, and R. M. Kingsbury. 1956.
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- *1494 Sulfite pulping of western redcedar, by E. L. Keller and J. N. McGovern. Inf. Rev. & Reaf. Mar. 1956.
- *1641 Sulfate pulping of Douglas-fir, western hemlock, Pacific silver fir, and western redcedar logging and sawmill waste, by M. W. Bray and J. S. Martin. Inf. Rev. & Reaf. Mar. 1956.
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- *1909 Sulfate pulping of ponderosa pine thinnings, by J. S. Martin. Inf. Rev. & Reaf. 1958.
- *1912 Semichemical-pulping characteristics of Pacific Coast red alder, Douglas-fir, western redcedar, and western hemlock, by E. L. Keller, J. S. Martin, and R. M. Kingsbury. 1956.
- *1947 Groundwood and chip groundwood pulping and papermaking experiments on ponderosa pine, by E. R. Schafer and Axel Hyttinen. 1959.
- *1961 Utilization of white-pocket Douglas-fir: Pulping and chemical conversion, by J. S. Martin, R. M. Kingsbury, J. N. McGovern, and R. A. Lloyd. Inf. Rev. & Reaf. 1959.

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- *2122 Experiments on the groundwood and sulfite pulping of sub-alpine fir, by Axel Hyttinen, E. L. Keller, and E. R. Schafer. 1958.
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- *2162 Continuous cold soda pulping of west coast red alder, tan-oak, madrone, and bigleaf maple, by J. F. Laundrie. 1959.
- *2175 Groundwood pulping of white fir and corkbark fir, by Axel Hyttinen and E. R. Schafer. 1959.
- *2180 Pulping and papermaking experiments on quaking aspen from Colorado, by Axel Hyttinen, J. S. Martin, and E. L. Keller. 1960.
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- *2012 Pulping of Latin-American woods, by G. H. Chidester and E. R. Schafer. Inf. Rev. & Reaf. Nov. 1959.
- *2013 Use of bleached cold soda pulps from certain mixtures of Latin-American hardwoods in newsprint, by G. H. Chidester and K. J. Brown. Inf. Rev. & Reaf. 1959.
- *2117 Pulping and papermaking experiments on Colombian woods, by G. H. Chidester and E. R. Schafer. 1958.
- *2124 Pulping and papermaking experiments on insignis pine (Pinus radiata). 1958.
- *2126 Summary of pulping and papermaking experiments on eucalyptus, 1926 to June 1957. 1958.
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- *191 Density, fiber length, and yields of pulp for various species of wood.
- *212 American woods for papermaking.

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Bleaching

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*Bleaching semichemical pulp, by F. A. Simmonds and R. M. Kingsbury. TAPPI Monog. No. 10, pp. 179-196, 1953.

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- *Sulfite pulps and papers from sawdust and chip mixtures, by E. L. Keller and J. N. McGovern. Pulp & Paper Mag. of Canada, June 1947.

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- *1666-9 Wood flour, by L. H. Reineke. 1956.
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Report No. 13 of the Annual Technical Conference of the American Paper and Pulp Association and the Forest Products Laboratory
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A continuous method for making cold soda pulp, by K. J. Brown.

Decay problems in pulpwood storage, by R. M. Lindgren.

Forest genetics, by H. L. Mitchell.

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*Wood resources, by E. G. Locke and K. G. Johnson. Ind. Eng. Chem. 46(3):478-483, Mar. 1954.

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*U.S. Forest Products Laboratory and its Pulp and Paper Division, by F. J. Champion. The Paper Maker, Feb. 1953.

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Manufacture of sulphite pulp in Western Germany, by J. N. McGovern and G. K. Dickerman. Pulp & Paper Mag. of Canada, May 1946.

*Manufacture of pulp and paper and related products from wood in Western Germany, by J. N. McGovern and G. K. Dickerman. Paper Trade Jour., Jan. 9, 16, 1945; also FIAT Rept. No. 487.

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- *564 Partial list of reference works on pulp and paper. 1959.
- *1499 Facilities for pulp and paper research at the U. S. Forest Products Laboratory, by G. H. Chidester. 1960.
- *1698 The U. S. Forest Products Laboratory, by F. J. Champion. 1960.
- *1972 Wood--A simple explanation, what it is, and how we use it, by F. J. Champion. 1960.

Technical Notes

- *240 A hundred definitions pertaining to wood and other forest products.

LIST OF PUBLICATIONS ON PULP AND PAPER--SECTION II

(Publications listed in this section are designated (a) if of limited interest, (b) superseded by later material, and (c) if of historical value.)

PULP

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Morphology of cellulose fibers as related to the manufacture of paper, by G. J. Ritter. Paper Trade Jour., Oct. 31, 1935. (b)

Application of elementary statistical methods in the testing of pulp and paper, by F. A. Simmonds and R. H. Doughty. Paper Trade Jour., Dec. 21, 1933. (c)

Proposed methods for the dirt count of pulp and paper, by F. A. Simmonds, P. S. Billington, and P. K. Baird. Paper Trade Jour., July 27, 1933. (c)

Further studies on ground wood evaluation, by E. R. Schafer and M. Heinig. Paper Trade Jour., Sept. 3, 1931. (c)

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Ground wood pulp evaluation: By means of static bending, screen analysis, and rate of flow tests, by E. R. Schafer and L. A. Carpenter. Paper Trade Jour., July 17, 1930. (c)

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Chemical analysis of the fractions obtained by screening blackgum and slash pine groundwood pulp, by M. Santaholma and E. R. Schafer. Paper Trade Jour., Nov. 9, 1933. (a, c)

A comparison of four methods for the determination of lignin, by P. S. Billington, F. A. Simmonds, and P. K. Baird. Paper Trade Jour., Jan. 26, 1933. (b, c)

Determination of cellulose and amount of chlorine consumed in its isolation: A short method, by M. W. Bray. Indus. & Eng. Chem., Jan. 15, 1929. (b, c)

Chemistry of the cellulose determination, by C. E. Peterson and M. W. Bray. Indus. & Eng. Chem., Nov. 1928. (b, c)

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Comparison of wood cellulose and cotton cellulose, by S. A. Mahood and D. E. Cable. Indus. & Eng. Chem., Aug. 1922. (c)

Chemical constitution of soda and sulfate pulps from coniferous woods and their bleaching qualities, by S. D. Wells. Indus. & Eng. Chem., Oct. 1921. (c)

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Paper

Journal Articles

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Significant sheet properties for developing specifications for various papers and paperboards, by P. K. Baird. Paper Trade Jour., Jan. 11, 1934.

Sorption of water vapor by paper-making materials:

Part 1. Effect of beating, by C. O. Seborg and A. J. Stamm. Indus. & Eng. Chem., Nov. 1931. (c)

Part 3. Hysteresis in the sorption of water vapor by paper-making materials, by C. O. Seborg. Indus. & Eng. Chem., Feb. 1937. (a)

Forest Products Laboratory research on paper machine variables, by W. A. Chilson and P. K. Baird. Paper Trade Jour., Oct. 5, 1933; Pulp & Paper Mag. of Canada, Nov. 1933. (a)

The volumetric composition of paper: (a)

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Part 3. Fiber substance density of pulps and papers, by P. S. Billington and E. L. Keller. Paper Trade Jour., Aug. 13, 1931.

Part 4. Composition of the air fraction: Improved apparatus and method for determining porosity, by R. H. Doughty, C. O. Seborg, and P. K. Baird. Paper Trade Jour., June 16, 1932.

Part 5. Composition of the air fraction: The effect of solid fraction and thickness of the porosity of air transmissibility of simple papers, by C. O. Seborg, R. H. Doughty, and P. K. Baird. Paper Trade Jour., Sept. 29, 1932.

A survey of the drying of paper and cellulosic paper-making materials, by F. A. Simmonds. Paper Trade Jour., May 18, 1933. (c)

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- W5c fiberboard boxes for canned foods, by E. C. Myers. The American Box Maker, Oct.-Nov. 1945. (a)
- Some factors affecting interweb adherence of single plies used in laminated sheets, by R. H. Doughty and P. K. Baird. Paper Trade Jour., Sept. 7, 1933. (a)
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- The requirements for fiber containers in service, by C. A. Plaskett. Paper Trade Jour., May 30, 1929. (b, c)
- Influence of moisture on tests of container boards, by S. D. Wells. Paper Indus., Dec. 1922. (c)
- Effect of varying humidities on strength of fiberboard and its component plies, by Otto Kress and G. C. McNaughton. Paper, May 22, 1918. (c)

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Sulfite

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A mill scale demonstration of temperature control in sulfite pulping, by G. H. Chidester. Paper Trade Jour., Oct. 11, 1928. (c)

Temperature schedule in sulfite pulping, by W. H. Swanson. Paper Trade Jour., Nov. 25, 1926. (c)

Chemistry of the sulfite process: (a)

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Part 5. Effect of various compositions of acid upon yield and quality of pulp, by R. N. Miller and W. H. Swanson. Paper Trade Jour., Oct. 11, 1923.

Part 6. Relative effects of temperature and of acid concentration during the cooking, by R. N. Miller and W. H. Swanson. Paper Trade Jour., Apr. 10, 1924.

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Relation between cooking conditions and yield and quality of sulfite wood pulp, by R. N. Miller. Paper Trade Jour., Dec. 3, 1925. (c)

Sugar formation in a sulfite digester, by E. C. Sherrard and C. F. Suhm. Indus. & Eng. Chem., Part 1, Oct. 1922; Part 2, Feb. 1925. (c)

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Advantages of liquid sulfur dioxide in sulfite pulp manufacture, by V. P. Edwardes. Pulp & Paper Mag. of Canada, Aug. 5, 1920. (c)

Alkaline

Journal Articles

Chemistry of the alkaline wood pulp process: (a)

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Part 3. Pulping of white pine by the soda and soda sulfur processes, by M. W. Bray, J. S. Martin, and L. A. Carpenter. Paper Trade Jour., Sept. 17, 1931.

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Use of preliminary impregnation in cooking wood by the alkaline process, by S. D. Wells, J. A. Staidl, and R. H. Grabow. Paper Trade Jour., Mar. 12, 1925. (c)

Distribution of methoxyl in the products of cooking jack pine by the soda process, by S. S. Aiyar. Indus. & Eng. Chem., July 1923. (c)

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Consumption of chemicals by the sulfate process: Results of experiments to determine the consumption of chemicals in pulping of unbarked wood by the kraft process, by Otto Kress and C. K. Textor. Paper, July 26, 1916. (c)

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Groundwood

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Experiments with jack pine and hemlock for mechanical pulp, by J. H. Thickens. Forest Products Laboratory Series (unnumbered), U. S. Dept. Agr., June 11, 1912 (out of print). (c)

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Improved pulpwood grinder for experimental work, by E. R. Schafer and J. C. Pew. Paper Trade Jour., June 20, 1935. (c)

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*1418 Chemical properties of white spruce pulp prepared by the use of phenol, by P. S. Billington and E. L. Fiedler. Inf. Rev. & Reaf. Mar. 1956. (a)

PULPING CHARACTERISTICS OF WOODS AND PLANT MATERIALS

Hardwoods

Journal Articles

Utilization of hardwoods for pulp and paper, by C. E. Curran. Paper Trade Jour., Jan. 17, 1929. (c)

Eastern and Northern Softwoods

Journal Articles

Comparative pulping value of Russian and Canadian spruce by the sulfite process, by W. H. Monsson and G. H. Chidester. Paper Trade Jour., Feb. 11, 1932. (c)

PULPING CHARACTERISTICS OF WOODS AND PLANT MATERIALS

(continued)

Eastern and Northern Softwoods (continued)

Journal Articles (continued)

Pulping eastern hemlock by the sulfite process: (a)

Part 1. The effect of varying the time and temperature of impregnation, by W. H. Monsson and G. H. Chidester. Paper Trade Jour., Nov. 15, 1928.

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What is the future of the pulp and paper industry in the South? by C. E. Curran. South. Lbrmn., Dec. 15, 1931. (c)

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PULPING CHARACTERISTICS OF WOODS AND PLANT MATERIALS

(continued)

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Pulping flax straw: (c)

Part 1. Hydrolysis with sodium sulfite, by M. W. Bray and C. E. Peterson. Paper Trade Jour., June 9, 1927.

Part 2. Chemical studies with chlorine as a pulping agent, by E. R. Schafer, M. W. Bray, and C. E. Peterson. Paper Trade Jour., Feb. 24, 1927.

Part 3. Hydrolysis and delignification with sodium hydroxide and with a mixture of sodium hydroxide and sodium sulfide, by M. W. Bray and C. E. Peterson. Paper Trade Jour., Jan. 19, 1928.

Part 4. Further studies of hydrolysis and delignification with alkaline reagents, by E. R. Schafer and C. E. Peterson. Paper Trade Jour., Jan. 19, 1928.

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PULPING CHARACTERISTICS OF WOODS AND PLANT MATERIALS

(continued)

Plant Materials (continued)

Journal Articles (continued)

Pulping flax straw: (c) (continued)

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Chemical constituents of flax straw, by S. D. Wells and E. R. Schafer. Paper Trade Jour., Apr. 23, 1925. (c)

A study of flax straw for paper making, by J. D. Rue, S. D. Wells, and E. R. Schafer. Paper Ind., Oct. 1924. (c)

Oat hulls for strawboard and paper pulp, by S. D. Wells. Paper Trade Jour., Nov. 3, 1921. (c)

The suitability of cotton hull fiber for pulp and paper manufacture, by Otto Kress. Paper, Jan. 21 and 28, 1920; Paper Trade Jour., Jan. 15 and 29, 1920. (c)

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PULPING CHARACTERISTICS OF WOODS AND PLANT MATERIALS

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General (continued)

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Wood pulp and pulpwood. A report to the U. S. Senate in compliance with Senate Resolution 200, Aug. 24, 1935, on the pulpwood and wood pulp industry in the United States. Tariff Com. Rept. No. 126, 2nd Series, 1938. (a)

National pulp and paper requirements in relation to forest conservation. A report to the U. S. Senate in response to Senate Resolution 205. Senate Document 115, 1935. Superintendent of Documents, Government Printing Office, Washington 25, D. C., 10 cents. (a)

Pulping and papermaking properties of selected New Zealand woods, by C. E. Curran, P. K. Baird, E. R. Schafer, W. H. Monsson, G. H. Chidester, and A. R. Entrican. New Zealand Bull. 6, 1928. (a)

PULP PROCESSING AND PAPERMAKING

Bleaching

Journal Articles

Bleaching of wood pulp: (c)

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Part 2. Effect of hardness of water, by C. E. Curran and P. K. Baird. Paper Trade Jour., July 17, 1924.

Part 3. Effect of temperature on the bleaching of sulfite pulp, by C. E. Curran and P. K. Baird. Paper Trade Jour., Sept. 11, 1924.

Part 4. Effect of consistence on bleaching of sulfite pulp (low density study), by C. E. Curran and P. K. Baird. Paper Trade Jour., Apr. 16, 1925.

PULP PROCESSING AND PAPERMAKING (continued)

Bleaching (continued)

Journal Articles (continued)

Bleaching of wood pulp: (c) (continued)

- Part 5. Effect of consistence as influenced by the bleach ratio, by C. E. Curran and P. K. Baird. Paper Trade Jour., Apr. 14, 1927.
- Part 6. Effect of bleach ratio on color, reaction rate, and chemical composition in bleaching sulfite pulp, by P. K. Baird. Paper Trade Jour., Nov. 29, 1928.
- Part 7. Effect of agitation on the color reaction rate and chemical composition in bleaching sulfite pulp at several consistencies, by P. K. Baird and R. H. Doughty. Paper Trade Jour., Nov. 29, 1928.
- Part 8. Effects of bleaching variables on the strength properties of easy-bleaching spruce sulfite pulp, by P. K. Baird and R. H. Doughty. Paper Trade Jour., Feb. 20, 1930.
- Color measurement by Ives tint photometer, by P. K. Baird. Paper Trade Jour., Apr. 28, 1927. (c)

Beating and Papermaking

Journal Articles

- Statistical survey of rosin as used in the paper industry, by P. K. Baird and C. E. Curran. Paper Trade Jour., July 4, 1940. (a)
- Processing variables in evaluating pulps by the pebble and rubber-covered ball method, by F. A. Simmonds and P. K. Baird. Paper Trade Jour., May 17, 1934. (c)
- Serviceability and processing effects of oval cast iron and circular steel rods in a rod mill, by C. E. Hrubesky, P. S. Billington, and P. K. Baird. Paper Trade Jour., Oct. 19, 1933. (c)
- Pebble-mill treatment effect on the strength properties of a pulp prepared by chlorination, by G. J. Ritter, R. M. Seborg, and F. A. Simmonds. Paper Trade Jour., Sept. 10, 1931. (c)

PULP PROCESSING AND PAPERMAKING (continued)

Beating and Papermaking (continued)

Journal Articles (continued)

The effect of processing on the number of ray cells in pulps and stuffs, by G. J. Ritter, F. A. Simmonds, and P. R. Eastwood. Paper Trade Jour., Sept. 10, 1931. (c)

Beating with rods, by S. D. Wells. Pulp & Paper Mag. of Canada, Mar. 8, 1928. (c)

The rod mill in the pulp and paper industry, by J. D. Rue and S. D. Wells. Paper Trade Jour., Sept. 16, 1926. (c)

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Wilkinite, a new loading material, by S. D. Wells. Paper Trade Jour., Nov. 18, 1920. (c)

Some observations on the retention of china clay by paper pulp, by Otto Kress and George McNaughton. Paper Trade Jour., Oct. 4, 1917. (c)

PULP, PAPER, AND WOOD WASTES

Journal Articles

Use of bark for paper specialties, by Otto Kress. Paper, Oct. 4, 1916; Pulp & Paper Mag. of Canada, Oct. 1916. (a)

Effect of white water on sheet properties, by E. R. Schafer. Paper Trade Jour., July 14, 1932. (c)

Surveying the mill for white water losses to indicate possible savings, by G. H. Chidester and E. R. Schafer. Paper Trade Jour., Dec. 13, 1928. (c)

Proposal for reducing the contamination of streams by strawboard mills, by J. D. Rue and F. G. Rawlings. Paper Trade Jour., Oct 8, 1925. (c)

PULP, PAPER, AND WOOD WASTES (continued)

Journal Articles (continued)

How to measure white water losses, by V. P. Edwardes. Paper Indus., May 1925. (c)

Recovery of waste paraffined paper by extraction with volatile solvents, by Otto Kress and L. F. Hawley. Indus. & Eng. Chem., Mar. 1919. (c)

Broadening the basis of America's pulpwood supply, by C. E. Curran. Jour. Forestry, Sept. 1938. (c)

Relation of the work of the U. S. Forest Products Laboratory to the pulp and paper industry, by C. C. Heritage. Pacific Pulp & Paper Indus., Dec. 1928. (c)

OTHER PUBLICATION LISTS ISSUED BY THE FOREST PRODUCTS LABORATORY

The following lists of publications which deal with 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, builders, retail lumbermen, and engineers.

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.

OTHER PUBLICATION LISTS ISSUED BY THE
FOREST PRODUCTS LABORATORY (continued)

Furniture Manufacturers, Woodworkers and Teachers of Wood Shop Practice--Partial list of publications for 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 and packaging data.

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.

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.

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.

OTHER PUBLICATION LISTS ISSUED BY THE
FOREST PRODUCTS LABORATORY (continued)

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.

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