

# PAPER TRADE JOURNAL

Reg. U. S. Pat. Off.

**PAPER**

SIXTY-FIFTH YEAR



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## Quebec May Expropriate Chandler Pulp Mill

Bill Passed by Provincial Legislative Council Permits Lieut. Governor to Take Over Idle Sulphite Fiber Plant Owned by Premier Pulp & Paper Corp. — Purpose of Measure Is to Force Owners to Resume Production.

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., November 9, 1936.—After formal protest by the Hon. Gordon Scott, the Quebec Legislative Council has passed the bill to permit the Lieutenant-Governor-in-Council to authorize expropriation of the pulp mill at Chandler, Que., now owned by the Premier Pulp and Paper Corporation.

The mill, which has been idle for years, has a capacity for the manufacture of 300,000 pounds per day of strong sulphite fiber. There are four digesters and four wet and one dry machines. Large timber limits are comprised in the property.

The purpose of the bill is to force the owners to resume production for the benefit of the unemployed, and it is said that if they do not do so the government after taking over the property, has a purchaser ready to buy and operate the mill.

The Hon. John Hall Kelly, in speaking on the bill, said the real object was to prevent the timber limits from being held for speculative purposes and hinted that it might become the basis of a general law. "Do not forget," he said, "that, because of the policies of the people who control the forests of Gaspé, a serious situation has come about."

"Outside of my duties in the Legislature I have asked the men who own these forests that, in their own interests, they should think twice before they decide to leave them go unworked, which policy brought about the present poverty conditions.

"The time is coming when the situations which have been created at Ste. Anne de Beaupre, in Chicoutimi, and elsewhere, will have to cease, and the type of legislation which we are now adopting for Gaspé betterment will be made applicable to all the province."

Mr. Kelly added: "Do not forget that the limits of this province were sold with the idea that they would be so developed as to benefit the people of the province, and not be held for speculative purposes."

The *Canadian Financial Bureau*, a financial paper published in Montreal, expresses doubt as to whether it is commercially practicable to operate the mill. It says:

"The Chandler property appears to have passed into several hands, at a progressively lower purchase price. It is significant of some inherent difficulty in operations that the mill and property originally cost \$15,000,000 and that the latest purchasers paid only \$85,000, then forthwith closed down the mill.

"According to the Hon. Oscar Drouin, Minister of Lands and Forests, the mill commenced operations in 1914, and has been closed since 1929. He stated that provision was made a year ago for reopening on a scale of 100-ton per day output, but nothing has since been done about it.

"The fact that the mill has had many owners in its comparatively short life, and that capital investment has been dissipated by what appears to be a very decidedly losing proposition, would lend credence to the belief that there are factors about the enterprise which militate against fair profit. Particularly is it apparent that if the mill had any capacity for profitable operation, it would have been opened by the owners during the past few years, when the pulp and paper industry has been enjoying a steadily improving market with demand rapidly overtaking output."

### Howard Smith Refunding Operation

Shareholders of Howard Smith Paper Mills have approved a special by-law authorizing the company to issue bonds in connection with the refunding operations recently announced.

Harold Crabtree, president of the company, stated that the refunding operation, which will result in annual interest savings and will free the company from losses through possible fluctuations in the Canadian dollar, the U. S. dollar and sterling, was done at a particularly opportune time, when the pound was around par.

He added that it was not all savings, however, as the expenses in connection with the issue, including premium on the old bonds and discount on the new issue, amounted to approximately \$430,000. However, the net amount of bonds outstanding would be some \$10,000 less than the old issue, as the \$430,000 would be covered by repayment of a loan made to Canada Paper Company, a subsidiary which is now offering \$1,700,000 of first mortgage bonds to redeem bonds outstanding and liquidate advances from its parent company.

### Brown Co. Bonds Deposited

More than \$9,200,000, or approximately 43 per cent, of the \$21,415,500 of first-mortgage 5½ per cent bonds of the Brown Company, has been deposited with the bondholders protective committee, it is announced by Charles Francis Adams, chairman of the committee.

# Demand for Paper Continues Active in Boston

Various Grades of Fine Paper Moving in Good Volume—Wrapping Paper Business Satisfactory Despite Slight Slowing Up — Box Board In Seasonal Request—Paper Stock Quotations Steady to Firm—Demand for Twine Fair

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., November 9, 1936—The wholesale paper market here continued active last week. There was considerable discussion in regard to the price situation of rag papers and sulphite bonds. Comments in regard to the fine paper market included "fairly good," "good," "better than fair," "improving a little," and "very good." At the office of one firm, it was stated that they expected to have the best year in a long time. The box covering business was reported as very good and improving. September and October were very good months in box paper lines. The card index and filing supplies demand has been ahead of last year. A manufacturer of this merchandise feels that there will be the greatest revival in business ever known. In some quarters of the wrapping paper market, it was stated that business had slowed up a little, but was "pretty fair as a whole." In other quarters, favorable comments were made. The outlook is better than last year in Christmas wrappings and fancy tissues for the department store trade. Specialties were active. Box boards were in rather good demand, although in not the same degree as when consumers were buying before the advance in prices.

Generally speaking, it was at least a fair market in paper stock, with a few price advances. A member of the trade says: "All prices are now likely to change upward. Since the election the consensus of opinion is that all commodity prices are going to be higher. All paper making materials are going to advance from now on. The hesitancy on the part of buyers before the election and the delay in buying goods piled up orders which were released all at the same time and it has made advances in commodity prices. This applies to the various grades of paper which are not collected in large quantities." With more business on No. 1 books, heavy, the price rose to .65 @ .75 from .60 @ .70 f. o. b. Boston. Box board chips advanced to .30 from .25 f. o. b. Boston. Other grades of old papers remained unchanged. In bagging, foreign manila rope went up to 2.60 @ 2.85 from 2.50 @ 2.80 f. o. b. Boston. Values of new and old domestic rags and foreign rags continued steady.

The demand for twine was better than fair.

## News of the Industry

The Dunleavy Company, card index and filing supplies, have increased their floor space 5,000 feet and have a new set of offices, greatly facilitating operation of business. J. Frank Dunleavy, head of the company, has recently returned to the plant, after twelve weeks in a hospital and the remainder of the time at his home, following an automobile accident June 17, in which he suffered serious injuries in the knee. He underwent an operation at the hospital and expects eventually to be able to walk without a limp.

A sales meeting was held Saturday morning at the office of Carter, Rice & Co., Corp., at which James Richard Carter, 2nd, of the Nashua Gummed and Coated Paper Company, Nashua, N. H., gave a highly constructive and interesting discussion before the entire sales force regarding Istitix Flat Gummed Paper and Carico-Sure-Hold Gummed Tapes. Frank Winter, sales manager of the Carter Rice company, presided.

Chester Weidner, formerly of the Providence office of Carter, Rice & Co., Corp., is now a member of the wrap-

ping paper department in the Boston office, specializing in Corroflex, the new flexible cushion wrapper, of which the company is an exclusive distributor in this territory.

An important meeting of the New England Paper Merchants Association is to be held today for the discussion of rag content papers.

The Fall meeting of the Boston Paper Trade Association is to be held November 18 at the Exchange Club. "Catch-Em-Alive-Jack," Jack Abernathy, of Oklahoma, who used to hunt with former President Theodore Roosevelt, will be a speaker. Mr. Abernathy caught 1,000 wolves alive, using only his bare hands.

Mr. Cappadona, of A. Cappadona & Co., Brooklyn, N. Y., prominent in the wholesale rope business and dealer in paperstock, and Albert T. Hicks, treasurer of Daniel N. Hicks, Inc., dealers in paper stock, New York City, called on the trade last week.

Notices have been sent out by John C. Hurd, executive secretary of the New England Paper Merchants Association, announcing that Wednesday, November 11, Armistice Day, will be observed generally by the paper trade by closing all day.

## The Story of News Print Paper

"The Story of News Print Paper," just published by the News Print Service Bureau, is the culmination of a current publicity campaign in behalf of the North American newsprint industry. The author of the book is Royal S. Kellogg, secretary of the News Print Service Bureau. The illustrations and art work are by Mrs. R. S. Kellogg.

Beautifully printed, profusely illustrated and spirally bound, this handsome brochure is a perfect gem of typography. It reproduces the series of advertisements which have run under this title in the *Editor and Publisher* this year, together with considerable additional matter and illustrations.

The book has been prepared especially for the purpose of giving authoritative information upon the manufacture of newsprint paper for the use of newspaper publishers, librarians, students in journalism, forestry and economics, school teachers and others who frequently inquire for information upon the subject.

The entire undertaking was made possible by a few members of the Bureau who generously supplied the funds therefor. Nowhere in the book is there any mention of any individual or any company so that it may be used freely by the entire industry. Extra copies for distribution along the lines suggested will be supplied at the following rates: Single copies \$1.00 each; 25 copies, 75 cents each; 50 copies or more, 50 cents each.

## Goulds Pumps in Champion Mill

In printing some of the more important equipment supplied to the Pasadena mill of the Champion Paper Fibre Company, mention of Goulds Pumps, Inc., Seneca Falls, N. Y. was unfortunately omitted. This concern furnished a considerable number of pumps for this new mill. The company, in fact, furnished about twenty of Fig. 3605 pumps for handling various chemicals and liquors in the mill.



FOR three generations, Stowe-Woodward has purposely devoted itself to the manufacture of a few highly specialized products. Chief among them are rubber covered rolls for the paper industry. To this concentration of thought and effort can be attributed many of the outstanding developments in rubber covered roll manufacturing — developments that were pioneered by Stowe-Woodward.

The COREWELD Process which made the old fashioned hard rubber core unnecessary, the Stowe-Woodward method of end sealing which eliminated many of the faults of rubber covered rolls, the TANNITE Process which combines toughness and resilience in couch rolls, the patented STONITE Compound for top and smoothing press rolls are a

few important Stowe-Woodward contributions.

The result of this long association of experience, talent, equipment and research is clearly reflected in the performance of every Stowe-Woodward roll. Correct size, weight and crown, uniform density, resistance to wear, checking, oxidation and corrugation can be taken for granted. Beyond these essential qualities are additional superiorities that become apparent as soon as the roll is put in operation — definite advantages that can be measured by a comparison of paper finish, roll performance and operating and maintenance costs.

May we show you with actual performance figures what Stowe-Woodward Rolls are doing under conditions comparable to yours?

**STOWE-WOODWARD, INC.**  
**NEWTON UPPER FALLS • MASSACHUSETTS**  
 NEW YORK OFFICE • WOOLWORTH BUILDING

*Makers of WHITE STAR Rubber Covered Rolls, TANNITE Couch Rolls  
 STONITE Top Press and Smoothing Rolls—All by the COREWELD Process*



# Chicago Paper Market Exhibits Strong Undertone

Outlook for Fine Paper Better, With Higher Prices Predicted—Kraft Paper Continues Firm, Affected by Scarcity of Kraft Pulp—Newsprint and Ground Wood Papers in Better Position—Paper Board Section Unchanged

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., November 9, 1936.—Despite readjustments in the fine paper market covering bonds, mimeos, ledgers, writings and other grades, the general paper market remains strong in tone, with talk of shortages in many grades contributing to the local optimism. In fine paper, as well, the long term outlook is credited with evidencing signs of higher prices. The local kraft market continued strong with the scarcity of kraft pulp teaming with a healthy demand to draw unusual attention to these grades.

Newsprint markets also showed gradual increase in strength as buyers noted the reported shortage in raw materials. Groundwoods are reported to have followed this leadership and are quoted as being in a splendid position for the early Spring business. Books and covers showed about the same strength consistency as last week. The board market was virtually unchanged. Waste papers made further strides to a better position as shortages in certain quarters caused a strong demand.

## Paper Stock Active

Some impression of the local activity in waste paper products is gathered from local quotations of dealers buying prices listing No. 1 mixed between .20 and .25; box board at the same figure; heavy book stock at .45 to .50 and light book stock between .30 and .40. No. 1 white soft shavings were quoted locally at between \$1.20 and \$1.35 while white news blanks were between .75 and .85. No. 1 soft white shavings, f.o.b. Chicago were \$40.00 per ton and white news blanks, on the same basis, \$24.00. Miscellaneous mixed papers were varying between .15 and .20. Greatly improved demand from manufacturers finding their own inventories depleted by the betterment in business was credited with materially strengthening the local market this week.

## Occupational Sales Tax

Although the fifteen day appeal period is not as yet terminated it is understood that Chicago printers have virtually assured themselves of a favorable Supreme Court decision with respect to the Illinois 3 per cent Occupational Sales Tax. The Illinois court, it is reported, is ruling that the printing of forms and other material for business use and utilized as a part of the cost of doing business is not taxable under the provisions of the law.

If this is the case and the ruling is announced it will be possible for business firms to ask of printers a return of the tax paid while the Act has been in operation—or since 1933. The buyer, of course, will be required to show proper proof that such tax payments have been made. In return, the printers will have available the tax, which has been held in escrow, minus the legal fees and other deductions for expenses incurred in bringing the suit.

To the paper industry, the decision means an added spur to business in this territory if the decision comes out as reliably reported. Buyers of printing—and, indirectly, of paper—will not have to meet the added cost due to the 3 per cent Occupational Tax. Thus the paper industry stands to benefit by the ruling and by the efforts made by the printing industry to show that printed forms, handbills, etc., were an essential service and a part of the cost of doing business.

The S. D. Warren Company, through the Chicago Paper Company, local distributors, has again issued a very attractive brochure, prefaced by some interesting comment on how business is developed and featuring five methods of describing merchandise—listing the "Before and After Descriptive Practices"; "Partial Payment and Credit Plans"; "Color Description and Size Descriptions"; "Describing Needs and Conveniences" and "Use Values described to promote buying, satisfaction and boosters." Subsequent information is to be offered by the Warren Company in a practical effort to stimulate advertising.

## New Coleman Electrometers

The Wilkens-Anderson Company, of Chicago, continue their development of pH control instruments, for both plant and laboratory use, introducing a complete new line of Coleman Electrometers.

At the beater or in the bleaching room, the new model No. 3537A, direct reading pH dial model will continue to be most popular. Simplified operation is a feature as one control has been eliminated. Longer electrode life is now certain, as the new sealed glass electrode is stronger, smaller and finally, the inner chemical system has been improved for practically indefinite life, subject only to the disintegration of the glass.

Longer battery life is provided, the inner assembly is completely shielded and the complete instrument is lighter and housed in a smaller case.

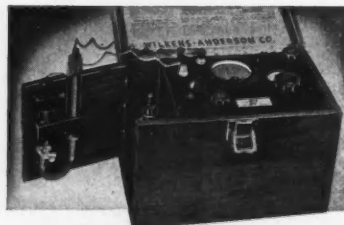
The laboratory model No. 3538C reads directly in pH and by a built-in switch, direct millivolt readings are also obtained over a 0-1300 mv. scale. This permits the use of any electrode system and for still greater accuracy, the potentiometer uses engine-wound manganine coils. For the laboratory, the refinements in the pH-mv. model or the new Research instrument for 110 volt, 60 cycle A.C. operation, will be of interest.

The new issue of Waco Catalyst, Vol. 3, describes the complete line of new Coleman pH Electrometers. Wilkens-Anderson Company will gladly send a copy of this 12-page booklet upon request. Address them at 111 North Canal street, Chicago, Ill.

## French Cigarette Paper Imports Rise

WASHINGTON, D. C., November 11, 1936.—American demand for French cigarette paper has sharply advanced during the current year, according to a report from Consul B. M. Hulley, Nantes, made public by the Commerce Department.

Shipments from the Nantes district to the United States may set a new high record. For the first nine months of 1936 they totaled 9,648,000 pounds, valued at \$2,629,000 compared with 7,448,000 pounds valued at \$2,009,000, in the corresponding period of 1935.





# A Pair of Aces FOR PLANT ECONOMY



For general plant service - Walworth Fig. 95 Re-New-Disc Bronze Globe Valve, 150 lb. working steam pressure.

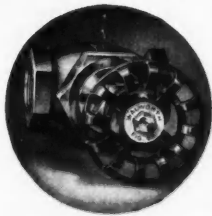
For plant service requiring throttling - Walworth Fig. 245-P nickel alloy plug type disc and seat-renewable, re-grinding Bronze Globe Valve, 200 lb. working steam pressure.

"The correct valve for each specific service" has been Walworth's policy for 94 years. Here is a typical example of this policy - a pair of valves for ace-high, dependable plant service.

Where throttling is not required, Fig. 95 is ideally adapted for general service. Time and trouble in changing discs are saved with the lock-on, slip-off disc holder originated by Walworth. Extra strength in the body bonnet connection is secured by incorporating the union bonnet throughout the line.

Where throttling is necessary, Walworth recommends Fig. 245-P. The Plug Type Seat and Disc of Sigmally 222, a hard nickel copper alloy, withstands terrific punishment and lasts longer.

All Walworth Bronze Valves have an aluminum marking plate, as shown, for the convenience of the user. Profit by Walworth's ability to recommend the exact valve for each specific need.



### PRE-PROVING WALWORTH QUALITY

The device shown here is the Comparator which magnifies tool, gauge and valve details, enabling Walworth to check dimensions to ten-thousandths of an inch. Walworth thus predicts the uniform high quality of its products, which field performance finds unsurpassed.

# WALWORTH

WALWORTH COMPANY  
60 EAST 42nd STREET, NEW YORK

**VALVES  
FITTINGS  
and TOOLS**

Backed by  
94 Years' Service

DISTRIBUTORS IN PRINCIPAL  
CITIES THROUGHOUT THE WORLD

# British Mills Adopt Consolidated Process

Will Shortly Start Producing Coated Paper Under Leasing Contract—Two Coating Machines Will Be Installed at Plant of Edward Lloyd, Ltd., Kent—Another Machine to be Installed at Star Paper Mills, Ltd., Yorkshire.

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., November 9, 1936—Using the process developed by the Consolidated Water Power and Paper Company, Wisconsin Rapids, Wis., two British mills will soon start producing coated paper under a leasing contract with the Consolidated. The coating is done directly on the paper machines with special equipment built into the machines.

Two technical men of the Consolidated, Reinhold Vogt, laboratory director, and Burt F. Raprager, superintendent of paper machines at the Wisconsin Rapids, division, will install the process. They sailed Sunday for England aboard the *Queen Mary* for an indefinite stay.

Two coating machines will be installed at the plant of Edward Lloyd, Ltd., which operate 21 machines at Sittingbourne, in Kent. One will be installed at the Star Paper Mills, Ltd., in Yorkshire. These firms have been carrying on negotiations with the Consolidated for about a year, Clarence E. Jackson, mill superintendent said.

Mr. Vogt has spent the last two years in the study and development of coating mixtures and coating formulas required by the new process. Mr. Raprager has been the practical head of the coating machine operation, and is an expert on the process.

## Institute of Paper Chemistry

The Institute of Paper Chemistry, affiliated with Lawrence College, Appleton, Wis., has contracted for one of the new 3-unit recording spectrophotometers now being built by General Electric. The instrument interprets color scientifically by utilizing monochromatic light. Its purpose is to record, by means of a moving pen, the amount of the various colors of the spectrum reflected from an object of any given color.

Finding that color interpretations of the human eye are too inexact for many scientific and industrial purposes, scientists tackled the problem of finding some physical means of reducing human error to a minimum. The recording photo-electric spectrophotometer draws a curve giving percentage of light reflected for all wave lengths of the visible spectrum. Its recordings are correct to within one-half of one per cent and form permanent records of the colors tested. These records could be sent to a distant point and colors there could be made to match the original colors by use of the spectrophotometric curves. It would not be necessary, for example, for one in New York, in matching a certain color in Paris, to have an actual sample of the color to be matched, if a spectrophotometric chart were available for the color.

The Institute now possesses one of the six original spectrophotometers built by General Electric several years ago and designed by Prof. A. C. Hardy of the Massachusetts Institute of Technology. The new machine, which is in three units, obviates mechanical difficulties present in the older model. The Institute of Paper Chemistry has been using the older machine successfully for the determination of color values in paper for the past several years.

Dr. Harry F. Lewis, Dean of the Institute, left last Saturday on a speaking tour under auspices of the American Chemical Society. His subject will be "The Contribution of the Physical Sciences to the Pulp and Paper Industry."

His first lecture was given Monday before a sectional group of the society at Dayton, Ohio, and he was to appear on successive days before other sections at Louisville, Ky., Cincinnati, Ohio, Purdue University at Lafayette, Ind., and at Indianapolis. His address brings out in relief the part played not only by the chemist but also by the physicist, fiber microscopist, photomicrographer, bacteriologist, and the engineer in carrying on research problems.

Dr. Lewis will make a similar trip to western cities in December.

Trustees of the Institute of Paper Chemistry met Friday November 6, in New York City. Dean Thomas N. Barrows, president-elect of Lawrence College, who succeeds Dr. Henry Merritt Wriston in that capacity, and also as director of the Institute, was in attendance. Other staff members from Appleton, Wis., who attended besides Dr. Wriston were Ralph J. Watts, treasurer; Westbrook Steele, executive director; and John Strange, secretary. Plans and policies under the new administration, effective February 1, were discussed.

## News of the Industry

Production has been started by Joseph J. Plank & Co., Appleton, Wis., on its new type dandy-roll. The new roll has a skeleton of brass wire instead of the customary brass and steel tubing covered with rubber. It is constructed in such a manner as to eliminate water being carried back up into the sheet, causing imperfections.

Additional manufacturing space has been provided in the main plant by the erection of a one-story building 28 by 112 feet which will be used for warehouse purposes. The addition is rapidly nearing completion.

As a means of introducing the new dandy-roll, the company has sent out paper samples containing the largest single design watermark ever produced in the paper industry. It portrays a hunting scene, with a flock of mallards flying toward decoys. The watermark is 22 by 34 inches in size, and was produced on paper run by Fox River Paper Company, Appleton.

Fifty members of the National Association of State Foresters paid a visit last week to the Nekoosa-Edwards Paper Company's forestry project in Wood county, Wis. They were on a tour of various forestry and conservation projects following a convention at Madison, Wis., and were escorted to various points by C. L. Harrington, superintendent of forests and parks for the Wisconsin Conservation Commission.

While at the ranger station, J. B. Nash, of the Nekoosa-Edwards Paper Company, described the company's extensive forestry operations begun in 1925. He showed them one stand of pine eleven years old that had shown an excellent survival capacity despite extreme drought. The goal of the company, he said, is to provide pine from reforested areas close enough to the mill to eliminate heavy truck and rail hauling charges.

Vast nurseries of the company at the artificial Nepco Lake were shown the visitors by William Brener, nursery superintendent. G. M. Conzet, director of forestry for Minnesota and president of the association, expressed his praise for the company's accomplishments.

# Association Activities in Philadelphia

Paper and Cordage Merchants to Hold Meeting on Friday—Col. Lewis Stone Sorely to Address Gathering—President George K. Hooper to Appear at Nominating Committee—Election Officers Scheduled for December

[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, Pa., November 10, 1936—The regular monthly meeting of the Paper and Cordage Association of Philadelphia will take place on Friday, November 13, preceded by a luncheon at the Adelphia Hotel. Colonel Lewis Stone Sorely, formerly Chief of Staff of the 79th Division, U. S. A. will be guest speaker. He will discuss his work in the Intelligence Division.

At this meeting, President George K. Hooper will appoint the Nominating Committee, consisting of Harry S. Platt, chairman; John S. Heverly, James Andrews, Samuel Shyrook and Fred I. Brower. Election of officers will take place at the December luncheon meeting, at which time the annual Christmas Party will be held. This year, the Entertainment Committee is planning to entertain sixty instead of fifty children, as has been the case in previous years. These children are recruited from the ranks of the Salvation Army and elaborate plans are under way to make this Christmas Party one long to be remembered by those privileged to attend. Sweaters, caps, games, candy, dolls, miscellaneous toys are distributed among the children without the necessity of any assessment on the part of members, although they have contributed substantially in furtherance of this annual Christmas Party. It is suggested that if members feel so inclined to kindly make donations of money instead of toys, which donations may be sent to E. K. Lay, chairman of the Entertainment Committee at 940 Drexel Building. The Christmas Tree in all its splendor will be donated by Matthias Paper Company, who was also donor last year.

## Paper Salesmen's Study Course

An informal dinner was held yesterday evening at the Penn Athletic Club for the purpose of bringing together all those who have participated in the organization of the Paper Salesmen's Study Course, under the auspices of the Paper Trade Association of Philadelphia. Among those invited were C. S. Ruddle, Fritz Peters, John H. King, C. S. Fleck, A. J. Abraham, William A. Meeks, L. D. Weisgerber, Mr. Stroup, Norbert A. Considine, Jos. H. Miller, Ormond Freile, Wm. A. Hentz, George W. Weaver, Mr. Clark, Mr. Warner, Harry S. Rossiter, LeRoy S. Bishop, Winfield Predmore, Frank McQuillan, Doris E. Lewis, executive secretary of Paper Trade Association of Philadelphia, V. P. Walden, of *Paper and Paper Products* and Katherine H. Norman, *PAPER TRADE JOURNAL*.

Norbert A. Considine, opened the meeting, stressing the fact that during his three months' absence abroad the Salesmen's Study Group had been organized. He then turned the meeting over to Ormond Freile, who presided. Mr. Freile pointed out the salient features of this newly organized group, emphasizing the need of training for salesmen in the paper trade. He stated there were upwards of 450 salesmen in the local paper trading area equally divided among fine and wrapping papers. The number of salesmen in this Study Group was limited to fifty, but applications have been received from almost fifty more, and while the lectures can be so arranged as to take care of 100, there needs must be further arrangements for plant visitations for the additional fifty.

Wm. A. Meeks, executive secretary of the Typothetae of

Philadelphia, presented some concrete similes of personal experiences in other industries, which unquestionably shows the inadequacy of training of sales people.

## Charles S. Reyburn Dead

Charles S. Reyburn, founder of the Reyburn Manufacturing Company and for twenty-five years, its president, died recently at his home "Domus Schoale," near Prospectville. He had been ill several months. He was born in Oxford and came to Philadelphia when a young man. He entered into partnership in 1895 and established the paper concern now situated at 32nd street and Allegheny avenue.

## Asks Support for Traffic League

F. J. Sensenbrenner, president of the American Paper and Pulp Association has sent the following letter, which is very explanatory, to members:

I want to call your attention to the work that is being done by the Pulp and Paper Traffic League, and I want to urge every company in the industry to support this activity.

As you know, the Pulp and Paper Traffic League is an Associate Member of the American Paper and Pulp Association. It has on two occasions in the last three years represented the whole industry in hearings before the Interstate Commerce Commission, and it is preparing at the present time to take active steps in connection with the forthcoming petition of the railroads to continue the emergency rates after December 31st of this year.

The American Paper and Pulp Association has not actively engaged in traffic matters. The reason is that the Pulp and Paper Traffic League, with its regional members, has built up an extensive background of information upon the basis of which the industry, as represented by the Pulp and Paper Traffic League can make a strong appearance at any hearings or conferences involving traffic matters. The activities of the League have been so effective that it has not been necessary for the American Paper and Pulp Association to take any action in this field whatsoever.

It is important, however, especially at this time, that the industry support, through membership, the very important activities of the League, and I, personally, wish to urge every member of the industry to join with those mills that are supporting the League in order that this work may be furthered and that the excellent results of the past may be assured to the industry in the future.

## New Brown Pressure Gauge Catalog

The Brown Instrument Company, Philadelphia, Pa., has just published a new catalog on Brown thermometers and pressure gauges.

This new catalog covers the complete line of Brown thermometers and pressure gauges—indicating, recording and controlling—and enumerates the wide range of industries to which they are applicable. It describes the classes of Brown thermometer and pressure gauges, explains their outstanding constructional features in simple, non-technical language, and presents a detailed description of each instrument of the line.



# TAPPI Medal Awarded to Clarence J. West

The Executive Committee of the Technical Association of the Pulp Paper Industry has announced the award of its gold medal to Clarence J. West, Editor of Publications of the Institute of Paper Chemistry, Appleton, Wis. This award is made from time to time to individuals who in the opinion of the TAPPI Awards Committee and the Executive Committee (by unanimous consent) has made an outstanding contribution to the technical advancement of the pulp and paper industry.

In its nearly twenty-two years of existence this award has been made to but five individuals, namely to William H. Mason, inventor of the Masonite process; Ogden Minton, inventor of the vacuum pulp and paper drier; Ernst Mahler for the development of several paper making processes; Edwin Sutermeister for his work in

in pure science to extend knowledge in the realm of scientific data.

As Chairman of the TAPPI Committee on Abstracts and Bibliography and as an abstractor for the famous Chemical Abstracts he has saved time of countless technical men who needed to be kept informed concerning the accomplishments of other investigators in all nations of the world.

Dr. West has recently joined the staff of the Institute of Paper Chemistry as Editor of Publications and in this capacity will be able to give his full attention to compiling and analysis of the literature relating to the pulp and paper industry.

The TAPPI medal will be presented at the annual meeting of the Technical Association of the Pulp and Paper Industry at the Waldorf-Astoria Hotel in New York, February 22 to 25, 1937.



DR. CLARENCE J. WEST

paper making chemistry and to William Millspaugh for his invention of the suction roll and related equipment.

That Dr. West is eminently qualified to receive this honor and distinction is well known in the industry and in the field of bibliography general. The initial step in all real research is to find out what has already been done and discovered in a certain field in order to avoid duplication. Because of Dr. West's efforts along this line no industry has a more detailed and clearer record of its technical and manufacturing accomplishments than the medallist. From 1900 to date this record has been built up and made available to the industry for the benefit of its engineers and other research men.

Dr. West began this work as head of the research information service of Arthur D. Little, Inc., in Cambridge. The work was continued for the benefit of the Country during the War by him as Lieut. Col. of the Chemical Warfare Service and since then until this year for the benefit of research investigators in all lines of scientific activity as head of the research information department of the National Research Council in Washington, D. C.

Dr. West has edited many outstanding scientific books, most noteworthy of which being the Critical Tables, a fifteen volume masterpiece giving the physical and chemical constants for all known materials. This has been a world wide activity and a necessity to enable workers, particularly

## Mead Corp. To Pay in Stock and Cash

[FROM OUR REGULAR CORRESPONDENT]

DAYTON, Ohio, November 2, 1936—Stockholders of the Mead Corporation met Friday, October 30 in this city, and approved a proposed amendment to the articles of incorporation in order to enable the concern to pay accumulated dividends in common stock and cash.

The approved amendment will permit the company to pay arrear dividends on the outstanding \$6 cumulative preferred stock, Class A, to the extent of 10 installments, amounting in all to \$15 per share, in the form of a stock dividend of one share of common stock.

The total arrearage to date amounts to \$19.50 per share and upon the approval of the stockholders, the entire amount is to be paid in the form of one share of common stock and \$4.50 in cash.

The Mead Corporation resumed payment of quarterly dividends on the preferred stock in December, 1935, and the board of directors contemplates the continuance of the current dividends in cash.

Immediately following the stockholders' meeting, the board of directors was called into session and the regular quarterly dividend was declared. The dividend of \$1.50 a share is to be paid to preferred stockholders December 1, to stockholders of record, November 15.

The recently-issued financial statement of the company showed a net income for the nine four-week periods ending September 5, of \$600,215.58, compared with \$281,758 in a similar period in 1935.

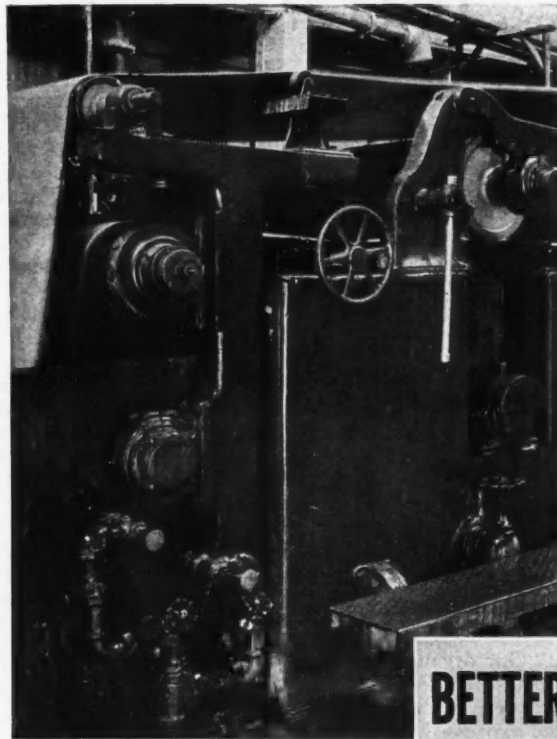
## Guide to Literature of Pulp and Paper Industry

The Institute of Paper Chemistry, Appleton, Wis., has recently issued an excellent volume entitled "A Guide to the Literature of the Pulp and Paper Industry." This 185 page, paper bound mimeographed book is an outline of the course given to students at the Institute.

The object of the course and book is to acquaint students with the literature in the Institute library and to teach them where and how to look for information. References are first given to the Dewey system of classification, then to the general table manuals dealing with chemistry and physics. Finally the available publications of the paper and pulp industry are referred to with brief mention of their contents.

Copies are available from the Institute at two dollars per copy.

A trip of inspection to a mill operating a new type B-C wet-end with the new type B-C vat is in order.



Would you be interested in cutting the cost of your wet felting to 30c a ton or less? By the way, what's it costing you now?

**BETTER CROSS FORMING**

**FASTER OPERATION**

**BETTER FINISH**

**SMOOTHER FINISH**

**FELT ECONOMIES**

Ever since the first new type Black-Clawson wet end was installed in the sunny south three years ago, paper makers have been arguing its merits pro and con—and the pros have it for there is no contradicting the facts.

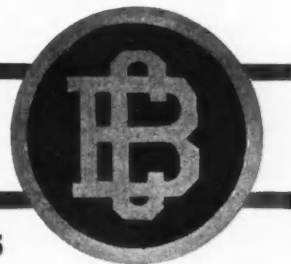
And what are the facts? Exactly what you read in the headlines—to the right—all of which have been established beyond further question at a dozen mills running an impressive variety of papers.

You also could very likely install one of these new wet-ends and benefit immensely—through faster operation—felting economies—and the production of a stronger and smoother sheet in the bargain.

**THE BLACK-CLAWSON COMPANY**  
Hamilton, Ohio

*Owners of*  
**Shartle Brothers Machine Company**  
Middletown, Ohio

**BLACK-CLAWSON**



**SUPER CYLINDER MACHINE WET ENDS**

# Gair Old Timers Hold Fourth Annual Dinner

The Fourth Annual Dinner of Gair Old Timers was held at the Hotel New Yorker on October 17. This association now has 400 members, who represent not only a large section of the paper and allied industries, but many other widely diversified businesses. More than 150 of the members, from many sections of the country, attended the dinner.

The success of this purely social get-together of men who are at present or who have been in the past members of the organization of Robert Gair Company, Inc., indicates the permanence of this unique organization.

Informal addresses were made by E. E. Seavers, of Robert Gair Company, Inc., retiring president; George W. Gair, Chairman of the Board of Robert Gair Company, Inc., and William W. Fitzhugh, of William W. Fitzhugh, Inc., newly elected president.

New officers for the ensuing year were elected as follows: president, William W. Fitzhugh, of William W. Fitzhugh, Inc.; vice-president, Harold Hughes, of Parsons & Whittemore, Inc.; secretary and treasurer, Wilbur F. Howell, of Robert Gair Company, Inc.; honorary president, Harry D. Adriance.

## Organization Unique

Mr. Seaver, retiring president, said: "Our organization is unique, having been formed on the basis of fellowship and friendship. We have searched for a deeper objective and a practical thought has recently been expressed. Many of us recognize and gratefully feel the value of the training received under Robert Gair, and one of our objectives might well be to perpetuate his memory and example to the extent that it may be a guide to those whom we contact and train as it has been our guide in the years past."

Mr. Fitzhugh, newly elected president, proposed that a bronze plaque be erected in a suitable place to the memory of Robert Gair by those who worked under him in appreciation of the sound business education they received which has resulted in their advancement and happiness. This plan was enthusiastically approved.

## The Attendance

Among those who attended were: Harry D. Adriance, Queensboro Gas and Electric Company; Hugh Axmacher; Clarence S. Barnes, William W. Fitzhugh, Inc.; E. Bake-well, Robert Gair Company, Inc.; A. J. Bauser, Robert Gair Company, Inc.; Sidney Bender; A. J. Brewster, Robert Gair Company, Inc.; Chas. Burke, Robert Gair Company, Inc.; Albert W. Campbell, Arrow Engraving Company; Ralph Campbell, Robert Gair Company, Inc.; J. H. Cashman, J. H. Cashman, Inc.; John Coakley, Robert Gair Company, Inc.; F. C. Costello, Bogota Paper and Board Corporation; Fred Coursen, Robert Gair Company, Inc.; Chas. L. Crowell, Robert Gair Company, Inc.

Tom Dalton, Robert Gair Company, Inc.; William S. Delp; E. Victor Donaldson, Robert Gair Company, Inc.; Felix F. Doll, William W. Fitzhugh, Inc.; Michael Di Nigros, City of New York; Geo. H. Drake, Continental Container Company; F. J. Edgars; Ted Eisner, National Biscuit Company; Samuel Evans, Robert Gair Company, Inc.; William W. Fitzhugh, William W. Fitzhugh, Inc.; Geo. W. Gair, Robert Gair Company, Inc.; P. F. Gaffney, Densen Banner Company; Fred Gaus; William Glennon, Robert Gair Company, Inc.

James Hall, Robert Gair Company, Inc.; William Hagermiller, A. & P. Tea Company; C. Heyman, Robert Gair Company, Inc.; Eugene Hogan, Stottard Electrotyp

Company; R. Hogen, National Folding Box Company; Harold Hughes, Parsons and Whittemore, Inc.; T. E. Kamish, Bogota Paper and Board Corporation; E. B. Kelley, E. B. Kelley Company, Inc.; Ed. Kelley, National Biscuit Company; Joseph Keating, Robert Gair Company, Inc.; Paul Lang, Continental Folding Box Company; Iver Larsen, Gair Realty Corporation; HenryLuz, Strehl Otens Company.

A. Manogue, Robert Gair Company, Inc.; John P. Markert, Continental Folding Box Company; Archibald Martin; John Martin; H. J. McPhilliamy, Robert Gair Company, Inc.; E. Meyer, Robert Gair Company, Inc.; John Millberry, Robert Gair Company, Inc.; Chas. Mills; Chas. Morrison, Robert Gair Company, Inc.; Lee Moss, Robert Gair Company, Inc.; D. O'Connor, Robert Gair Company, Inc.; Jule Ostner, Densen Banner Company; John Pabst, Robert Gair Company, Inc.; Geo. Pauchner, Gair Realty Corporation; Chas. Phoebus; Henry Pupke, National Biscuit Company; J. Quinn, Coy, Disbrow Company; Henry Rust, Robert Gair Company, Inc.

E. E. Seaver, Robert Gair Company, Inc.; Geo. W. Shannon, Robert Gair Company, Inc.; Thomas Shannon, Shannon & Bailey, Inc.; Francis Smith, Robert Gair Company, Inc.; Stanley Smith, Robert Gair Company, Inc.; E. O. Sommer, Robert Gair Company, Inc.; Chas. F. Stocker, Sweeney Litho Company; Fred Stocker, Atlantic Gummed Tape Company; Le Roy Shepard, Robert Gair Company, Inc.; H. B. Van Antwerp, Sinclair & Valentine; H. Van Decker, Robert Gair Company, Inc.; Fred Vetter, Robert Gair Company, Inc.; H. von Hass-lacher, Robert Gair Company, Inc.; George Wahlig, National Biscuit Company; Frank G. Wasgatt, Robert Gair Company, Inc.; A. Weigand, Robert Gair Company, Inc.; B. U. Wright; V. A. Young, Robert Gair Company, Inc.; Ed. Zwinger, National Biscuit Company.

## Michigan Superintendents to Meet

The Michigan Division of the American Pulp and Paper Mill Superintendents Association has announced completion of plans for its big November meeting, scheduled to be held Saturday, November 28, at the Park American Hotel, Kalamazoo, Mich. The regular business session will convene at 3:30 p.m. E. Petersen, of the Goodrich Tire and Rubber Company, will be the principal speaker.

The evening session will be ladies' night with a dinner dance and program of entertainment.

Anyone wishing to attend will be welcome and are urged to send in their reservations early to Secretary Norman J. Cowie at the Hawthorne Paper Company, Kalamazoo.

## Boiler Water Conditioning

Boiler water treatment has become such a complicated subject that a new sixteen page bulletin entitled "The Inside Story of Boiler Water Conditioning" will be welcomed by industrial executives, engineers and power plant operators. This bulletin takes all the mystery out of boiler treatment by a clear, non-technical discussion of all the various methods. It shows the importance of selecting the right method to handle the conditioning of various waters and it emphasizes the necessity for a thorough understanding of the subject if the boiler room is to be efficiently operated. Write to the Elgin Softener Corporation, Elgin, Ill., for your copy.



## Obituary

### Herbert Crabtree

Herbert Crabtree, vice president and general manager of the Adams Paper Company, Inc., Wells River, Vt., passed away on November 3 in his 59th year, at the Marh Hitchcock Hospital at Hanover, N. H., following a serious operation.

Mr. Crabtree was born in Lancaster, England and had resided in Wells River, Vt. for 35 years. He leaves a widow and son besides five brothers and one sister.

Mr. Crabtree's family have long been associated with the paper trade. His late father, Edwin Crabtree, was president of the Adams Paper Company up to the time of his death three years ago, which office is now held by the eldest son, David Crabtree, of Montreal West. Other brothers surviving are: Walter Crabtree, of New Zealand, retired; Edwin S. Crabtree, Montreal West, sales representative for several Canadian pulp mills; Harold Crabtree, president of Howard Smith Paper Mills, Canada Paper Company and Alliance Paper Mills; Kay Crabtree, mill manager of the Crabtree Division of Howard Smith Paper Mills; A nephew, Aubrey Crabtree, of Madawaska, Me., is general manager of Fraser Papers, Limited.

At the time of his death Mr. Crabtree was president of the Rotary Club of Woodville, N. H., and Wells River, Vt.

### William J. Hunter

[FROM OUR REGULAR CORRESPONDENT]

PLYMOUTH, Mass., November 9, 1936—William J. Hunter, aged 59, president of the Plymouth Cordage Company, formerly of Newton, Mass., died here November 1.

Mr. Hunter was a member of Mayflower Lodge, I.O.O.F., and of Sagamore Encampment of Plymouth.

His widow, a daughter and his father, Peter Hunter, are living.

The funeral was held November 3 from Beams Funeral Home, with the Rev. Carl Knudsen of the Church of the Pilgrimage officiating. Burial was at Vine Hill Cemetery.

### William E. Ebbets

PLATTSBURG, N. Y., November 4, 1936—William E. Ebbets, of New York, well-known paper merchant, died early today at the home here of his sister, Mrs. Ross P. Lobdell, five days after having been stricken with paralysis. He was 67 years old.

Mr. Ebbets arrived here Thursday night after a hunting trip through Northern New York. At Potsdam recently he was the guest of the Sisson brothers of the Raquette River Paper Company.

A native of Brooklyn, he had spent more than forty years in the wholesale paper business. He was a son of the late James and Margaret McNurney Ebbets.

Mr. Ebbets had been closely associated with the paper manufacturing and merchandising industry. At one time he was president of the Paper Association of New York City. From 1922 until 1932 Mr. Ebbets was manager of Coy Disbrow & Co., a firm dealing in paper goods, which he helped to found. During recent years, Mr. Ebbets was mill representative for the Carolina Fiber Company.

He became identified with the paper trade while still in his teens. He became associated with Wilkinson Brothers & Co., paper merchants, and, in 1898, he quit that firm to organize, with five others, the firm of Coy Hunt &

Co. He was manager of the latter concern until 1912.

Mr. Ebbets was prominent as a breeder and exhibitor of dogs. Hunting was his chief recreation. He was director, since 1930, of the American Kennel Club and an officer of the German Shepherd Dog Club of America for more than ten years. He made his home at Demarest, N. J.

His widow; a son, William A. Ebbets; two daughters, Mrs. Edward P. Corning and Mrs. Clarence W. White, and five grandchildren, all of Glenbrook, Conn., survive.

## Change Walsh-Healey Regulations

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., November 11, 1936—The labor department has announced certain amendments to its regulations in connection with the administration of the Walsh-Healey government contract act regarding the manufacturers records of employment. The amendments to the regulations on this point are as follows:

"Every contractor subject to the provisions of the act and these regulations shall maintain the following records of employment which shall be available for the inspection and transcription of authorized representatives of the secretary of labor;

"(a) Name, address, sex, and occupation of each employee covered by the contract stipulation.

"(b) Date of birth of each such employee under 21 years of age.

"(c) Wage and hour records for each such employee including the rate of wages and the amount paid each pay period, the hours worked each day and each week, and the period during which each such employee was engaged on a government contract with the number of such contract. Compliance with this subsection shall be deemed complete if wage and hour records of all employees in the plant are maintained during the period between the award of any government contract and the date of delivery of the materials, supplies articles or equipment; provided, that where no separate records for employees engaged on government contract are maintained, it shall be presumed that all employees in the plant, from the date of award of any such contract until the date of delivery of the materials, supplies, articles or equipment, were engaged on such government contract.

"Such records shall be kept on file for at least one year after the termination of the contract."

## Bogus Club to Hold Dinner

The Bogus Club of Charles F. Hubb & Co., 383 Lafayette street, New York City, will hold its second annual dinner on Friday evening, December 4th, at six-thirty, at 2 Park avenue, New York, having as guest of honor the president of the company, Charles P. White, who is widely known throughout the trade.

The Bogus Club is composed of the salesmen of Charles F. Hubb & Co., and their friends. M. W. Reddick is president.

A splendid dinner and gala floor show have been arranged. All who attended the affair last year know the splendid time that was had, the one regret being that it was impossible to accommodate all who requested tickets. This year a larger place is being reserved, hoping it will be sufficient to accommodate all the Bogus Club's friends. M. W. Reddick, president, and W. S. Urban, chairman of the entertainment committee, are in charge of arrangements, and will be glad to hear from anyone desiring tickets.

# PAPER TRADE ESTABLISHED 1872 JOURNAL

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Associate Editor

Thomas J. Burke, C. A.  
Editor Cost Section

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## FUTURE MEETINGS

NEW ENGLAND SECTION, Technical Association of the Pulp and Paper Industry—Third Friday of each month at the Nonotuck Hotel, Holyoke, Mass.

DELAWARE VALLEY SECTION, Technical Association of the Pulp and Paper Industry—Fourth Friday of each month at the Engineers Club, Philadelphia, Pa.

LAKE STATES SECTION, Technical Association of the Pulp and Paper Industry—Second Tuesday of each month at the Conway, Hotel, Appleton, Wis.

KALAMAZOO VALLEY SECTION, Technical Association of the Pulp and Paper Industry—First Thursday of each month at the Park-American Hotel, Kalamazoo, Mich.

## FOREIGN PAPER TRADE

Exports of paper and paper products from the United States during August dropped off to some extent compared with July but were 10 per cent in value above those for the corresponding month last year, according to the Forest Products Division of the Department of Commerce. Most classes contributed to this increase. A few of the larger items, notably uncoated book papers, boards, and sheathing paper show decreases in volume ranging from 50 to 60 per cent. Among the less important items from the standpoint of volume of shipments, decreases were also registered in vulcanized fiber, cash register paper, cover paper and envelopes.

Exports of greaseproof and waterproof paper however increased 70 per cent and exports of other wrapping a 95 per cent compared with the corresponding month last year. Shipments of over-issue newspapers, which may also be classed as a wrapping paper, increased more than 130 per cent, even greater increases took place in shipments of tissue and surface-coated papers, which were 140 per cent and 155 per cent respectively higher than during August, 1935. Increases which occurred in shipments abroad of writing and newsprint papers, toilet papers, insulating and wallboards, bags, boxes, and a few lesser items were not so outstanding but were nevertheless responsible for the rise in this year's total to \$1,889,695 as against \$1,716,568 for August, 1935.

Of increasing importance over the past few years are paper base stocks, which now approach in value our ex-

ports of paper. Shipments during August were valued at \$1,139,104, of which amount \$973,069 represented bleached and unbleached sulphite pulp and \$128,363 rags and other waste stock. The total for the corresponding month last year was \$986,154 of which \$828,648 represented shipments of sulphite pulp. No separation was made between bleached and unbleached pulp up to the beginning of this year. So far approximately three-fifths of these shipments have consisted of bleached pulp.

Imports of paper base stocks into the United States continue at a high level. August imports in this line reached a total of \$9,901,044, an increase of 40 per cent over the total for August, 1935. Pulpwood receipts were 50 per cent and wood pulp receipts 45 per cent greater in volume than for the corresponding month last year; imports of rags were greater by 26 per cent; and imports of other waste declined slightly. Imports of all classes of wood pulp during August were higher than last year, with the heaviest increases occurring in kraft and unbleached sulphite pulps which were respectively 78 per cent and 50 per cent in excess of August 1935 receipts.

Imports of newsprint and other papers continue higher than for some years. August receipts of newsprint totaled 246,186 tons as against 195,052 tons during the corresponding month last year. Paper imports for the month reached a total valuation of \$9,966,096, of which \$8,697,144 represented newsprint and \$1,268,952 all other classes of paper and board. All of these figures represent an increase of about 28 per cent over the corresponding month of 1935.

## FAIR PRICE FOR NEWSPRINT

"The Story of News Print Paper," just issued by The News Print Service Bureau, contains an instructive and timely chapter entitled "A Fair Price," from which we quote as follows:

"Price is the market reflection of the supply-demand ratio. It goes up and down as these factors vary. Few people believe that a price expressed in monetary terms can remain stationary for long periods of time. Fluctuations are bound to occur as conditions change. Adjustments to them are normal business procedure. On the other hand, sudden and excessive price changes disrupt established relationships and vitally react upon the supply and demand for commodities.

"Looking back over the past twenty years it is now easy to draw conclusions from the facts known alike to the makers and the users of newsprint paper. There is nothing new in these conclusions. They check with human experience as recorded through the ages. But it seems necessary for every generation to learn them anew.

"The publisher must get his white paper at a price which, taken with all his other production costs, totals enough less than his receipts from circulation and advertising so that he can profitably continue in the publishing business. He must also set up adequate reserves for contingencies. This is particularly true in a time of rapid social and political change. It is equally to the interest of

the paper manufacturer that the publisher should prosper. If he does not prosper, he is a poor customer. If he loses heavily he is likely to cease being a customer at all.

"The newsprint maker must sell his products for a price that will not only pay his direct out-of-pocket cost, but which will also adequately provide for maintenance of raw material supply, depreciation of plant and obsolescence of equipment in addition to return for the use of capital. If he fails for long to get such a price, he ceases to be a paper manufacturer and the publisher loses a source of supply.

"A fair price for newsprint paper may therefore be defined as a price at which both the capable newspaper publisher and the efficient paper manufacturer may make the reasonable profits which are essential to the permanence of their undertakings. They are indispensable to one another. The prosperity of one should not be at the expense of the other. Only when they prosper together is their relationship soundly based.

"There is much cheap demagogic talk about business for service instead of profit. But the inescapable fact is that conducting a legitimately profitable business is the greatest service that can be rendered to a community. Profitable business makes possible employment at fair wages, return on invested capital, provision for improvements—progress all along the line. It requires intelligent and persistent application of energy, initiative and skill to the doing of whatever the job may be. Moreover, the measure of success is not size alone, as was well stated not long ago by a newspaper publisher in an advertisement in the *Editor and Publisher*:

"Businesses are not built on sales alone; they're built on profits."

### Government Paper Bids

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., Nov. 11, 1936—The Government Printing Office has received the following bids for 17,500 pounds (100,000 sheets) of single coated book paper; John F. Post, Inc., at 6.54 cents per pound; Whitaker Paper Company, 7.66 cents; Stamford Paper Company, 6.69 cents; R. P. Andrews Paper Company, 6.69 cents; and Barton, Duer & Koch Paper Company, 6.69 cents.

For 10,000 sheets of 22x28" gray photo mount board; Mathers-Lamm Paper Company, \$37.70 per M sheets; M. S. Ginn & Company, \$39.20 less 2 per cent; Reese & Reese, Inc., \$36.23; Whitaker Paper Company, \$37.72; R. P. Andrews Paper Company, \$41.40; Charles W. Speidel & Company, \$40.50; Charles G. Stott & Company, Inc., \$41.49; George W. Miller & Company, Inc., \$38.75; Hurlock Brothers, \$38.75; Old Dominion Paper Company, \$39.24; Milton Vradley & Company, \$37.90; and Dobler & Mudge, \$45.39.

### American Writing Hearing

A hearing will be given creditors of the American Writing Paper Company, in the U. S. District Court at Boston, November 17 at 11 a.m. to consider an offer received by the company for sale of one of its smaller paper machines for \$10,000, which will involve release of this machine from the lien of the first mortgage.

### Production Ratio Report

These statistics are based upon paper production reports to the American Paper and Pulp Association.

#### COMPARATIVE MONTHLY SUMMARIES

Months	1936	1935	1934
January	76.1%	65.8%	.....
February	77.9%	70.0%	.....
March	76.0%	70.5%	.....
April	82.3%	70.0%	.....
May	81.6%	69.4%	.....
June	80.7%	72.3%	.....
July (b)	80.0%	67.8%	.....
August	81.5%	70.9%	.....
September (c)	84.0%	75.0%	59.4%
October	.....	75.6%	64.7%
November	.....	75.3%	61.7%
December (a)	.....	74.3%	62.1%
Year	.....	71.2%	.....

#### COMPARATIVE WEEKLY SUMMARIES

CURRENT WEEKS, 1936		CORRESPONDING WEEKS, 1935	
*October 3	85.4%	October 5	75.2%
*October 10	87.2%	October 12	76.3%
*October 17	87.6%	October 19	74.8%
*October 24	88.0%	October 26	76.4%
*October 31	89.8%	November 2	75.4%

The following statistics show the number of mills reporting by ratio groups:

Ratio Limits	Number of Mills Reporting, Current Weeks				
	Oct. 3, 1936	Oct. 10, 1936	Oct. 17, 1936	Oct. 24, 1936	Oct. 31, 1936
0% to 50%	70	53	57	47	38
51% to 100%	260	276	270	273	180
Total Mills Reporting	330	329	327	320	218

\* Subject to revision until all reports are received. These data exclude (a)—Christmas Day, (b)—Fourth of July, (c)—Labor Day.

### PAPERBOARD OPERATING RATIOS

According to reports from the National Paperboard Association, per cents of operation, based on "Inch-Hours," were as follows:

Months	1936	1935	1934	Months	1936	1935	1934
January	61%	61%	.....	July	69%	59%	.....
February	67%	67%	.....	August	75%	65%	.....
March	68%	67%	.....	September	76%	69%	62%
April	70%	61%	.....	October	.....	76%	63%
May	68%	61%	.....	November	.....	70%	56%
June	68%	65%	.....	December	.....	60%	(a)53%
Week ending Oct. 3, 1936	80%	Week ending Oct. 17, 1936	81%				
Week ending Oct. 10, 1936	81%	Week ending Oct. 24, 1936	82%				
Week ending Oct. 31, 1936	84%	Week ending Oct. 31, 1936	84%				

### Charles B. Brown's New Post

HOLYOKE, Mass., November 10, 1936—Charles B. Brown, who has been connected with the American Tissue Mills, Inc., for the past fifteen years has been named as sales manager succeeding Paul E. Graves who died recently. Mr. Brown came to Holyoke from the New York office, of which he was manager. He first covered the Pennsylvania, Baltimore and Washington territory. He is a native of England and during the world war served in the Royal Flying corps. He was first connected with the Union Company of New York City, pulp and paper importers from Stockholm and later was connected with the Kalamazoo Vegetable Parchment Company. He has entered upon his new duties here.

### Don M. Cuyler To Manage Detroit Div.

CINCINNATI, Ohio, November 9, 1936—Don M. Cuyler has been appointed manager of The Whitaker Paper Company Division in Detroit, Mich.

Mr. Cuyler has had experience in both the jobbing and manufacturing field of the paper business. He is originally from Detroit, although for the past two years he has made his home in Chicago, while acting as sales manager for the Kalamazoo Paper Company. Prior to that he was eight years handling the Western sales for The Detroit Sulphite Pulp and Paper Company. He took over his new duties on November 6.





*Do your envelopes have*  
**“Hiding Power”?**

If not, the true function of an envelope is absent. While “hiding power” or opacity is not the sole factor in envelope quality, it is one of the characteristics necessary for high grade appearance and performance.

Envelope stock is only one of the many papers that can be economically opacified and whitened

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The Cryptones and the Albaliths are uniform quality Zinc Sulphide Pigments manufactured in many strengths to meet the particular requirements of many papers.

Our Technical Service Staff will be glad to assist you on any problems in this work.



**THE NEW JERSEY ZINC COMPANY**  
160 FRONT ST., NEW YORK



**ZINC SULPHIDE PIGMENTS IN PAPER**



Section of the

# Technical Association of the Pulp and Paper Industry

Edited by Ronald G. Macdonald, Secretary

## Effect of High Sulphur Dioxide Concentrations and High Pressures in Sulphite Pulping\*

By J. N. McGovern<sup>1</sup>

### Abstract

Sulphite cooking liquors containing large amounts of sulphur dioxide increased the rate of penetration and pulping. The time required to penetrate completely western hemlock heartwood chips by sulphite liquors was reduced both by increasing the acid concentration and increasing the temperature. The time required to produce pulps of the same degree of purification from western hemlock, white spruce, and lowland white fir chips at a maximum temperature of 140 deg. C. was reduced considerably by an increase in the sulphur dioxide content of the cooking liquor. The temperature required to produce pulp of the same degree of purification in a constant time was greatly reduced by an increase in the sulphur dioxide content of the cooking liquor. The application of a hydro-static pressure far in excess of that developed by the steam and sulphur dioxide had no noticeable effect on the penetration time, the pulping time, or the pulp. Semipulps from loblolly pine chips made with acid containing 15 per cent total and 1.1 per cent combined sulphur dioxide were the equal or superior to similar pulps made with a normal acid, but were produced in much shorter time.

The yield and properties of wood pulps produced by sulphite pulping are influenced by many factors, important among which is the composition of the cooking liquor<sup>2</sup>. Sulphite pulping is generally considered as consisting of two or more or less distinct and separate stages, namely, the penetration and the pulping periods. The manner in

which the two stages are influenced by an excess of sulphur dioxide in the cooking liquor is dealt with in this report.

For successful pulping, contact is necessary between the cooking liquor and the innermost portion of the chips before the critical temperature of penetration is reached. If the critical temperature is exceeded for a sufficient length of time before the chips are completely penetrated by the cooking acid, including the bisulphite, partially pulped chips with hard, discolored, and undigested centers result. This undesirable action, or burning, is commonly attributed to the absence of base. It can be avoided, regardless of how rapidly the critical temperature is reached or exceeded, if the penetration of the chips by both the excess and combined sulphur dioxide in the cooking liquor is complete. The attainment of this desirable situation involves the complex problem of wood penetration by liquids, a problem that has received much attention. In this report, however, penetration is considered only as it concerns certain relations existing between penetration and temperature, pressure, and excess sulphur dioxide concentration.

The temperature of penetration is an important factor in the impregnation stage because it has a definite maximum, or critical, value, and because it affects, within its permissible range, the rate of penetration. The critical temperature for white spruce is approximately 110 deg. C. (15, 28, 40); that for eastern hemlock, 120 deg. C. (40); and that for western hemlock, between 110 and 120 deg. C. according to the penetration conditions (17). The rate and degree of penetration are increased by the temperature of penetration, as would be expected due to the decreased viscosity and increased diffusion of the liquor (7, 14, 18, 38); on the other hand, it has been pointed out that the expansion of the air in the chips allows less liquor to enter, that air is less soluble in the liquor at higher temperatures, and that the passage of sulphur dioxide from the liquor into the gaseous phase makes calcium sulphite precipitation more likely (38).

Penetration can be viewed conveniently from the standpoints of natural penetration, in which the entry of bisulphite into the wood is chiefly effected by diffusion, and forced penetration, in which the liquid movement is caused by a pressure differential between two sides of the wood section (6). In the former, the penetration is mainly dependent on the temperature and composition of the liquor (6, 14, 35, 41). A pressure differential between the ex-

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<sup>1</sup> Member TAPPI, Assistant Technologist, Forest Products Laboratory, Forest Service, U. S. Department of Agriculture, maintained at Madison, Wis., in cooperation with the University of Wisconsin.

<sup>2</sup> In this report the constituents of the cooking liquor are defined as follows: (1) Total sulphur dioxide: Sulphur dioxide present in the solution as such and in the sulphurous acid and the calcium bisulphite calculated as percentage by weight and measured by the iodine test. (2) Combined sulphur dioxide: Sulphur dioxide present in the solution as calcium bisulphite calculated as percentage by weight as though present as the monosulphite and measured by the Sander (36) test. (3) Free sulphur dioxide: Sulphur dioxide present in the solution over that required for the monosulphite calculated as percentage by weight and measured by the difference between the total and combined sulphur dioxide contents of the liquor. (4) Excess sulphur dioxide: Sulphur dioxide over that required for the bisulphite calculated as percentage by weight and measured by the difference between the total and twice the combined sulphur dioxide contents of the liquor. (5) Base: The alkali or alkaline earth metal which has been dissolved by treating the hydroxide or carbonate with an aqueous solution of sulphur dioxide or sulphurous acid to form the bisulphite which, with the excess sulphur dioxide makes up the cooking acid or liquor; thus there are sodium, calcium, or magnesium base liquors. (The oxides of the above metals are also referred to as the base of the liquor, for example, there are soda, lime, or magnesia base liquors.)







TABLE II—CHEMICAL PROPERTIES OF VARIOUS WOODS USED

Species	Shipment number	Solubility in										Hydrolysis number
		Cellulose, Per cent	Alpha cellulose, Per cent	Lignin, Per cent	Total pentosans, Per cent	Hot 1 per cent NaOH, Per cent	Hot water, Per cent	Alcohol-benzene, Per cent	Ether, Per cent			
Western hemlock	1369	59.3	42.3	30.5	9.6	13.1	2.8	3.1	0.5	20.1		
Western hemlock	1410	57.7	40.6	29.9	9.6	11.9	2.7	3.1	1.3	23.1		
White spruce	1423	60.6	42.1	27.8	12.1	10.7	2.1	2.3	1.1	29.4		
Lowland white fir	1409	62.8	45.9	27.2	8.9	10.3	2.5	2.6	.9	16.0		
Loblolly pine	1459	58.1	42.9	28.4	12.7	13.3	2.2	2.5	1.4	...		

per cent) at temperatures from 100 to 125 deg. C. In addition, the burning temperature was ascertained for several acid concentrations and the effect of pressure in excess of the steam and sulphur dioxide pressures was investigated. In the pulping experiments the cooking acids ranged from 5 to 20 per cent total sulphur dioxide (the lime base combined sulphur dioxide was constant at 1.20 per cent) and the temperatures from 120 to 140 deg. C. The effect of added pressure in excess of that from the steam and sulphur dioxide on the pulping was also examined. A few semisulphite type digestions on loblolly pine using acids containing 15 per cent total and 1.10 per cent combined sulphur dioxide were made.

**Materials**

**WOOD**

The wood used in the penetration experiments was west-

ern hemlock (*Tsuga heterophylla*); the physical and chemical characteristics of which are shown in Tables 1 and 2. The heartwood was separated from the sapwood and converted by sawing and planing into uniform chips  $\frac{1}{8}$  by  $\frac{5}{8}$  by 1 inch ( $\frac{5}{8}$  inch in the grain direction). This method of preparation yielded uniform and reproducible heartwood chips and eliminated the irregularities and uncertainties found in mill-run chips due to splitting, jagged surfaces and edges, uneven thickness, and variable dimensions. The chips or blocks thus prepared were stored in a moisture-proof container and had a constant moisture content of 18.1 per cent throughout the study.

The  $\frac{5}{8}$ -inch wood chips employed in the pulping experiments were prepared from logs of western hemlock (*Tsuga heterophylla*), white spruce (*Picea glauca*), lowland white fir (*Abies grandis*), and loblolly pine (*Pinus taeda*) by means of a 47-inch high-speed disc chipper; the fines and oversized chips were removed by a vibrating chip screen. The physical and chemical evaluations of the wood in the shipments from which the foregoing logs were obtained are given in Tables 1 and 2. The data on another sample of western hemlock are included in these tables for purposes of comparison.

**COOKING ACID**

The cooking acids used in the penetration and pulping experiments were made by passing sulphur dioxide from a cylinder into a suspension of the required amount of hydrated lime. The total sulphur dioxide was determined

DIAGRAMMATIC LAYOUT OF EXPERIMENTAL SULPHITE DIGESTER

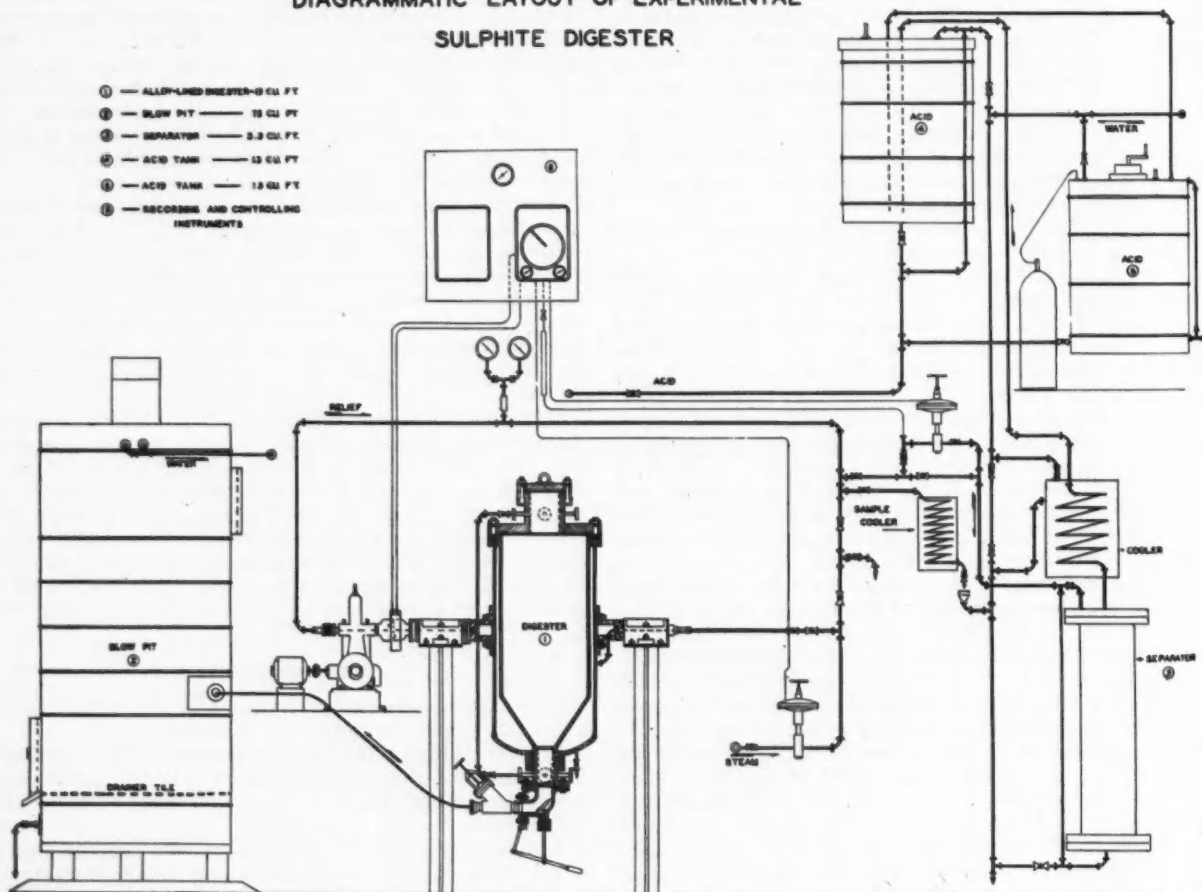


FIG. 1

TABLE III—SERIES I. DIGESTION CONDITIONS AND RESULTS AND CHARACTERISTICS OF PULPS FROM DIGESTIONS MADE AT EQUAL TIMES AT REDUCED TEMPERATURES WITH COOKING LIQUORS CONTAINING VARYING CONCENTRATIONS

TABLE III—SERIES L. DIGESTION CONDITIONS AND RESULTS AND CHARACTERISTICS OF PULPS FROM DIGESTIONS MADE IN EQUAL TIMES AT REDUCED TEMPERATURES WITH COOKING LIQUORS CONTAINING VARYING SULPHUR DIOXIDE CONCENTRATIONS

Group number	Species	Wood Used			Acid Composition			Digestion Conditions			Yield			Hypochlorite Bleach			3-Stage Bl.			Remanent number				
		Dryness, per cent	Charge (Oven-Dry), pounds	Excess SO <sub>2</sub> , per cent	Total SO <sub>2</sub> , per cent	Free SO <sub>2</sub> , per cent	Combined SO <sub>2</sub> , p. ct.	Time at 110° C., hrs.	Time to max. temp., hours	Max. temp., deg. C.	Pressure, lbs./sq. in.	Total time, hours	Total, per cent	Screened, per cent	Screenings, per cent	Standard bleach powder, per cent	Standard bleach powder, per cent	Color blue, Ives parts	Roe chlorine number					
3646	Western hemlock...	84.12	77.3	4.96	2.54	3.75	1.21	0.16	86.9	1.5	4.75	140	105	9.3	42.5	42.3	0.2	0	Unbleached	66	59	86	12	5.63
3647	Western hemlock...	83.70	80.0	5.00	2.60	3.80	1.20	.21	86.1	1.5	4.75	140	108	9.0	41.8	41.7	-1	0	Bleached	67	59	82	12	4.94
3648	Western hemlock...	83.26	80.0	5.00	2.60	3.80	1.20	...	86.2	1.5	5.00	140	105	8.6	42.4	42.3	-1	0	Bleached	83	86	85.5	12	5.45
3649	Western hemlock...	84.60	80.0	9.50	7.00	8.25	1.25	...	86.0	1.5	4.00	130	135	9.6	44.0	43.9	-1	0	Bleached	87	87	85	11	5.64
3650	Western hemlock...	85.95	81.65	9.50	7.10	8.30	1.20	.18	84.0	1.5	4.00	130	135	9.0	43.5	43.4	-1	0	Bleached	85	84	83	14	7.33
3651	Western hemlock...	84.5	80.0	10.0	7.60	8.80	1.20	.12	85.9	1.5	4.00	126	147	10.0	44.8	44.7	-1	0	Bleached	85	85	86	15	6.84
3652	Western hemlock...	87.26	80.0	9.8	7.40	8.60	1.20	.26	85.5	1.5	3.75	127	135	10.0	42.7	42.6	-1	0	Bleached	87	86	85	15	7.16
3653	White spruce.....	78.84	80.0	5.00	2.60	3.80	1.20	.19	94.5	1.5	4.75	140	105	9.0	46.2	46.1	-1	0	Bleached	70	63	58	12	6.46
3654	White spruce.....	78.85	80.2	5.02	2.64	3.83	1.19	.12	94.5	1.5	4.75	140	112	9.0	45.7	45.6	-1	0	Bleached	68	62	57	11	5.37
3655	White spruce.....	78.73	80.0	15.00	12.60	13.80	1.20	.18	94.5	1.5	3.50	125	185	9.0	47.2	47.1	-1	0	Bleached	86	85	86	11	7.16
3656	Lowland white fir...	85.58	79.9	5.02	2.62	3.82	1.20	.24	89.7	1.5	4.75	140	105	9.0	47.6	47.5	-1	0	Bleached	68	60	56	12	6.42
3657	Lowland white fir...	88.08	81.3	4.96	2.60	3.78	1.18	.22	87.7	1.5	4.75	140	110	9.0	48.3	48.3	...	0	Bleached	87	86	85	12	6.23
3658	Lowland white fir...	87.40	80.4	20.0	17.60	18.8	1.20	.28	88.7	1.5	3.25	120	250	9.6	47.2	47.2	...	0	Bleached	77	71	66	9	5.17
3659	Lowland white fir...	87.03	80.0	20.0	17.60	18.8	1.20	...	89.3	1.5	3.25	120	235	9.3	49.9	49.8	-1	0	Bleached	86	86	85	12	10.42
3691-A	Lowland white fir...	87.03	...	20.0	17.60	18.8	1.20	...	89.3	1.5	3.25	120	235	9.3	51.2	51.2	...	0	Bleached	84	85	85	12	9.15
3691-B	Lowland white fir...	87.03	...	20.0	17.60	18.8	1.20	...	89.3	1.5	3.25	120	235	9.3	51.2	51.2	...	0	Bleached	64	57	52	14	13.29
3691-C	Lowland white fir...	87.03	...	20.0	17.60	18.8	1.20	...	89.3	1.5	3.25	120	235	9.3	50.8	50.8	...	0	Bleached	66	56	52	14	12.58
3691-D	Lowland white fir...	87.03	...	20.0	17.60	18.8	1.20	...	89.3	1.5	3.25	120	235	9.3	51.2	51.2	...	0	Bleached	87	87	86	14	12.58
3691-E	Lowland white fir...	87.03	...	20.0	17.60	18.8	1.20	...	89.3	1.5	3.25	120	235	9.3	50.6	50.6	...	0	Bleached	86	85	85	12	10.86
3691-F	Lowland white fir...	87.03	...	20.0	17.60	18.8	1.20	...	89.3	1.5	3.25	120	235	9.3	50.6	50.6	...	0	Bleached	87	87	86	14	11.86

\* "Basket" cooks. † Total wood charge including that in baskets.

Group number	Bursting Strength			Tearing Strength			Folding Endurance			Tensile Strength			Freeness			Chemical Analysis of Pulp											
	Milling Time—Minutes	Points per pound	Per ream	Milling Time—Minutes	Grams/pound/ream	Double folds	Milling Time—Minutes	Pounds per square inch	Milling Time—Minutes	Cubic centimeters	Alpha cellulose, per cent	Ash, per cent	Total cellulose, per cent	Copper number	Lignin, per cent	Total, per cent	Hydrolysis number	Penetration, per cent	Viscosity, centipoises								
3646	0	1.64	1.42	1.23	1.01	1.11	144	430	842	446	816	...	860	815	675	492	350	...	84.5	97.2	2.5	0.7	0.3	43.6			
3647	0	1.58	1.95	1.76	1.65	1.34	147	272	729	862	586	...	835	840	780	675	535	...	85.6	97.9	2.2	0.6	2.3	47.7			
3648	0	1.86	1.93	1.85	1.75	1.42	156	155	681	706	892	1205	982	2675	3860	5160	5395	6445	7110	6480	860	845	730	535	385	360	84.8
3649	0	1.30	1.31	1.21	1.02	1.00	102	574	565	889	881	...	2678	4090	5610	6760	6440	8120	...	81.9	96.4	2.6	0.8	0.9	3.8		
3650	0	1.60	1.73	1.64	1.35	1.38	158	396	653	1710	951	1895	...	3150	3345	4770	6820	6410	8120	...	81.9	96.4	2.6	0.8	0.9	3.8	
3651	0	1.66	1.83	1.59	1.24	1.18	245	801	345	3750	7965	7495	...	3500	4335	5750	7965	7495	...	82.8	97.4	2.2	0.4	0.5	2.9		
3652	0	1.54	1.62	1.51	1.26	1.00	165	621	765	993	1242	1467	...	3580	4300	5350	7200	6900	...	83.3	97.1	2.1	0.4	0.5	2.9		
3653	0	1.56	1.56	1.32	1.26	1.07	126	352	374	521	1388	1687	...	4114	4414	5200	6760	6490	...	85.1	97.1	2.1	0.4	0.5	2.9		
3654	0	1.44	1.19	1.23	1.24	1.06	547	347	347	891	792	1148	1169	4490	4760	5475	6810	6370	7200	7143	850	840	765	655	593	280	85.1
3655	0	1.76	2.26	2.16	1.73	1.51	4	162	879	1234	1746	...	1427	3312	4662	6012	7206	...	84.2	96.2	2.4	0.4	0.9	4.2			
3656	0	1.89	2.49	2.27	2.02	1.48	22	320	320	4250	5245	6340	7100	7580	885	855	780	640	400	315	84.2	96.2	2.4	0.4	0.9	4.2	
3657	0	2.34	2.32	1.89	1.45	1.34	172	1210	1787	2365	1783	1880	...	2500	4460	6120	8142	7660	9960	...	83.6	98.3	2.1	1.1	0.8	3.9	
3658	0	1.81	1.74	1.47	1.33	1.23	135	1159	231	2643	2486	3380	...	3330	5150	6750	8040	8050	9180	...	84.3	98.2	2.1	1.1	0.8	3.9	
3681-A	0	2.00	1.63	1.67	1.33	1.23	10	936	1219	2245	2280	2859	...	193	5980	6360	8200	8115	8200	...	84.2	98.2	2.1	1.1	0.8	3.9	
3681-B	0	2.52	2.56	1.86	1.40	1.45	12	1094	1797	2422	2919	...	1685	3711	5920	7310	8940	...	86.4	99.7	2.3	0.5	1.3	4.3			
3681-C	0	2.29	2.16	1.88	1.82	1.32	11	546	1729	2287	2165	...	1825	4140	5280	7415	8060	...	84.9	97.0	...	...	...	...			
3681-D	0	1.79	2.16	1.88	1.82	1.32	11	546	1729	2287	2165	...	1825	4140	5280	7415	8060	...	84.9	97.0	...	...	...	...			





TABLE V—SERIES III. DIGESTION CONDITIONS AND RESULTS AND CHARACTERISTICS OF PULPS FROM DIGESTIONS MADE AT DIFFERENT PRESSURES

Group number	Digestion number	Wood Used			Acid Composition			Digestion Conditions			Yield			Bleach Data										
		Species	Dryness, per cent	Charge (Oven-Dry), pounds	Total SO <sub>2</sub> , per cent	Excess SO <sub>2</sub> , per cent	Free SO <sub>2</sub> , per cent	Combined SO <sub>2</sub> , p. cl.	Combined SO <sub>2</sub> at end, per cent	Acid-wood ratio, O.D.	Time to 110° C., hrs.	Time to max. temp., hours	Max. temp., deg. C.	Pressure, lbs./sq. in.	Total time, hours	Total, per cent	Screened, per cent	Screenings, per cent	Condition of pulp	Color	Hypochlorite Bleach	3-Stage Bl.		
✓ A	3646	Western hemlock...	84.12	77.3	4.96	2.54	3.75	1.21	0.16	88.9	1.5	1	4.75	140	105	9.3	42.5	42.3	0.2	0	Unbleached	Red 61 59 56 12	Blue 87 86 85	12
✓ A	3647	Western hemlock...	80.00	80.0	5.00	2.60	3.80	1.20	.21	86.1	1.5	1	4.75	140	108	9.0	41.8	41.7	.1	0	Bleached	Green 61 57 52 12	Blue 87 86 85	12
✓ A	3652	Western hemlock...	83.26	80.0	5.00	2.60	3.80	1.20	...	86.2	1.5	1	5.00	140	105	8.6	42.4	42.3	.1	0	Unbleached	Red 63 55 51 12	Blue 87 87 85	12
✓ B	3663	Western hemlock...	86.51	79.6	5.00	2.60	3.80	1.20	.28	93.6	1.5	1	4.75	140	1300	9.0	43.0	42.9	.1	0	Unbleached	Red 59 51 46 12	Blue 87 87 85	12
✓ C	3667	Lowland white fr.	85.58	79.9	5.02	2.62	3.82	1.20	.24	89.7	1.5	1	4.75	140	105	9.0	47.6	47.5	.1	0	Bleached	Red 68 62 60 12	Blue 88 86 85	12
✓ C	3670	Lowland white fr.	88.08	81.3	4.96	2.60	3.78	1.18	.22	87.7	1.5	1	4.75	140	110	9.0	48.3	48.3	...	0	Unbleached	Green 70 66 64 12	Blue 86 85 85	12
✓ D	3687	Lowland white fr.	86.75	76.5	5.00	2.60	3.80	1.20	.05	101.0	1.5	1	4.75	140	1500	9.9	46.8	46.8	...	9	Bleached	Red 71 65 60 9	Blue 89 87 86	8
✓ D	*3687-A	Lowland white fr.	86.75	...	5.00	2.60	3.80	1.20	.05	101.0	1.5	1	4.75	140	500	9.9	48.2	48.2	...	0	Unbleached	Green 65 59 55 11	Blue 88 88 86	11
✓ D	*3687-B	Lowland white fr.	86.75	...	5.00	2.60	3.80	1.20	.05	101.0	1.5	1	4.75	140	500	9.9	48.0	48.0	...	0	Unbleached	Green 65 59 55 12	Blue 88 88 86	12
✓ D	*3687-C	Lowland white fr.	86.75	...	5.00	2.60	3.80	1.20	.05	101.0	1.5	1	4.75	140	500	9.9	47.2	47.2	...	0	Unbleached	Green 65 56 50 15	Blue 88 88 85	15
✓ D	*3687-D	Lowland white fr.	86.75	...	5.00	2.60	3.80	1.20	.05	101.0	1.5	1	4.75	140	500	9.9	47.7	47.7	...	0	Bleached	Green 65 58 53 11	Blue 87 87 85	11

1 Excess pressure produced by hydrostatic means. 2 Total wood charge including that in baskets. 3 "Basket" cooks.

Digestion number	Bursting Strength			Tearing Strength			Folding Endurance			Tensile Strength			Freeness			Chemical Analysis of Pulp																														
	Milling Time—Minutes	Points per pound per ream	0 20 40 60 80 100 120	Milling Time—Minutes	Grains/pound/ream	0 20 40 60 80	Milling Time—Minutes	Double folds	0 20 40 60 80 100 120	Milling Time—Minutes	Pounds per square inch	0 20 40 60 80 100 120	Cubic centimeters	0 20 40 60 80 100 120	Alpha cellulose, per cent	Ash, per cent	Total cellulose, per cent	Copper number	Hydrolysis number	Lignin, per cent	Total, per cent	In cellulose, per cent	Alcohol benzene, p. ct.	Ether, per cent	Viscosity, centipoises																					
3646	0.44	0.73	0.84	0.86	0.82	...	1.64	1.42	1.22	1.01	1.11	144	430	842	446	816	...	3280	4295	4630	6960	6960	...	860	815	675	492	350	...	85.6	...	97.2	2.5	9.7	0.8	3.4	...	0.7	0.3	43.6						
3647	0.47	0.61	0.79	0.89	0.84	...	1.58	1.95	1.76	1.66	1.34	147	272	729	862	586	...	3160	3682	5035	5420	6945	...	855	840	780	675	535	...	85.6	...	97.9	2.2	10.2	5.3	3.4	...	0.6	...	2.4	43.1					
3663	0.53	0.61	0.84	0.90	0.98	...	1.68	1.78	1.76	1.59	1.42	47	118	593	967	1485	1117	2960	3690	4560	5200	5950	7520	5810	850	845	800	575	280	...	84.8	...	95.4	2.3	10.2	7.4	4.1	...	5.5	...	5.4	61.0				
3667	0.26	0.87	0.91	0.97	1.03	...	1.76	2.26	2.16	1.73	1.51	4	162	879	1234	1746	...	1427	3312	4662	6012	7206	...	885	855	780	640	400	...	84.2	...	96.5	2.4	9.4	4.9	4.5	...	4.1	...	4.1	45.3					
3670	0.36	0.82	0.96	1.06	1.05	1.02	...	1.89	2.49	2.27	2.02	1.48	22	392	595	1594	1644	1702	1522	2040	3240	4250	5245	6340	7100	7580	865	855	765	640	300	...	83.8	...	97.2	2.2	7.1	3.4	4.1	...	4.1	...	4.1	40.8		
3687	0.35	0.52	0.63	0.75	0.90	...	1.89	2.49	2.27	2.02	2.13	15	99	102	836	604	1037	2254	2340	2890	3410	4220	4200	6230	7510	870	865	850	815	435	...	85.2	...	98.6	2.3	9.4	6.4	3.4	...	4.4	...	4.4	39.5			
3687-A	0.22	0.48	0.50	0.55	0.95	...	1.39	2.12	...	1.75	1.57	5	96	...	583	883	1515	...	1190	2590	...	4675	6550	...	890	880	...	695	555	385	...	85.4	...	97.5	2.5	8.1	12.4	5.3	...	3.3	...	1.0	...	4.3		
3687-B	0.29	0.49	0.50	0.59	0.98	...	1.68	2.03	...	1.90	5	82	...	...	626	1527	...	1350	2620	...	5790	6080	...	883	870	...	575	450	...	84.2	...	97.8	2.5	7.5	9.3	3.8	...	5.3	...	3.8	...	2.4	...	4.3		
3687-C	0.39	0.61	0.90	0.94	0.97	...	1.87	2.29	...	1.74	1.64	21	263	...	1225	619	699	...	1940	4080	...	5160	5860	6720	...	870	865	...	715	535	365	...	83.7	...	96.8	...	...	...	...	...	...	...	...	...	...	...
3687-D	0.26	0.46	0.50	0.84	0.84	...	1.50	2.18	...	1.76	...	5	43	...	1277	...	2029	1045	1360	2420	...	4840	...	6640	7010	880	870	...	710	...	380	290	84.5	...	97.5	...	...	...	...	...	...	...	...	...	...	...

by iodine titration and the combined sulphur dioxide by the Sander method (36). The combined sulphur dioxide varied from 0.9 to 1.1 per cent in the semisulphite digestions but was constant at 1.2 per cent in all the other digestions as well as in the penetration tests. Acids containing up to 10 per cent total sulphur dioxide could be made by passing the required amount of sulphur dioxide into the cooled acid. Cooking acids containing from 10 to 20 per cent total sulphur dioxide were prepared by passing sulphur dioxide gas into a bomb until a predetermined pressure was reached in the case of the penetration tests or, in the case of the digestions, by running the calculated required amount by weight under pressure into the digester.

#### Apparatus

The penetration experiments were carried out in 350 cc. calorimeter type, corrosion-resistant bombs. Each bomb was fitted with a pressure gauge, a gas inlet, and a relief valve. The desired constant temperature ( $\pm 0.5$  deg. C.) was obtained by immersion of the bombs in electrically heated and controlled glycerine baths equipped with stirrers to maintain a uniform temperature.

The pulping experiments were made in a 13-cubic foot semicommercial digester with a corrosion-resistant metallic lining and equipped with an automatic temperature control which kept the digester and contents at the maximum temperature within plus or minus 1 deg. C. The auxiliary acid making equipment, control apparatus, gauges, and recovery tank and their connections as well as the digester itself are shown in Fig. 1. In some of the digestions four cylindrical "baskets" made from perforated corrosion-resistant material and having a capacity of 5 pounds of oven-dry wood were placed, uniformly spaced, in the semicommercial digester in addition to the regular charge.

#### Experimental Procedure

##### TIME OF PENETRATION

The penetration tests followed the procedure which had been previously successfully applied at the Forest Products Laboratory (17, 27). This procedure, briefly, involves the application of brom phenol blue indicator to the split surfaces (in grain direction) of chips after they have been subjected to the penetration treatment. The extent a chip is colored by the indicator is taken as a measure of its penetration. The minimum time for complete penetration (entire surface colored blue) is taken as the time of penetration. The time interval used is 15 minutes.

In several of the tests pressure in excess of that generated by the sulphur dioxide and steam was obtained by means of an initial hydrostatic pressure (50 pounds per square inch) applied by a pump through the inlet connection.

The time of penetration determined according to the preceding method was checked at several representative points by subjecting chips to a high digesting temperature attained by transferring the bomb after completion of the penetration period to another glycerine bath at 145 deg. C. The chips were digested at this temperature for 2 hours, after which the bomb was cooled, the contents placed on a Büchner funnel and washed. The penetration was evaluated by splitting the chips; incomplete penetration of the bisulphite before pulping was shown by hard and dark colored centers and complete penetration by their absence.

The critical temperature of penetration of the bisulphite or the temperature above which burning precedes penetration was determined approximately by subjecting the bombs with their contents of chips and acid to progressively higher temperatures. The lowest temperature at which the chips showed the hard and dark-colored centers

characteristic of burning before penetration was taken as the minimum temperature of burning.

#### DIGESTION

The pulping experiments were carried out according to the semicommercial methods developed at the Forest Products Laboratory. The total wood charge was the equivalent of approximately 80 pounds when oven-dry for all the digestions except the semisulphite, where the equivalent of approximately 100 pounds was used. The amount of wood charged and the total liquor charged per 100 pounds of oven-dry wood are given in tables 3, 4, 5, and 6.

In the digestions where an initial hydrostatic pressure was applied the digester was completely filled with cooking acid and, after fastening the cover in place, a pressure of 20 pounds per square inch was applied by means of a hydrostatic pump. This initial pressure plus the pressure developed in the digester at a maximum temperature of 140 deg. C. using an acid containing 5 per cent total sulphur dioxide resulted in a pressure of 500 pounds per square inch. In the digestions where additional sulphur dioxide was added to the cooking liquor under pressure in the digester, the time of addition (0.5 to 1.5 hours) was not included in the digestion time.

The digester was heated indirectly in all cases, the steam being admitted into the jacket through an automatic control valve. The penetration portion of the temperature schedule used in all the digestions, except those noted, included a uniform rise to 110 deg. in 1.5 hours and holding there for an additional hour. The very low amount of screenings (Tables 3, 4, and 5) in all the digestions proved this time to be ample. The maximum temperatures were attained at a rate of rise that brought the temperature uniformly from 110 to 145 deg. C. in 2.5 hours. The various maximum temperatures used were selected at points on this rise curve and the temperature held constant until the end of the digestion. The semisulphite digestions followed a slightly different schedule, the temperature being brought to 105 degrees in 1 hour, held there for 1 hour, and then raised to 140 deg. C. in 2 hours more. The temperature schedules just described are shown in Fig. 2.

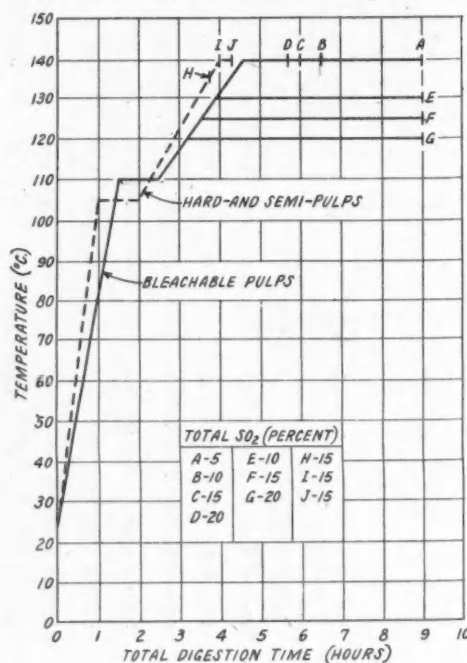


FIG. 2  
Temperature schedules.



From 15 to 20 minutes were allowed for reducing the total pressure (no relief during the digestion) to 10 to 20 pounds per square inch above the steam pressure at the temperature of blowing.

**PULP TESTS**

The pulps were tested by methods standard at the Forest Products Laboratory (9). The strength tests included bursting, tearing, folding, and tensile strengths along with the freeness at various milling periods. The chemical tests included lignin, cellulose, alpha-cellulose, ash, copper number, hydrolysis number, pentosans, solubility in ether and alcohol-benzene, and cupra-ammonium viscosity according to TAPPI standards (42). The bleach requirement of the pulp was measured by a single stage hypochlorite method standard at the Forest Products Laboratory (9), a three-stage bleach adopted from the method of Rue and Sconce (34), the permanganate number according to Johnsen and Parsons (20), and the Roe chlorine number according to Johansson (19).

**Discussion of Results**

**PENETRATION**

The data from the penetration experiments carried out at different temperatures with acids of varying sulphur dioxide content are given in Table 7. Several relations between time and temperature of penetration and total sulphur dioxide concentration are clearly shown in Figs. 3 and 4. These results were obtained from western hemlock heartwood chips and it follows that sapwood chips would be completely penetrated under the same conditions in even a shorter time, since the former are more difficult to penetrate. As the heartwood chips were specially prepared instead of being chipped in the usual way, more uniform and reproducible results were obtained, but the times for complete penetration are estimated to be 25 to 50 per cent higher than would result with mill-run chips because of splitting, shattering, and nonuniformity of thickness of the latter. In all cases the time required for complete penetration was checked by a second trial.

As mentioned previously, other investigators have long observed the fact that acids of higher sulphur dioxide contents penetrate more easily than those of lower concentrations. This observation is verified here (Fig. 3) for some-

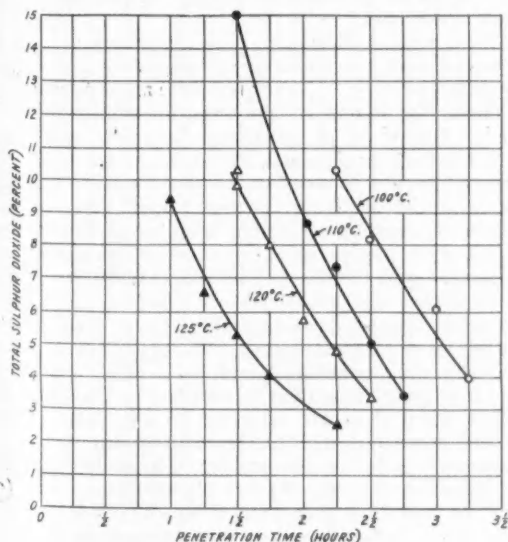


FIG. 3

Relation between penetration time and total sulphur dioxide concentration at different temperatures.

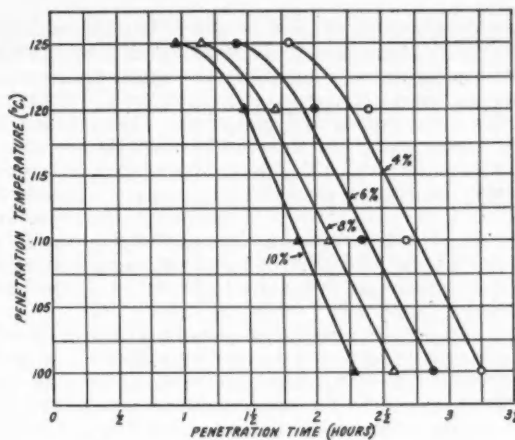


FIG. 4

Relation between time and temperature of penetration for various concentrations of sulphur dioxide.

what wider ranges than previously reported. Increasing the amount of sulphur dioxide present in the liquor seems to have more influence at the lower concentrations than at the higher, as shown by the slightly greater slope of the curves in Fig. 3 and the greater horizontal displacement of the curves in Fig. 4 in this range. Furthermore, the reduction in penetration time with increase in sulphur dioxide concentration seemingly progressively decreases for equal sulphur dioxide concentration increments (Fig. 4). This may mean that there is a limiting concentration above which no appreciable reduction in penetration time occurs with further increase in sulphur dioxide concentration. The hyperbolic character of the curves in Fig. 3 also support this point of view. There is no evidence in the ranges studied that there is a common limit for all temperatures, the curves in Fig. 3 being roughly parallel; nor would this be expected.

The reduction in penetration time with increased temperature, sulphur dioxide concentration being constant, is uniform up to 120 deg. C. (Fig. 4), each 10 degree rise cutting down the time 1/2 hour. Above this temperature and below the critical temperature the time decreased rapidly. The more rapid penetration at the higher temperature is probably due to an opening of the wood by pulping action, an observation which has also been made previously (37). Above 125 deg. C. (temperature of test 130 deg. C.) the chips showed burning before penetration for all the acids used.

TABLE VII

TIME REQUIRED TO PENETRATE WESTERN HEMLOCK HEARTWOOD CHIPS AT DIFFERENT TEMPERATURES WITH ACIDS CONTAINING DIFFERENT AMOUNTS OF SULPHUR DIOXIDE (COMBINED SULPHUR DIOXIDE CONSTANT AT 1.20 PER CENT)

Temperature of penetration Deg. C.	Composition of Liquor		Time of penetration Hours	Pressure Pounds per square inch
	Total SO <sub>2</sub> Per cent	Excess SO <sub>2</sub> Per cent		
100	4.1	1.7	3.25	34
100	6.1	3.7	3.00	53
100	8.2	5.8	2.50	77
100	10.3	7.9	2.25	95
110	3.6	1.2	2.75	40
110	5.0	2.6	2.50	47
110	7.2	4.8	2.25	73
110	8.6	6.2	2.00	94
110	15.0	12.6	1.50	145
120	4.0	1.6	2.50	53
120	4.8	2.4	2.25	62
120	5.8	3.4	2.00	77
120	8.0	5.6	1.75	107
120	9.8	7.4	1.50	130
120	10.3	7.9	1.50	135
125	2.6	2.2	2.25	48
125	4.1	1.7	1.75	62
125	5.3	2.9	1.50	82
125	6.6	4.2	1.25	104
125	9.4	7.0	1.00	137

These data on the relation between the time and temperature of penetration and sulphur dioxide concentration confirm, except in the matter of the critical temperature, the observations of Hrubesky and Chidester (17) obtained using the same species and procedure. They found the critical temperature for western hemlock heartwood to vary between 110 and 120 deg. C., being lower for acids with higher excess sulphur dioxide contents, whereas in the present work the critical temperature was in all cases above 125 deg. C. The difference may be explained by variations in the wood used; Tables 1 and 2 show some such variations (comparisons of shipments 1369 and 1410, the latter being used in the present study).

In the case of the penetration tests at 110 deg. C. with the liquor containing 5 per cent sulphur dioxide, an additional pressure of 100 pounds per square inch over that normally developed by the sulphur dioxide and steam was applied to the bomb by hydrostatic means; this procedure gave a total pressure equivalent to that developed when an acid containing 15 per cent sulphur dioxide was used at this temperature. The excess pressure had no apparent effect on the penetration time, this figure being the same for both the tests with and without excess pressure. The same experience of others in this respect has already been pointed out.

While precipitation of calcium sulphite from several of the acids of low sulphur dioxide content was a possibility, no evidence of this was noticed in any of the tests. The favorable influence of higher sulphur dioxide content in removing the danger of precipitation has already been stressed.

#### DIGESTION

The effects of the sulphur dioxide content of the digestion liquor, varied through a wide range of concentration, on the rate of pulping and the properties of the pulps produced therefrom were studied from several points of view. In the first series of digestions the pulping temperature was decreased as the sulphur dioxide concentration increased, the temperature being so adjusted as to produce a pulp of the desired quality in a constant digestion time of 9 hours. The data obtained by following this procedure are given in Tables 3 and 8 and some features of the data depicted in Figs. 2, 5, and 6. In the second series the temperature was held constant but the time of digestion was decreased

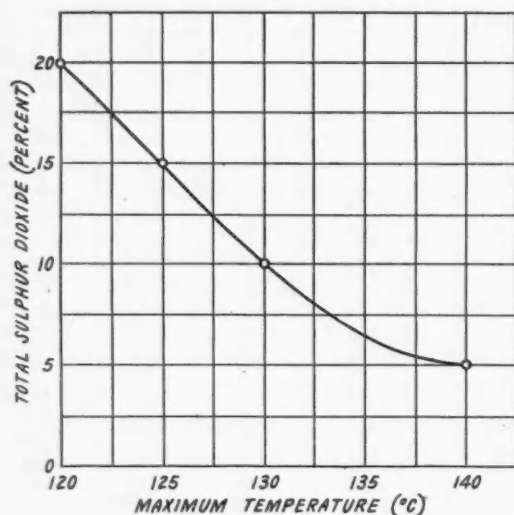


FIG. 5

Effect of total sulphur dioxide concentrations on maximum temperature for constant digestion time.

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as the acid concentration increased, the time in this case being adjusted to yield pulps of the desired quality under the given conditions. These data are presented in Tables 4 and 8 and Figs. 2, 7, and 8. In the third series the effect of excess pressure was determined. These results are presented in Table 5 and Fig. 9. The fourth and final series had the purpose of determining the effect of strong acids in the production of a semipulp. These data are found in Tables 6 and 8. This scheme of operation enabled a separation and evaluation of the several factors influencing the pulping reaction.

#### SERIES I. EFFECT OF HIGH SULPHUR DIOXIDE CONCENTRATIONS ON THE MAXIMUM TEMPERATURE FOR DIGESTIONS AT CONSTANT TIME OF DIGESTION

The increased pulping activity of digestion liquors with high amounts of sulphur dioxide permitted a considerable reduction in the pulping temperature for a constant time of digestion. The relation between the total sulphur dioxide content of the digestion liquor and the temperature of pulping for digestions requiring a total time of 9 hours and pulps of equivalent quality is shown in Fig. 5. This curve is a composite of the digestion conditions used. It was obtained by adjusting the data from Table 3 to the foregoing requirements and is accurate within the limits of experimental error. The greatest reduction in temperature was experienced when the total sulphur dioxide was increased from 5 to 10 per cent. However, the use of acids with sulphur dioxide content higher than 10 per cent permitted appreciable temperature reductions, as shown in Fig. 5. No diminution in the increased activity of the cooking liquor caused by increased sulphur dioxide concentration was evident in so far as its effect was studied in this series.

The pulps produced in the digestions in which the temperature was reduced as the sulphur dioxide content of the acid was increased (time constant) varied in yield and physical and chemical properties according to the digestion conditions employed. The general effects appeared to agree with common experience in that the pulps produced at the lower pulping temperatures were obtained in higher yields and had improved physical and chemical characteristics. The actual data in this series are given in Table 3, being grouped according to the species and digestion conditions.

The three western hemlock check digestions (group A) at the lowest acid concentration (5 per cent) and highest temperature (140 deg. C.) vary but little among themselves and indicate the extent of the experimental error to be expected. The yield in all three digestions was much below that ordinarily obtained from this species. The low yield undoubtedly is in some way connected with the characteristics of the particular shipment used and not with the particular digestion conditions used in this study, since other digestions of this same wood shipment carried out under normal mill conditions showed equally low yields. The four digestions (group B) made on the same wood with cooking liquors containing 10 per cent total sulphur dioxide at temperatures around 130 deg. C. vary a little more in digestion conditions and, to a lesser extent, in degree of pulping than can be ascribed to experimental error, but when they are adjusted to the same bleachability and compared with the control group A, several unmistakable trends are discernible. The yields from the former digestions (group B) are about 1.5 per cent (on basis of the wood) higher than those obtained from the controls (group A). The composite strength development curves of the two groups are given in Fig. 6. Each composite curve was obtained by drawing an average curve through the superimposed strength development curves

for the individual digestions in the group, after adjusting them to the same bleach requirement. It may be observed that the strength development was more rapid for group B and reached a higher maximum in the case of the bursting, folding and tensile strengths, but a lower maximum for the tearing strength. The chemical properties of pulps in the two groups differ only slightly except for the viscosity. This property is definitely higher (77 as compared to 45 centipoises) for the pulps in group B. The same pulps also seemed to have a somewhat lower alpha-cellulose content and a slightly higher pentosan content.

The pulps made from white spruce using an acid containing 5 per cent total sulphur dioxide and a temperature of 140 deg. C. (group C, table 3) and using an acid containing 15 per cent total sulphur dioxide and a temperature of 125 deg. C. (group D, Table 3), verified the trends noted for the western hemlock pulps. The data for these groups in Table 3 show an increase in yield of about 1.4 per cent for the pulps from the digestion at the lower temperature (group D). The strength development curves in Fig. 6 compare a composite of the two check control digestions and the pulp from the reduced temperature digestion. Here again the strength development is slightly more rapid for the latter, the maximum bursting and fold-

ing strength appreciably higher, the tearing strength lower and the tensile strength about the same. The chemical analyses of these pulps showed no noticeable differences except for the alpha-cellulose and viscosity. As with the western hemlock pulps, the alpha-cellulose content was lower and the viscosity higher in the pulps made at the lower temperature, the control pulps (group C) having an average viscosity of 58 centipoises and the pulp in group D 86 centipoises.

The lowland white fir pulps from digestions in which cooking liquors having still higher sulphur dioxide concentrations at greatly reduced temperatures were used bore out the trends just noted to an even greater extent. These effects are noted in comparing groups E and F (Table 3), the former being pulps from digestion at 140 deg. C. with acids containing 5 per cent sulphur dioxide, while those in the latter were made in digestions at 120 deg. C. with acids containing 20 per cent sulphur dioxide. The average yield of group F is 1.9 per cent (based on the wood) higher than the average of group E, when compared on the basis of the same bleach requirement. The corrected yield for group E was obtained by plotting yield against bleach requirement for the different digestions in the group. The composite strength development curves for these groups are given in Fig. 6, the values being

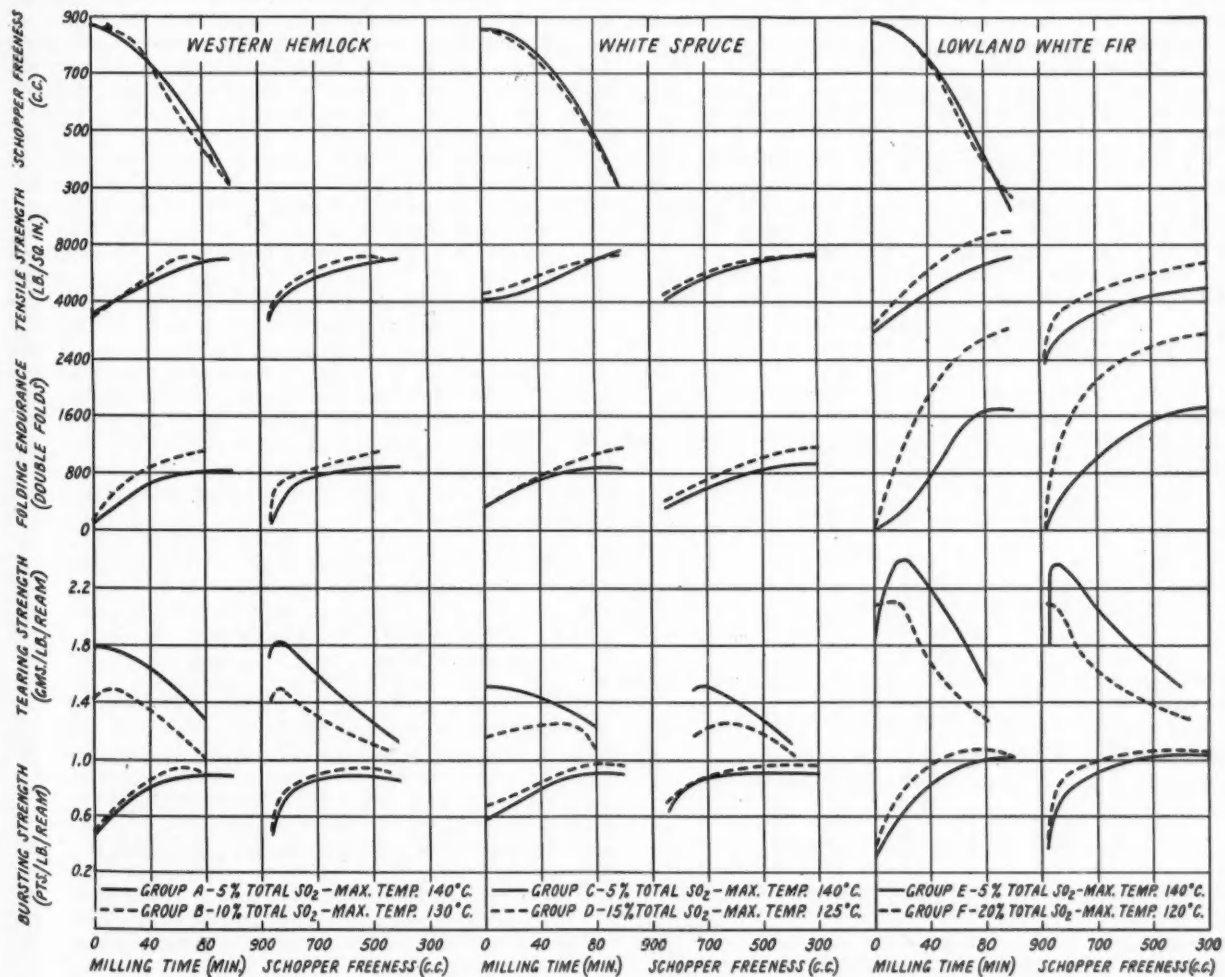


FIG. 6

Physical properties of pulps from digestions with cooking liquors containing varying sulphur dioxide concentrations at different maximum temperatures (time 9 hours).



TABLE VIII  
LIGNIN AND CELLULOSE REMOVAL IN DIGESTIONS WITH VARIOUS SPECIES, TEMPERATURE SCHEDULES, DIGESTION TIMES, AND SULPHUR DIOXIDE CONCENTRATION.

Group No.	Species	Total SO <sub>2</sub> in liquor Per cent	Total digestion time Hours	Maximum digestion temperature Deg. C.	Cellulose removed Per cent	Lignin removed Per cent
<b>SERIES I</b>						
A	Western hemlock.....	5	9.0	140	28.8	99.0
B	Western hemlock.....	10	10.0	130	26.6	99.3
C	White spruce.....	5	9.0	140	26.4	99.0
D	White spruce.....	15	9.0	125	25.2	99.5
E	Lowland white fir.....	5	9.0	140	26.5	98.9
F	Lowland white fir.....	20	9.0	120	22.6	98.2
<b>SERIES II</b>						
A	Western hemlock.....	5	9.0	140	28.8	99.0
B	Western hemlock.....	10	6.5	140	29.1	97.3
C	Lowland white fir.....	5	9.0	140	26.5	98.9
D	Lowland white fir.....	10	6.5	140	26.4	98.8
E	Lowland white fir.....	15	6.0	140	26.5	98.6
F	Lowland white fir.....	20	5.75	140	28.1	98.1
<b>SERIES III</b>						
A	Western hemlock.....	5	9.0	140	28.8	99.0
B	Western hemlock.....	5	9.0	140	28.8	99.0
C	Lowland white fir.....	5	9.0	140	26.5	98.9
D	Lowland white fir.....	5	9.9	140	26.2	97.9
<b>SERIES IV</b>						
A	Loblolly pine.....	15	3.75	135	8.6	62.0
B	Loblolly pine.....	15	4.00	140	17.5	79.6
C	Loblolly pine.....	15	4.25	140	17.6	95.2

adjusted to the same bleachability. The more rapid development of the strength of the pulps in group F is immediately noticeable and, as before, higher maximum bursting, folding, and tensile strengths and lower maximum tearing strength are the results from the pulps digested at the lower temperature. The chemical analyses of the pulps in the two groups were the same except in the case of the viscosity determination, where again a definite increase was noted for the pulps made at the lower temperatures (81 centipoises for group F and 52 centipoises for group E).

A result of the higher yields of pulp at the lower temperatures is shown in Table 8, series I, where the percentages of cellulose and lignin removed have been tabulated for the pulps in the various groups in this series. All the figures in the table have been adjusted for slight bleach requirement differences. It may be noted that pulps

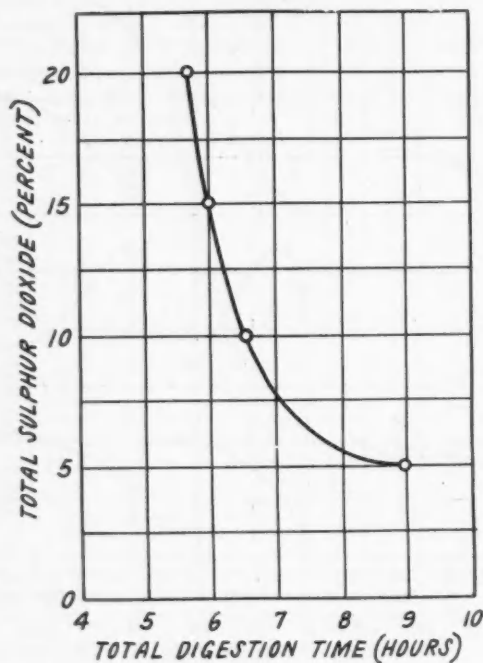


FIG. 7

Effect of total sulphur dioxide concentration on digestion time for constant digestion temperature.

from the same species (the basis of the comparisons) show less cellulose removal and substantially the same lignin removal when produced at the lower temperature allowed by the use of the acid with higher sulphur dioxide concentration.

Thus in all the cases studied in this series, the relatively low bleaching pulps produced in equal times at the lower temperatures allowed by the increased sulphur dioxide content of the cooking liquor exhibited the benefits generally attributed to lower digestion temperatures, namely, higher yield and generally improved quality. In particular, the strength development of the pulps thus made was more rapid than that of pulps digested at the highest temperatures (140 deg. C.), the maximum bursting, folding, and tensile strength being higher, the tearing strength lower, and the viscosity definitely higher. No optimum point in the temperature—acid concentration relation with regard to the pulp produced was noticed in the range studied.

#### SERIES II. EFFECT OF HIGH SULPHUR DIOXIDE CONCENTRATIONS ON THE PULPING TIME FOR DIGESTIONS AT THE SAME MAXIMUM TEMPERATURE

An increase in the sulphur dioxide content of the cooking liquor increased the rate of pulping so that digestions at the same maximum temperature were made in materially shorter times. The relation between the total sulphur dioxide content of the cooking liquor and the digestion time using a constant maximum temperature of 140 deg. C. is shown in Fig. 7, the curve being a composite derived from all the pulps in series II (table 4). The most marked effect, as far as total time reduction or reduction in time to achieve a certain lignin and cellulose removal are concerned, is experienced by increasing the sulphur dioxide concentration from 5 to 10 per cent—to an even greater extent than was found in series I. The time reduction for uniform concentration increases becomes less and less; this was not the case in series I where the temperature reduction was uniform below 130 deg. C. It thus seems that a certain minimum time (approximately 3 hours at 140 deg. C.) is required to effect the necessary delignification. If advantage is taken of the shortening of the preliminary penetration period permitted by the increase of the sulphur dioxide concentration, as previously explained, it is estimated that the total digestion time could be reduced for the digestion condition used in this study to 5¼ and 4½ hours by the use of cooking liquors containing 10 and 20 per cent total sulphur dioxide, respectively, at a maximum temperature of 140 deg. C.

Use of the shorter digestion time resulted in certain differences in yield and properties from those digested for 9 hours when compared on the basis of the same bleach requirement. The pulps in groups A and B (series II, Table 4) which were made from western hemlock pulpwood in 9 and 6.5 hours with acid containing 5 and 10 per cent total sulphur dioxide, respectively, are only slightly different. The slightly higher yield for the latter is easily accounted for by its higher bleachability; this difference disappears when the cellulose yield is considered (Table 8). Composite strength development curves, derived from data in Table 4 are reproduced in Fig. 8; they show no particular differences except for the folding endurance which is higher for the pulps in group B. The chemical analyses (Table 4) show a lower cellulose and higher lignin content for group B; these differences also appear in the cellulose and lignin removal data (Table 8).

The lowland white fir pulps from digestions made with acids containing 10, 15, and 20 per cent total sulphur dioxide and digestion times of 6.5, 6.0, and 5.75 hours, respectively (groups D, E, and F, table 4), appear to be somewhat inferior to those made in 9 hours with an acid

containing 5 per cent total sulphur dioxide at the same maximum temperature of 140 deg. C., especially in the extreme case (20 per cent acid). The pulp yields were decreased somewhat by the treatment with the stronger acid, the greatest decrease (1.4 per cent, wood basis) being noted with the strongest acid. The pulps in the various groups in general give evidence of having their strength properties changed in some measure in the direction of lower bursting strength, although the pulp made with the 10 per cent acid (group D) has properties more like those found in series I. Comparative composite strength development curves for the extreme cases (groups C and F) based on data corrected for bleachability differences are presented in Fig. 8. There is a decided tendency, it will be noted, toward lower bursting and folding strengths. As found for the western hemlock pulps the chemical analyses of the lowland white fir pulps in the various groups showed that the pulps made in the shorter times had lower cellulose and higher lignin contents, and hence higher cellulose and lower lignin removals (Table 8). The data for series II, group F, are corrected to the bleachability of group C.

The effect, then, of increasing the sulphur dioxide content of the cooking liquor used in digestions at the same temperature is a material reduction in the time necessary to produce equal bleaching pulps. This increase in the rate of pulping appears to affect the pulps thus produced adversely to some degree. Here again, these conclusions refer only in the ranges studied, particularly 140 deg. C., and for the easy bleaching pulps obtained; the results may possibly be different for rawer pulps or for pulps produced at a different maximum temperature.

**SERIES III. THE EFFECT OF PRESSURE IN EXCESS OF THE NORMAL STEAM AND SULPHUR DIOXIDE PRESSURE ON PULPS PRODUCED WITH ACIDS CONTAINING 5 PER CENT SULPHUR DIOXIDE AT A MAXIMUM TEMPERATURE OF 140 DEG. C.**

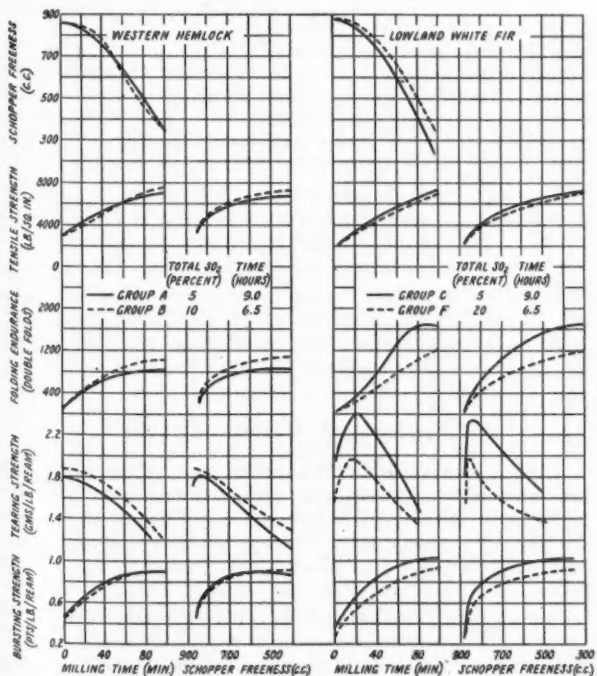


FIG. 8

Physical properties of pulps from digestions with cooking liquors containing varying sulphur dioxide concentrations for different times. (Maximum temperature constant).

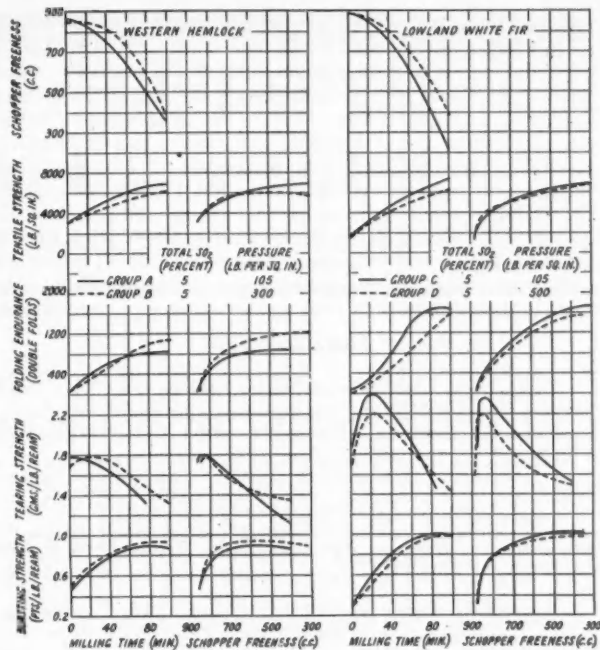


FIG. 9

Physical properties of pulps from digestions at different pressures.

The effect of high pressures was determined by applying a small hydrostatic pressure to the digester when cold, which resulted in a considerably higher pressure at the pulping temperature than realized from the combined effects of the sulphur dioxide and steam (500 as compared with 105 pounds per square inch). This added pressure during the digestion period, however, appeared to have little or no effect on either the rate of pulping or the properties of the pulps produced. A comparison of the western hemlock pulps in groups A and B (Table 5 and Fig. 9) shows that about the same results were obtained in both cases. The pulp in group B (hydrostatic pressure used in the digestion) was a trifle raw which accounts for the slightly higher yield and difference in its chemical composition. The cellulose and lignin removal data, however, show no differences for the two groups. The slightly higher bleachability of the pulps in group B is perhaps accounted for by the facts that a very small amount of relief was necessary in order to operate at a safe pressure and that the acid-wood ratio was somewhat higher. The pulps in groups C and D in this series made from lowland white fir pulpwood verified the results just described. The pulps made using the higher pressure (group D) were produced in the same yield as the normal pulps but were a little weaker (Fig. 9) and somewhat less delignified (Table 8, series III) when compared on the basis of the same bleach requirement; these differences can also possibly be explained by the very small amount of relief and the larger amount of liquor used.

**SERIES IV. EFFECT OF HIGH SULPHUR DIOXIDE CONCENTRATIONS IN DIGESTIONS PRODUCING RAW AND SEMIPULPS**

The use of cooking liquors with high concentrations of sulphur dioxide permitted the production of partially pulped chips in relatively short times. A comparison of Groups A and B (Table 6) shows that the loblolly pine subjected to semisulphite pulping conditions and practice yielded partially delignified chips, which could be easily

reduced to pulp form by mechanical means (beater action in this case) in 3¼ and 6½ hours when acids containing 15 and 5 per cent total sulphur dioxide, respectively, were used. Furthermore, the pulp made by using the strong acid was produced in higher yield (the delignification of the two digestions was the same) and had a higher bursting strength. In this case, the more drastic treatment but more rapid pulping reaction appeared to be beneficial to the final result. The pulps in groups B, C, and D (Table 6) furnish for a limited range some idea of the rates of lignin and cellulose removal (Table 8) using an acid containing 15 per cent total sulphur dioxide. No similar data for normal acid are available for comparison.

#### Literature Cited

- (1) Borchers, E. and Bryde, O. *Papier-Fabr.* 32 (49): 500 (Dec. 9, 1934).
- (2) Cable, D. E. Canadian Patent 300,279 (May 20, 1930); U. S. Patent 1,790,260 (Jan. 27, 1931).
- (3) Campbell, W. B. and Maass, O. *Can. J. Research* 2 (1): 42 (Jan. 1930).
- (4) Chidester, G. H. and McGovern, J. N. *Paper Trade J.* 94 (5): 40-42 (Feb. 4, 1932).
- (5) DeMontigny, R. *Pulp Paper, Canada* 34 (2): 109-10 (Feb. 1932).
- (6) DeMontigny, R. and Maass, O. Dept. Int. Canada, Forest Service—Bull. 87.
- (7) Edwards, V. P. *Paper Trade J.* 72 (16): 207 (April 14, 1921).
- (8) Edwards, V. P. *Paper* 26 (7): 92-96 (April 21, 1920).
- (9) Forest Products Laboratory Manual of Standard Testing Methods for Pulpwood, Pulp, Stuff, and Paper (Mimeograph report), Forest Products Laboratory, Madison, Wisconsin.
- (10) Fotijew, S. and Moisejew, B. *Zellstoff Papier* 10 (10): 716 (Oct. 1930).
- (11) Fuchs, A. Dissertation, Darmstadt, 1932.
- (12) Gishler, P. E. and Maass, O. Forest Products Laboratory, Canada. Pulp and Paper Lab. Quarterly Rev. No. 21: 1-10 (Jan.-March 1935).
- (13) Häggstrand, E. *Zellstoff Papier* 11 (6): 338-41 (June 1931).
- (14) Hansen, R. B. and Hazelquist, S. *Paper Trade J.* 95 (20): 27-9 (Nov. 17, 1932).
- (15) Heuser, E. *Pulp Paper, Canada*. Intern. No. 1929: 121-128.
- (16) Hill, H. *Zellstoff Papier* 13 (12): 602 (Dec. 1933).
- (17) Hirubeky, C. E. and Chidester, G. H. *Paper Trade J.* 98 (7): 34-7 (Feb. 15, 1934).
- (18) Jakimanskii, W. *Zellstoff Papier* 11 (12): 689-90 (Dec. 1931).
- (19) Johansson, D. *Paper Trade J.* 101 (13): 101-4 (Sept. 26, 1935).
- (20) Johnson, B. and Parsons, J. L. *Paper Trade J.* 76 (13): 49-51 (March 29, 1923).
- (21) Johnson, H. W. and Maass, O. Forest Products Laboratory, Canada. Research Notes 3: 5-9 (1930).
- (22) Konopatskii, A. N. Leningrad. Oblastnoi Lovet Vanche. Inzhererno—Tekh. Obshchestvo. *Tsellyulozno—Bumazhnoi Prom.*, 1933: 87-100.
- (23) Kreissler, O. *Svensk Pappers-Tidn.* 38 (19) 630-8. (Oct. 15, 1935).
- (24) Lundberg, A. H. *Pacific Pulp Paper Ind.* 8 (2): 8-9 (Feb. 1934).
- (25) Lundberg, A. H. *Paper Trade J.* 92 (20): 53-54 (May 14, 1931).
- (26) Martuniov, M. F. *Tsentr. Nauch.—Issledovatel. Bumazhnoi Prom., Materialui* (1933) No. 2: 54-66.
- (27) McGovern, J. N. and Chidester, G. H. *Paper Trade J.* 98 (18): 41-46 (May 3, 1934).
- (28) Miller, R. N. *Paper Trade J.* 81 (23): 221-5 (Dec. 3, 1925).
- (29) Pictet, R. and Brelaz, G. German Patent 26,331 (1883).
- (30) Pictet, R. and Tharaldsen, F. German Patent 504,667 (April 27, 1926); Norwegian Patent 42,934 (Dec. 27, 1926).
- (31) Pictet, R. and Tharaldsen, F. Norwegian Patents 43,337 and 43,338 (Nov. 1, 1926).
- (32) Richter, E. *Zellstoff Papier* 13 (12): 560-3 (Dec. 1933).
- (33) Routala, O. and Sevon J. *Cellulosechemie* 10 (6): 97-107 (June 2, 1929).
- (34) Rue, J. D. and Sconce, J. S. *Paper Trade J.* 95 (17): 54-62 (Oct. 27, 1932).
- (35) Samson, T. *Svensk Pappers-Tidn.* 39 (1): 306 (Jan. 15, 1936).
- (36) Sander, A. *Paper Trade J.* 81 (10): 50 (Sept. 2, 1920).
- (37) Saunderson, H. M., Johnston, H. W. and Maass, O. *Can. J. Research* 8 (5): 415-20 (May 1933).
- (38) Saunderson, H. M. and Maass, O. *Can. J. Research* 10 (1): 24-36 (Jan. 1934).
- (39) Schroeder, W. Swedish Patent 74,723 (May 9, 1930).
- (40) Swanson, W. H. *Paper Trade J.* 83 (22): 198-9 (Nov. 25, 1926).
- (41) Sutherland, J. H., Johnston, H. W. and Maass, O. *Can. J. Research* 10 (1): 36-72 (Jan. 1934).
- (42) Tech. Assoc. Pulp Paper Ind. Standards, Method T 206 M.
- (43) Weber, E. A. *Pulp Paper, Canada* 35 (6): 307 (May 1934).
- (44) Waenerlund, T. U. S. Patent 1,809,499 (June 9, 1931).
- (45) Westad, O. U. S. Patent 1,904,894 (April 18, 1933).
- (46) Wolf, R. E. U. S. Patents 1,699,556 (Jan. 22, 1929); 1,772-792 (Aug. 12, 1930); 1,780,638 (Nov. 4, 1930).
- (47) Wolf, R. E., Hill, R. P. and Hatch, R. S. U. S. Patent 1,804,967 (May 12, 1931).

#### Value of Paper Lacquer

A portfolio which demonstrates the value of paper lacquer for protecting and enhancing the beauty of fine color work is being sent out by Maas & Waldstein Company, lacquer manufacturers.

The portfolio contains two identical designs in six colors, one of which is just as it came from the press while the other has been treated with a coat of Crystalustre, M. & W's new lacquer for paper and cardboard.

TAPPI SECTION, PAGE 310

#### Bleaching of Wood Pulp

Bleaching of Wood Pulp (Die Bleiche des Zellstoffs), by E. Opfermann and E. Hochberger, Part II, the two parts comprising Volume III of "Technik und Praxis der Papierfabrikation," issued by E. Heuser and E. Opfermann; Otto Elsner Verlagsgesellschaft, Berlin, Germany. (416 pages, 121 figures, and 2 folding tables. Price R.M. 40.00, abroad 25 per cent less).

Part I, which deals with the history of bleaching, the preparation of the various bleaching liquors, and the chemical reactions involved in the bleaching of sulphite pulp with hypochlorite bleach liquors, has been reviewed in the Paper Trade Journal (of July 9th, 1936, page 16).

Part II has now also been issued. It completes this thorough and unique treatise on the subject of pulp bleaching and is divided into eleven chapters dealing chiefly with the mechanism of the various methods of bleaching and refining and their commercial technique. The final chapter (XI) contends with chemical and mechanical mill control. The chapters on bleaching and refining comprise the following subjects: (1) Conversion of the incrustants into the soluble state. (2) One stage bleaching with hypochlorites in low and high stock density. (3) Chemical and physical changes of the pulp fibre during bleaching. (4) Multiple stage bleaching with hypochlorites. (5) Pre-bleaching with chlorine in gaseous form and as chlorine water. (6) Multiple stage bleaching using chlorine and bleach liquors. (7) Washing of the bleached pulp. (8) Bleaching of soda and sulphate pulps. (9) Special bleaching methods (catalytic; using peroxides, etc.). (10) Chemical purification (refining) of wood pulp. At the end follows an index of names and subjects.

These chapters cover most completely and adequately the status of our present-day knowledge of the subject of bleaching as it derives from both commercial technique and research work. Particular stress is laid on the modern methods of bleaching, i. e., the multiple stage processes with and without alkaline interstage and after-treatments and having most manifold possibilities, and on the ever increasing application of chlorine to unbleached pulp.

The fact that the authors, well known in the profession, have many years of experience both in research work and in commercial technique, adds largely to the value of the book. It has enabled them to acquire a critical attitude toward this intricate subject so that the reader may follow their presentation with confidence. Thus, this volume (and this also holds true for the first volume) is far more than a mere compilation.

Literature references, given wherever they appeared feasible, are numerous and cover the subject up to the 1st of May of this year. In addition, the patent literature has been given widest consideration. The format is excellent.

This treatise will, no doubt, make many friends amongst not only experienced technicians but also students eager to acquaint themselves with the important subject of pulp bleaching.—E. HEUSER.

#### Rockwood V-Belt Drives

The Rockwood Manufacturing Company, 1801-2001 English avenue, Indianapolis, Ind., has reason to be proud of its new Rockwood V-belt drive literature which it is sending out, among other reasons because it is so simple and easy to select and price a belt from these new data books. The two new data books, No. 782 for Multiple Groove Drives and No. 783 for Fractional hp. Single Groove Drives cover a range from fractional to 500 hp. and present the data in a simple manner which makes it very easy to select a Rockwood V-Belt drive. Interested individuals or concerns may obtain these new data books by writing to the company at the address mentioned.





# IMPORTS OF PAPER AND PAPER STOCK

NEW YORK, BOSTON, PHILADELPHIA AND OTHER PORTS

## NEW YORK IMPORTS

WEEK ENDING NOVEMBER 7, 1936

### CIGARETTE PAPER

Champagne Paper Corp., *Champlain*, Havre, 540 cs.; R. J. Reynolds Tobacco Co., *Pr. Harding*, Havre, 60 cs.; De Mauduit Paper Corp., *Pr. Harding*, Havre, 1 cs.

### WALL PAPER

—, *Deutschland*, Hamburg, 14 cs.; Globe Shipping Co., *New York*, Hamburg, 2 bls.

### PAPER HANGINGS

W. H. S. Lloyd & Co., *Queen Mary*, Southampton, 3 bls.; W. H. S. Lloyd & Co., *American Merchant*, London, 1 cs., 1 ble.; W. H. S. Lloyd & Co., *Lancastria*, Liverpool, 1 ble.

### NEWSPRINT

Perkins Goodwin & Co., *Deutschland*, Hamburg, 284 rolls; Jay Madden Corp., *Deutschland*, Bremen, 134 rolls; N. Y. Times, *Markland*, Liverpool, N. S., 462 rolls; N. Y. Tribune, Inc., *Markland*, Liverpool, N. S., 2,073 rolls; World Telegram, *Markland*, Liverpool, N. S., 605 rolls; Brooklyn Daily Eagle, *Markland*, Liverpool, N. S., 629 rolls; Westchester Newspapers, Inc., *Markland*, Liverpool, N. S., 48 rolls; Parsons & Whittemore, Inc., *Markland*, Liverpool, N. S., 355 rolls; International Paper Sales Co., *Humberarm*, Dalhousie, 8,703 rolls; Jay Madden Corp., *Argosy*, Kotka, 472 rolls; International Paper Co., *G. T. D.*, Gatineau, 308 rolls; International Paper Co., *International No. 1*, Gatineau, 312 rolls; Perkins Goodwin & Co., *New York*, Hamburg, 691 rolls.

### PRINTING PAPER

Dingelstedt & Co., *Deutschland*, Hamburg, 53 cs.; R. J. Saunders, *Queen Mary*, Southampton, 3 cs.

### WRAPPING PAPER

Japan Paper Co., *Gerolstein*, Antwerp, 2 cs.; Equitable Paper Bag Co., *Pr. Harding*, Hamburg, 982 rolls; M. M. Cohen, *Pr. Harding*, Hamburg, 22 bls., 49 rolls.

### PACKING PAPER

A. J. Bullinger, *Black Osprey*, Rotterdam, 4 cs.; —, *Europa*, Bremen, 15 cs.

### FILTER MATERIAL

A. Giese & Son, *Deutschland*, Hamburg, 5 cs.

### FILTER PAPER

C. Schleicher & Schull Co. Inc., *Deutschland*, Hamburg, 6 cs.; H. Reeve Angel & Co. Inc., *American Merchant*, London, 24 cs.

### DRAWING PAPER

H. Reeve Angel & Co. Inc., *American Merchant*, London, 4 cs.

### METAL COATED PAPER

K. Pauli Co., *Deutschland*, Hamburg, 3 cs.; K. Pauli Co., *Deutschland*, Bremen, 26 cs.; K. Pauli Co., *New York*, Hamburg, 28 cs.

### BARYTA COATED PAPER

Atlantic F'd'g. Co., *Deutschland*, Hamburg, 13 cs.; Globe Shipping Co., *New York*, Hamburg, 32 crates.

### SURFACE COATED PAPER

Globe Shipping Co., *Deutschland*, Bremen, 32 crates, 7 cs.

### PHOTO PAPER

Irving Trust Co., *Champlain*, Havre, 4 cs.

### DECALCOMANIAS

Sellers Transportation Co., *Deutschland*, Hamburg, 17 cs.; Sellers Transportation Co., *Europa*, Bremen, 15 cs.; Sellers Transportation Co., *New York*, Hamburg, 21 cs.

### COLORED PAPER

International F'd'g. Co., *New York*, Hamburg, 21 cs.; International F'd'g. Co., *Deutschland*, Hamburg, 1 cs.; J. W. Hampton Jr. Co., *Black Gull*, Antwerp, 1 cs.

### TISSUE PAPER

Columbia Ribbon & Carbon Manufacturing Co., *American Merchant*, London, 1 cs.; B. F. Drakenfeld & Co., *Lancastria*, Liverpool, 5 cs.

### WAX COATED TISSUE PAPER

American Express Co., *New York*, Hamburg, 3 cs.

### WRITING PAPER AND ENVELOPES

American Express Co., *Queen Mary*, Southampton, 14 cs.

### ENVELOPES

—, *Deutschland*, Hamburg, 23 cs.; —, *New York*, Hamburg, 16 cs.

### GUMMED PAPER

Heemsoth, Kerner, Inc., *Europa*, Bremen, 3 cs.

### PAPER SPOOLS

J. I. Bernitz, *Pr. Harding*, Hamburg, 4 cs.

### CARD BOARD

—, *Deutschland*, Hamburg, 5 cs.

### PAPER TUBES

—, *Deutschland*, Hamburg, 102 pkgs.; —, *New York*, Hamburg, 7 cs.

### MISCELLANEOUS PAPER

Jay Madden Corp., *Deutschland*, Hamburg, 32 bbls.; Jay Madden Corp., *Deutschland*, Bremen, 10 bbls., 1 cs.; —, *Pr. Taft*, Kobe, 5 cs.; Favor Ruhl & Co., *Pr. van Buren*, Genoa, 6 cs.; Keller Dorian Paper Co., *Pr. van Buren*, Marseilles, 19 cs.; Paper House of Pennsylvania, *Argosy*, Copenhagen, 15 cs.; Jay Madden Corp., *Argosy*, Copenhagen, 32 bbls.; —, *Volendam*, Rotterdam, 75 rolls; Favor Ruhl & Co., *Champlain*, Havre, 4 cs.; Almo Trading & Importing Co., *Champlain*, Havre, 25 cs.; A. Giese & Son, *Champlain*, Havre, 60 bls.; E. Fougera & Co., *Champlain*, Havre, 83 cs.; Keller Dorian Paper Co., *Champlain*, Havre, 20 cs.; American Express Co., *Europa*, Bremen, 24 cs.

### RAGS, BAGGINGS, ETC.

Irving Trust Co., *Black Osprey*, Rotterdam, 60 bls. bagging; Continental Bank Trust Co., *Black Osprey*, Rotter-

dam, 54 bls. bagging; National City Bank, *Black Osprey*, Rotterdam, 129 bls. rags; D. de Benedetto, Inc., *Black Osprey*, Rotterdam, 59 bls. rags; —, *Sea Glory*, Bristol, 103 bls. rags; R. J. Ross & Co. Inc., *Schodack*, Havre, 364 bls. dark cottons, 397 bls. rags; D. de Benedetto Inc., *Schodack*, Havre, 102 bls. paper stock; J. Cohen & Son Co., *Schodack*, Havre, 86 bls. rags; Philadelphia National Bank, *Schodack*, Havre, 46 bls. rags; Banco Coml. Italiane Trust Co., *Schodack*, Havre, 116 bls. rags; Castle & Overton, Inc., *Schodack*, Havre, 31 bls. rags; W. Steck & Co., *Schodack*, Havre, 162 bls. rags, 16 bls. new cuttings; Birkenstein & Long, Inc., *Schodack*, Havre, 56 bls. new cuttings; Hicks Costarino Co. Inc., *Schodack*, Havre, 78 bls. new cuttings; Van Oppen & Co., *Schodack*, Havre, 153 bls. rags, 53 bls. bagging; E. J. Keller Co. Inc., *Schodack*, —, 99 bls. paper stock; J. Eisenberg & Co., *Schodack*, Dunkirk, 29 bls. rags; Darmstadt, Scott & Courtney, *Schodack*, Dunkirk, 52 bls. bagging; —, *American Merchant*, London, 85 bls. rags; J. Cohen Son Co. Inc., *American Merchant*, London, 8 bls. rags; E. J. Keller Co. Inc., *American Merchant*, London, 96 bls. paper stock; —, *Pr. van Buren*, Bombay, 710 bls. cotton waste; Irving Trust Co., *Pr. van Buren*, Bombay, 132 bls. rags; W. Steck & Co., *Silverpine*, Bombay, 200 bls. rags; S. Shapiro & Sons, *Silverpine*, Bombay, 100 bls. cotton waste; Banco Coml. Italiane Trust Co., *Belfast Maru*, Kobe, 100 bls. rags; —, *Belfast Maru*, Kobe, 35 bls. rags; Globe Sanitary Products Corp., *Belfast Maru*, Kobe, 70 bls. rags; J. J. Ryan & Sons, Inc., *Belfast Maru*, Shanghai, 300 bls. cotton waste; Leigh Textile Co., *Volendam*, Rotterdam, 91 bls. cotton waste; —, *Lancastria*, Liverpool, 23 bls. paper stock; Chase National Bank, *H. Jaspas*, Antwerp, 88 bls. bagging; D. M. Hicks, Inc., *Gerolstein*, Antwerp, 173 bls. flax pulp; —, *New York*, Hamburg, 451 bls. rags; Chase National Bank, *New York*, Hamburg, 60 bls. rags; —, *New York*, Hamburg, 414 bls. cotton waste; E. J. Keller Co. Inc., *Black Gull*, —, 321 bls. bagging, 5 bls. rags; Royal Manfg. Co., *Black Gull*, Antwerp, 95 bls. cotton waste; Boger Cotton Products Co., *Black Gull*, Antwerp, 33 bls. picker waste; Irving Trust Co., *Black Gull*, Antwerp, 58 bls. bagging Brandwein Mazur Co., *Black Gull*, Antwerp, 63 bls. cotton waste; —, *Black Gull*, Antwerp, 259 bls. rags; —, *Sanyo Maru*, Shanghai, 100 bls. picker waste; —, *Sanyo Maru*, Osaka, 250 bls. picker waste; W. Steck & Co., *Pr. Harding*, Hamburg, 165 bls. rags; E. J. Keller Co. Inc., *Western World*, —, 147 bls. cotton waste; E. J. Keller Co. Inc., *Mahronda*, —, 60 bls. paper stock; E. J. Keller Co. Inc., *Tai Yang*, —, 41 bls. paper stock.

#### OLD ROPE

—, *American Merchant*, London, 54 coils; G. W. Millar & Co. Inc., *Volendam*, Rotterdam, 60 coils.

#### CHINA CLAY

Paper Makers Importing Co., *Sea Glory*, Fowey, 1,504 tons, 16 cwt.; J. W. Higman Co. Inc., *Sea Glory*, Fowey, 490 tons, 1 cwt.

#### CASEIN

—, *Deutschland*, Hamburg, 70 bags; —, *Schodack*, Havre, 149 bags; —, *Western World*, Beunos Aytes, 11 bags; —, *Champlain*, Havre, 268 bags.

#### WOOD PULP

Irving Trust Co., *Deutschland*, Hamburg, 450 bls. mechanical pulp, 76 tons; Lagerloef Trading Co., *Argosy*, Wiborg, 130 bls. sulphite, 26 tons; Guaranty Trust Co., *Argosy*, Gdynia, 502 bls. wood pulp, 100 tons; Perkins Goodwin & Co., *Argosy*, Gdynia, 900 bls. wood pulp, 138 tons; New Haven Pulp & Board Co., *L. A. Barnes*, Bridge-water, N. S., 5,596 bls. wood pulp, 8 half bls.; M. Sone,

*New York*, Hamburg, 346 bls. wood pulp, 54 tons; Bank of N. Y. Trust Co., *New York*, Hamburg, 480 bls. wood pulp, 96 tons; Castle & Overton, Inc., *New York*, Hamburg, 700 bls. wood pulp, 140 tons; G. H. MacFadden & Bro., *New York*, Hamburg, 2,540 bls. wood pulp, 508 tons.

#### WOOD PULP BOARDS

Jay Madden Corp., *Argosy*, Wiborg, 15 rolls; Absorbo Beer Pad Co., *Pr. Harding*, Hamburg, 300 bls.

#### NEWARK IMPORTS

##### WEEK ENDING NOVEMBER 7, 1936

H. G. Craig Co., *Eli*, Quebec, 1,454 rolls newsprint; H. G. Craig Co., *Donpaco*, Donnacona, 314 rolls newsprint.

#### ALBANY IMPORTS

##### WEEK ENDING NOVEMBER 7, 1936

Atterbury Bros. Inc., *Frode*, Oslo, 600 bls. chemical pulp, 101 tons; Atterbury Bros. Inc., *Frode*, Oslo, 5,376 bls. sulphite, 909 tons; Price & Pierce, Ltd., *Frode*, Oslo, 1,050 bls. sulphite, 177 tons; E. M. Sergeant Pulp & Chemical Co., *Frode*, Oslo, 240 bls. chemical pulp, 40 tons; The Borregaard Co. Inc., *Frode*, Sarpsborg, 150 bls. sulphate, 25 tons.

#### PORTLAND IMPORTS

##### WEEK ENDING NOVEMBER 7, 1936

Gottesman & Co. Inc., *Blankaholm*, Sweden, 3,600 bls. wood pulp.

#### NEW LONDON IMPORTS

##### WEEK ENDING NOVEMBER 7, 1936

New Haven Pulp & Board Co., *L. A. Barnes*, Bridge-water, N. S., 4,153 bls., 494 half bls. wood pulp.

#### BOSTON IMPORTS

##### WEEK ENDING NOVEMBER 7, 1936

—, *Black Osprey*, Rotterdam, 40 bls. bagging; Irving Trust Co., *Black Osprey*, Rotterdam, 77 coils old rope; Castle & Overton, Inc., *Black Osprey*, Rotterdam, 334 bls. rags; Bulkley Dunton & Co., *Elg*, —, 1,100 bls. wood pulp; Acer McLernon Ltd., *Elg*, Port Alice, 3,800 bls. sulphite.

#### PHILADELPHIA IMPORTS

##### WEEK ENDING NOVEMBER 7, 1936

E. J. Keller Co. Inc., *Black Osprey*, —, 509 bls. rags; Chase National Bank, *Black Osprey*, Antwerp, 67 bls. cotton waste; Philadelphia National Bank, *Black Osprey*, Antwerp, 2699 bls. rags; G. W. Millar & Co. Inc., *Black Osprey*, Antwerp, 50 bls. rags; —, *Black Osprey*, Antwerp, 307 bls. rags; E. J. Keller Co. Inc., *Schodack*, —, 137 bls. rags; —, *Schodack*, Havre, 362 bls. rags; Castle & Overton, Inc., *Schodack*, Havre, 1,073 bls. rags, 112 bls. new cuttings; J. M. Hagy Waste Works, *Schodack*, Havre, 36 bls. cotton waste; Bulkley Dunton & Co., *Elg*, —, 2,240 bls. wood pulp. Aetna Paper Co., *Elg*, Port Alice, 3,800 bls. wood pulp; Acer McLernon Ltd., *Elg*, Port Alice, 6,840 bls. wood pulp; Stora Kopparberg Corp., *Argosy*, Stockholm, 250 bls. chemical pulp, 50 tons; Jay Madden Corp., *Argosy*, Helsingfors, 20 bbls. paper; Jay Madden Corp., *Argosy*, Wiborg, 15 rolls wood pulp boards; J. W. Hampton Jr. Co., *Argosy*, Kotka, 301 rolls newsprint; Jay Madden Corp., *Argosy*, Kotka, 44 rolls wood pulp boards; —, *Belfast Maru*, Kobe, 334 bls. rags; M. Sone, *Frankenwald*, Hamburg, 318 bls. wood pulp.

#### BALTIMORE IMPORTS

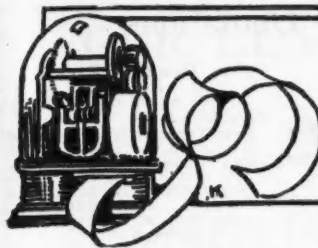
##### WEEK ENDING NOVEMBER 7, 1936

Ralli Bros., *Silverpine*, Karachi, 250 bls. glue stock.

#### NORFOLK IMPORTS

##### WEEK ENDING NOVEMBER 7, 1936

—, *Sea Glory*, Bristol, 53 coils old rope



# LATEST MARKET REVIEW

## New York Market Review

Office of the PAPER TRADE JOURNAL,  
Wednesday, November 11, 1936.

Conditions in the local paper market are more favorable. Demand for the various standard grades of paper is well sustained. Sales forces of the leading paper organizations are generally optimistic regarding the future trend of the industry. Prices are holding to schedule, in most instances.

The outlook for the newsprint paper industry is better than for some years past. Demand from the leading newspaper publishers is heavy and the mills are operating practically at capacity to fill current requirements. Stocks at the paper mills are not excessive. The price situation remains unchanged for the present.

Business in the fine paper market is fairly satisfactory. Demand for book, cover, bond and ledger papers is brisk. With production costs rising there is much talk around of higher prices in the near future. Tissues are moving into consumption freely. The coarse paper market is sharing the general business improvement.

The ground wood pulp market is exhibiting a stronger undertone. Due to the curtailment of grinding during the long drought experienced last summer the statistical position of the mechanical pulp industry is sounder. Production in North America is now being maintained in normal volume. Prices are steady.

### Chemical Pulp

Paper mill demand for the various grades of chemical pulp is insistent. Offerings of both domestic and foreign grades are limited. Bleached sulphite continues firm. Quotations on several grades of unbleached sulphite are higher. Imported kraft pulp is also displaying strength. Bleached soda pulp is holding up well.

### Old Rope and Bagging

The old rope market is showing some signs of improvement. Offerings of both domestic and imported old manila rope are rather scarce. Small mixed rope is moving in fairly good volume. Old rope quotations are steady. Demand for both scrap and gunny bagging is more lively. Roofing bagging is also attracting interest.

### Rags

Steadiness prevails in the domestic rag market. Demand for new and old cotton rags is more active. No. 1 white shirt cuttings are in excellent request, both for home and foreign account. Roofing grades are stronger. The position of the imported rag market is little changed. No radical price revisions have taken place.

### Waste Paper

The paper stock market is in a stronger position. Board mill demand for the lower grades of waste paper is holding up well. The higher grades of waste paper are steady

to firm. White envelope cuttings and hard and soft white shavings are quite active, while book stock quotations are slightly higher.

### Twine

Keeping pace with the steadily increasing demand for wrapping paper, trading in the local twine market is unusually active. Inquiries for immediate and future delivery are numerous, many of which should materialize into desirable orders. Prices are holding to formerly quoted levels.

## R. S. Kellogg Address Paper Salesmen

Royal S. Kellogg, secretary of the News Print Service Bureau, discussed the newsprint paper situation at the regular meeting and luncheon of the Eastern Division of the Salesmen's Association of the Paper Industry, held in the Empire Room of the Hotel Lexington, New York, on Monday.

Mr. Kellogg stated that sentiment in the newsprint industry was fairly cheerful. He declared that consumption was running heavy and that the mills operating were practically on full time schedule.

He mentioned that production for the first ten months of 1936 was 10 per cent greater than in the corresponding period of last year, although United States mills are only making 26 per cent of the total North American output.

Mr. Kellogg stated that more newsprint is coming from over-seas than ever before, the imports so far this year totaling 250,000 tons, most of which came from Finland.

He declared that the sizes of Sunday newspapers had increased between 2 to 3 per cent and daily newspapers approximately 4 per cent this year, while circulations were up from 2 to 5 per cent.

Production of all types of paper in France increased notably following the devaluation of the franc when orders increased owing to fear of high prices. The index of production in the French paper industry (based on 100 for 1913) increased steadily during the first half of 1936, standing at 164 in June as against 123 in January.

France relies on foreign sources for 90 per cent of its woodpulp requirements. Imports of all grades of pulp increased to 371,785 metric tons in the first eight months of 1936 compared with 313,718 tons and 343,604 tons, respectively for the corresponding periods of 1935 and 1934.

## Approved Pulp Testing Chemist

B. J. Russell, Southern Kraft Corporation, Panama City, Fla., has been accepted by the Joint Committee on Approved Pulp Testing Chemist for the Paper Industry as an approved paper and pulp mill testing chemist and is listed as such effective October 28, 1936.



Miscellaneous Markets

Office of the PAPER TRADE JOURNAL,  
Wednesday, November 11, 1936.

**BLANC FIXE.**—The position of the blanc fixe market is practically unchanged. Prices are holding to schedule. The pulp is quoted at from \$42.50 to \$45 per ton, in bulk; while the powder is selling at from 3½ to 3¾ cents per pound, in barrels, at works.

**BLEACHING POWDER.**—Steadiness prevails in the bleaching powder market. Supplies are moving into consumption in good volume. Prices are generally well maintained. Bleaching powder is quoted at from \$2 to \$2.25 per 100 pounds, in drums, at works.

**CASEIN.**—The casein market continues firm. Domestic standard ground is quoted at 17 and finely ground at 17½ cents; while French and Argentine standard ground are selling at 17 and finely ground at 17½ cents per pound, all in bags, car lot quantities.

**CAUSTIC SODA.**—Paper mill demand for caustic soda is persistent. The contract movement is well up to average. Solid caustic soda is quoted at from \$2.55 to \$2.60; while the flake and ground are selling at from \$2.95 to \$3 per 100 pounds, in drums, at works.

**CHINA CLAY.**—The china clay market is exhibiting a strong undertone. Contract shipments are moving freely. Imported china clay is quoted at from \$13 to \$21 per ton, ship side; domestic paper making clay is selling at from \$6.50 to \$12 per ton, ship side.

**CHLORINE.**—Conditions in the chlorine market are satisfactory. Demand from the paper mills is fairly heavy. Prices are holding to formerly quoted levels. Chlorine is selling at from \$2.15 to \$2.25 per 100 pounds, in tank cars, at works.

**ROSIN.**—The rosin market is stronger. Paper making gum rosin is now quoted at \$7.05 and wood rosin at \$6.90 per 280 pounds, gross weight, in barrels, at Savannah. Seventy per cent rosin size is selling at \$3.36½ per 100 pounds, in tank cars, at works.

**SALT CAKE.**—Trading in the salt cake market is brisk. The contract movement is fairly heavy. Salt cake is quoted at from \$12 to \$13; chrome salt cake at from \$11 to \$12 per ton, at works; imported salt cake at from \$12 to \$13 per ton, ship side.

**SODA ASH.**—The soda ash market is displaying strength. Contract shipments are normal for the season. Prices are steady. Quotations on soda ash, in car lots, at works, per 100 pounds, are as follows: in bulk, \$1.05; in bags, \$1.20; and in barrels, \$1.50.

**STARCH.**—No radical changes transpired in the starch market. Demand from the mills is fairly active. Prices remain unchanged. Special paper making starch is quoted at \$4 per 100 pounds, in bags; and at \$4.27 per 100 pounds, in barrels, at works.

**SULPHATE OF ALUMINA.**—The sulphate of alumina market is firm. Contract shipments are moving in good volume. Commercial grades are quoted at from \$1.35 to \$1.60; while iron free is selling at from \$2 to \$2.25 per 100 pounds, in bags, at works.

**SULPHUR.**—The sulphur market is steady. Yearly contracts are quoted at \$18 per long ton, in bulk, on orders of 1,000 tons, or over, and \$20 on smaller quantities. On spot and near by car loads, the quotation is \$21 per ton. All quotations are in car lots, at works.

**TALC.**—Business in the talc market is well up to average. The contract movement is seasonal. Prices remain unchanged. Domestic talc is quoted at from \$16 to \$18 per ton, at eastern mines; while imported talc is selling at from \$23 to \$30 per ton, on dock.

Market Quotations

Paper  
Rag Content Bond & Ledgers—  
Delivered Zone 1

	Bonds	Ledgers
100% Rag Ext. No. 1	.36	.37
100% Rag	.28	.29
75% Rag	.21	.22
65% Rag	.18	.19
50% Rag	.15	.16
25% Rag	.12½	.13½

Sulphite Bond & Ledgers—  
Delivered Zone 1

	Bonds	Ledgers
No. 1 Sulphite	7.50	8.50
No. 2 Sulphite	6.50	7.50
No. 3 Sulphite	6.00	7.00
No. 4 Sulphite	5.50	6.50

Book, B Grade, Cased

S. & S. C.	5.85	6.60
S. & S. C. Litho.	6.10	6.85
M. F.	5.60	6.35

No. 4 Grade

Coated and Enamel	6.80	7.65
Coated Litho.	6.80	7.65

Tissues—Per Ream—

White No. 1	.82½	—
White No. 1 M. G.	.77½	—
White No. 1½	.62½	—
White No. 2	.60	—
Anti-Tarnish M. G.	.67½	—
Colored	.80	—
Kraft	.67½	—
Manila	.60	—
Unbleached Toilet	2.60	3.30
Bleached Toilet	3.94	5.26

Paper Towels—

Unbleached	2.10	3.35
Bleached	3.30	3.70

Manila—

No. 1 Jute	9.00	9.25
No. 2 Jute	7.75	8.50
No. 1 Wood	4.00	5.25
No. 2 Wood	3.50	4.00

Fibre Papers—

No. 1 Fibre	4.25	5.50
No. 2 Fibre	4.00	4.75

(Delivered New York)

News, per ton—

Roll, contract	41.00	—
Sheets	46.00	—

Kraft—

No. 1 Northern	4.25	4.75
Standard	4.00	4.12½
Southern	3.87½	—
Glazed	4.37½	—
Striped	4.62½	—

Boards, per ton—

News	37.50	40.00
Chip	35.00	37.50
Sgl. Mla. L.I. Chip	50.00	52.50
Lined Chip	50.00	52.50
Kraft Liners	65.00	67.50
White Pat. Coated	60.00	62.50
Binders Boards	67.00	75.00

Mechanical Pulp

(On Dock, Atlantic Ports)		
No. 1 Imported—		
Moist	25.00	26.00
Dry	25.00	26.00
(Delivered)		
No. 1 Domestic and		
Canadian	28.00	29.00

Chemical Pulp

(On Dock, Atlantic, Gulf and West Coast Ports)		
Bleached Sulphite (Domestic and Foreign)—		
Division 1	2.70	3.30
Division 2	2.65	2.75
Division 3	2.60	2.70

Prime Qualities—

Class 1. All Prime		
Easy Bleaching	2.20	2.25
Other Than Easy Bleaching—		
Class 2. Higher than Standard	2.15	2.25
Class 3. Standard	2.10	2.15
Class 4. Lower than Standard	2.00	2.05

(On Dock, Atlantic Ports)

Kraft Bleached	3.00	3.25
Kraft Light & Strong	2.20	2.30
Kraft No. 1	2.00	2.20
Kraft No. 2	1.95	2.05
(F. o. b. Pulp Mill)		
Kraft Domestic	1.85	2.15
(Delivered)		
Soda Bleached	2.60	—

\* Add 60 cents per short ton, dock charges, for Albany; \$2.00 for Lake Ports East and \$3.00 for Lake Ports West of Mackinac Straits.

Domestic Rags

New Rags		(Prices to Mill i. o. b. N. Y.)	
Shirt Cuttings—			
New White, No. 1	7.75	@	8.00
Silesias, No. 1	6.25	@	6.50
New Unbleached	6.25	@	6.50
New Soft Blacks	3.75	@	4.00
Blue Overall	6.75	@	7.00
Fancy	3.00	@	3.25
Washables	2.25	@	2.50
Mixed Khaki Cuttings	3.50	@	3.75
O. D. Khaki Cuttings	4.25	@	4.50

Old Rags

White, No. 1—			
Repacked	3.25	@	3.50
Miscellaneous	2.75	@	3.00
White, No. 2—			
Repacked	2.25	@	2.50
Miscellaneous	1.75	@	2.00
Thirds and Blues—			
Repacked	2.00	@	2.25
Miscellaneous	1.90	@	2.00

Roofing Rags—

No. 1	Nominal		
No. 2	1.60	@	1.65
No. 3 (bagging)	1.50	@	1.55
No. 4	1.50	@	1.60
No. 5A	1.40	@	1.50

Foreign Rags

New Rags			
New Dark Cuttings	2.25	@	2.50
New Mixed Cuttings	2.00	@	2.25
New Light Silesias	5.50	@	5.75
Light Flannellettes	5.50	@	5.75
New White Cuttings	7.00	@	7.50
New Light Oxfords	4.00	@	4.50
New Light Prints	3.00	@	3.25

Old Rags

No. 1 White Linens	7.50	@	8.00
No. 2 White Linens	6.50	@	7.00
No. 3 White Linens	4.50	@	5.00
No. 4 White Linens	2.25	@	2.50
No. 1 White Cotton	4.25	@	4.75
No. 2 White Cotton	3.25	@	3.75
No. 3 White Cotton	2.50	@	2.75
No. 4 White Cotton	1.90	@	2.15
Extra Light Prints	2.00	@	2.25
Ord. Light Prints	1.75	@	1.85
Med. Light Prints	1.55	@	1.65
Dutch Blue Cottons	2.25	@	2.50
French Blue Linens	3.50	@	4.00
German Blue Linens	2.00	@	2.25
German Blue Cottons	2.00	@	2.25
Checks and Blues	3.00	@	3.25
Linsey Garments	2.15	@	2.25
Dark Cottons	1.90	@	2.10
Old Shopperies	1.75	@	2.00
New Shopperies	1.75	@	2.00
French Blues	2.25	@	2.50

Old Rope and Bagging

(Prices to Mill f. o. b. N. Y.)			
Gunny No. 1—			
Foreign	2.10	@	2.15
Domestic	1.75	@	1.85
Wool Tares, light	1.50	@	1.75
Wool Tares, heavy	1.85	@	2.05
Bright Bagging	1.70	@	1.75
Manila Rope—			
Foreign	2.75	@	3.00
Domestic	2.75	@	3.00
Jute Strings	2.00	@	2.10
Sisal Strings	2.00	@	2.10
Mixed Strings	.80	@	1.00

Old Waste Papers

(F. o. b. New York)			
Shavings—			
White Envelope			
Cuttings	2.55	@	2.65
Ordinary Hard			
White No. 1	2.25	@	2.35
Hard White No. 2	2.10	@	2.20
Soft White No. 1	1.95	@	2.05
Flat Stock—			
Stitchless	.80	@	.90
Over issue Mag.	.80	@	.90
Solid Flat Book	.75	@	.85
Crumpled No. 1	.50	@	.55
Ledger Stock	.95	@	1.00
New B. B. Chips	.30	@	.35
Manilas			
New Env. Cut.	1.75	@	1.85
New Cuttings	1.35	@	1.45
Old Kraft Machine			
Compressed bales	1.15	@	1.30
News—			
No. 1 White News	1.15	@	1.25
Strictly Overseas	.50	@	.70
Strictly Folded	.50	@	.55
No. 1 Mixed Paper	.40	@	.45

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# C.K. WILLIAMS & COMPANY

E A S T O N · P E N N S Y L V A N I A

**Twines**  
(F. o. b. Mill)  
(Soft Fibre)

Coarse Polished—

India	.1334	.1634
Belg. White Hemp	.1434	.1834
India Compress	.1434	.1434

Fine Polished—

Fine India	.20	.22
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Unpolished—

Box	.0934	.1034
Paper Makers	.0934	.1134
Tube Rope	.1034	.1334
Wall Paper	.1134	.1234
Wrapping	.1534	.21
Soft Fiber Rope	.1234	.1334

(Hard Fibre)

Bond	.12	.2034
Anchor	.1134	.13
Manila	.21	.28

**BOSTON**

**Paper**

Rag Content Bond & Ledgers—  
Delivered Zone 1

Bonds		Ledgers
100% Rag Ext. No. 1	.36	.37
100% Rag	.28	.29
75% Rag	.21	.22
65% Rag	.18	.19
50% Rag	.15	.16
25% Rag	.1234	.1334

Sulphite Bond & Ledgers—  
Delivered Zone 1

Bonds		Ledgers
No. 1 Sulphite	7.50	8.50
No. 2 Sulphite	6.50	7.50
No. 3 Sulphite	6.00	7.00
No. 4 Sulphite	5.50	6.50

**Bagging**  
(F. o. b. Boston)

Manila Rope—

Foreign	2.60	2.85
Domestic	2.75	—
Transmission Rope	1.25	1.35
Jute Rope	2.1234	2.25
Jute Carpet Threads	1.65	1.75
Gunny No. 1—	—	—
Foreign	1.90	2.00
Domestic	1.75	1.80
Bleachery Burlap	4.25	4.50
Scrap Burlap—	—	—
Foreign	1.90	2.00
Domestic	1.75	1.80
Scrap Sisal	2.00	2.10
Scrap Sisal for Shred-	—	—
ding	2.10	2.35
Wool Tares, heavy	1.90	2.00
New Burlap Cuttings	2.25	2.50
Australian Wool	—	—
Pouches	2.50	2.60
Heavy Baling Bagging	2.00	2.50
Faper Mill Bagging	1.65	1.70
Bagging No. 2	1.10	1.25

**CHICAGO**

**Paper**  
(F. o. b. Mill)

Rag Bond... .12 @ .40

Water Marked Sulphite Bond... .0634 @ .11

Sulphite Bond... .0534 @ .0734

Superfine Writing... .18 @ .24

No. 1 M. F. Book... .0634 @ .0734

No. 2 M. F. Book... .0534 @ .0634

No. 1 S.&S.C. Book... .0634 @ .0734

No. 2 S.&S.C. Book... .0534 @ .0634

Coated Book... .07 @ .12

Coated Label... .07 @ .0834

No. 1 Manila... .0434 @ .0534

No. 1 Fibre... .0434 @ .0534

No. 2 Manila... .0434 @ .0434

Butcher's Manila... .0334 @ .0334

No. 1 Kraft... 4.75 @ 5.00

Southern Kraft... 3.88 @ 4.25

No. 2 Kraft... 3.88 @ 4.25

Wood Tag Boards... .0434 @ .0634

Sulphite Screenings... .03 @ .0334

Manila Tissue... .0534 @ .07

White Tissue... .07 @ .09

(Delivered Central Territory)

News, per ton—

Rolls, contract	42.00	—
Sheets, open	47.00	—

Boards, per ton—

Plain Chip	46.50	—
Solid News	50.00	—

Manila Lined Chip... 55.00 @ —

Patent Coated... 65.00 @ —

Container Lined—

85 Test, per 1000 sq. ft.	1.70	—
100 Test, per 1000 sq. ft.	1.85	—

**Old Papers**  
(F. o. b. Chicago)

Shavings—

No. 1 White Envelope Cuttings	1.70	2.00
No. 1 Hard White	1.40	1.65
No. 1 Soft White	1.25	1.50
Ledger & Writings	.60	.70
Solid Books	.50	.60
Blanks	1.00	1.05
Krafts	.80	.90
New Kraft Cuts	1.20	1.30
Manila Env. Cuts	1.25	1.30
Ex. No. 1 Manila	.90	1.00
Print Manila	.40	.50
Overissue News	.40	.45

Old Newspapers—

No. 1 Folded News	.4234	.45
No. 1 Mixed Paper	.25	.30

Roofing Stocks—

No. 1	30.00	—
No. 2	28.00	—

**BOSTON**

**Paper**

Rag Content Bond & Ledgers—  
Delivered Zone 1

Bonds		Ledgers
100% Rag Ext. No. 1	.36	.37
100% Rag	.28	.29
75% Rag	.21	.22
65% Rag	.18	.19
50% Rag	.15	.16
25% Rag	.1234	.1334

Sulphite Bond & Ledgers—  
Delivered Zone 1

Bonds		Ledgers
No. 1 Sulphite	7.50	8.50
No. 2 Sulphite	6.50	7.50
No. 3 Sulphite	6.00	7.00
No. 4 Sulphite	5.50	6.50

F.o.b. Mill

Book, Super	.06	.09
Book, M. F.	.0534	.0834
Book, Coated	.0834	.18
Coated Litho	.09	.12
Jute Manila No. 1	.11	.13
Manila, Sul. No. 1	.0434	.0634
Manila, Sul. No. 2	.0334	.0434
No. 1 Kraft	.0434	—
No. 2 Kraft	.0434	—

(Delivered New England points)

Southern Kraft	.04	—
News Print Rolls	39.50	—
Straw Board, rolls	40.00	35.00
Filled News Board	42.50	45.00
Chip Board	40.00	42.50
Single Manila Lined	—	—
Chip	50.00	55.00
Single White, Patent	—	—
Coated News Board	60.00	65.00
(Bender)	60.00	65.00
Wood Pulp Board	70.00	75.00
Binder Boards (Standard Grade)	67.00	75.00

**Old Papers**  
(F. o. b. Boston)

Shavings—

No. 1 Hard White	2.20	2.35
No. 1 Soft White	1.85	2.15
No. 2 Mixed	.75	.80
Solid Ledger Books	1.50	1.75
Overissue Ledger	—	—
Stock	1.15	1.30
Mixed Ledgers	.85	.90
No. 1 Books, heavy	.65	.75
No. 1 Books, light	.50	.60
Crumpled Stitchless	—	—
Book Stock	.50	.60
Manila Env. Cuttings	1.50	1.60
Manila Env. Cuttings, extra quality	1.75	1.85
Old Newspapers	.4734	.50
No. 1 Old Manila	.60	.65
White Blank News	1.10	1.15
No. 1 Kraft	1.20	—
Mixed Papers	.35	—
Print Manila	.55	.60
Container Manilas	.2734	—
Old Newspapers	.45	.4734
Overissue News	.50	—
Box Board Chips	.30	—
Corrugated Boxes	.4734	.50
Kraft corrugated boxes	.95	1.00
Screening Wrappers	.40	.45

**Domestic Rags (New)**  
(F. o. b. Boston)

Shirt Cuttings—

New Light Prints	.0334	.0334
New White No. 1	.0734	.08
New White No. 2	.0434	.05
Silesias No. 1	.0634	.0634
New Black Silesias	.0334	.0434
Soft Unbleached	.08	.0834
Blue Chevoit	.0634	.07
Fancy	.03	.0334
Washable	.02	.0280

Cottons—According to grades—

Blue Overalls	6.25	6.75
New Black, soft	.04	.0434
Khaki Cuttings	.0334	.04
O. D. Khaki	.0334	.0434
Corduroy	.0234	.03
New Canvas	—	.05
B.V.D. Cuttings	.0734	.08

**Domestic Rags (Old)**  
(F. o. b. Boston)

Canvas	.0434	—
White No. 1—	—	—
Repacked	—	2.75
Miscellaneous	2.50	2.75
White No. 2	—	—
Repacked	1.90	2.00
Miscellaneous	2.00	2.25
Two and Blues	1.75	2.00
Thirés and Blues—	—	—
Repacked	1.3734	1.75
Miscellaneous	1.25	1.6234
Black Stockings	3.90	4.00

Roofing Stock—

No. 1	1.75	1.80
No. 2	1.65	1.70
No. 3	1.30	1.35

**Foreign Rags**  
(F. o. b. Boston)

Dark Cottons	1.85	2.00
Cuttings	6.50	6.75
Dutch Blues	2.25	2.50
New Checks & Blues	2.50	3.00
Old Fustians	2.05	2.25
Old Linsey Garments	2.00	2.3734
New Silesias	5.75	6.00

**PHILADELPHIA**

**Paper**

Rag Content Bond & Ledgers—  
Delivered Zone 1

Bonds		Ledgers
100% Rag Ext. No. 1	.36	.37
100% Rag	.28	.29
75% Rag	.21	.22
65% Rag	.18	.19
50% Rag	.15	.16
25% Rag	.1234	.1334

Sulphite Bond & Ledgers—  
Delivered Zone 1

Bonds		Ledgers
No. 1 Sulphite	7.75	8.75
No. 2 Sulphite	6.75	7.75
No. 3 Sulphite	6.00	7.00
No. 4 Sulphite	5.50	6.50

F.o.b. Mill

Book, M. F.	5.00	—
Book, S. S. & C.	3.25	—
Book, Coated	6.15	—
Coated Lithograph	6.15	—
No. 1 Jute Manila	10.50	—
Manila Sul. No. 1	6.75	—
Manila No. 2	4.25	—
No. 1 Kraft	6.00	—
Southern Kraft	5.00	—
News Print Rolls	40.00	—
Straw Board	40.00	45.00
News Board	40.00	—
Chip Board	37.50	—
Wood Pulp Board	70.00	85.00

Binder Boards—

No. 1, per ton	75.00	80.00
No. 2, per ton	70.00	75.00
Carload lots	65.00	70.00

Tarred Felts—

Regular	52.25	54.25
Slaters (per roll)	.84	.94

Khaki Cuttings—

No. 1 O. D.	.04	.0434
No. 2 Mixed	.0334	.04
Corduroy	.02	.0234
New Canvas	.04	.0434
New Black Mixed	.02	.0234

**Domestic Rags (Old)**

White No. 1—	—	—
Repacked	4.00	4.50
Miscellaneous	3.00	3.50
Thirés and Blues—	—	—
Miscellaneous	2.00	2.25
Repacked	2.50	2.75
Black Stockings	4.50	5.00

Roofing Stock—

Foreign No. 1	2.20	2.25
Domestic No. 1	1.50	1.60
Domestic No. 2	1.40	1.50
Roofing bagging	1.10	1.20

**Bagging**  
(F. o. b. Phila.)

Gunny, No. 1—

Foreign	2.00	—
Domestic	2.25	—
Manila Rope	2.75	—
Sisal Rope	2.25	2.35
Mixed Rope	1.00	1.10
Scrap Burlaps—	—	—
No. 1	2.25	2.50
No. 2	1.00	1.10
Wool Tares, heavy	3.25	3.50
Mixed Strings	1.00	1.10
No. 1 New Light	—	—
Burlap	3.00	3.50
New Burlap Cuttings	2.50	2.75

**Old Papers**  
(F. o. b. Phila.)

Shavings—

No. 1 Hard White	2.30	2.40
No. 2 Hard White	2.10	2.20
No. 1 Soft White	1.80	1.85
No. 2 Soft White	1.40	1.45
No. 1 Mixed	—	.85
Solid Ledger Stock	1.50	1.60
Ledger Stock, white	1.15	1.20
Ledger Stock, colored	.85	.90
No. 1 Books, heavy	.65	.70
Manila Cuttings	1.80	1.90
Print Manila	.55	.60
Container Manilas	.55	.60
Kraft Paper	1.10	1.20
No. 1 Mixed Paper	.45	.50
Straw Board Chip	.40	—
Binders Board Chip	.40	—
Corrugated Board	.60	.65
Overissue News	.60	—
Old Newspapers	.45	—

**BOSTON**

**Paper**

Rag Content Bond & Ledgers—  
Delivered Zone 1

Bonds		Ledgers
100% Rag Ext. No. 1	.36	.37
100% Rag	.28	.29
75% Rag	.21	.22
65% Rag	.18	.19
50% Rag	.15	.16
25% Rag	.1234	.1334

Sulphite Bond & Ledgers—  
Delivered Zone 1

Bonds		Ledgers
No. 1 Sulphite	7.75	8.75
No. 2 Sulphite	6.75	7.75
No. 3 Sulphite	6.00	7.00
No. 4 Sulphite	5.50	6.50

F.o.b. Mill

Book, M. F.	5.00	—
Book, S. S. & C.	3.25	—
Book, Coated	6.15	—
Coated Lithograph	6.15	—
No. 1 Jute Manila	10.50	—
Manila Sul. No. 1	6.75	—
Manila No. 2	4.25	—
No. 1 Kraft	6.00	—
Southern Kraft	5.00	—
News Print Rolls	40.00	—
Straw Board	40.00	45.00
News Board	40.00	—
Chip Board	37.50	—
Wood Pulp Board	70.00	85.00

Binder Boards—

No. 1, per ton	75.00	80.00
No. 2, per ton	70.00	75.00
Carload lots	65.00	70.00

Tarred Felts—

Regular	52.25	54.25
Slaters (per roll)	.84	.94

**Domestic Rags (Old)**  
(F. o. b. Boston)

Canvas	.0434	—
White No. 1—	—	—
Repacked	—	2.75
Miscellaneous	2.50	2.75
White No. 2	—	—
Repacked	1.90	2.00
Miscellaneous	2.00	2.25
Two and Blues	1.75	2.00
Thirés and Blues—	—	—
Repacked	1.3734	1.75
Miscellaneous	1.25	1.6234
Black Stockings	3.90	4.00

Roofing Stock—

No. 1	1.75	1.80
No. 2	1.65	1.70
No. 3	1.30	1.35

**Foreign Rags**  
(F. o. b. Boston)

Dark Cottons	1.85	2.00
Cuttings	6.50	6.75
Dutch Blues	2.25	2.50
New Checks & Blues	2.50	3.00
Old Fustians	2.05	2.25
Old Linsey Garments	2.00	2.3734
New Silesias	5.75	6.00

**Domestic Rags (New)**  
(Price to Mill, f. o. b. Phila.)

Shirt Cuttings—

New White, No. 1	.08	.0834
New White, No. 2	.0434	.05
Light Silesias	.0534	—
Silesias, No. 1	.0434	.05
Black Silesias, soft	.0334	.04
New Unbleached	.06	—
Washable, No. 1	.02	.0234
Blue Overall	.07	.0734

Cottons—According to grades—

Washable, No. 2	.0234	.0434
New Blue	.02	.0234
Fancy	.03	—
New Black Soft	.04	.0434
New Light Seconds	.0334	.04
New Dark Seconds	2.00	2.25

**PHILADELPHIA**

**Paper**

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Delivered Zone 1

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75% Rag	.21	.22
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F.o.b. Mill

Book, M. F.	5.00	—
Book, S. S. & C.	3.25	—
Book, Coated	6.15	



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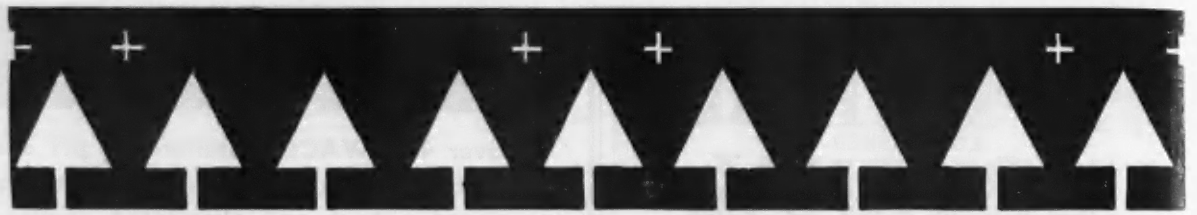
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