

1916  
65  
3  
43180  
OCT 6  
LIBRARY  
RECEIVED

# TECHNICAL FALL MEETING NUMBER FORTY-SIXTH YEAR

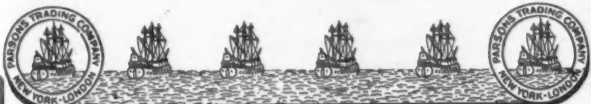
# PAPER TRADE JOURNAL

THE INTERNATIONAL WEEKLY OF THE PAPER AND PULP INDUSTRY.

ESTABLISHED IN 1872

Vol. LXV. No. 14. NEW YORK AND CHICAGO, OCTOBER 4, 1917

(Per Annum, \$4.00  
Single Copy, 10 Cents)



## A FOREIGN DEMAND FOR YOUR PAPER

will keep your mills working to capacity in normal times by absorbing the surplus over the requirements of your domestic market.

The Parsons Trading Company with its established branches and selling organization throughout the world supplies the medium by which this surplus can be exported without trouble, risk or expense to you. Now is the time to prepare for a PERMANENT capacity output.

**PARSONS TRADING COMPANY**  
Exporters and Importers of Paper and Pulp  
17 Battery Place, NEW YORK

LONDON  
BUENOS AIRES  
HARANA  
MEXICO, D. F.  
STOCKHOLM

SYDNEY  
MELBOURNE  
WELLINGTON  
CAPE TOWN  
BOMBAY

**VITO G. CANTASANO & BROS.**  
Special Packing of New & Old Cotton Rags,  
Woolens, Bagging and all grades  
of Paper Stock.

OFFICE AND MAIN PACKING HOUSE, 185 SOUTH STREET  
Branch—395 PEARL STREET 34 VANDEWATER STREET  
New York  
Telephone 1832-1833 Beekman.

## F. BREDT & CO.

240 WATER STREET, NEW YORK CITY

ANILINE COLORS  
and DYESTUFFS for  
Paper Mills



TRADE MARK  
Ultramarine Blue, Brown  
and White Sugar of Lead,  
Canvas Dryer Felts

SOLE AGENTS FOR

**JOSEPH PORRITT & SONS** **FELTS AND JACKETS**

**Morey and Company**  
INCORPORATED

**PAPER STOCK**

111 Devonshire St. Boston, Mass.

**Did You Look ?  
at Page 15**

**PAPER STOCK, RAGS, ETC.**

**J. I. LENHART**

236 N. DELAWARE AVE. PHILADELPHIA

WAREHOUSES: { 231 N. WATER ST.  
236 N. DELAWARE AVE.

WALTER P. SIMONDS, Pres. and Treas. H. R. WOODWARD, Asst. Treas.

## TRAIN SMITH COMPANY

IMPORTERS AND DEALERS IN

ALL GRADES OF FOREIGN AND  
DOMESTIC PAPER STOCK

67 MILK STREET, Equitable Bldg., BOSTON, MASS

## GLENS FALLS MACHINE WORKS

GLENS FALLS, N. Y.

PAPER and PULP MILL MACHINERY

SOLE MANUFACTURERS OF

Rogers Wet Machine  
For Chemical Pulp  
Rotary Sulphur Burners  
Improved Wet Machines

Moore Rotary Screen  
For Ground Wood Pulp  
Improved Standard Grinders  
Rotary Pumps, Etc.

**BERMINGHAM & SEAMAN CO.**  
Paper Manufacturers..

Chicago, New York, Philadelphia, Buffalo,  
Detroit, Milwaukee, Minneapolis, St. Louis

Paper and Cardboards of all kinds.

Carload lots and time contracts solicited.

We have the largest stock of "Seconds" carried in the West.

## PRICE & PIERCE, Ltd.

30 EAST 42ND ST., NEW YORK

SOLE AGENTS

OBBOLO  
FRÅNÖ  
NORRBOTTEN **KRAFTS**  
KORSNAS

**INTERNATIONAL PULP CO.**

NEW YORK CITY

**ASBESTINE PULP**

REG. U. S. PATENT OFFICE

**FILLER**

**90% RETENTION**

VULCANIZED FIBRE  
PARCHMOID FILTER PAPER  
VEGETABLE PARCHMENT  
GLASSINE



Diamond State Fibre Co.  
Bridgeport, Pennsylvania

HUDSON TRADING COMPANY  
PAPER

OF EVERY DESCRIPTION

DOMESTIC and EXPORT

18 East 41st St., New York City

OFFICES AT

BUENOS AIRES HAVANA SANTIAGO RIO DE JANEIRO

IMPROVED HIGH SPEED MACHIN-  
ERY TO MAKE

PAPER BAGS

OF EVERY STYLE OF BOTTOM  
FOR LINED AND UNLINED BAGS

POTDEVIN MACHINE CO.

253 36th STREET

BROOKLYN, N. Y.

F. L. SCHMIDT COMPANY

MANUFACTURERS OF

ENVELOPE MACHINES

and special paper handling machinery, de-  
signing, pattern making, machine work.

150 ELEVENTH AVE.

NEW YORK

CUTTING  
DIES

We have been in business since 1849  
and are exceptionally well fitted by ex-  
perience, with equipment and highest  
class of workmen, to furnish dies for  
cutting paper, etc., for all purposes.



For Dieing Out Envelopes, Labels, Lith-  
ographs and Advertising Novelties, Boxes,  
Wrappers, Gaskets, Toys, Paper Napkins,  
Drinking Cups, etc., etc.

The Hoggson & Pettis Mfg. Co.

NEW HAVEN, CONN., U. S. A.

"By Test The Best"



SERVICE  
EFFICIENCY  
ECONOMY

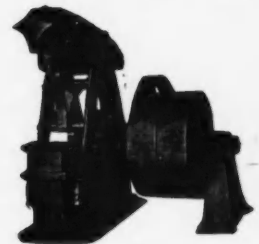
are the prime reasons why  
our

SPLITTERS AND BARKERS

are in universal use in the pulp industry of United  
States and Canada. Write us for particulars.

WATERVILLE  
IRON WORKS

WATERVILLE  
MAINE



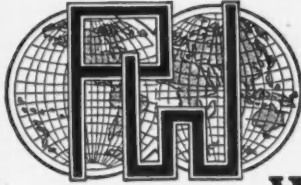






**Parsons & Whittemore, Inc.** 174 Fulton St. New York City

**P**aper Exporters



**A**gents for Mc-Namee Clay

**N**early everything for Paper Mills

**D**omestic Export and Import

**W**ood Pulp—All grades.

**Taggarts Paper Co.**

MANUFACTURERS OF

**Catalogue, Light Weight Manilas and Specialties**

MAIN OFFICE

Sherman Bldg., WATERTOWN, N. Y.

**FOR YOUR PROTECTION**

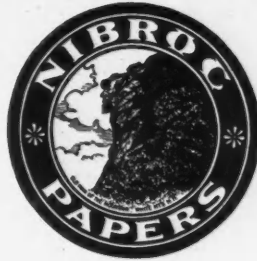
and to prevent SUBSTITUTION see that OUR LABEL is on EVERY PACKAGE



**IDEAL COATED PAPER CO.**

Main Office, New York      BROOKFIELD, MASS.      Cincinnati      Chicago

**GENUINE KRAFT**



**Nibroc Kraft**

**Nibroc Fibre**

**Nibroc Bond**

**Drug Wrapping**

Bleached Sulphite Pulp  
Unbleached Sulphite Pulp

GET OUR LATEST QUOTATIONS

**BERLIN MILLS COMPANY**

PORTLAND, ME.

New York Office: Woolworth Bldg.

Chicago Office: 118 So. Dearborn St.

**DELLO**



**BOND**

AND  
**HIGH-GRADE WRAPPING PAPERS**  
**ODELL MANUFACTURING COMPANY**

291 Broadway, New York  
PAPER AND PULP MILLS, GROVETON, N. H.

Super Calenders  
Breaker Calenders  
Friction Calenders  
Embossing Calenders  
Hydraulic Presses and Pumps



Successors to the Granger Foundry & Machine Co.

**The Textile-Finishing Machinery Company**

Providence, R. I.

# BUYER'S GUIDE : Classified Index to Advertisements

All advertisers are entitled to one insertion under proper heading. Extra insertions, \$5.00 per annum. Extra Headings, \$10.00.

	Page.		Page.		Page.
<b>AGALITE.</b>		Marden, Orth & Hastings Corp.....	53	<b>KNIVES.</b>	
Union Talc Co.....	95	<b>CONDENSERS.</b>		Eagle Knife & Bar Works.....	41
<b>ALUM.</b>		Westinghouse Electric & Mfg. Co.....	25	<b>MAGNETIC EXTRACTOR.</b>	
Detroit Chemical Works.....	61	<b>CONVEYORS.</b>		PAPER BAGS.	
Pennsylvania Salt Mfg. Co.....	96	Jeffrey Mfg. Co.....	43	Roland T. Oakes Co.....	81
Superior Chemical Co.....	79	<b>CRANES AND TRAMWAYS.</b>		<b>MOTORS AND GENERATORS.</b>	
Winkler & Bro., Isaac.....	73	Hugh R. Blethen.....	13	General Electric Co.....	23
<b>ARCHITECTS AND ENGINEERS.</b>		Shenard Electric Crane & Hoist Co.....	11	Schorsch & Co.....	67
Hardy, S. Ferguson.....	59	<b>CUTTING DIES.</b>		<b>PAPER BAG MACHINERY.</b>	
Hardy, George F.....	59	The Hoggson & Pettis Mfg. Co.....	2	Lockport Machine Co.....	86
Sadtler, P. B.....	59	Independent Die Co.....	71	Potdevin Machine Co.....	2
Smith, F. L.....	59	<b>DIGESTER LININGS.</b>		<b>PAPER CUTTERS.</b>	
Stebbins Engineering & Mfg. Co.....	59	Stebbins Engineering & Mfg. Co.....	59	Hamblet Machine Co.....	49
Tomlines, Thomas L.....	59	<b>ENGINES.</b>		Oswego Machine Works.....	79
Vitale & Rothery.....	59	Ball Engine Co.....	71	Seybold Machine Co.....	31
Joseph H. Wallace & Co.....	59	<b>ENGINES, STEAM.</b>		Smith & Winchester Mfg. Co.....	94
<b>ASBESTINE PULP.</b>		Westinghouse Electric & Mfg. Co.....	25	<b>PAPER DEALERS.</b>	
International Pulp Co.....	1	<b>ENVELOPE MACHINES.</b>		Birmingham & Seaman Co.....	1
<b>AUTOMATIC COMPENSATOR.</b>		F. L. Schmidt Co.....	2	Dillon & Barnes.....	91
Electric Controller & Mfg Co., The, Cleve-		<b>EVAPORATORS.</b>		C. L. LaBoiteaux Co.....	77
land, Ohio.....	21	Swenson Evaporator Co.....	4	Mid-West Paper Co.....	86
<b>BALL BEARINGS.</b>		<b>FELTS.</b>		Paper Manufacturers Co.....	93
S K F Ball Bearing Co.....	95	Appleton Woolen Mills.....	6	Pulp & Paper Trading Co.....	5
<b>BELTING.</b>		Caldwell Co., Inc., R. J.....	56	<b>PAPER DRYING REGULATORS.</b>	
Graton & Knight Mfg. Co.....	17	Draper Bros. Co.....	49	W. F. Pickles.....	41
New York Belting & Packing Co.....	29	F. C. Huyck & Sons.....	19	<b>PAPER EXPORTERS.</b>	
<b>BLEACHING POWDER.</b>		Orr Felt & Blanket Co., The.....	35	Capens' Sons, Inc., A. M.....	91
Arnold Hoffman & Co., Inc.....	93	Shuler & Benninghofen.....	73	Hudson Trading Co.....	2
Bush, Beach & Gent, Inc.....	73	Waterbury Felt Co.....	6	Parsons Trading Co.....	1
J. L. & D. S. Riker.....	95	H. Waterbury & Sons Co.....	51	<b>PAPER FILLERS.</b>	
<b>CALENDER ROLLS.</b>		<b>FILTERING SYSTEMS.</b>		United States Talc Co.....	59
Farrel Foundry Machine Co.....	63	Hungerford & Terry Inc.....	81	C. W. Williams & Co.....	96
Loddell Car Wheel Co.....	49	New York Continental Jewell Filtration Co.	5	<b>PAPER AND PULP MACHINERY.</b>	
Textile Finishing Machinery Co.....	3	Norwood Engineering Co.....	71	Appleton Machine Co.....	95
<b>CARBON TOOLS.</b>		Wm. B. Scaife & Sons Co.....	11	Baker Manufacturing Corp.....	37
Thos. L. Dickinson.....	65	<b>FILTER PLATES AND SCREENS</b>		Beloit Iron Works.....	43
<b>CASTING BRONZE.</b>		(PER'D METAL).		Black-Clawson Co.....	37
Wm. A. Hardy & Sons.....	41	Harrington & King Perforating Co.....	31	Clafin Engineering Co.....	33
<b>CHAIN DRIVES.</b>		<b>FOURDRINIER WIRES.</b>		H. C. Clark & Son Machine Co.....	87
Morse Chain Co.....	27	Appleton Wire Works.....	96	Dayton Beater & Hoist Co.....	77
<b>CHEMICAL EXPERTS.</b>		Wm. Cahble Excelsior Wire Mfg. Co.....	96	F. H. Davis.....	84
The Emerson Laboratory.....	59	Cheney Bigelow Wire Works.....	13	Dillon Machine Co.....	81
Arthur D. Little, Inc.....	67	Eastwood Wire Mfg. Co.....	96	Dilts Machine Works.....	11
<b>CHINA CLAY.</b>		Thomas E. Gleeson.....	6	Downingtown Mfg. Co.....	94
Miner-Edgar Co.....	41	Lindsay Wire Weaving Co.....	73	Emerson Mfg. Co.....	63
Star Clay Co.....	96	<b>FRICITION CLUTCHES.</b>		Glens Falls Machine Co.....	1
<b>COATING MACHINES.</b>		Caldwell Co., W. E.....	53	Huband & Nash Co.....	61
Mayer Coating Machines Co.....	79	Hill Clutch Co.....	65	Improved Paper Machinery Co.....	19
<b>COLORS AND DYESTUFFS.</b>		<b>GUMMED PAPER.</b>		Mills Machine Co.....	84
F. Bredt & Co.....	1	Ideal Coated Paper Co.....	3	Noble & Wood Machine Co.....	65
Heller & Merz Co.....	49	Nashua Gummed & Coated Paper Co.....	73	Norwood Engineering Co.....	71
A. Klipstein & Co.....	71			Shartle Brothers Machine Co.....	87

## Pulp Mills Complete

We are prepared to furnish a complete line of machinery and equipment needed in the recovery or chemical end of soda and sulphate pulp mills.

Our line includes diffusers, digesters, causticizers, incinerators, disc evaporators, melt tanks, waste heat boilers, smelters, leaching batteries, etc. Most of the American Kraft Mills have our equipment.

### SWENSON EVAPORATOR CO.

945 Monadnock Block

CHICAGO, ILLINOIS

Cable Address: "Evaporator" Chicago



# BUYER'S GUIDE : Classified Index to Advertisements

All advertisers are entitled to one insertion under proper heading. Extra insertions, \$5.00 per annum. Extra Headings, \$10.00.

	Page.		Page.		Page.
<b>PAPER AND PULP MACHINERY—Cont.</b>		<b>PERFORATED METALS.</b>		<b>SULPHITE FITTING.</b>	
Smith & Winchester Mfg. Co.....	94	Harrington & King Perforating Co.....	33	Stebbins Engineering & Mfg. Co.....	59
Union Iron Works.....	79	<b>PULP PROCESS.</b>		<b>SULPHUR.</b>	
Voth Co., J. M.....	39	Castle, Gottheil & Overton.....	67	Union Sulphur Co.....	67
<b>PAPER MAKERS' SUPPLIES.</b>		Hall Process Corp.....	57	<b>SULPHUR BURNERS.</b>	
Morey & Co.....	1	<b>PULP SHREDDERS.</b>		Stebbins Engineering & Mfg. Co.....	59
Scandinavian-American Trading Co.....	6	Ryther & Pringle Co.....	31	<b>TANKS.</b>	
<b>PAPER MANUFACTURERS.</b>		<b>PULP STONES.</b>		Caldwell Co., W. E.....	45
American Coating Mills.....	6	Lombard & Co.....	71	New England Tank & Tower Co.....	81
Berlin Mills Co.....	3	<b>PUMPS.</b>		A. T. Stearns Lumber Co.....	95
Collins Mfg. Co.....	61	Goolds Mfg. Co.....	37	<b>TIERING MACHINES.</b>	
Diamond State Fibre Co.....	2	Shurtle Brothers Machine Co.....	84, 87	Economy Engineering Co.....	65
Eastern Mfg. Co.....	13	<b>ROLL BARS AND BED PLATES.</b>		New York Revolving Portable Elevator Co.	67
Flower City Tissue Mills Co.....	63	Shurtle Brothers Machine Co.....	84	<b>TIMBER ESTIMATES.</b>	
Franklin Paper Co.....	75	<b>ROPE PAPER MAKERS' MATERIALS.</b>		James W. Sewall.....	59
Hammermill Paper Co.....	39	Scandinavian-American Trading Co.....	6	<b>TOILET PAPER.</b>	
Howard Paper Co.....	35	<b>ROSIN SIZE.</b>		Pickquik.....	85
Missisquoi Pulp & Paper Co.....	79	Arabol Mfg. Co.....	95	<b>TRANSMISSION MACHINERY.</b>	
Niagara Paper Mills.....	67	Vera Chemical Co.....	95	H. W. Caldwell & Son Co.....	55
Odell Mfg. Co.....	3	<b>ROTARY BLEACHERS.</b>		<b>TRUCKS.</b>	
Taggart Paper Co.....	3	Biggs Boiler Works Company.....	77	Stuebing Truck Co.....	45
West End Paper Co.....	53	<b>RUB-STEEL VALVES</b>		<b>TURBINES, STEAM.</b>	
<b>PAPER SPECIALTIES.</b>		Voorhees Rubber Mfg. Co.....	35	Westinghouse Electric & Mfg. Co.....	25
Paper Mills Specialty Co.....	45, 53	<b>SCREENS.</b>		<b>VARIABLE SPEED TRANSMISSION.</b>	
<b>PAPER STOCK.</b>		Bird Machine Co.....	46 and 95	Reeves Pulley Company.....	55
Atterbury & McKelvey, Inc.....	67	Harmon Machine Co.....	95	<b>WALL BOARD CUTTERS.</b>	
Atterbury Bros.....	91	<b>SCREEN PLATES.</b>		Knowlton Co., M. D.....	79
Edwin Butterworth & Co.....	51	Wm. A. Hardy & Sons Co.....	41	<b>WATERPROOF PAPERS.</b>	
Cantasano & Bro., Vito G.....	1	Union Screen Plate Co.....	11	National Waterproofing Co.....	49
Castle, Gottheil & Overton.....	91	<b>SECOND HAND PAPER MILL MA- CHINERY.</b>		<b>WATER SOFTENING AND PURIFYING APPARATUS.</b>	
Cookson, James.....	86	Shurtle Brothers Machine Co.....	84, 87	Wm. B. Scaife & Sons Co.....	11
Federal Paper Stock Co.....	79	<b>SIZING.</b>		<b>WATER WHEELS.</b>	
Gumbinsky Bros. Co.....	96	Corn Products Refining Co.....	45	James Leffel & Co.....	94
Hofeller & Co., Theodore.....	91	<b>SKYLIGHTS.</b>		Oval Wood Dish Co.....	73
Imperial Bagging Co.....	59	E. Van Noorden Co.....	5	<b>WOOD PIPES.</b>	
Keller Co., Inc., E. J.....	1	<b>SLITTERS AND REWINDERS.</b>		Wyckoff & Son Co., A.....	63
Lenhart, J. I.....	91	Cameron Machine Co.....	81	<b>WOOD PREPARING MACHINERY.</b>	
Maier, Marx.....	91	Dietz Machine Works.....	61	Waterville Iron Works.....	2
Main Paper Stock Co.....	91	Kidder Press Co.....	55	<b>WOOD PULP.</b>	
Mendelson Bros. Paper Stock Co.....	86	Samuel M. Langston.....	59	Scandinavian-American Trading Co.....	6
Pioneer Paper Stock Co.....	77	Meisel Press & Mfg. Co.....	67	<b>WOOD PULP IMPORTERS.</b>	
Salomon, Inc., A.....	71	<b>SPEED INDICATOR.</b>		Andersen & Co., J.....	6
Salomon Bros. & Co.....	91	N. P. Bowsher Co.....	87	Ira L. Beebe & Co.....	91
Smith, Edward J.....	81	<b>STOKERS, MECHANICAL.</b>		Gottesman & Son, M.....	33
Train Smith Company.....	1	Westinghouse Electric & Mfg. Co.....	25	Interstate Pulp & Paper Co.....	5
Western Paper Stock Co.....	77	<b>SULPHATE ("KRAFT" SODA) PULP.</b>		New York Oversea Co., Inc.....	77
<b>PAPER TESTERS.</b>		Scandinavian-American Trading Co.....	6	Pagel & Co., Inc., A. J.....	15
The Ashcroft Mfg. Co.....	13	<b>SULPHITE, BLEACHED &amp; UNBLEACHED.</b>		Parsons & Whittemore, Inc.....	1 and 3
<b>PAPER TUBE MACHINERY.</b>		Parsons Pulp & Lumber Co.....	79	Price & Pierce, Ltd.....	1
Dietz Machine Works.....	61	<b>SULPHITE FIBRE.</b>		Scandinavian-American Trading Co.....	6
Grissinger Machine Works.....	73	Burgess Sulphite Fibre Co.....	57		
<b>PARCHMENT AND WAXED PAPERS.</b>					
Kalamazoo Vegetable Parchment Co.....	55				

SPECIAL CLASSIFIED DIRECTORY, PAGE 87; "WANTS" AND "FOR SALE," PAGES 84 AND 85.

## THE PULP AND PAPER TRADING CO.

Temple Court Building, Rooms 908 to 911, New York

AGENTS FOR

J. & J. ROGERS CO., Ausable Forks, N. Y.

EASTERN AGENTS—

MICHIGAN SULPHITE FIBRE CO., Port Huron, Mich.

## GRAVITY AND PRESSURE

# FILTERS

## WATER SOFTENING PLANTS

The New York Continental Jewell Filtration Co.

15 Broad Street, New York

111 W. Monroe St., Chicago Inter-State Building, Kansas City

## Van Noorden Skylights

To work by the Sun  
Means twice the work done.



are as

Indispensable

To a modern Paper Mill as its important inner equipment "DAYLITE" means Nature's light without weather or condensation drip.

E. VAN NOORDEN & CO. 103 Magazine St. Boston, Mass.

# INTERSTATE PULP AND PAPER COMPANY

Grand Central Terminal, New York

## WOOD PULP AND PAPER

## J. ANDERSEN & CO

FREDERICK BERTUCH, Special  
Successors to Frederick Bertuch & Co.

Rooms 908, 909, 910 Temple Court Building, New York.

Importers and Dealers in

## WOOD PULP and PAPER

Agents for

KELLNER-PARTINGTON PAPER PULP CO., Ltd.  
(Mills at Sarpsborg, Norway, Hallein, Austria) Manchester,  
England

VEREINIGTE STROHSTOFF FABRIKEN  
(United Straw Pulp Factories, Coswig, Saxony, Germany)

## THE WATERBURY FELT CO.



### FELTS AND JACKETS

For Every Grade of Paper  
and Pulp

Correspondence and orders solicited.

Manufactured at  
SKANEATELES FALLS, N. Y.



Manufacturers of

Coated Cardboard, Boxboard and Litho-  
graph Paper, including Lithograph Blanks,  
Postal Card Stock, Tough Check, Rail-  
road, Thick China, Transluents and  
Menu Board.

Our Boards and Papers lie flat, hang straight, and  
register because they are made right.  
Orders for regular or special sizes are given prompt  
attention. Quality guaranteed.

TRY US AND SEE

EASTERN SALES OFFICE, 501 Fifth Avenue, NEW YORK CITY

## FOURDRINIER WIRES

Cylinder Moulds and Dandy Rolls made and Repaired  
Lettering and Monograms for Watermarks

## THOMAS E. GLEESON INC

Manufacturers of Wire Cloth of All Descriptions  
411-413 JOHN STREET, EAST NEWARK, N.J.

SPECIALTY

**THE FINEST WIRES**  
FOR TISSUE AND FINE GRADE PAPERS

Telephone 1700 Broad Cable Address, "Lagerlof Newyork"  
1701

## Scandinavian-American Trading Company

PRODUCE EXCHANGE BUILDING, NEW YORK

IMPORTERS AND EXPORTERS OF

FOREIGN AND DOMESTIC

## WOOD PULP

OF ALL KINDS

AND

PAPER MILL SUPPLIES

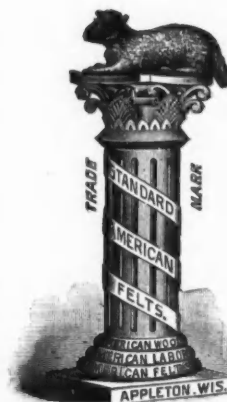
HANS LAGERLÖF, PRES.

# APPLETON Woolen Mills

APPLETON, WIS.

MANUFACTURERS OF

Paper  
Makers'  
Felts and  
Jackets



CORRESPONDENCE SOLICITED

# PAPER TRADE JOURNAL

THE INTERNATIONAL WEEKLY OF THE PAPER AND PULP INDUSTRY

## FORTY-SIXTH YEAR

PUBLISHED EVERY THURSDAY BY THE  
LOCKWOOD TRADE JOURNAL COMPANY, INC.

LESLIE R. PALMER, President

J. W. VAN GORDON, Vice-President

Telephones  $\left\{ \begin{array}{l} 2380 \\ 2381 \\ 2382 \end{array} \right\}$  Vanderbilt 10 EAST 39TH ST., N. Y., U. S. A. Cable Address: Catchow, New York

Western Publication Office—431 S. Dearborn Street, Chicago  
New England Office—Room 46, 127 Federal Street, Boston

Western New England News Office—A. W. Anders, Holyoke  
London Office—Stonhill & Gillis, 58 Shoe Lane

The PAPER TRADE JOURNAL is the pioneer publication in its field, and has for many years been the recognised Organ of the Paper and Pulp Industry. Its circulation is greater than the combined circulations of all other publications in the field. Entered at New York Post office as second-class mail matter.

### Terms of Subscription

UNITED STATES AND MEXICO . . . . . Per year, \$4; 6 months, \$2; 3 months, \$1  
CANADA AND FOREIGN COUNTRIES IN POSTAL UNION . . . . . Per year, \$6  
SINGLE COPIES . . . . . 10 cents

### Other Publications of Lockwood Trade Journal Company

AMERICAN STATIONER AND OFFICE OUTFITTER (Weekly) - Per year, \$2  
LOCKWOOD'S DIRECTORY OF THE PAPER, } . . . . . Per copy, \$5  
STATIONERY AND ALLIED TRADES (Annual) }

Vol. LXV. No. 14.

NEW YORK AND CHICAGO

Thursday, October 4, 1917.

## Table of Contents

### News of the Trade:

	PAGE.
Technical Association Meets at Holyoke.....	8
Report of Committee on Sulphate Pulp.....	9
The Preparation of Sulphite Acid.....	12
Factors in the Quality of Ground Wood.....	16
Determining the Strength of Pulp.....	20
Investigation of Stresses in Digester Shells.....	22
Processes for Causticizing Soda Liquors.....	34
Clay Retention .....	44
Sampling and Testing Lap Pulp.....	60
Retention of Fillers by Paper Pulp.....	64
Argentine Market for Toilet Paper.....	70
Higher News Print Prices Are Indicated by Inquiry....	72
Cost of Making Print Paper Shown to Be Near 3c.....	72
News of Chicago Trade.....	72
Philadelphia Trade News.....	72
Paper Can Factory for Sacramento.....	72
Commission Wants Reports from Book Paper Men.....	74
Special Weekly Book Paper Report for Manufacturers..	74
Thomas Smiley Commissioned Captain.....	74
New York Jottings.....	76
Canadian News Print Inquiry Resumed.....	76
Charles Nelson Goes with Kimberly Clark Company....	76
Practical and Technical Questions and Answers.....	78
News Print Trial November 12.....	80
Champion Coated Paper Co. Goes to Court of Appeals...	80

	PAGE.
Speculation Regarding Paper Bills.....	80
First News Print Reports Almost All In.....	80
Paper Mill Employees Show Increase.....	80
Paper Mills in Canada Less Rushed with Orders.....	82
Publishers and Canadian News Print Inquiry.....	82
Welfare Work by Kimberly-Clark Company.....	82
High Wages for Cutting Pulp Wood in Maine.....	83
Price Question Looms Large in Canada.....	83
Increasing Demand for Canadian Power.....	83
Co-operative Buying for Paper Mills.....	83
Better Pulp Wood Supply for New York Paper Men....	86
To Erect Plant for Making Paper Cans.....	92

### Editorial:

Government Contracts .....	50
The Second Liberty Loan.....	50
Canadian Paper Exports.....	50

### Obituary:

William Edward Ritchie.....	51
John Samuel Andrews.....	51
Iver J. Terp.....	51

### Market Review:

New York Market.....	88
Market Quotations .....	89
Miscellaneous Markets .....	92

WANTS AND FOR SALE ADVERTISEMENTS—84 and 85.

## TECHNICAL ASSOCIATION MEETS AT HOLYOKE

Paper Making City Shows Characteristic Hospitality at Joint Convention of the Canadian Technical Section and the Technical Association of the Pulp and Paper Industry—Instructive, Helpful and Enjoyable Program Is Carried Out—Henry E. Fletcher, Promoter of the Association, Frequently Praised—Unusually Good Reports and Papers.

[FROM OUR SPECIAL REPRESENTATIVE.]

HOLYOKE, Mass.—As the citizens of Holyoke wended their way to their daily duties on Thursday morning last they were everywhere greeted with banners displaying the one word "Tappi." To them it may have indicated that a new beverage was to make its initial bid for local consumption, but to the hundreds who were embarking from the early morning trains it evidenced that the "Queen City" of the Connecticut Valley was alive to the fact that it was to be the host for three days to the members of the Technical Association of the Pulp and Paper Industry, and a royal host the city proved to be.

### Holyoke Shows Generous Hospitality

The three days' reception and entertainment was typical of the hospitality for which the paper manufacturers of Holyoke have long been noted as bestowing on visiting guests. Lunches, banquets, sight-seeing trips, auto tours and other forms of entertainment took up the visitors' time when there was any relaxation from the business sessions of the convention on Thursday. Friday and Saturday were given up entirely to these diversions, as the business session occupied but one day.

President Caruth called the session to order and spoke of the remarkable interest being shown in the work of the association and its increasing membership. Thursday morning was devoted to the reports of the various committees, while the afternoon was given up to the reading of papers on the assigned subjects, several being illustrated by stereopticon views.

### An Enjoyable Banquet

With the business session adjourned until the next meeting to be held in New York next February, the members prepared for the banquet given by the manufacturers at the Hotel Nonotuck. This hostelry is on a par with leading metropolitan hotels, and the smoothness with which the evening's affairs were carried out would do credit to the best in the larger centers.

Nearly three hundred attended the banquet which was opened with the entire assembly singing "America," which was followed by "God Save the King." That a new field of endeavor in technical training and education has opened in the paper and pulp industry which will align the industry with the other large industries of the world that have given attention to the technical and scientific development of their business was the theme which dominated the addresses of most of the speakers. Attention was directed to the Technical Association, the infant branch of the industry, which in less than three years has become a lusty youngster and during its maturing years will be an important factor in solving manufacturing problems and assisting in the establishing of standards of undoubted value to the entire industry.

It must not be construed that the banquet features were entirely of a serious strain; no banquet where members of the paper industry are gathered could be without its humorous situations. Stories flowed as freely from the lips of the speakers as if they were scintillating stars facing a first night Broadway audience. That they went across successfully was evidenced by the cheers which greeted each speaker as he was introduced by the toastmaster, Hon. Arthur C. Hastings.

Mayor White, who arrived in time for the banquet, related his experiences of the morning with his taxi driver and the New York traffic officer which resulted in the arrest of the chauffeur and the consequent missing by the mayor of his train. Coming from a family of paper makers and at one time himself a member of the craft, he complimented the members on the advanced methods now employed in the industry and the prominent part they were taking in its progress. "Rush," he said, was the one word in the vocabulary he wished could be eliminated. The customer's injunction to the salesman taking the order was to "rush" its fulfillment; the salesman appended "rush" on the order sent to the mill; each mill employee added "rush" to every instruction he issued until the goods were packed and ready for shipment.

### Co-operation Between Canada and America

Prof. John S. Bates of the Canadian association spoke of the value of the co-operation between the two associations.

Geo. H. Harvey, secretary and general manager of the Colin Gardner Paper Company, touched on the human element question and cited instances where old line superintendents at first rejected what they termed intrusion on the part of the mill chemist, and are now working in perfect harmony with that department.

### Mr. Behrend of Hammermill Company Speaks

The next speaker, Ernst R. Behrend, president of the Hammermill Paper Company, also injected the human equation into his talk and spoke of the relations of employer and employee, strongly urging the former to fill their responsible positions with employees who had grown up in the business and proven proficient rather than to go to outside sources for such assistants.

Jos. G. Taylor, president of Taylor-Logan Company, Paper makers, related some humorous Scotch incidents, which made a hit with his auditors.

### C. A. Crocker Talks to Members

The last speaker of the evening was C. A. Crocker, treasurer of the Crocker-McElwain Company, whom the toastmaster referred to as the one individual who had brought the writing manufacturers together and eliminated many of the unpleasant features connected with this branch of the industry. Mr. Crocker impressively spoke on co-operation not only among employees and employers, but also on the part of employers among themselves.

### Henry E. Fletcher Praised

There was one individual who was frequently referred to by the speakers and who modestly accepted all the kind sayings and yet was the one through whose untiring efforts this gathering of professional men was made possible by the formation of the Technical Association. To Henry E. Fletcher, of the Fletcher Paper Company, of Alpena, Mich., belongs the credit for the organizing of the Technical Association, and he was entitled to the many kind remarks relative to his success in accomplishing what he has done in a short space of time.

Among the reports and papers read at the convention were the following:



## REPORT OF COMMITTEE ON SULPHATE PULP\*

In view of the ever increasing price and scarcity of pulpwood your committee has prepared for this meeting a brief report regarding the suitability of various American woods for the manufacture of kraft pulp. With increase in price and decrease of the available eastern pulpwood supply, it is probable that our western woods standing on private and national forest lands will be used to a larger extent in the near future for the manufacture of pulp and paper, and many of these woods are well suited for the manufacture of a high grade kraft pulp.

The kraft and sulphate processes of pulping, due to the alkaline character of the cooking liquor in which caustic soda and sodium sulphide are the chemicals employed, enable resinous woods to be pulped, which could not be commercially pulped by the sulphite or groundwood process. At the present time, the bulk of the groundwood (1,293,661 tons was produced in the United States in 1914) is made by the grinding of spruce wood; while spruce, hemlock and balsam are the principal woods used in the manufacture of sulphite pulp (1,151,327 tons in 1914). This at once indicates the value of conserving spruce, hemlock and balsam wood for reduction by the sulphite and groundwood processes and utilizing other woods not suitable for the manufacture of these pulps for the production of kraft pulp.

There is no question that the higher the quality of the pulpwood, the better will be the yield and quality of the resulting pulp, but the alkaline cooking liquor as used in the kraft process destroys to a large extent fire-charred or decayed wood, permitting in many cases the use of an inferior quality of wood than can be used in the sulphite or groundwood pulping processes. The true sulphate pulp, which is not made in the United States at the present time, represents a thoroughly cooked product which can be commercially and economically bleached to a high degree of white. The kraft pulp, as made in the United States, and which represents a pulp which is not so thoroughly cooked as the true sulphate pulp, is used largely in its natural brown shade or tinted to some slight variation of the standard brown shade for the manufacture of kraft wrapping paper, board, or other paper products, where a bleached stock is not required, but where strength is of primary importance. This permits, in the kraft process of pulping, the use of wood which does not have to be thoroughly cleaned, and wood which by either the sulphite or groundwood process of pulping would yield a pulp off color in shade or of such a high pitch or resin content that it would offer difficulties in the conversion of pulp to paper on the paper machine.

In general, only the coniferous woods are suitable for kraft pulping, as only these woods have a sufficient fiber length to give the strength required of a kraft pulp.

The short-fibered, deciduous trees, such as aspen, various species of gum woods, maples, ash, chestnut, cotton wood, willow, etc., while they can be pulped by the kraft process, are not suitable for reduction to a pulp condition by this process as the resulting short fibered pulp is too weak to be used in the manufacture of paper products in the furnish of which a long and strong fibered pulp is required. Basswood is peculiar in that it gives a kraft pulp of fairly good strength, even though the fiber length of the wood and pulp is small. The particular basswood, under examination, was cut at Madison, Wis., and showed a fiber length of 1.14 Mm. in comparison with poplar with a fiber length of 1.04 Mm. The basswood kraft pulp did not have the strength of a pulp made from a long fibered wood, but the strength was remarkable in comparison with pulps made from other short-fibered woods.

The yield of pulp per unit weight of wood will, of course, vary, depending upon the degree of pulping to which the wood is

subjected and varies slightly with the different species and in proportion to the actual cellulose content of the wood. Woods containing appreciable percentages of oils and resins, such as yellow pine, and other southern pines, Norway pine, western yellow pine, etc., will show a decrease in yield in proportion to the amount of oil and resin contained in the wood. In general, if yields are calculated on the volume of the original wood, as in the common pulp mill practice where the yield of pulp is based on the very indefinite cord basis then such yields from different woods assuming the same pulping conditions, are fairly approximate to the weight per cubic foot of the original wood.

The following table, compiled at the Forest Products Laboratory, gives some of the important data on coniferous woods that are being or might be used commercially for the manufacture of kraft pulp. The weight per cubic foot of bone-dry wood of the various species listed are all based on the original volume of a cubic foot of the green wood. The specific gravities of the various woods are calculated on the oven-dry weights of the wood and on both the green and oven-dry volume of the original wood. The other headings on the table are self-explanatory.

TABLE II.  
Average Strength Tests on Kraft Papers (Waterleaf) Made from Various American Woods from Pulps Prepared on a Semi-Commercial 100-Pound Scale.

Species.	Number Strength		Stretch Per Cent.	Breaking Length M.	Number Double Folds.
	Cooks.	Pts.-Lb. Ream.			
Apline fir .....	4	1.00	4.5	7100	770
Amabilis fir .....	7	1.00	3.8	6100	500
Balsam fir .....	1	1.10	2.5	9850	770
Douglas fir .....	5	1.00	2.4	7700	500
Grand fir .....	2	1.00	2.75	6800	700
Noble fir .....	5	1.00	3.0	6300	800
Red fir .....	2	.80	2.8	6800	1000
White fir .....	2	1.00	3.1	7000	1100
White spruce .....	6	1.20	2.5	9500	600
Red spruce .....	6	1.20	4.0	7000	1400
Englemann spruce ...	3	1.20	3.1	8200	1400
Sitka spruce .....	1	.90	2.9	5800	1200
Eastern hemlock ....	6	1.10	3.7	6200	900
Western hemlock ....	6	1.00	3.9	6500	1300
Tamarack .....	12	1.10	4.0	6100	1350
Western larch .....	5	.95	2.6	6500	700
Cypress, bald .....	2	.70	3.3	4700	640
Lodgepole pine .....	5	1.30	3.5	7200	1500
Western yellow pine..	5	1.30	2.7	10400	400
Longleaf pine .....	39	1.00	2.1	7400	400
Shortleaf pine .....	5	.80	4.0	5400	450
Norway pine .....	3	1.20	4.1	7300	1300
Jack pine .....	28	1.20	4.0	7000	1200
Sugar pine .....	2	1.00	3.2	6500	1100
White pine .....	2	1.00	3.6	8000	1200

As would be expected, white, black and red spruce yield an excellent grade of kraft pulp, while Englemann and Sitka spruce found in the west are also well suited for this purpose. Hemlock, both of the eastern and western species, as well as the various species of fir, make high grades of kraft pulp. Balsam fir is, of course, well known in the east as a source of pulp-wood, but the various western firs, such as Alpine, Amabilis, grand, noble, red and white fir, also Douglas fir, having been found by semicommercial experimentation to be well suited for reduction to a high grade of kraft pulp.

(Continued on page 10)

\*By Dr. Otto Kress, Chairman.

## TECHNICAL ASSOCIATION MEETS AT HOLYOKE

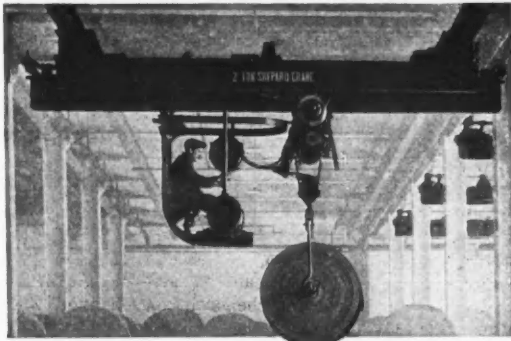
(Continued from page 9.)

TABLE I.

Average Physical Characteristics of Various American Woods Suitable for Pulping by the Sulphate or Kraft Process.

Common and Botanical Name.	Test Material From	No. of Trees	No. of Rings per Inch.	Summer Wood Per Cent	Moisture Content Per Cent	Wgt. Per Cubic Ft. Green Lbs.	Per Weight Per Oven-dry Based on Green Volume.	Specific Gravity Based on	
								Volume When Green.	Volume When Oven-dry.
Alpine fir ( <i>Abies lasiocarpa</i> )	Colorado	5	15	14	31.9	28	19.4	.31	.32
Amabilis fir ( <i>Abies amabilis</i> )	Oregon Washington	20	8	26	50.5	47	23.1	.37	.42
Balsam fir ( <i>Abies balsamea</i> )	Wisconsin	5	12	26	54	45	21.2	.34	.41
Douglas fir ( <i>Pseudotsuga taxifolia</i> )	Washington Oregon Montana Wyoming	18	13	35	26.5	38	28.1	.45	.52
Grand fir ( <i>Abies grandis</i> )	Montana Oregon	10	22	27	27.5	34	25.0	.40	.44
White fir ( <i>Abies concolor</i> )	California	5	10	30	61	56	21.8	.35	.44
Noble fir ( <i>Abies nobilis</i> )	Oregon	5	23	17	29	31	21.8	.35	.41
White spruce ( <i>Picea canadensis</i> )	New Hampshire Wisconsin	7	14	27	31.4	33	22.5	.36	.43
Red spruce ( <i>Picea rubens</i> )	New Hampshire Tennessee	9	17	27	30	34	23.8	.38	.41
Engelmann spruce ( <i>Picea engelmannii</i> )	Colorado	10	14	14	50	38	19.4	.31	.35
Sitka spruce ( <i>Picea sitchensis</i> )	Washington	5	9	24	34.6	33	21.2	.34	.37
Eastern hemlock ( <i>Tsuga canadensis</i> )	Tennessee Wisconsin	10	20	34	51.2	48	23.8	.38	.44
Western hemlock ( <i>Tsuga heterophylla</i> )	Washington	5	10	27	41.5	41	23.8	.38	.43
Tamarack ( <i>Larix laricina</i> )	Wisconsin	5	20	38	34.2	47	30.6	.49	.56
Western larch ( <i>Larix occidentalis</i> )	Washington Montana	13	32	37	36.7	48	30	.48	.59
Cypress, bald ( <i>Taxodium distichum</i> )	Louisiana Missouri	10	16	31	46.5	48	25.6	.41	.47
Logpole pine ( <i>Pinus contorta</i> )	Colorado Montana Wyoming	28	24	22	39.4	39	23.7	.38	.44
Western yellow pine ( <i>Pinus ponderosa</i> )	Colo., Mont. Ariz., Wash. California	25	20	22	48.6	46	23.8	.38	.42
Longleaf pine ( <i>Pinus palustris</i> )	Florida Louisiana Mississippi	34	18	39	31.9	50	34.4	.55	.64
Shortleaf pine ( <i>Pinus echinata</i> )	Arkansas Louisiana	12	12	40	39	50	31.2	.50	.58
Norway pine ( <i>Pinus resinosa</i> )	Wisconsin	5	22	41	35	42	27.5	.44	.51
Sugar pine ( <i>Pinus lambertiana</i> )	California	5	12	34	55.2	50	22.5	.36	.39
Jack pine ( <i>Pinus divaricata</i> )	Wisconsin	5	7	30	51.2	50	24.4	.39	.46
Loblolly pine ( <i>Pinus taeda</i> )	Florida North Carolina South Carolina	15	8	42	41.1	54	31.2	.50	.59
Pitch pine ( <i>Pinus rigida</i> )	Tennessee	5	12	30	45.9	54	29.4	.47	.54
White pine ( <i>Pinus strobus</i> )	Wisconsin	5	16	31	42.5	39	22.5	.36	.39

(Continued on page 12.)



Underhung Transfer Crane Bridge with Form 25-2-Holst



The Solution To The Labor Question  
is "One man and a Shepard"

Ask us to send our expert on handling to confer with you.  
No obligation of course.

Or Bulletin J.

**SHEPARD**  
ELECTRIC CRANE & HOIST CO.

NEW-YORK PHILADELPHIA MONTROUSE FALLS N.Y. PITTSBURGH CHICAGO  
CINCINNATI CLEVELAND ST. LOUIS  
MILWAUKEE INDIANAPOLIS  
DETROIT BALTIMORE BOSTON  
SAN FRANCISCO  
HONOLULU  
AUSTIN

**WATER**

**SOFTENING  
OR  
FILTRATION**

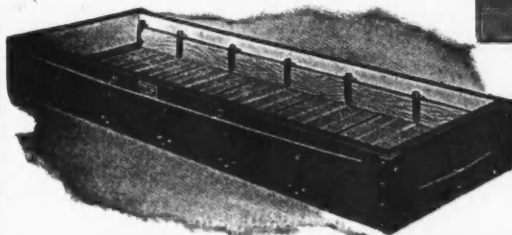
FOR BOILER FEED AND ALL INDUSTRIAL USES

WM B SCAIFE & SONS CO.

PITTSBURGH, PA.

**UNION SCREEN PLATE COMPANY**

FITCHBURG, MASS., U. S. A.  
LENNOXVILLE, P. O. CANADA



**UNION BRONZE SCREEN PLATES** ROLLED BRASS  
(Best phosphorized Cast Metal) (Union Quality)

Old Plates RECLOSED and RECUT to accurate gauge.

UNION BRONZE SCREWS for Screen Plates UNION BRONZE SUCTION BOX PLATES

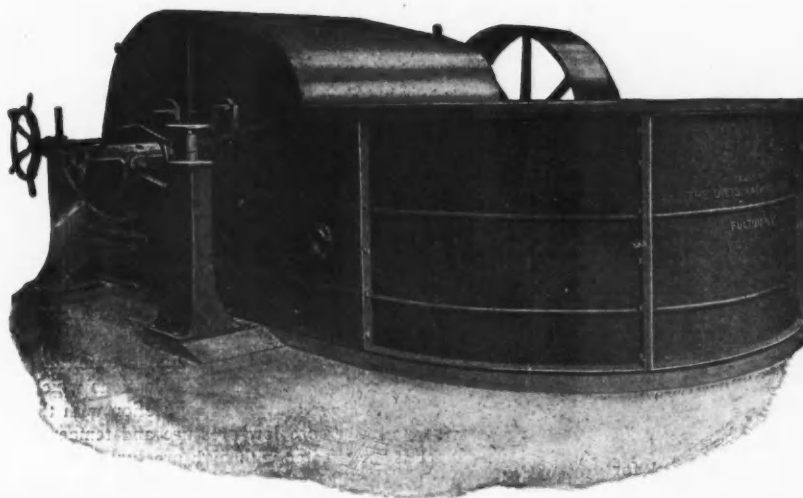
Immediate Delivery of the Largest Orders. Satisfaction Guaranteed.

**The WITHAM SCREEN PLATE FASTENER, Patented**

THE ORIGINAL THE BEST

Over One Thousand in Successful Operation

Recommended by Screen Makers



**Dilts Machine Works**

INCORPORATED

Fulton, N. Y., U. S. A.

**PAPER MILL MACHINERY  
MACHINE KNIVES**

We have been making a Specialty  
of BEATING and WASHING  
Engines for many years.

Our Knife Department for the past  
Fifty years has been making a Specialty  
of Quality MACHINE  
KNIVES for Paper and Pulp Mills.

Specialization makes for excellence.  
We solicit your inquiries.

## TECHNICAL ASSOCIATION MEETS AT HOLYOKE

(Continued from page 10.)

The various species of pine grown in the north, such as Jackpine, Norway pine and white pine, are well suited for kraft pulping. Norway and white pine are, of course, too valuable as a source of high grade lumber to be ordinarily considered for pulping purposes, but mill refuse from the sawing of these woods might be available.

Of the western pines, sugar pine, western yellow pine, and lodgepole pine are well suited, while in the South both the longleaf and shortleaf species are used; pitch, scrub, loblolly and second-growth or "old field" pines also make good grades of kraft pulp. In this connection it might be of interest to note that longleaf yellow pine chips, after the extraction of turpentine, pine oil and rosin by steam distillation and solvent extraction, yielded by semi-commercial pulping tests a fair grade of kraft pulp. Further, cypress mill waste might be used to advantage for the manufacture of a commercial grade of kraft pulp.

The tamarack of the northern forests and the closely related western larch from our western forests, as well as the redwood from the west, make a good grade of kraft pulp.

As a basis for comparison of the kraft papers made from various American woods, tests were made at the Forests Products Laboratory by kraft-pulping them on a semicommercial 100-pounds scale. Relative strength values are given in Table 2. The pulps tested are not to be considered as finished papers as the pulp was in each case made into waterleaf paper for testing purposes. No typical cooking or yield data has been given for these cooks, as there are so many variable factors, such as steam pressure, amount of cooking chemical, concentration of chemicals, etc., where change in one of these factors would have a decided effect on the pulping conditions and on the yield of pulp.

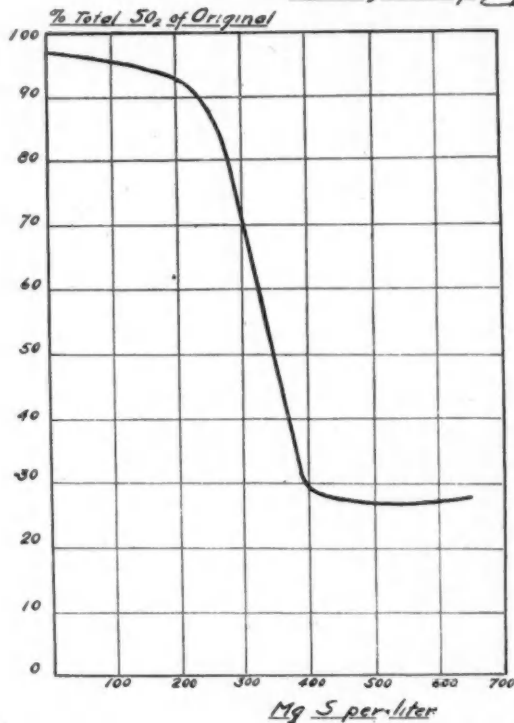
Many of these woods are well adapted for the manufacture of a high grade of kraft pulp, though they are not being used for this purpose at the present time. The kraft mills now operating and the kraft mills of the future might find it to their advantage seriously to consider some of these woods for pulping purposes, thereby saving in wood costs and conserving our supply of pulp woods especially suited for sulphite and groundwood pulping.

## THE PREPARATION OF SULPHITE ACID\*

To the President and Members of the Technical Association of the Pulp and Paper Industry:

Owing to the war conditions and the new work taken up by

*Free Sulphur or Thio-sulphuric Acid*  
*as*  
*Cooking Acid*  
*According to Prof. Klason*



the chairman of your committee since the last annual meeting, we have not been able to get together to work out a definite joint recommendation, but Mr. Paulson has worked up a method for

\*Report of the committee on sulphite pulp, Robert B. Wolf, chairman.

removing sulphur trioxide from the burner gases, which your committee feels should be presented to the association for their consideration. This method, as worked up by Mr. Paulson, will not only remove sulphur trioxide, but also free sulphur and other impurities which are injurious to the cooking acid.

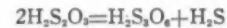
Following is the paper submitted by Mr. Paulson:

"Those of us who have been directly connected with the manufacture of sulphite pulp, know well how mysteriously the quality of the pulp will change. The superintendent of the paper mill will come and tell you that he is unable to make a decent sheet of paper, because the pulp is 'no good.' You look around to find the trouble, but oftentimes the trouble disappears just as mysteriously as it came.

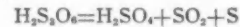
Professor Klason has shown that when free sulphur is present in the acid to the extent of 150 Mg. per liter the following reaction will take place:



The thio-sulphuric acid will then form trithionic acid and hydrogen sulphide:



and the trithionic acid will break up into sulphuric acid, sulphur dioxide and sulphur:



This process will continue as long as there is any lime left in the solution.

The diagram shown herewith, which is given by Professor Klason, indicates the reaction which takes place in a sulphite digester, and also shows what influence free sulphur has on the reactions. There will be noticed two sharp turns on the curve corresponding to the three different stages in the decomposition of the cooking acid. The first indicating that point when the polythionic acids reach the maximum concentration at whatever temperature is used; the second, the point when all lime has been precipitated as sulphate.

"It is evident from the foregoing that in order to obtain uniform results in the cooking process the sulphur dioxide gases should be freed from all impurities. The observations which were made by Professor Klason were made in connection with the Mitscherlich cooking process where low pressure and temperature is used. The danger is far greater with high pressure and temperature, such as are used in the quick cooking process.

(Continued on page 14.)



# EASTERN MFG. CO.

Manufacturers of

## WRITINGS—BONDS—LEDGERS

### Linen Finish Papers a Specialty

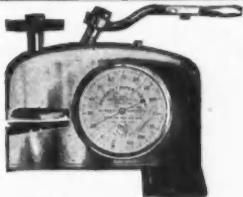
MILLS

Bangor, Maine

Lincoln, Maine

Eastern Office—Astor Trust Bldg., 501 Fifth Ave.,  
NEW YORK CITY

Western Office—Forsythe-Harding Paper Co.,  
CHICAGO, ILL.



**The Ashcroft Paper Tester**



**The Ashcroft Thickness Gauge**

Actual necessities for all those who make, sell or purchase paper in any form. The thousands in daily use testify to their efficiency.

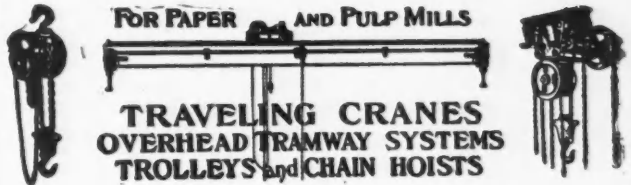
**THE ASHCROFT MFG. CO.**

119 West 40th Street New York  
29 North Jefferson Street Chicago, Ill.  
141 Milk Street Boston, Mass.  
Canadian Sales Agents: The Canadian Fairbanks Morse Co., 84-98 So. Antoine St., Montreal, Quebec.

## HUGH R. BLETHEN

21 Park Row, NEW YORK, N. Y.

FOR PAPER AND PULP MILLS



**TRAVELING CRANES  
OVERHEAD TRAMWAY SYSTEMS  
TROLLEYS and CHAIN HOISTS**

**Air Compressors—Air Hoists**

**Electric Hoists**

ESTABLISHED 1842

## FOURDRINIER WIRES

DANDY ROLLS  
CYLINDER  
MOLDS

# CHENEY BIGELOW WIRE WORKS

Springfield, Mass.

MANUFACTURERS

Brass, Copper and Wire Cloth,  
Bank and Office Railings and Grille Work

## TECHNICAL ASSOCIATION MEETS AT HOLYOKE

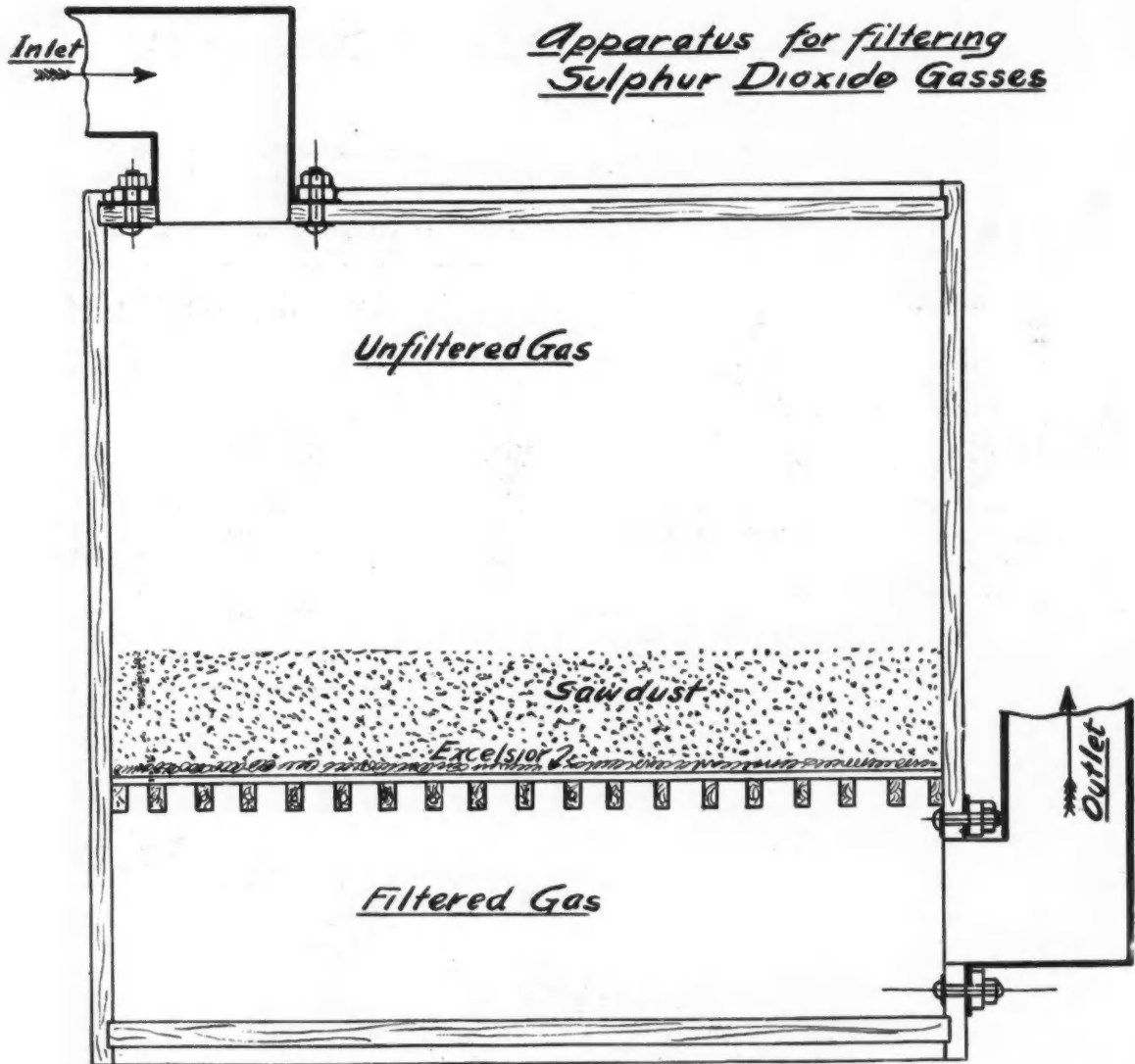
(Continued from page 12)

"The method I believe the committee should recommend is in accordance with that of Ragnar Forsgren and consists of filtering the gases through a bed of sawdust.

"The apparatus is constructed as shown in the accompanying drawing. A wooden tank which is perfectly air-tight will answer the purpose satisfactorily. About 18 inches from the bottom is

draft on the burners. This in turn will make it possible to produce a gas containing a higher percentage of sulphur dioxide, and hence increase the output of the acid plant."

We believe that the suggestions made by Mr. Paulson are worthy of consideration and we hope that they will prove of use to the members of the association and that at the meeting follow-



placed a grating made of wood, on top of this is placed a layer of excelsior to prevent the sawdust from falling through the grating, and on top of the excelsior is placed a layer of sawdust from 18 inches to 2 feet deep according to the fineness of the sawdust. The gases enter the tank at the top and are taken out at the bottom.

"An apparatus of this kind made sufficiently large is also of great aid in acidmaking, especially where vacuum pumps are used, since it eliminates the pulsation of the pumps and makes a steady

ing this one we will have the benefit of discussions by members who have tried out the recommendations made.

Respectfully submitted,

SULPHITE PULP COMMITTEE,

Robert B. Wolf, Chairman,

P. A. Paulson,

H. G. Spear.

(Continued on page 16)

# Paper Manufacturers!

Are you looking for a

# Clean Sulphite?

WONDERFUL WHITE COLOR  
FREE FROM SHIVES



**Ljusnan**

**Unbleached**

**Sulphite**

We have a few hundred tons on dock that we can ship to you. Wire collect or write for price and samples

Value of Swedish Kronor during week ending October 1. Normal rate of exchange: 1 krono = 26.80 cents.

Sept. 25th—34.00	cents—increased value	26.87%
" 26th—34.65	" " "	27.05%
" 27th—34.35	" " "	28.17%
" 28th—34.75	" " "	29.66%
" 29th—34.75	" " "	29.66%
Oct. 1st—35.00	" " "	30.60%

**A. J. PAGEL & CO.**

Incorporated

61 Broadway : New York

Michigan Agent, CALE B. FORSYTHE, Kalamazoo

## FACTORS IN THE QUALITY OF GROUNDWOOD\*

The production of a maximum amount of a definite uniform quality of groundwood depends upon a correct balance between several factors which influence the amount of pulp produced and its quality. Practically none of these is readily susceptible of close control as we think of it in chemical terms. This paper will deal with some of the variables, their relation to each other, and efforts that have been made to control them.

The factors having a most important bearing upon quality and production are:

1. Power available on any grinder unit.
2. Surface of pulp stone.
3. Pressure of grinding.
4. Speed of pulp stone.
5. Kind and condition of wood.
6. The "human element."

Since the majority of grinders are directly connected to water wheels we will confine ourselves to that type of installation.

(1) *The power available* on any grinder unit, although a rather fixed factor, will vary with river conditions and also the conditions of gate opening and speed under which the water turbines are operated. In low water periods when there is not sufficient power to operate the installation to capacity, it is customary to reduce the friction loads on the units by withdrawing from operation a certain number of grinders or a certain number of grinder pockets. In this manner there is delivered a more nearly uniform power value throughout the year to such grinders as are operating. In many of the plants a variation in the available power occurs at periods of high water, when the effective head of water on the turbines is reduced below normal, due to the high stage of the tail water. The amount of power available usually determines the grinding conditions.

### Surface of Stone

2. The surface of the pulp stone has an extremely important effect upon both the quality and quantity of pulp produced from any grinder. Radical changes in quality are produced by altering either the natural grit or the surface produced by artificial means. A stone suitable for grinding satisfactory pulp for wall board would not be most suitable for producing pulp for use in light weight catalogue paper. This necessitates the selection of a grit best adapted for the particular grade of pulp desired. A stone of coarse grit should be used for coarse pulp, and finer grits for the finer grades of groundwood. It is, however, difficult to secure two stones of identical grit and texture. On the "softer" stone the cutting particles wear smooth in a short time and more frequent burring is necessary.

Efforts have been made to build up an artificial stone in which the matrix of binding material will wear away at an even rate with the cutting particles and continually expose fresh grit. The difficulty most operators have experienced with this class of stone is that the wear is not uniform, and extreme care must be taken to guard against sudden changes in temperature. Many of the artificial stones become badly pitted or spall out large pieces after continuous use, and the very rough surfaces resulting produces a very coarse, shivy pulp. Subsequent dressing is one of smoothing rather than of roughening.

The purpose of burring a natural or quarried stone is to present new sharp particles of grit to the wood being ground, and at the same time provide depressions in the stone in which the ground fibers may lie as the stone passes beneath the wood in other pockets of the grinder. The operation is usually performed by contact of a burr or bush roll against the revolving pulp stone. The periphery of the burr may be machined in various ways to produce small pyramids or wedge shaped ridges to mark the stone with a similar pattern. Extensive tests made with many of the ordinary

patterns of burrs showed that the type used made no appreciable differences in the pulp produced, providing the grit of the stone was "raised" to the same degree with any two burrs. It was noted, however, that with certain types or combinations there was less difficulty in maintaining a desired surface of stone. This may be attributed to the personal factor involved, and accounts for the very decided and widely differing prejudices many grindersmen have for certain burrs.

That the personal equation is a very important one in maintaining a surface of stone is apparent from the way in which the burr is used. Whether the tool is held at one arm of a level and fed across the stone "by hand," or whether it is held in a form of tool post and fed across the stone by a screw device the pressure of the burr against the stone is entirely a matter of the operator's judgment. Recently a hydraulic device has appeared on the market to maintain this pressure uniform, but due to differences in the hardness of pulp stones, and the degree of sharpness of the burr itself after a single use, the device in itself would not appear wholly to solve the difficulty.

When grinder pressure and speed are held constant the effect of sharpening a pulp stone is to increase the production and produce a pulp of a coarse quality.

### Pressure of Wood upon the Pulp Stone

3. The pressure maintained on the grinder cylinders is next to the surface of the pulp stone, the most important variable in the grinding operation. Given a definite condition of stone surface the quality of pulp and the output per grinder may be varied through a considerable range by raising or lowering the cylinder pressure. This range, however, is much narrower than will obtain when surface of stone is varied. With a sharp stone the quality is improved with the lowering of the cylinder pressure at a sacrifice, however, to production. Other variables (except power) remaining unchanged, the production varies directly with the cylinder pressure.

The quality of the pulp is determined by the unit pressure with which the wood is forced against the stone. While it is extremely desirable to maintain this uniform, the impossibility to do so when grinding ordinary pulp wood with the present equipment is readily apparent. In grinding, a round stick, 10 inches in diameter, the unit pressure on the stone will be but one-tenth as great when the diameter is reached as when the stick presented a width of one inch near the beginning of the operation. The ultimate product, therefore, represents a mixture of fibres produced under the continually changing values of unit pressure, the mean value of which is in proportion to the cylinder pressure.

### Speed of Pulp Stone

4. The speed of the pulp stone has never a greater influence on the amount of pulp produced than upon its quality. Production increases directly as the peripheral speed of the stone is increased, but as the water wheels are designed for very definite speeds the range through which speed may profitably be varied is very limited.

### Kind and Condition of Wood Used

5. When woods other than spruce are ground, it is usually to advantage to keep them separate from the spruce, as the results are more satisfactory when the surface of stone can be adapted to the particular wood in question. In order to maintain the quality of product, most of these species require a duller stone than ordinarily used for spruce.

The condition of the wood also introduces a variable factor. With freshly cut spruce a sharper stone may be employed and a better product secured than if the wood has been in the yard for a considerable period.

(Continued on page 18)

\*Report of the committee on groundwood, George C. McNaughton, chairman.

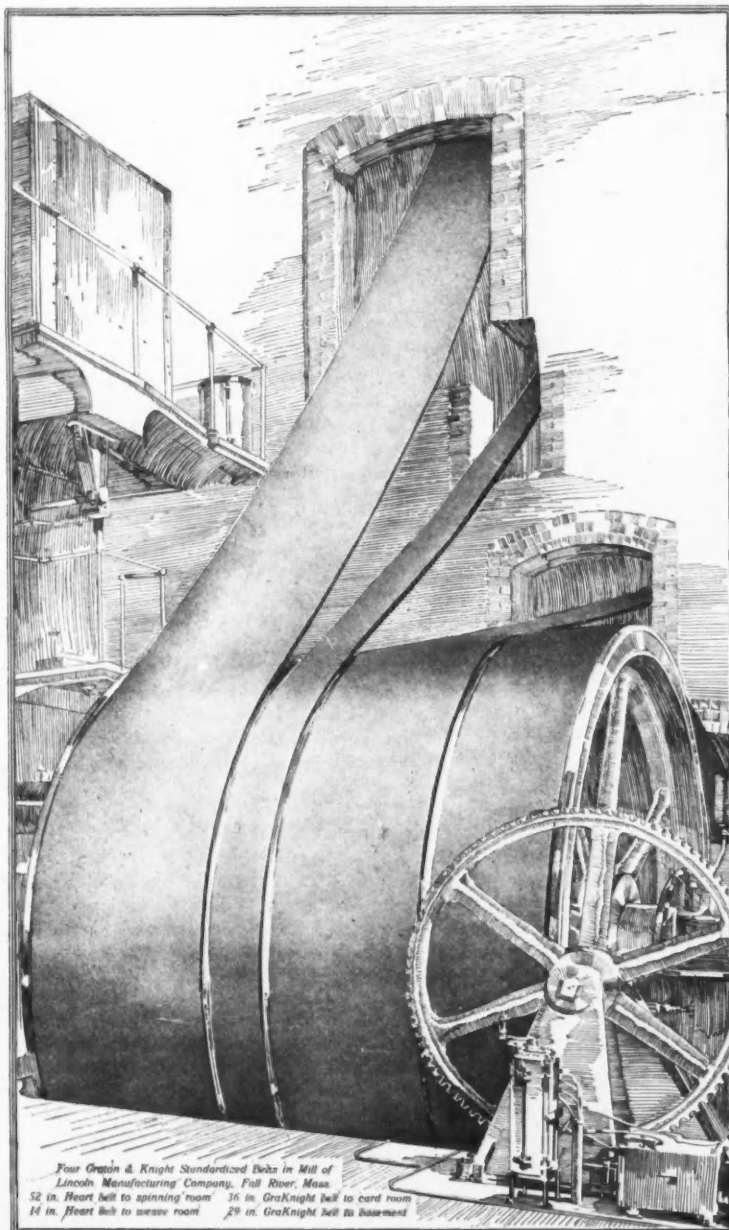


# GRATON & KNIGHT

## Standardized Series

# LEATHER BELTING

*Tanned by us for belting use*



Four Graton & Knight Standardized Belts in Mill of  
Lincoln Manufacturing Company, Fall River, Mass.  
52 in. Heart belt to spinning room 16 in. GraKnight belt to card room  
14 in. Heart belt to weave room 29 in. GraKnight belt to basement

## Big Belts— For Big Jobs

There is one right way, and only one right way, to buy belting. That is on the basis of the *work to be done*. A big job needs a big belt.

For belting is machinery.

If you buy it as you buy machinery—you will standardize it, as you have standardized your machinery. You will buy Standardized Belting.

Standardized Belts are made to the actual standards of the job. They have been worked out during sixty-six years of belting experience. The requirements of every kind of power transmission have been classified and a Standardized Belt evolved to meet the actual demands of each.

There is Graton & Knight Heart Brand, the standardized extra-heavy oak-tanned center stock belt—GraKnight, the standardized medium-weight oak-tanned center stock belt—GraKnight Dynamo, the standardized light-weight oak-tanned center stock belt—Neptune, the standardized waterproof belting—Spartan, standardized for exacting conditions or difficult drives.

The way to save money on belting isn't to buy cheaper belts—but to buy the belt that will do your work best. You will save money on that belt, and lose money on any other kind.

Apply Standards to your power transmission. Our Engineers and our Belting Laboratory are at your service—let them help you standardize your belting.

### The Graton & Knight Mfg. Company

*Oak Leather Tanners, Makers of  
Leather Belting, Lace Leather,  
Leather Packings and Leather  
Sundries.*

Worcester, Mass., U. S. A.

#### BRANCHES

Atlanta	Fall River	Philadelphia
Boston	Kansas City	Pittsburgh
Chicago	Minneapolis	Portland, Ore.
Cleveland	New Orleans	St. Louis
Detroit	New York	Seattle

#### SELLING AGENTS

Graton & Knight Mfg. Co. of Texas,  
Dallas, Tex.  
Graton & Knight Mfg. Co. of Wisconsin,  
Milwaukee, Wis.  
Graton & Knight Mfg. Co. of California,  
San Francisco, Cal.



## TECHNICAL ASSOCIATION MEETS AT HOLYOKE

(Continued from page 16)

### The Human Element

6. In groundwood production, as in other lines of pulp manufacture, the personal equation or the human elements is by no means a negligible factor. There are records of mill tests where a difference in production of as much as 20 per cent has been due to this one item. In cases where a nicety of balance exists between the various factors, a laxness upon the part of an attendant will destroy the entire arrangement. This is especially true in regard to the manner in which the pulpwood filled into the cells of the grinder. If the compartments are not replenished immediately after they are exhausted or if a stick is permitted to wedge between two others, producing a resultant pressure against the perpendicular sides of the pocket instead of transmitting the entire pressure to the stone, factors are introduced which effect either quality or production or both.

### Inter-relation of Factors Influencing Quality and Production

Between the power from the waterwheels, condition of stone, surface cylinder pressure, speed of stone and the human factor there is a very intimate relation. None can be altered without having an effect upon the others.

Although it may be advisable in flood times or when water is being wasted over the spillway to operate the water wheels under conditions of maximum power, it is probable that most of the time the plant desires to operate the wheels at maximum efficiency. When the r.p.m. of the pulp stones rise above the speed for maximum efficiency less power is delivered to the grinder shaft and production suffers. Some of the most frequent causes for a rise in speed are (1) binding of the wood on the sides of the wood compartments, (2) withdrawal of pressure from one or more grinder cylinders, (3) not replenishing a pocket immediately after it has become empty of wood, (4) drop in pressure in the pump line, and (5) freshly sharpened stones. It will be observed that many of these causes result directly from the personal equation introduced by the operator.

Within certain limits the quality can be controlled for different degrees of sharpness of stone by manipulating the cylinder pressure and using lower pressures on a sharp stone and higher ones on a dull stone. Lowering the cylinder pressure for sharp stone and higher ones on a dull stone. Lowering the cylinder pressure for sharp stones causes the speed to rise, and if the gate opening is decreased production suffers excessively. Increasing the pressure with a view to increase production requires in a direct ratio an increase in power delivered to the pulp stone in which case all of the installation may not be operated.

### Efforts at Grinder Control

Many of the efforts at grinder control have been founded upon maintaining a constant speed for the water wheels.

Some years ago a grinder was developed with specially adapted pockets to eliminate the binding which is one of the causes of rise in speed and loss in production, but apparently this did not meet with any marked success. Where backing off the pressure from one or more grinder pockets caused a temporary drop in line pressure, separate pump lines were installed for the purpose. Centrifugal pumps have been belted to grinder shafts in order to increase the cylinder pressure with rise in speed of the stone and in this manner restore the speed to normal. Their action was rather sluggish, besides producing large variations in pressure which did not help the uniformity of the pulp any. Governors attached to the grinder shaft controlled the speed successfully but did not permit the water wheels to operate at maximum capacity since the cause of the decreased load was not removed, and the grinderman could not notice faulty performance as readily.

Relief valves at the pressure line at each grinder permitted adjustments of cylinder pressure to keep the turbines properly loaded but to accomplish the desired end required considerable attention.

As a means of controlling the speed between fairly narrow limits the method of using fewer than the total number of pockets on any line of grinders should give good results. By this method the surplus pockets are kept filled with wood to which the pressure is applied when the load is withdrawn from other pockets for purposes of replenishing or rearranging the wood. The period of increased speed ordinarily accompanying these latter operations is eliminated, and at all times a maximum load may be maintained upon the turbines. Very promising results were secured upon an experimental scale and mills employing this means of speed control have confirmed them.

The control over speed should be primarily to maintain production of groundwood pulps, while quality is probably best controlled by the surface of the pulp stone. It has been pointed out that the dressing or burring of the pulp stone involves to a very great extent the human factor, and does not permit an exact duplication of treatment.

There has rather recently been brought into the market a burr having thin teeth and flat surfaces between the base of the teeth, in contrast to the wedge shaped depressions between the teeth hitherto used. The inventors assert that this burr gives a much more exact duplication of previous dressings and consequently a more uniform product.

Examinations of groundwood with a microscope or with a stereopticon gives the observer certain indication of quality, but through difficulties in sampling and classification is not entirely satisfactory for close control. With less routine, and a little practice one can judge a stock as closely by adding a little pulp to water in a container having a blue glass bottom under which an incandescent lamp is glowing.

The practicability of the sedimentation test as a control for groundwood pulp production was brought out by Messrs. Fishburn and Weber last September at the meeting of the Technical Association. For a uniform class of wood the results secured by this means have enabled the operators to duplicate the various qualities of groundwood pulp desired and at the same time maintain a maximum production from their grinders. The admirable feature of this test is that it affords a numerical basis upon which to base quality and becomes independent of the observer. The test is made upon the mixtures of pulps from all the grinders and on that account still necessitates judgment of a competent person as to what pulp stones need dressing when the sedimentation value diverges from the established standard. However, it is the opinion of your committee that this test is by far the most satisfactory one yet brought forward for standardizing the quality of mechanical pulp. Various members of the association are now trying it out, and their experiences indicate that the sedimentation test may soon be recommended as another standard method for the Technical Association.

### To Secure Further Data

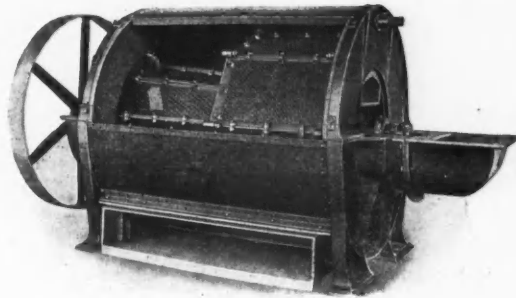
Before such recommendation is made, however, your committee wishes to secure further data on this test, embracing as wide ranges of operating conditions as possible. The experimental data obtained to date is not entirely conclusive as to the value of the sedimentation test as a general method for mill control of groundwood pulp quality. We would, therefore, appreciate hearing the experiences and criticisms of mills which have been experimenting with this method.

(Continued on page 20)

# "IMPROVED" KNOTTER

for the first screening of sulphite, sulphate or ground wood pulp

We shall be glad to furnish data and samples of the work this machine will do in actual use.



The cost of power and upkeep is extremely small and the results are very satisfactory.

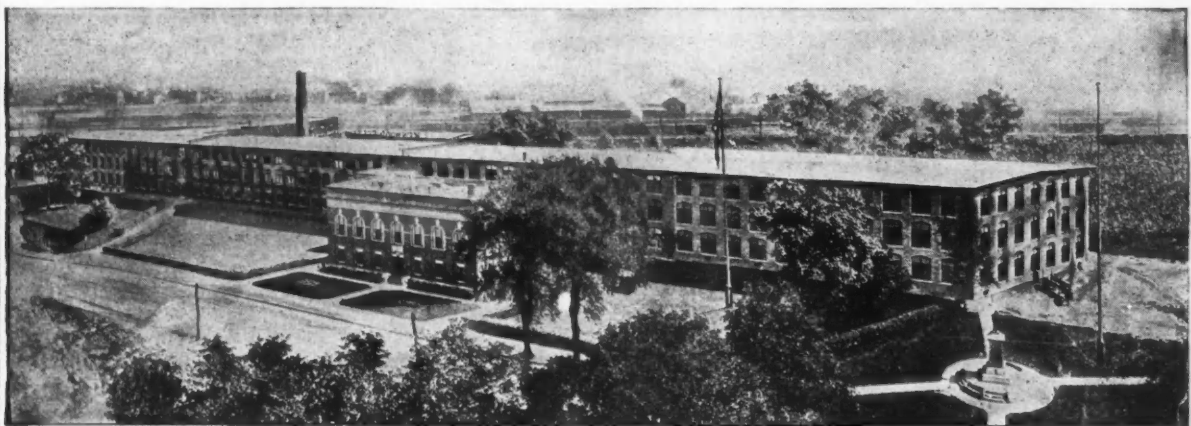
Knotter Design No. 2

WE ASK A THOROUGH INVESTIGATION

## IMPROVED PAPER MACHINERY CO.

NASHUA, N. H., U. S. A.

## F. C. HUYCK & SONS ALBANY, N. Y.



Manufacturers of Kenwood Felts and Jackets for all kinds of Paper and Pulp.  
Seamless Felts both for high speed machines and fine papers.



## DETERMINING THE STRENGTH OF PULPS\*

Some time ago we set out in this laboratory to determine by the ball mill method the rate of the increase in strength of different pulps with the increase in the time of beating them.

In starting on this work it was found that several changes from the standard method as outlined by the committee were necessary. To determine the strength of pulp in an unbeaten condition, it was found that while certain grades could easily be cleared by hand, others, particularly those which had been dried on the dryers of a machine, were difficult to get entirely clear. Accordingly we built a clearing machine. This consisted of a small copper tank six inches in diameter and twelve inches high; inside of this was a smaller cylinder with neither top nor bottom and which acted as a midfeather. A two-bladed propeller on a small shaft was set inside of this and run at a very high speed, say 1,200 to 1,500 r.p.m. It was found that this machine cleared the pulp very well in about thirty minutes without slowing it to any appreciable extent.

Although we built this machine for the foregoing purpose, we found it was essential in our further investigation. This was due to the fact that with some pulps after they had been beaten in the ball mill for a certain length of time, say forty minutes, the sliding action of the stones tended to roll the pulp into small knots which could not be cleared by hand. The sheets made from pulp in this condition gave a very low test due to the fact that the rolls or knots added much to the weight of the sheet without adding anything to the strength, and also made the surface of the sheet so uneven as to make a fair test impossible. Consequently it was found necessary to clear these pulps and the clearing machine was found very effective for this work.

Another departure from the standard method was found necessary. Obviously sheets made from pulp beaten different lengths of time shrink to different sizes; also different pulps and different samples of the same pulp beaten for the standard time shrink to sizes which vary sometimes as much as 15 per cent. Therefore, for the purpose of true comparison, we deemed it advisable to cut all the sheets to a given size before weighing and testing them, and adopted the size of 4 in.  $\times$  7 in.

Except that the mill used had a speed of 66 r.p.m., instead of the standard 60 r.p.m., the other details of the standard method were followed. The percent dry of the pulp as given by the manufacturer was assumed to be correct and found satisfactory. Cars were sampled in accordance with the method of taking samples to determine the dry weight.

A large part of our work was done on a domestic sulphite pulp which we will call Grade B. From the car sample usually six 100-gram samples were kneaded up with 1 liter of water each. One of these samples was cleared and made into sheets without beating. The other five samples were beaten in the ball mill, adding a second liter of water to each one, for ten, twenty, thirty, forty and fifty minutes respectively. It was generally necessary to clear the forty and fifty-minute samples in the clearing machine and sometimes even the thirty-minute sample. The sheets were made on a 7 in.  $\times$  9 in. mould, pressed in a letter press for two minutes and dried on a rack at room temperature over night. The sheets were then pressed, trimmed, weighed and tested. The test on the unbeaten sample varied from 51 to 70 points. The increase in test for the first ten minutes beating usually amounted to about 30 points; for the second ten minutes the increase ran from 10 to 20 points; for the third ten minutes, 5 to 10 points; for the fourth ten minutes 0 to 10 points; and for the fifth ten minutes, from the forty minute to the fifty minute sample, usually decreased, sometimes as much as 10 to 12 points. Out of sixteen cars tested only four failed to decrease in strength on the fifty minute sample, and these four increased an average of only 2 points each. The forty

minute tests on these sixteen cars varied from 103 to 136 points.

The unbeaten test of an imported pulp which we will call Grade A, was found to be much lower about 30 to 35 points. The increase in strength was regular for each ten minute increment up to fifty minutes, giving an increase of 13 to 15 points for each added ten minutes of beating. The rate of increase decreased somewhat in the next ten minutes, and the pulp gave the highest test at sixty minutes beating. After sixty minutes further beating caused the strength to fall off rapidly.

Grade R gave a test quite similar to that of Grade B. The unbeaten test was 63 which is fairly high. The increase in strength was quite rapid at first running up to practically the maximum in thirty minutes. This was about 100 points. The test at forty minutes was about the same, while at fifty minutes the test dropped off 10 points.

The test on Grade NY was almost identical with that on Grade B. The falling off in strength came after forty minutes beating.

A similar test run by the Department of Tests of the American Writing Paper Company on Grade C gave a falling off in strength only after ninety minutes beating and a high test of 129 points.

From these tests the following points are to be noted:

(1) The unbeaten test of a pulp is no indication of the maximum test after beating. For example, take two lots of Grade B pulp which both gave an unbeaten test of 51; the maximum test after forty minutes beating on one lot was 104, on the other lot 132. Further one lot giving the unusually high unbeaten test of 73.3 gave a maximum test of only 119. When the strength curves are plotted they are so different in form that no general conclusions can be drawn. These curves do show, however, that the strength of a lap pulp is developed more rapidly than the strength of a pulp dried on the dryers of a machine.

(2) If the maximum strength of any particular grade of sulphite pulp is wanted, it is first necessary to find out the beating time necessary to develop this maximum strength. With Grade B we found that the maximum strength was developed at forty minutes, with Grade A at sixty minutes, etc.

(3) With all the grades of pulp tested a point was reached where further beating rapidly decreased the strength of the resulting sheets. Microscopic examination of the fibers pointed clearly to the reason for this. As the time of increase in the beating progressed the number of fibers which were either broken or badly bruised increased quite regularly until the point of the maximum test was reached. After this point was reached further beating greatly increased the number of bruised or broken fibers. Now in bursting a sheet of paper two things may take place. The paper may break due to the pulling apart of the individual fibers, or it may break by the breaking of the fibers themselves. We have two factors then in the strength of any sheet—the strength of the cementing action of the fibers to one another, and the strength of the fibers themselves. When tested for bursting strength whichever of these two is the weaker will determine the test. When the sheets made from the unbeaten pulp are tested, the break is due almost entirely to the separation of the fibers one from the other. As we beat the pulp the strength due to the cementing action increases and the ultimate strength of the fiber probably decreases. At the maximum point of strength, the two strength factors should be practically balanced, so that a portion of the fibers are pulled apart, and the other portion broken. As we pass beyond this point in beating, the ultimate strength of the fiber has decreased to such an extent that it is the determining factor in the break, and the test is lowered. It may be noted in passing that the sheets which show a marked decrease from the maximum strength are usually found to be parchmentized.

Two samples of Grade A were taken from the same lots of  
(Continued on page 22)

\*Report of the Committee on Standard Methods of Testing Materials Used in the Manufacture of Paper, Raymond S. Hatch, chairman.





Save  
Your  
Labor  
Costs

The E.C. & M.  
Automatic Compensator

The shifting of a million men from the *factories* to *fighting*, inevitably *compels* every labor-employer to do away with the *unnecessary* use of labor—to *replace* human effort by automatic equipment.

The E. C. & M. Automatic Compensator *removes* the skill and labor *ordinarily needed* to start A. C. Motors; with this Compensator, starting an A. C. Motor is as *simple* and *easy* as turning on an electric light.

Merely push one button to *start* the Motor; push another button to *stop* the Motor.

The E. C. & M. Automatic Compensator offers so much in the way of *economy*, *safety* and *speeded production* that it must be judged in terms of *quality* rather than in terms of *cost*.

THE ELECTRIC CONTROLLER & MFG. CO.

CLEVELAND, OHIO

## TECHNICAL ASSOCIATION MEETS AT HOLYOKE

(Continued from page 20)

pulp. One was soaked in water at room temperature for nine days. At the end of the nine days the two lots were beaten and made up into sheets. We found that the pulp which had been soaked for nine days increased in strength—much more rapidly than the dry pulp, and at thirty minutes had reached almost the same strength as the dry pulp had at forty-five minutes. After thirty minutes however the rate of increase in strength of the soaked sample was not so great, and at the maximum point the sample which had been soaked tested only 4 per cent higher than the dry sample. From this it would seem that the soaking for nine days in water at room temperature, changes the fibers so that they hydrate more rapidly, but also has the effect of weakening them somewhat so that the ratio of increase of strength falls off after thirty minutes beating, while in the case of the dried samples the same rate is continued up to fifty minutes beating.

Toward the latter part of our work we found that the strength test on our Grade B pulp took a sudden drop, which brought the test down from an average of about 109 to an average of about 85 for the maximum test beating time. The reason for this drop has yet to be explained. Coincident with this drop in strength we were running some experiments to determine what effect on the strength would result if this pulp, which runs ordinarily from 50 to 60 per cent dry, were allowed to become air-dry before it was beaten. Much to the author's surprise the air-dried samples gave higher tests than the original pulp. He knows no explanation for this,

but a speculation as to its cause may not be out of place. The test on the wet pulp was unusually low and leads to the conclusion that the fibers had been mistreated in some way before they were received. If so they were probably in a condition such that a very short period of beating would develop the cementing factor of the fiber to a point such that the strength of the fibers themselves determined the test. Now the drying out of the pulp may have hardened the fibers so that they stood up better under the beating, and at the same time have not decreased the hydrating qualities beyond what would be needed for the maximum test.

In the mill where this work was done a careful record is kept of the strength of the paper as it is made. So an attempt was made to check up the tests of the pulp in the laboratory with the results in the mill. While these results did not check up as well as had been hoped, it was clear that high results in the laboratory gave high results in the mill, and conversely low results in the laboratory showed low results in the mill. With further control of mill conditions it seems likely that the mill results will check well with the results as determined in the laboratory.

Laboratory, Crocker-McElwain Company,

Holyoke, Massachusetts, August 28, 1917.

The committee desires to express its appreciation for the excellent work done by E. C. Tucker of this laboratory, who prepared the subject matter of this report and under whose direction the experiments were carried out. R. S. HATCH, Chairman.

## AN INVESTIGATION OF STRESSES IN DIGESTER SHELLS

BY H. O. KEAY, B.Sc., LAURETIDE COMPANY, LTD., GRAND MÈRE, P. Q., CANADA.

In the design of sulphite digester shells, it has long been the practice to calculate the stresses by means of the conventional formulae for cylindrical pressure vessels—as in the case of boiler shells—without any apparent consideration whatever of the possible action of the masonry lining. Where such a lining realizes a thickness of seven inches or more, it will be recognized that we are dealing with a circular arch of no meager strength. To demonstrate that under certain circumstances such linings do impose a heavy tensile stress upon the shells of sulphite digesters is the aim of this paper.

To settle the question of the influence of temperature of the lining upon shell stresses, Professor A. P. Mills and the author were requested two years ago by the Laurentide Company, Limited, and the International Paper Company to conduct a joint investigation of the behavior of the shell of a digester under working conditions. The J. & J. Rogers Company, of Ausable Forks, N. Y., very kindly offered the use of a new digester for this purpose. While the effect of temperature was found to be less than had been anticipated, it was discovered that the digester shell was still subject to heavy tensile stresses even after the contents had been discharged and the digester cooled to room temperature. The fact that either investigator was working quite independently of the other, with entirely different instruments, renders the striking identity of the results throughout the range of the tests a very satisfactory check on the testing methods.

The Laurentide Company has taken a very keen interest in this work and has made it possible for the author to conduct two more similar tests upon digesters at the company's mills at Grand Mère, P. Q. The general agreement of the results with those of the previous test now seems to justify bringing the whole matter before the technical men of the paper industry for their serious consideration.

An account of the tests at the mills of the J. & J. Rogers Company will be given first, followed by an outline of the

second series of tests at the mills of the Laurentide Company.

The instruments used by the author in these tests consisted of a ten-inch Howard extensometer set, thermometers for indicating the temperature of the shell and lining, and a pressure gauge for determining the internal pressure of the digester at the test level.

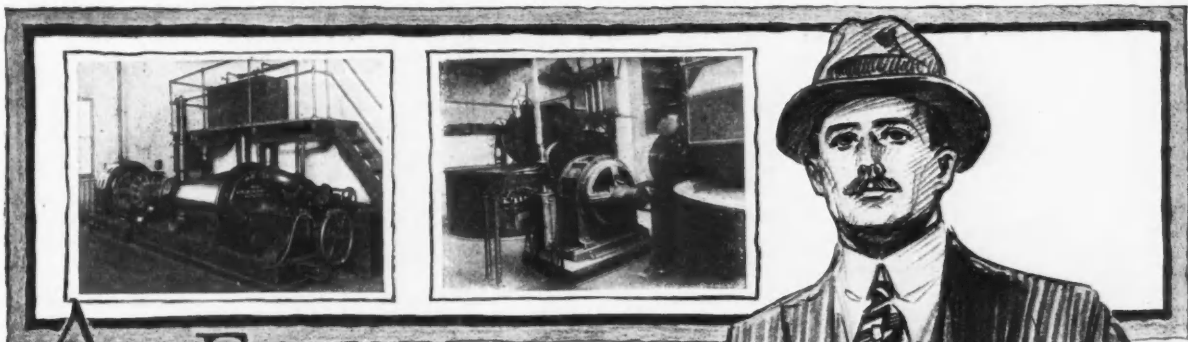
To those who may be unfamiliar with the Howard type of extensometer, it may be explained that this is a micrometer which accurately measures the distance between the centers of two small holes especially prepared in a plane surface, as illustrated in Fig. 1. The points of the extensometer are pressed into these holes and the micrometer screw turned up until it strikes the end of the sliding shaft within the sleeve. One point being on the shaft, and the other on the sleeve, it is evident that the points are free to assume the exact position required to measure the distance between the centers of the holes. The measurements are accurate to one ten-thousandth of an inch. A tram punch is provided to mark the holes—in this case, ten inches apart—and a comparator bar of steel (shown in section in Fig. 1) is also used to standardize all measurements taken. Attention is directed to the thermometer cup in the comparator for correction to a standard temperature. In practice, it has been found expedient to incline this comparator somewhat and partly fill the thermometer cup with mercury.

The delicate shell thermometers were supported against the digester at the test level by means of wooden seals having glass fronts to enable the thermometers to be read without disturbing them. Four of these seals were securely held against the shell by means of wire hoops around the digester.

In order to obtain a record of the temperature of the digester lining at the test level, a half-inch hole was drilled directly through the shell and half way through the lining. Into this hole was inserted and sealed another delicate thermometer.

The pressure gauge was mounted at the test level on the

(Continued on page 24)



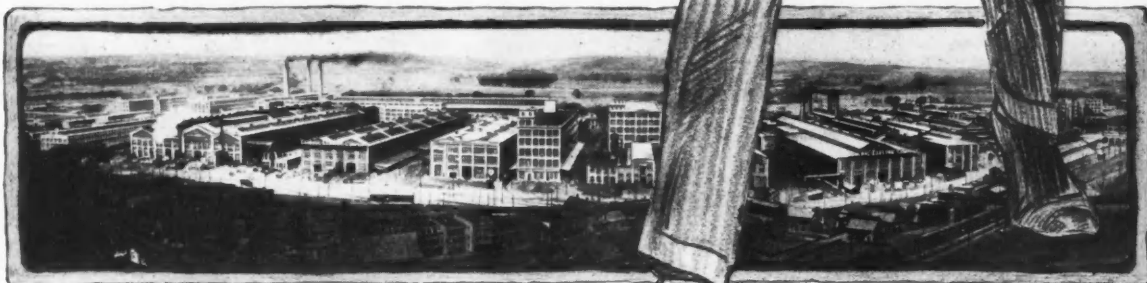
# An Expert comes at your call

When complicated problems arise it is often necessary to consult experts on the subject involved.

Realizing this fact, this company has gathered together engineering specialists to cover each industry which uses or should use electrical equipment.

The familiarity of these specialists with the details of the industry itself and the application of electrical equipment in the industry, makes their services much to be desired when problems arise pertaining to generation and use of electric power.

Do not hesitate to call for their co-operation—their knowledge is yours for the asking.



## General Electric Company

General Office: Schenectady, N. Y.

Sales Offices in all Large Cities

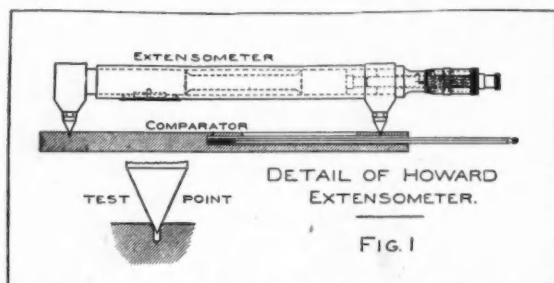
7300

## TECHNICAL ASSOCIATION MEETS AT HOLYOKE

(Continued from page 22)

digester and connected to the sampling nozzle near the top by means of a brass pipe into which a little glycerin was poured before filling with digester liquor. Since the top connection was below the level of the charge in the digester, the head of liquid was added to the top pressure, thus registering the exact pressure at the test level.

For the accurate determination of either longitudinal or cir-



cumferential stresses in the shell plate, it is of course necessary to take account of the strains in both directions as derived from the corresponding distortions; so provision had to be made for extensometer measurements both longitudinally and circumferentially.

The middle portion of each of the two shell sheets of the lower cylindrical course was selected for test, as indicated in Fig. 2, where the digester seam details are also shown.

Upon the unstressed shell of the digester when it was unlined, empty and at room temperature were taken the first extensometer and temperature readings, together with the corresponding extensometer and temperature reading of the comparator. All subsequent readings were referred to these as standard.

Advantage was taken of this opportunity to determine the elastic constants of the steel plate by noting its circumferential and longitudinal extension under a graduated hydrostatic pressure test. Thus it was found that the modulus of elasticity, or Young's modulus, for this material is 29,200,000 and Poisson's ratio,

usually designated as  $\frac{I}{m}$ , is  $\frac{I}{3.75}$  or 0.267.

The apparent coefficient of thermal expansion of the plate was also obtained at this time by heating the water with which the digester had been filled, and observing the extension with rise in the shell temperature. The apparent thermal coefficient was found to be 0.000013097 per degree centigrade. It has been called an apparent coefficient since, partly by reason of radiation at the thermometer seal, the value is manifestly too high for the actual linear coefficient. Whether it represents the actual thermal coefficient is entirely immaterial because the essential fact remains that each centigrade degree rise in temperature of the shell as registered by these thermometers with identical settings in subsequent tests meant an extension of 0.000013097 inch per inch of length, as measured by the same extensometer.

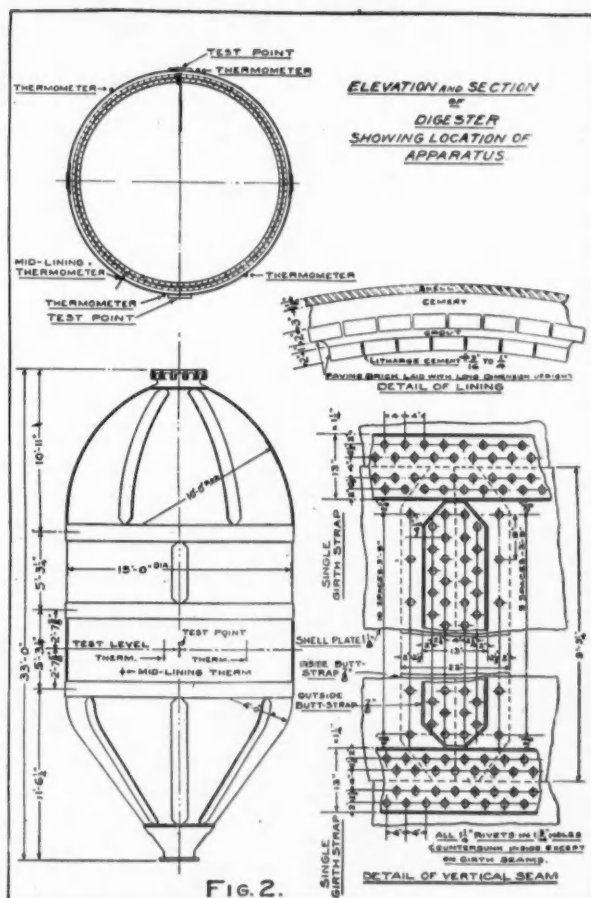
The foregoing completed the preliminary work of the test. The instruments were all removed and the test holes filled with gum to protect them from corrosion. The digester was then lined and put in regular service. The lining of the digester was made up of a layer of 1:2 cement mortar 3 inches thick next to the shell; a 2-inch course of fireclay paving brick followed; then came a 1-inch course of cement grout and another 2-inch course of paving brick, making a total thickness of eight inches of lining. The bricks were laid on end, the circumferential dimension being four

inches and the vertical dimension eight and a half inches. The facing course was laid with litharge cement.

After a period of nearly three months, the instruments were again set up and extensometer measurements made during three successive regular cooks, after which the digester was cooled to room temperature and filled with digester liquor and chips for another graduated hydrostatic test. The test was carried out in the same manner as upon the unlined digester, the temperature remaining practically constant.

Following this test, the digester was very gradually steamed to cooking temperature and pressure, and finally blown after a cook lasting about twenty-three hours, extensometer, temperature and pressure observations being continued throughout. This completed the collection of data.

Proceeding now to the calculation of stresses from the observed extensometer and temperature readings, it will be recalled that the standard condition of the instrument was taken as the extensometer and corresponding thermometer reading of the comparator in the reference observations on the cold unstressed



shell. In subsequent tests, corrections had, therefore, to be made on account of changes in temperature of the comparator from the standard temperature taken, and for any changes during a set of readings. The combined corrections are for the instrument alone.

(Continued on page 26)





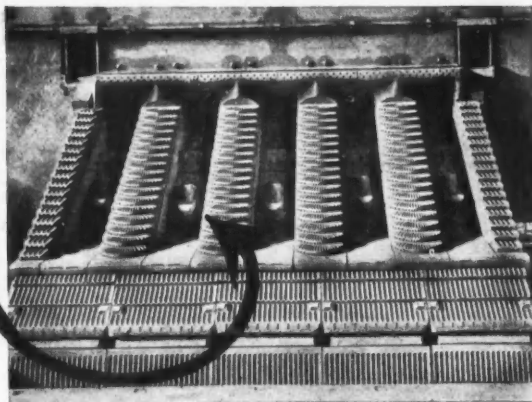
*"I Have Never Known  
A Tuyere to Fracture"*

"In all my experience, I have never known a Westinghouse Tuyere to fracture," said a user of the Westinghouse Underfeed Stoker.

"Looked at from the side, the Tuyere resembles an expansion joint. By means of the corrugations, the Westinghouse people have provided openings for the incoming air and have succeeded in maintaining an **EVEN THICKNESS OF METAL**. This insures **EVEN CONTRACTION AND EXPANSION**. As a further precaution, the entire surface of the Tuyere is **EVENLY** cooled by the air; and there can be no adjacent hot spots and cool spots to cause uneven stress and fracture.

"My experience with

## The Westinghouse Underfeed Stoker



**HAS CONFIRMED** my belief that it is properly designed in every detail."

In selecting your stoker, do not overlook those "little things" which are either in your favor — or against you.

It is better to guard against annoying and frequent renewals and shutdowns by a thorough investigation **BEFOREHAND**.

Westinghouse Electric & Mfg. Co.  
East Pittsburgh, Pa.

# Westinghouse

## TECHNICAL ASSOCIATION MEETS AT HOLYOKE

(Continued from page 24)

In addition to the corrections for the instrument, the extensometer readings had to be further corrected for changes in the temperature of the shell itself from the standard reference temperature, making use of the thermal coefficient determined in the separate test, previously described. Each extensometer reading recorded was an average of five readings made.

The difference between the final corrected extensometer reading and the original reference reading gave the distortion and this divided by the original length gave the strain in the direction taken. Corresponding actual stresses in the shell in the named

Taking the value of the elastic constants  $E=29,200,000$  and  $m=3.75$  from the preliminary test, the calculation resolves itself to the following:

$$P_1 = \frac{3.75 \times 29,200,000}{(3.75 \times 3.75) - 1} \times (3.75 e_1 + e_2) = 8,384,000 \times (3.75 e_1 + e_2)$$

$$P_2 = 8,384,000 \times (3.75 e_2 + e_1)$$

Averages were taken of the circumferential and longitudinal stresses on both sides of the digester, and these are plotted in Fig. 3, based upon the readings obtained for the cold unstressed

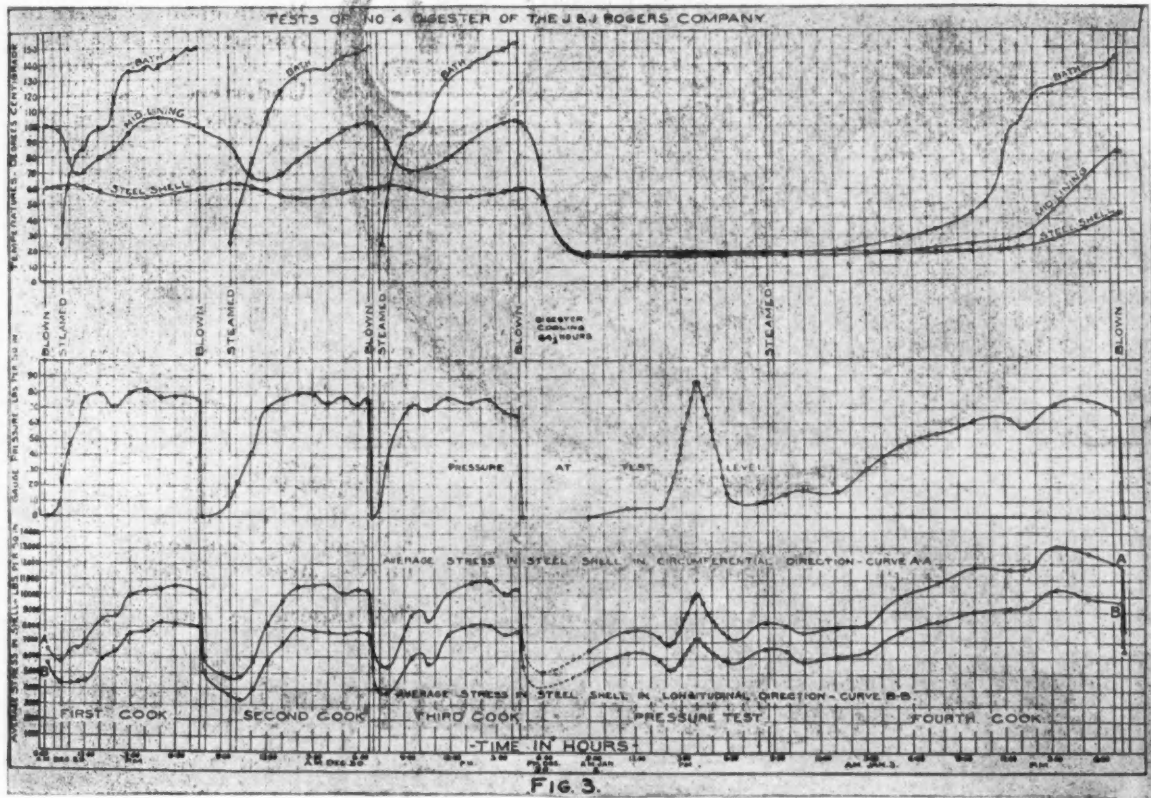


FIG. 3.

direction were calculated from a consideration of both circumferential and longitudinal stresses, as follows:

- Where  $e_1$ =circumferential strain, inches per inch,
- $e_2$ =longitudinal strain, inches per inch,
- $P_1$ =circumferential stress, lb. per square inch,
- $P_2$ =longitudinal stress, lb. per square inch,
- $E$ =modulus of elasticity of the steel.

$$i = \frac{1}{m} = \text{Poisson's ratio.}$$

within the limits of elasticity of the steel under the given conditions, the following relationship holds:

$$e_1 = \frac{P_1}{E} - \frac{P_2}{mE} \quad \text{and} \quad e_2 = \frac{P_2}{E} - \frac{P_1}{mE}$$

from which we obtain

$$P_1 = \frac{mE}{m_2 - 1} \times (e_1 m + e_2) \quad \text{and} \quad P_2 = \frac{mE}{m_2 - 1} \times (e_2 m + e_1)$$

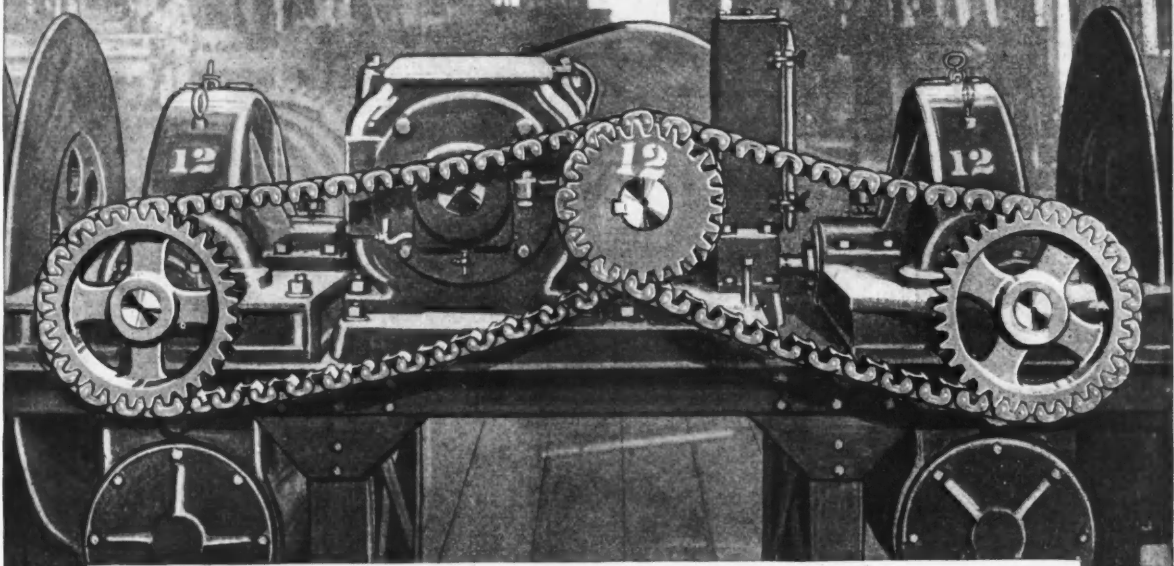
plate. Corresponding curves, showing the internal pressures, as well as the temperatures of shell, middle of lining, and cooking bath, are also plotted in this figure.

Referring to the plotted curves, the sequence of these will be found, to be in order of the tests as described: first the three continuous cooks, then, after an interval during which the digester was cooled, comes the hydrostatic pressure test, which in turn is followed by the retarded cooking operation. The upper of the two stress curves is that of circumferential stress and the lower one the longitudinal stress.

Had no extraneous stresses been encountered, calculation shows that the magnitude of the values represented in the upper curve would have been approximately double those of the lower curve, but we see that such is not the case, nor do the curves return to the base line of zero stress, even when the digester has been cooled down to room temperatures (as before the hydrostatic test). Further, the difference between the maximum and minimum of neither the circumferential nor the longitudinal stress

(Continued on page 28)

# MORSE SILENT CHAINS OPERATE PANAMA CANAL EMERGENCY GATES



## FURTHER EVIDENCE OF Morse Dependability

**T**HE UNITED STATES GOVERNMENT, before selecting the form of POWER TRANSMISSION which should operate the Emergency Gates of the Panama Canal Locks, made a comparative investigation of all the large manufacturers of Silent Chains, putting their products through searching tests of STRENGTH and ADAPTABILITY.

MORSE SILENT CHAINS showed a much higher tensile strength than any other make, and were selected as the chains which could be depended upon in emergencies. Accordingly, the Otis Elevator Co., which installed the 36 Control Units was instructed to operate them through MORSE SILENT CHAINS. One of the units is pictured above.

Write us for still further evidence of the Government's confidence in "MORSE." Government tests are worth investigating.

**MORSE CHAIN CO., - Ithaca, New York**

*Largest manufacturers of silent chains in the world.*





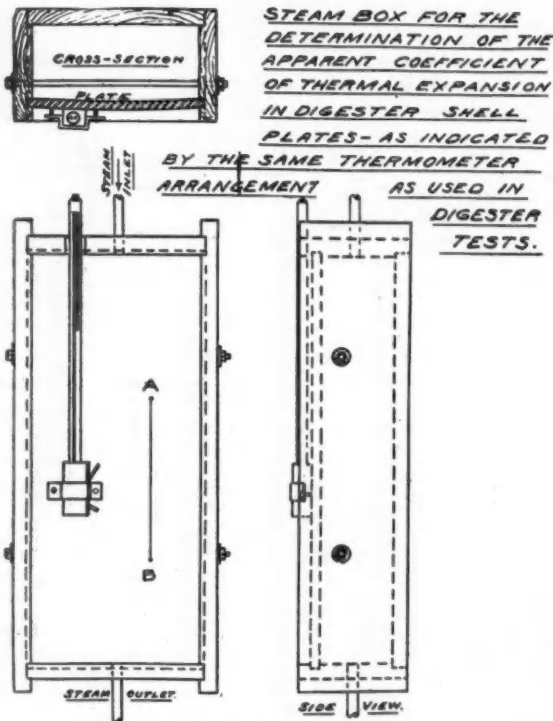
## TECHNICAL ASSOCIATION MEETS AT HOLYOKE

(Continued from page 26)

curve is as great as the calculated values corresponding with the known maximum internal pressure. This can be accounted for only in one way; namely, that, subsequent to the lining of the digester, compression had accumulated in this lining, reacting as a residual tensile stress in the plate. The effect of internal pressure and the elastic extension of the steel shell tends to relieve the compression in the lining and its consequent reaction on the shell; so, at the point of maximum internal pressure, the resultant

mid-lining temperatures were taken, the hydrostatic tests were omitted, a change was made in the thermometer arrangements for obtaining the shell temperature and the thermal coefficient referred to this thermometric device was obtained by separate test, as described below.

An extra piece of digester shell was framed in wood in such a way as to form the front side of a steam box, shown in Fig. 4. One of the shell thermometers was attached in the usual manner to this steel plate, and test holes laid out for the extensometer as close as possible to the thermometer location. Starting with the temperature of the plate at 22.65° C., careful readings were made of the test length by means of the Howard extensometer. Steam was gradually introduced into the steam box and extensometer readings continued until a temperature of 100° Cent. was reached. The total extension per inch divided by the rise in tem-



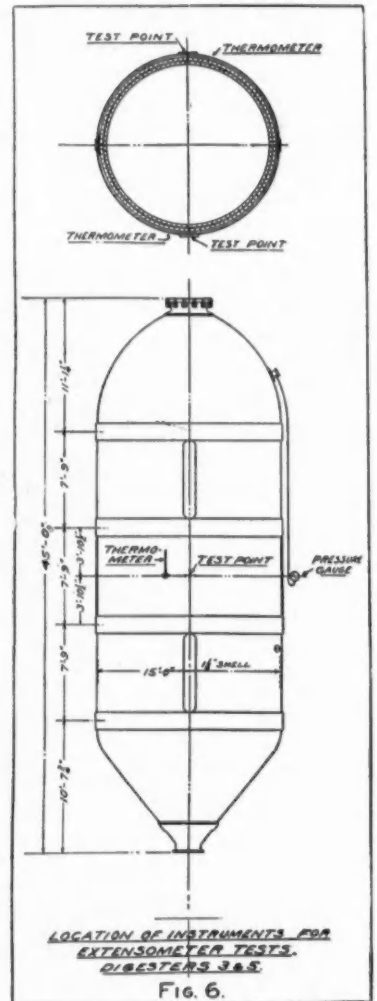
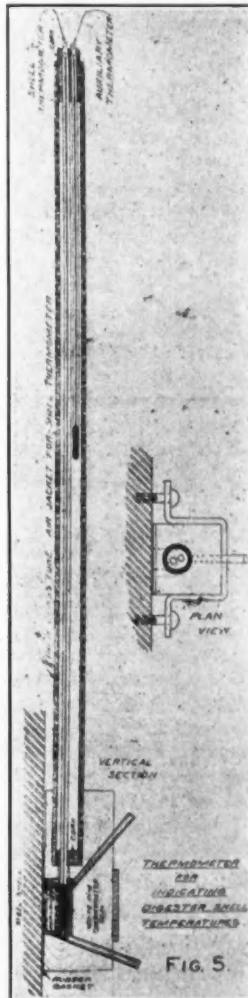
stress is necessarily less than the sum of the residual stress and that which would have been produced by hydrostatic pressure alone.

The residual circumferential stress is shown to be about 5,000 lb. per square inch in the solid plate, and the maximum circumferential stress in the final cook reaches a value of 13,000 lb. per square inch, with a corresponding longitudinal stress of 10,400 lb. per square inch. Since the strength of the longitudinal seam, expressed in terms of the strength of the gross section of the uncut plate is 85.42 per cent, and that of the girth seems 67.19 per cent, the corresponding maximum circumferential stress becomes

13,000 = 15,220 lb. per square inch, and the maximum longitudinal stress

$\frac{10,400}{0.6719} = 15,480$  lb. per square inch. The higher stresses encountered in making the first cook after the digester had been cooled down emphasize the necessity for extreme care in bringing the digester up to working temperature and pressure under similar circumstances.

Directing our attention now to the tests conducted at the mills of the Laurentide Company, it may be said that the method of testing was practically identical with the foregoing except that no



perature in degrees centigrade gave the thermal coefficient 0.0000125 per degree centigrade as the proper value to use with the instruments as actually applied in the digester test.

A drawing of the shell thermometer used in the latter tests (Continued on page 30)



# Two Reasons why we guarantee "Test Special" Rubber Belting

**NEW YORK BELTING & PACKING CO.**  
 ADMINISTRATIVE OFFICES  
 91 CHAMBERS STREET, NEW YORK, N. Y.  
 BRITISH OFFICES: 49, SOUTHAMPTON ROAD, LONDON, ENGLAND  
 CABLE ADDRESS: "BELT" NEW YORK

New York Belting & Packing Co.  
 91 Chambers Street,  
 New York, N. Y.

Gentlemen:-  
 We have your recent letter asking our opinion of the "Test Special" friction surface rubber belting which you have furnished us.

We are glad to tell you that this belting has proven very satisfactory and we consider that we are getting very efficient results by its use. As you know we used the "Test Special" to test up our new board mill at Thorold, Ontario, in the Fall of 1914. The mill has operated at full capacity from the start and we have not been required to make any changes with smaller rolls than required to make very good success with smaller rolls. The fact that we had very good success with smaller rolls of your belting prior to our building the Thorold mill led us to believe that we would receive equal satisfaction with your product at Thorold. We are pleased to tell you that our anticipations in this direction have been fully realized.

We have been agreeably surprised by the fact that we have had no such trouble as is usually caused by the stretching of belting on new equipment. All the belts are in first class condition and from their present appearance are good for a long term of service.

We are glad to recommend "Test Special" belting to anyone who wants efficient "best service".

Yours very truly,  
 THE MANAGER  
*J. J. [Signature]*  
 Purchasing Agent

320/E

**Petaluma Box Company, Inc.**  
 DEALERS OF ALL KINDS OF FRUIT TRAYS, BUS CASES, CHICKEN COOPS, BERRY CHESTS, LUMBER, LATHS, SHAKES, SHINGLES, SANDWICH SHAVINGS AND BOX WOOD  
 7 & 8 FRANKLIN STREET  
 PETALUMA, CALIF. 6-5-18

Gentlemen:-  
 Your last shipment of Test Special belting came duly to hand. Please accept our thanks for promptness in filling this order.

We are now using this brand of belting on a good part of our plant and have found it so satisfactory that we are replacing all worn out belts with "Test Special". We have placed this belting on high speed machines and in places where severe strains and overloads are carried and our experience is that it carries the loads and lasts longer than the best grades of leather or Balata belting.

We find that it is not affected by heat or moisture, will not tear out at the lacing and will last for six months on a run that wears out the best grade of leather belt in three months. We do not hesitate to recommend "Test Special" belting for use for any purpose for which a belt is used.

Very truly yours,  
 Petaluma Box Co.  
 Per *V. L. [Signature]*

77:LL

## Have You a Belting Problem?



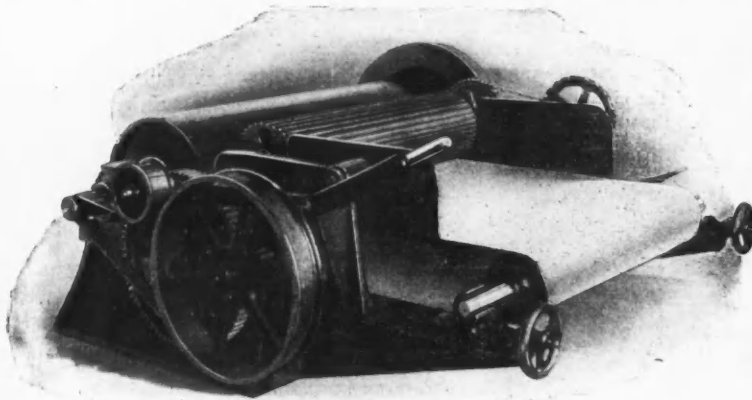
### NEW YORK BELTING & PACKING COMPANY

- |   |   |
|---|---|
| NEW YORK, N. Y. .... 91-93 Chambers Street  | SAN FRANCISCO, CAL. .... 519 Mission Street |
| CHICAGO, ILL. .... 124-126 West Lake Street | BOSTON, MASS. .... 65 Pearl Street          |
| ST. LOUIS, MO. .... 219-220 Chestnut Street | PITTSBURGH, PA. .... 420 First Avenue       |
| PHILADELPHIA, PA. .... 321-323 Arch Street  | SPOKANE, WASH. .... 157 So. Monroe Street   |



# The Ryther Shredder

FOR THE PRIMARY REDUCTION  
OF DRY, PARTLY DRY AND  
FROZEN WOOD PULP

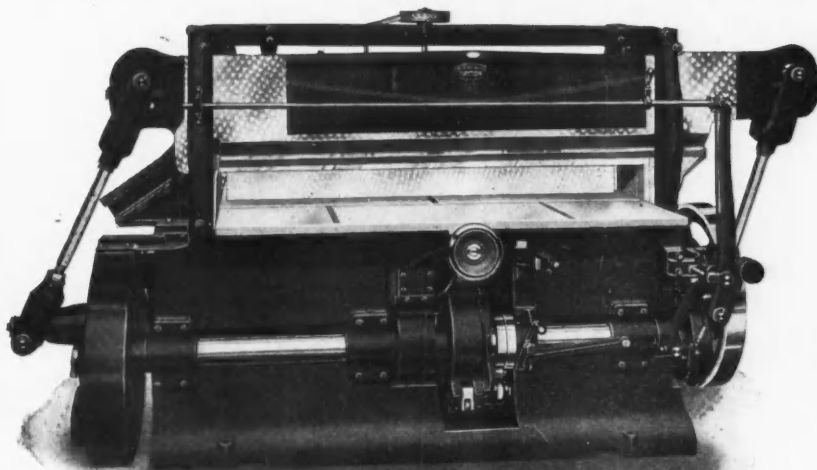


## SAVES TIME, WASTE, POWER

Among its many users are  
International Paper Co.  
Kimberly-Clark Co.  
M. & W. H. Nixon Paper Co.  
*It's worthy of investigation. Write us.*

### RYTHER & PRINGLE COMPANY, Carthage, N. Y.

# Seybold "Dayton" Automatic Cutter



**I**N Purchasing a Cutting  
Machine, measure its  
VALUE by the RE-  
SULTS you are able to  
obtain by its use.

We welcome the clos-  
est comparison of the  
QUALITY and  
QUANTITY of the out-  
put of the DAYTON  
CUTTER with that of  
any other make.

**The Seybold Machine Company**  
Main Office and Factory, Dayton, Ohio, U.S.A.

NEW YORK: The Seybold Machine Co., E. F. Lawson, 151-163 W. 26th St.  
CHICAGO: The Seybold Machine Co., C. N. Stevens, 112-114 W. Harrison St.  
ATLANTA: J. H. Schroeter & Bro. TORONTO: The J. L. Morrison Co.  
LONDON: Smyth-Horne, Ltd. WINNIPEG: Toronto Type Foundry Co., Ltd.

## TECHNICAL ASSOCIATION MEETS AT HOLYOKE

(Continued from page 30)

litharge-glycerin cement.

Two test locations were taken on each digester at the middle portion of each of the two sheets forming the middle course of the shell, as shown in Fig. 6. Gauge points were prepared as before for both circumferential and longitudinal readings of the extensometer, the special thermometers were attached, and the pressure gauge connected as indicated. Details of the longitudinal and girth seams are presented in Fig. 7.

After collecting the data, averages were taken of the circumferential and longitudinal stresses on both sides of the digester in each case, and these are plotted in Figs. 8 and 9, based upon the readings obtained for the cold unstressed plate. Corresponding curves showing internal pressures, as well as temperatures of shell and cooking bath, are also plotted on these diagrams.

Taking the maximum observed circumferential stress in the shell during the cooks in the final tests as 13,300 lb. per square

inch in the solid plate corresponds with  $\frac{13,300}{0.852} = 15,610$  lb. per

square inch at the minimum section of the plate in the vertical seams. Again, taking the corresponding maximum observed longitudinal stress at 8,800 lb. per square inch in the solid plate gives

$\frac{8,800}{0.675} = 13,030$  lb. per square inch at the minimum section of

plate in the girth seams.

Reference to the curves, Fig. 9, for digester No. 3, indicates results essentially similar to those observed on Digester No. 5.

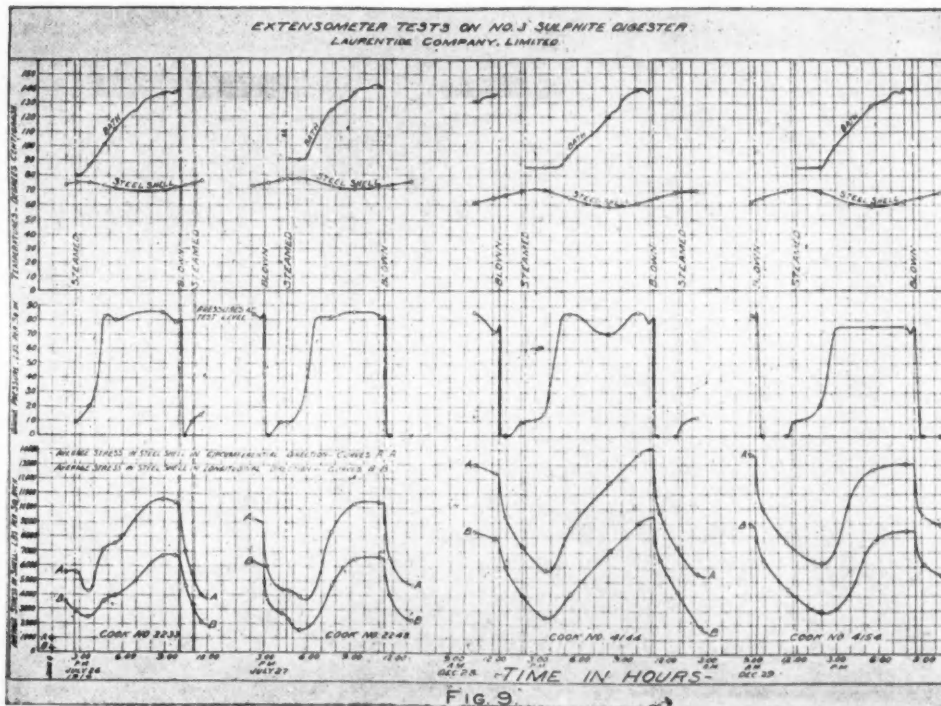


FIG. 9.

Referring to the curves, Fig. 8, for Digester No. 5, it will be noted that test readings were made on March 31, as soon as the lining of the digester had been completed, but before any cooking had been done. Circumferential and longitudinal stresses in the shell at this time were both about 800 lb. per square inch.

Cooking operations were started at once, and on May 19, observations were made covering the period of two regular cooks, Nos. 1446 and 1450, as indicated. The higher circumferential stresses in the solid plate ranged from 10,000 to 11,700 lb. per square inch, while the lower circumferential stresses ranged from 2,000 to 3,600 lb. per square inch.

After a period of somewhat over seven months, during which the digester had been in continuous operation, observations were resumed on December 26 covering three regular cooks, Nos. 4116, 4122 and 4128. The higher circumferential stresses in the solid plate now ranged from 12,300 to 13,300 lb. per square inch, while the lower circumferential stresses ranged from 4,000 to 5,000 lb. per square inch. The curves of longitudinal stresses show similar increases during this period.

Comparison of both of the foregoing with the corresponding curves from the test at the mills of the J. & J. Rogers Company shows a striking similarity in the behavior of these digester shells, although in the former instance the lining cement was gauged with sodium silicate solution at 5° Baumé, while in the latter case the cement was gauged with a sodium silicate solution at approximately 36° Baumé, a circumstance which appears to indicate that, if this silicate has an influence in producing the permanent expansion of the lining, an excess over a certain amount has little or no effect. It should be clearly understood that the above mentioned maximum stresses are about double those which we obtain by the usual method of calculation by the conventional formulae ordinarily used in the design of cylindrical pressure vessels, and where we may have counted upon factor of safety of 6, this factor is actually reduced to about 3.

To give some idea of how the residual stress in the shell accumulated in the time covered by the tests, curves are shown in Fig. 10, combining the results of the tests on all three digesters.

(Continued on page 34)



Bleached and Unbleached  
**WOOD PULP**  
 of every description

**M. GOTTESMAN & SON**

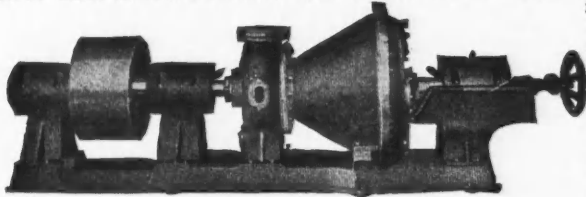
Established 1886

18 East 41st Street

NEW YORK, N. Y.

**Increase Your Production**

Three Claflin Continuous Beaters will handle as much stock as six tub-beaters. The six tub-beaters will cost three times as much as three Claflin Continuous Beaters. Six tub-beaters will occupy four times the floor space required for three Claflin Continuous Beaters. These facts have been demonstrated daily for the past nine years in some of the best mills in the country.

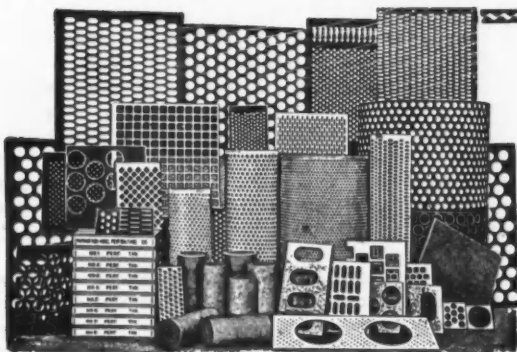


It has also been demonstrated beyond question that the Claflin Continuous Beaters do better beating and crushing, produce a finer, stronger and more uniform pulp than the tub-beaters.

We also have many customers, who prefer our Continuous Beaters to Jordan engines, because the fillings never break or tear out, and they obtain a better product than from a Jordan.

If you manufacture Kraft paper, and are having trouble with tub-beaters, Jordans and other refining engines, write us for special information on Kraft stock.

**THE CLAFLIN ENGINEERING CO., LANCASTER OHIO**



**PERFORATED METALS**

**Paper and Pulp Mill Screens**  
 STEEL, IRON, COPPER, BRASS, BRONZE

FOR

Centrifugal and Rotary Screens—Drainer Bottoms—Filter Plates—Pulp Washers, etc. All sizes and shapes of holes in many thicknesses and dimensions of sheets. Accuracy in all details and excellence of quality at lowest consistent prices.

**THE HARRINGTON & KING PERFORATING CO.**

618 NORTH UNION ST., CHICAGO, ILL.

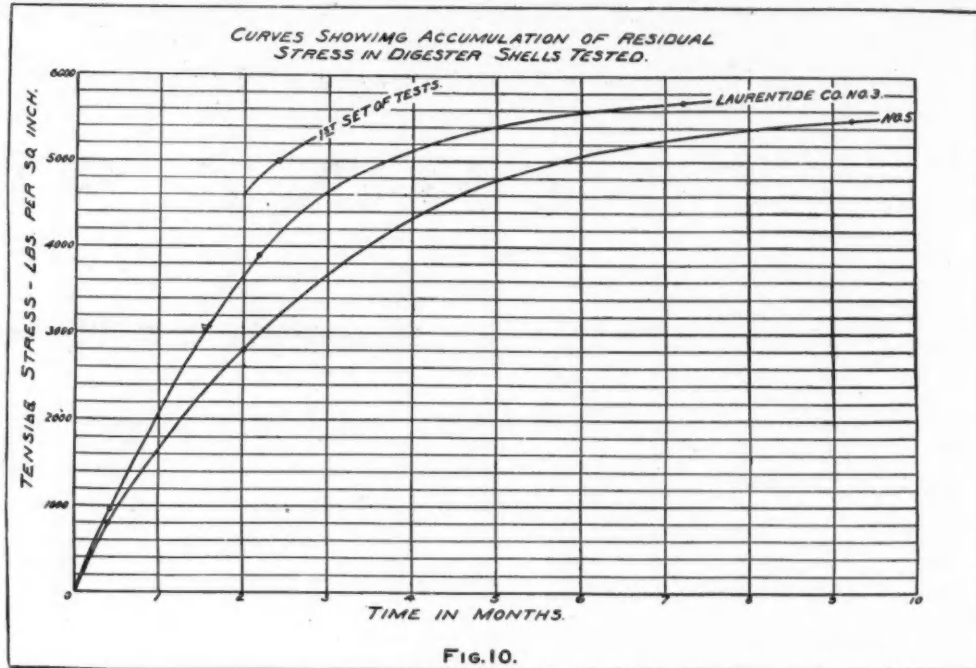
114 LIBERTY ST., NEW YORK, N. Y.

## TECHNICAL ASSOCIATION MEETS AT HOLYOKE

(Continued from page 32)

The object of this paper has been to present the facts of the case so far as the research has taken us. The causes of the action cited undoubtedly exist in the chemical and physical readjustment which takes place within the lining after it has been built in place. We might wander a long way in the discussion of the

conditions, and to subject these to repeated changes in temperature within the range of ordinary cooking operations, noting the amount of distortion. By varying the proportions of the various ingredients conceded to be desirable in digester linings, it may be hoped ultimately to strike a balance of conditions where the



setting of cement without evolving an entirely satisfactory theory as to its bearing in the present case. What is needed is actual research and proof. For want of any better method, it has been the author's aim to make up cubes of various lining materials confined in such a way as to reproduce as far as possible digester

lining will neither shrink in setting to cause cracks for the inflow of acid, nor to expand to the extent of imposing undesirable stresses upon the shell. In the meantime, it may be well to bear in mind in the designing of new digesters that, under certain circumstances at least, these residual stresses do exist.

## PROCESSES FOR CAUSTICIZING SODA LIQUORS\*

During the last few years chemical industry has been greatly stimulated by the extraordinary course of events. The cutting off of the supply of many imports from abroad and the demands made by the war have done much to bring this condition about. The builders of chemical appliances have made a distinct contribution by the enterprise they have shown. Very often they have been the leaders in improving and developing processes by making a study of them. The getting together of both builders and users annually at the National Exposition of Chemical Industries in New York will I am sure, lead to increasing interest as time goes on.

### Indications of Progress

As an illustration of this progress let me mention one subject of great general importance in chemical processing, the separation of solids from liquids. There are two fundamental ways of viewing this subject:

First, by a counter current movement of the elements;

Second, by straining or filtering out the solids.

The character and relative value of these elements will influence the choice to a great extent. Minor and incidental considerations must also be reckoned with. The making of caustic soda from the carbonate falls within the scope of this subject, and several new appliances and manipulations have been advanced and adopted for this work. Not until recently have any improvements been made in the manner of preparing the liquors for cooking wood by the soda process.

Therefore, it seems timely and fitting for the Committee on Soda Pulp to present this subject to the Association for a wider knowledge and better appreciation of one of these newer developments in chemical industry applicable to the manufacture of pulp by the soda process.

Under the title

### Discussion of Different Processes for Causticizing Sodium Carbonate Liquors and the Separation of the Sludge

We will take up the following systems:

(Continued on page 36)

\*Report of the Soda Pulp Committee. Martin L. Griffin, chairman, Wallace H. Howell, Jr., and George K. Spence, Associates.

# HOWARD BOND

WATERMARKED

Color Brilliant : Strength Wonderful

---

**THE HOWARD PAPER CO.**  
URBANA, OHIO

## ORR FELTS AND JACKETS

ALL ARE GIVING SATISFACTION ON

NEWS AND FAST RUNNING MACHINES

THESE FELTS ARE WOVEN ENDLESS

**THE ORR FELT & BLANKET CO., Piqua, Ohio, U. S. A.**

## Voorhees Rub-Steel Valves

*"The Valve with a Backbone"*

They Combine *Strength With Flexibility*—Do All sorts of Pumping In  
*Four Grades. Insist on having them*

Voorhees Rubber Mfg. Co., 20-50 Bostwick Ave., Jersey City, New Jersey

## TECHNICAL ASSOCIATION MEETS AT HOLYOKE

(Continued from page 34)

### Types of Processes Discussed

- First*—Intermittent precipitation, sedimentation and decantation;  
*Second*—Continuous precipitation, sedimentation, washing and separation of the precipitate from the solution;  
*Third*—Intermittent or continuous precipitation, filter-pressing and washing for the separation of solids and liquids;  
*Fourth*—Intermittent or continuous precipitation, with continuous filtering and washing for the separation of solids and liquids.

### The Old System

Under the first heading is comprised the old process of adding the lime to the solution of soda ash in a tank constructed for this

measurement of the strength and volume of the alkali liquor used for each charge, so that the quantity of lime may be accurately adjusted.

2—A series of tanks follow for the subsequent settling, drawing purpose and thereafter settling out the precipitated calcium carbonate and drawing off the clear liquor. The process of washing, off the liquor, boiling up and washing of the sludge. These tanks and causticizer should be of the same capacity and furnished with agitator and all necessary pipe connections. The process is one of quiescent settling of the precipitate, decanting the clear liquor, washing the sludge by a process of dilution, which practically and theoretically is never complete. The lower the concentration of the

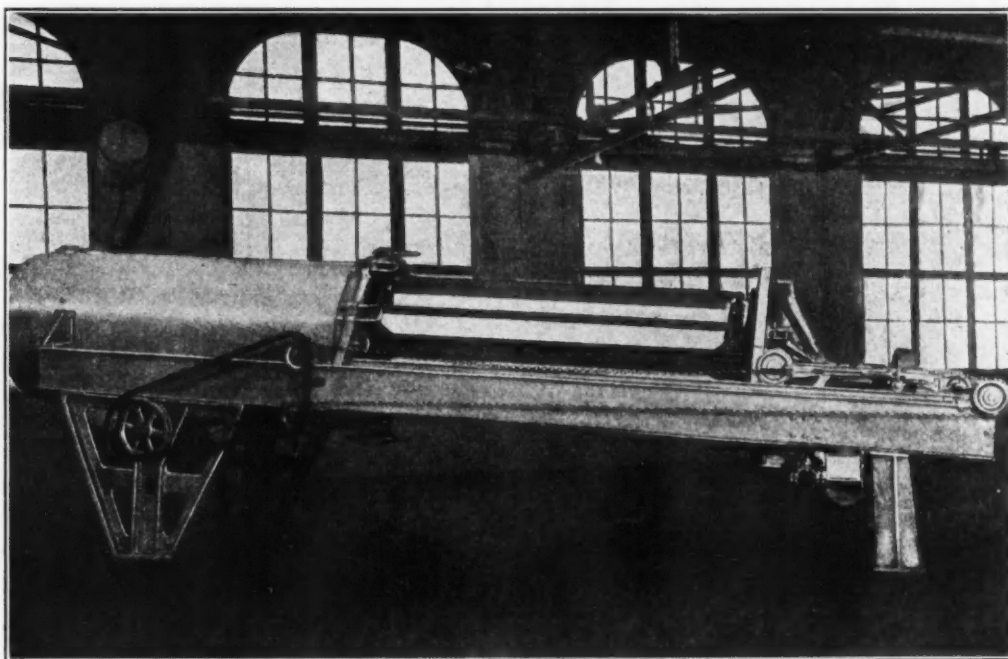


FIG. 1.—VIEW OF POWER DRIVEN KELLY FILTER PRESS.

settling and decantation is then repeated until the sludge is as free from alkali as conditions will permit.

The actual chemical process must of necessity be the same in substance, whatever the subsequent mode of procedure may be. In soda pulp mills where the black ash must be leached out, the lime is added to the liquor in dry form; where caustic soda is made for market from finished soda ash, the process is reversed and dry soda ash is added to milk of lime. In any case the lime must be brought into contact with the soda ash in solution and boiled to make the process effective. It is from this stage onward that improvements have been made which this committee is about to take up. This first and old process may be set forth in a general way as follows:

1—The causticizer—where the solution of alkali and lime are mixed and boiled. This may be a vertical, open, round tank, with a basket suspended for the lime, and an agitator; or, it may be a horizontal cylindrical closed tank with manholes, lime-baskets, agitator and pipe connections. With this arrangement the boiling may be done with low pressure and the causticizing process made more effective.

It is very important that adequate plans be made for a careful

liquor to be causticized, the higher will be the causticizing efficiency. It is therefore desirable to make up the liquors of approximately the strength required for cooking the wood. The weak wash liquors must of necessity be disposed of in any system, by washing up strong sludges or used in leaching out the black ash.

Such a system requires a large number of tanks, piping, valves, floor space, buildings, labor, steam, etc.

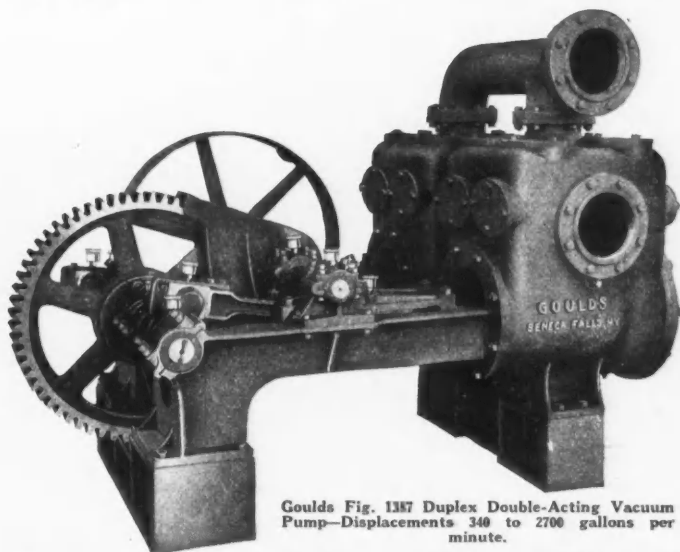
### The Dorr System

Under the second heading, the causticizing process is best set forth by the system of the Dorr Company. It has been made continuous by the adoption of continuous agitation and continuous counter-current decantation. By the adoption of this company's equipment, all operations become continuous, the soda ash, or soda liquor, and lime in proper proportions are mechanically fed to the first of a series of three reaction agitators which are fitted with steam coils. If the caustic liquors are to be made from soda ash, the wash liquors from the second thickener will gravitate to the first solution reaction agitator to furnish the required fluid volume. In pulp mills, however, this wash liquor must necessarily be used

(Continued on page 38)



# For Wet Vacuum Service



Goulds Fig. 1387 Duplex Double-Acting Vacuum Pump—Displacements 340 to 2700 gallons per minute.

Goulds Fig. 1387 is a duplex Vacuum Pump especially suitable for wet Vacuum service as with **Suction Boxes on Paper Machines.** This type is only one of a complete line of Triplex, Duplex and Single-cylinder vacuum pumps, single and double-acting which we build with displacements to meet the requirements of any plant. These pumps can be equipped for either gear or belt connection to the driver.

Bulletin 106 contains complete data and description on this line of pumps.

**Copy Sent on Request.**

## The Goulds Manufacturing Company

BRANCH HOUSES: Boston, New York, Philadelphia, Chicago

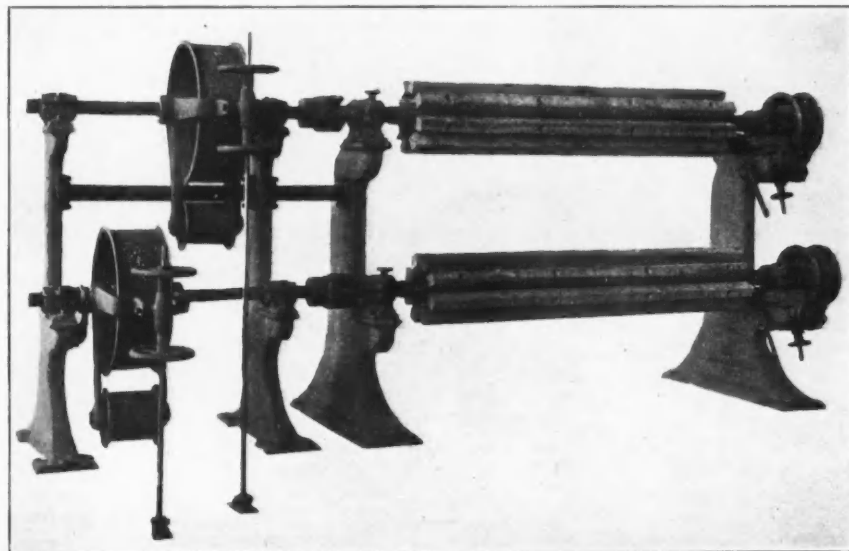
Main Office and Works:  
*Seneca Falls, N. Y.*

DISTRICT OFFICES: Pittsburgh, Atlanta, Baltimore, Houston



**THE BLACK-CLAWSON CO.** HAMILTON OHIO, U. S. A.

**Builders of Paper and Pulp Mill Machinery**



### Sheet and Roll Pasting Machines

We issue a Catalogue which contains real information. Write for it.

FOR  
**ECONOMY  
QUALITY  
AND  
QUANTITY**

our high speed Straight Fourdrinier, Harper Fourdrinier and Cylinder Machines are unsurpassed.

## TECHNICAL ASSOCIATION MEETS AT HOLYOKE

(Continued from page 36)

for leaching out the strong tanks of black ash. Three agitating tanks are provided, placed in series, so as to insure a continuous boiling for at least one hour to make the chemical reaction effective.

The pulp or precipitate and liquor flow continuously through this series into the first thickener, the overflow from which is the strong liquor.

The underflow from each thickener is controlled by a diaphragm pump which delivers it at such a height that, joined by wash liquor or water, it gravitates to the next thickener in the series. The underflow from the last thickener either runs to waste or to a filter for final dewatering and reburning, if desired. It is claimed that by the use of thickeners a smaller total settling area is required than in intermittent work, since the tanks are working continuously and no time is lost in decanting, discharging and refilling.

The Dorr agitator and thickener are the particular devices placed in the tanks to obtain the efficient results sought, and do not

concentrates in the mining industry, in which the carrying fluid is water and has no value. In the manufacture of caustic soda, however, the valuable product is the liquid, while the pulp is a waste by-product. In this case, it is extremely important that the fluid product should be delivered in its most concentrated form, particularly so if it must be evaporated. While it is possible to dispose of weak washing liquors effectually by counter-current methods, it involves more plant, labor and losses.

### The Third Type of Process

We may illustrate the third type of process, namely, intermittent precipitation, filter-pressing and washing for the separation of solids and liquids, by the Kelly filter press, already installed in several pulp mills, and whose representative is Emil E. Lungwitz, of 90 West street, New York.

Chemical filtration consists in cake building and cake washing. If the cake retains valuable salts, they should be removed because

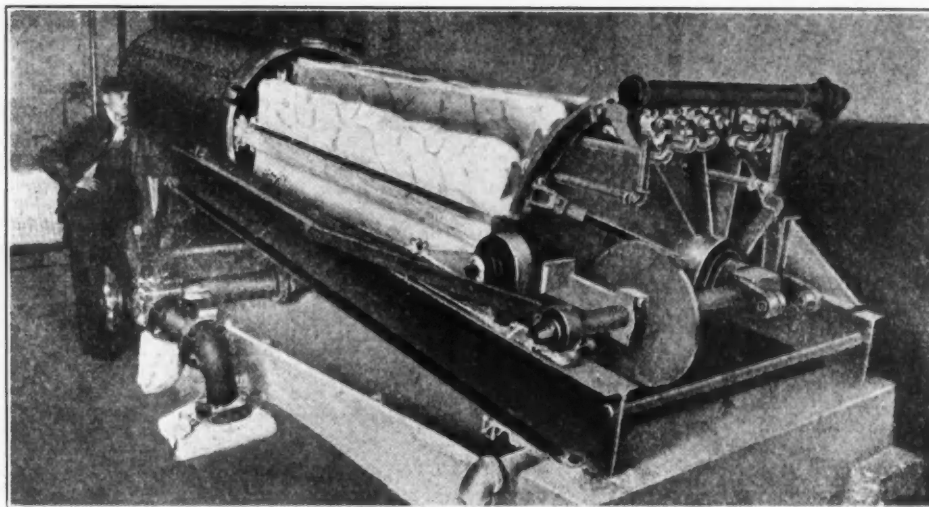


FIG. 2.—OPEN KELLY FILTER PRESS SHOWING CAKE ON LEAVES.

include the tanks, properly speaking. The "agitator" can be operated in any flat bottom tank, and consists of a central vertical cylinder carried by a shaft supported from the top of the tank and equipped with two arms carrying plows, which travel around the bottom of the tank and draw the pulp to the center. This is raised through the cylinder by means of air and distributed evenly over surface of the tank by suitable revolving launders or troughs. A continuous inflow and outflow is provided.

The "thickener" consists of a slow-moving mechanism placed in a suitable tank, by means of which the operation of settling may be made continuous through the removal of the settled material to a point of discharge. It consists of a central vertical shaft with radial arms equipped with ploughs, to bring the thickened material to a discharge opening at the center, by the slow rotation of the mechanism, where it may be discharged as desired. There is a peripheral launder which collects the clear liquid overflowing at the top of tank. This whole process is designed for continuous work.

The Kingsport Pulp & Paper Company's new plant at Kingsport, Tenn., is equipped with this system.

It is well to note, in passing, that the Dorr devices have been worked out principally for the concentration of slimes and fine

of their value; if the cake carries the principal value, it should be washed to remove the impurities. The filter press is adapted to either case and the method of procedure is the same.

Plate and frame presses have been used in chemical operations for many years. They have given good results notwithstanding many deficiencies. In these presses, the cake is formed within the bag, cakes forming on the opposing faces until they grow together. The filtering capacity continually diminishes until the cake is formed, which will contain a moist core unless time is taken at the expense of capacity.

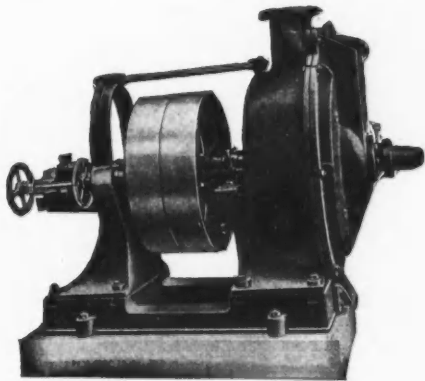
Such presses require much hand labor and are relatively of small capacity; the washing of the cake must be done by displacement of the unfiltered sludge, remaining within the press, and the filters themselves must be removed for cleansing. They are better adapted to problems in which the cake is the more valuable product, and not well adapted for such work as filtering hot strong caustic solutions.

### Improvements as Illustrated by the Kelly Press

Recently, many striking improvements have been made which have furnished the motive for this report. The Kelly press illus-

(Continued on page 40)

# THE ORIGINAL AND STILL UNEQUALLED PULP REFINER



700 Now In Use

For simplicity and capacity no other compares with it.

## PULP SAVER PROFIT MAKER

This refiner enables you to refine your tailings into No. 1 Pulp instead of wasting them or making them into a cheaper No. 2 grade Pulp.

Can be used to equally as good advantage for refining tailings and knots in sulphite mills.  
Two sizes—stones 39½" and 59".

**J. M. VOITH CO. Inc.**  
200 FIFTH AVENUE NEW YORK

WE BUILD ALL MACHINERY REQUIRED FOR PAPER, PULP AND SULPHITE MILLS

HAMMERMILL  
BOND

HAMMERMILL  
COVER

HAMMERMILL  
LEDGER

HAMMERMILL  
  
SAFETY

**HAMMERMILL PAPER CO.**  
ERIE, PENNSYLVANIA

EASTERN OFFICE

291 BROADWAY

NEW YORK CITY

## TECHNICAL ASSOCIATION MEETS AT HOLYOKE

(Continued from page 38.)

trates many of these improvements in intermittent filtration. The essential parts of this press are:

- (1) The supporting frame;
- (2) The press shell;
- (3) The filter carriage;
- (4) The filter leaves;
- (5) The quick-locking head mechanism.

The press is telescopic in design. The filters are enclosed in a tight shell and the cake is built up uniformly upon the outside of large filter bags whose area is not diminished in the process of forming the cake. The filter leaves are built up frames, carrying a four-mesh wire screen, and are entirely enclosed within the bags. They are connected to the head end of the press and discharge

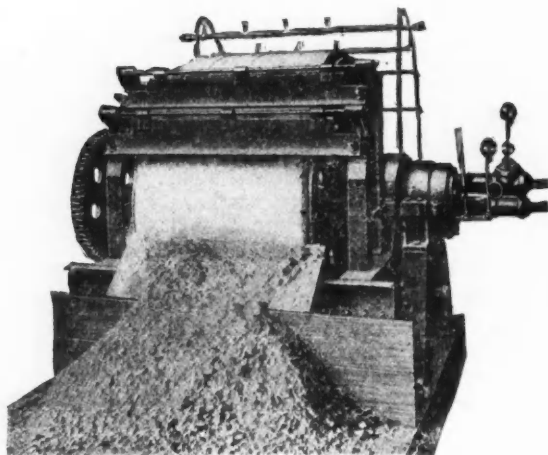


FIG. 3. ZENITH ALL METAL ROTARY FILTER—TYPE B 1.

their filtrates into a common trough. This whole mechanism, including the head end, is counterpoised on a sloping frame. When in operation the filters are enclosed within the shell, and when ready to be discharged they are withdrawn.

Briefly, a complete cycle of operations consists in pumping the sludge into the filter, under a controllable pressure, until the cake is formed. The unfiltered sludge is then displaced by air pressure and this in turn replaced by wash water or other washing media. These operations follow successively under a constant pressure so that the cake may be retained intact until the operation is finished. Whenever it is desired, the cakes can be further dried with steam or air. The press is then opened and the cakes can be removed easily by inflating the bags with air or steam, etc.

Some of the peculiar advantages claimed for this press are:

- (1) Large capacity for space occupied and time consumed;
- (2) Economy in energy, including mechanical power, manual labor, losses of energy by changes of temperature during the process.

The shell of this press can be insulated against radiation, either by steam jacket, lagging, or means for circulating brine so that the process can be controlled at any temperature desired;

- (3) Economy of extraction with a minimum of wash water;
- (4) Presses are built strong with a good resistance to wear and tear.

As applied to the soda pulp process, the strong sludgy liquor

should be discharged from the causticizing unit into a tank where one sedimentation and one decantation of the strong liquor should be made. The strong liquor sludge should then pass directly to the filter press, and the strong filtrate pass on with the strong decanted liquor. The largest product of strong liquor will be obtained. The cake may then be washed and the small volume of weak liquor be disposed of in the usual way. The cake itself is then ready to be discharged. There are many of these presses in use for handling caustic soda sludges, both in pulp and chemical works.

### Continuous Filtration

Under the final subdivision of this report we shall deal with continuous filtering.

The actual chemical operation of causticizing may be either intermittent or continuous, though I see no particular advantage in the continuous plan. The batching plan provides for definite quantities per batch, with definite results; the continuous plan involves a definite proportional rate of flowage of all the elements entering into the system per unit of time, and requires more intelligent supervision.

In either case and by any system I would advocate one sedimentation and decantation of the strong liquor as the simplest means for separating the bulk of the strong liquor. Or, if a tank of the "Boston tank" design is used, the causticizing unit may discharge directly, in a continuous flow, into it.

In its simplest form the Boston tank consists of a cylindrical tank with conical bottom, having a distributing trumpet in the center, through which the sludgy liquor enters and at the bottom of which the sludge settles, while the clarified liquor rises to the top and flows away through an annular collecting gutter. A pipe situated at a suitable level provides for the continuous discharge of the sludge to the filter.

The Boston tank is a variation of the Dorr thickener to obtain similar results, and may be used in series for counter current separation of the solids. It is introduced here because it forms part of the system advocated by the Industrial Filtration Corporation, which is a builder of continuous filters.

The rotary continuous filter consists of an open container, in which is suspended a revolving drum, whose periphery is composed of a number of shallow compartments covered by a filtering medium. Each compartment, by means of individual pipe lines, is connected to a perforated trunnion, which turns against a stationary valve cap, to which are attached suction and blow lines. The arrangement is such that suction and air pressure may be applied at different points to each of the compartments during every revolution of the drum, the cake forming on the surface by the suction and discharged at the proper time by the air pressure. It may also be removed by a scraper, or doctor blade. The clear filtrate passes through the connecting pipes to the discharge through the trunnion. The filter is in many respects a combination of the cylinder mold and the revolving suction roll, well known in the paper industry.

Provision is also made for washing the cake and separating the wash water from the strong filtrate. The cake discharges with 35 per cent to 40 per cent moisture.

The one notable thing which has made possible these great improvements in filtering devices is the invention of a metallic filtering cloth capable of resisting corrosive action and woven in such a way as to give a clear filtrate.

The filtering drum of this continuous filter is covered with such resisting wire cloth, made of Monel metal.

These continuous filters are being used with good results in many large pulp and paper works and chemical industries.

*Building, floor space, power and labor required to install and op-*

*(Continued on page 42)*



Don't tie up on a long contract for

**ENGLISH CLAY**

when you can get a better product at home.

Our clays contain less water and less grit than the foreign kind.

Test and Buy  
**CM — EW — KLM**  
Brands

WASHED  
**CLAY**

**MINED AND REFINED  
IN AMERICA**

**MINER EDGAR COMPANY**

Exclusive Agents  
52-62 WARREN STREET  
BROOKLYN  
N. Y.

Buy from us and be assured of

**PROMPT  
SHIPMENTS**

Your calendar is your shipping schedule.

A large reserve stock always on hand

Manufactured by  
**EDGAR BROS. CO.**



**EAGLE KNIFE and BAR WORKS**

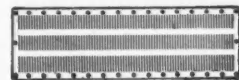
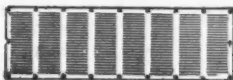
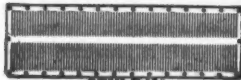
**John W. Bolton & Sons, Inc.**

**HIGH GRADE**

**Knives, Bars, Plates and Jordan Fillings**

**OF EVERY DESCRIPTION**

**HIGH GRADE STEEL PRODUCTS FOR USE IN PAPER MILLS  
LAWRENCE, MASS.**



**SCREEN PLATES**

For Flat, and Rotary Centrifugal Screens. Made of Hardy Bronze, Rolled Brass and Copper. Grooved or beveled for any kind of fasteners

**Acid-Resisting  
Bronze Castings  
Suction Plates  
Babbitt Metal  
Hardy Bronze Screws**



**OLD PLATES  
RECUT TO  
ACCURATE GAUGE**

**WM. A. HARDY & SONS COMPANY :: Fitchburg, Mass., U. S. A:**



**WE ARE SAFE IN OUR PROPOSITION**

*YOU'LL MAKE NO MISTAKE IN ACCEPTING IT*

**PICKLES DRYING REGULATOR**

will do everything we claim for it and more. The test costs you nothing until you are satisfied. Many mills tried one and now have every machine equipped. Write for list of users and other information.

**W. F. PICKLES, Buckland, Conn.**

## TECHNICAL ASSOCIATION MEETS AT HOLYOKE

(Continued from page 40)

erate these different types of processes—Taking as a basis a mill producing about 100 tons of pulp from poplar wood, the actual alkali required to be causticized daily would exceed 125,000 pounds, by the losses incurred in the process. This would approach 100,000 pounds of caustic and be contained in about 160,000 gallons or 21,400 cubic feet. The amount of calcium carbonate resulting from the chemical reaction would be about equal to the amount of alkali, since their molecular equivalents are nearly the same.

To install a sedimentation and decantation process would require a tank floor space of 15,000 square feet provided only one tank volume is turned out every twenty-four hours. A tank should make two complete cycles daily and in this event the floor space would be reduced half, or 7,500 square feet. This alone would call for a building 75 feet by 100 feet allowing no room for operating. Additional tanks for weak liquors and storage or mixing of cooking liquor must be provided and means for the final disposition of the sludge.

The building should be of good height, not less than forty feet, and all above ground to secure good light, ventilation and drainage. There should be an upper enclosed deck or gallery to contain the causticizers and a storage of lime conveniently located.

These tanks must all be equipped with agitators and power to drive them. It would probably require an equipment of 100 horsepower from capacity to operate such a system, though the actual power required for most of the time would be very much less. It would require three men to operate this part of the plant.

A causticizing plant, according to the Dorr System, would occupy a space approximately as follows:

These are built in ten tons of caustic soda units. Each unit requires a floor space 75 feet by 26 feet. It would require five such units for a production of 100 tons of poplar pulp or fifty tons of caustic soda daily. This would call for a floor space of 75 feet by 130 feet. It is possible to reduce this floor space by using tray thickeners. These consist of one or more steel trays placed in a settling tank with a set of arms and plough blades for each tray all operated by the same vertical shaft. Such tray thickeners were installed in the Kingsport plant. No additional space would be required for weak liquors since the counter current system provides for this and no pumps other than the small diaphragm pumps are required.

The total power required for each unit is five horsepower. One man only would be required to operate the whole five unit plant.

### A Different Basis for an Estimate of Capacity

In proposing a system for making liquors where a filter forms an essential element, the capacity of the filter must be the basis. Choosing the Kelly press as one type, two single units, type No. 450, or one twin unit, type No. 1300, would be required.

The floor space occupied by the single press is 5½ by 23 feet each. Additional space must be provided for tank supplying the presses, for pumps, air compressor and operation.

The presses must be situated at an elevation which will permit of automatically discharging the cake into a hopper and thence to a conveyor beneath. Probably fifty horsepower and the services of two men would be ample to operate.

It will thus be seen that the building and floor space for such a plant would be relatively small, the idea being to make as complete a separation of solids and liquids by forced filtration of the original liquor rather than by a progressive separation by dilution of the residue which requires large tank capacity.

The rotary continuous filter operating on strong caustic sludge would receive the sludge from a continuous settling tank as described above. Two of these filters would be required and should be placed with their discharge sides facing each other so that the cake may pass to a common conveyor. These fil-

ters occupy a space 8x8x8 feet and weigh about 11,000 pounds each.

The filtering drum revolves about 1/3 r.p.m. The only power required for this work would be for an exhaust pump which would act as a blower at the same time to lift the cake over the doctor and for the conveyor. Practically no labor is required as the process is automatically continuous.

Such then are the essential features of the latest devices and processes for causticizing sodium carbonate liquors with lime for the efficient separation of the calcium carbonate from the caustic liquor.

### Relative Merits and Efficiency on the Different Causticizing Systems

In discussing the relative merits of the different processes used in the soda pulp mills for changing the sodium carbonate to sodium hydroxide; and their efficiency as regards steam consumption and alkali accounted for, it is necessary to form some basis of efficiency. In the older decantation process, in most general use, time and capacity are the principal efficiency factors.

An alkali room having ten pans (each of such capacity that when charged with sodium carbonate liquor, causticized, properly settled, drawn off and mixed with a properly settled first wash, there will be enough liquor for two digesters) is capable of furnishing liquor enough for twenty digesters in twenty-four hours. In other words, each pan should be allowed twenty-four hours for one complete cycle in order to obtain good economical results. This will allow the strong and first wash each four and a half hours and each of the other three washes three hours to settle before syphoning off the clear liquor. When handled in this way, the lime sludge discharged will contain about 85 per cent weak liquor and 15 per cent solids by volume, or 68 per cent weak liquor and 32 per cent solids by weight. The loss of soda in this sludge discharge will be from one-half to three-quarter per cent of the total soda used.

Thorough agitation is also a necessary factor in causticizing soda efficiency. If the agitator shaft is provided with one set of wings near the bottom, it should make at least thirty revolutions a minute; but provided with three sets of wings at three different heights, the speed of the shaft can be cut to sixteen or eighteen revolutions a minute and give equally good results. Of two mills using the same size alkali pans, the same quantity of lime, and all other conditions the same, excepting the speed of the agitator shaft, the shaft in one mill made twenty revolutions a minute and in the other thirty revolutions a minute, with the result that the former was obliged to use about 8 per cent more lime than the latter; and, on account of using extra lime to get the same causticity, 6 per cent less liquor was syphoned from the strong pan in the former mill, after allowing the pans to settle the same length of time.

When using a lime containing 94 per cent active calcium oxide, it is customary to use about 560 pounds of lime for each 1,000 pounds of sodium carbonate causticized, in order to get a strong liquor having 92 per cent of the total soda causticized. This strong liquor when mixed with a first wash of 97 per cent causticity, will furnish liquor of about 94.5 per cent causticity for the digesters. The lime when slacking in the pan of carbonate liquor will furnish about 480 B. t. u per lb or 268,000 B. t. u. for every 1,000 pounds of sodium carbonate causticized. This will raise the temperature of the liquor about 30° Fahr. If the carbonate liquor from the leachers tests 160° Fahr., the lime added will raise the temperature to 190° Fahr. so that it is only necessary to add enough steam to raise the temperature 22° higher to reach the boiling point at the sea level. It is only necessary to boil the pan of liquor about fifteen minutes, when the agitation is good; but agitation should be continued from twenty to thirty minutes longer.

At this point I might mention the part the quality of lime plays

(Continued on page 44)

# Continuous Pasting Machines

FOR

## Solid Container and Wall Boards

A "Beloit" Specialty That Holds  
All Records for Production

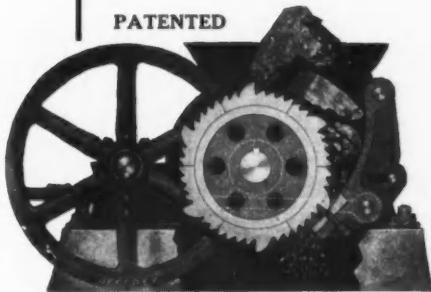
It has made possible the wholesale production of Containers on an Economical Basis to meet the Ever Growing Demand for that class of Material.

ASK

**BELOIT IRON WORKS**  
BELOIT, WIS.

# Are You Taking a Chance on Your Stoker Coal Supply ?

PATENTED



Insure Your Plant against a Shut Down  
By Installing a

**JEFFREY**  
SINGLE ROLL  
**CRUSHER**



One Operation Reduces Run-of-Mine Coal to Stoker Size

Bulletin No. 141-E has completed details of this machine and the results it is capable of producing—shows how it can be installed in connection with Coal Handling Equipments. Send for a copy.

**THE JEFFREY MANUFACTURING COMPANY**

931 North Fourth Street, COLUMBUS, OHIO

New York Philadelphia Chicago Birmingham Milwaukee Seattle  
Cleveland Boston Pittsburgh St. Louis Dallas Denver Montreal

*Here are a few of the many Pulp and Paper Mills who are profiting by their use:*

- Cheboygan Paper Co.
- St. Regis Paper Co.
- Ontario Paper Co.
- Minnesota and Ontario Power Co.
- S. D. Warren & Sons
- Lake Superior Paper Co.
- Bryant Paper Co.
- St. Croix Paper Co.
- Union Bag & Paper Co.
- The Laurentide Co., Ltd.

## TECHNICAL ASSOCIATION MEETS AT HOLYOKE

(Continued from page 42)

in affecting the time necessary to boil the liquor. The calcium oxide content of a lime, as found by analysis, very often comes far from representing the active content of the lime. Samples of lime with a total calcium oxide content of 85 per cent have shown an active content as low as 72 per cent. The soda Pulp Committee, in a previous report, has called the attention to a miniature causticizing test as a satisfactory method of testing lime used in order to determine its active content. The principal cause for the difference between the actual and active calcium aside from that present as carbonate, is due to presence of an excessive amount of silica and alumina in the form of silicates, which has been fused by overburning in the kiln, and encloses some of the active lime, making it difficult for the slacking water to reach it. Lumps of this lime will stand in hot water as long as twenty-five minutes without breaking down, while a lump of good slacking lime will break down completely in about one minute. It will be found advantageous to make a rough slacking test, as above suggested, in the alkali room, when a car of lime appears refractory; and if it requires much time for the lumps to break down better results can be obtained by boiling the pans of liquor an additional half hour. By the decantation process, allowing twenty-four hours for one complete cycle, eight pounds of sodium carbonates can be causticized per cu. ft. of pan capacity in twenty-four hours.

Most of the soda pulp mills have increased their production to such an extent that the alkali room is worked far beyond its capacity; and the result is inefficient operation in this department. The original ten pans are trying to do the work of fifteen, which results in cutting the cycle of time to sixteen hours in place of twenty-four, and causing a loss of from 3 per cent to 4 per cent of the total soda causticized.

### Cannot Be Considered Substitutes

The newer processes brought forward in recent years cannot be considered substitutes for the causticizing process, as the first step in the operation is the same in every case. The sodium carbonate must first be causticized by boiling with lime. It is from this point on that improvements have come to the assistance of the soda pulp manufacturer. By a small addition to his alkali room he is able to secure, with the same number of pans, an increase in capacity of 100 per cent to 150 per cent. The improvements consist in new methods of separating the liquor from the sludge after the causticizing process is finished, effecting a saving of time and space, and cutting down the loss of soda in the sludge discharges. A description of such methods has been given in the earlier part of this report, and a brief abstract of their principles and claims will now be given.

### The Dorr Process

The Dorr process is an improved method of doing on a systematic continuous plan what is attempted with a discontinuous intermittent system of disconnected tanks. The process being strictly counter current, it is very efficient in washing the precipitate, sustaining and building up concentrations from the washings.

The Dorr Company's engineer reports that the Kingsport plant, having a capacity of fifty tons dry weight of caustic soda a day, producing 14° Baumé liquor of 92 per cent causticity, has an efficiency of 99.4 per cent. The process is well illustrated and results are analyzed on the "flow sheet." As such it is a decided improvement upon the old system.

There is one important matter which should not be overlooked. The system is not well calculated to retain the initial heat, since the thickeners are very large and shallow. Large open tanks containing hot liquors should be covered or the condition of the room will be very disagreeable, particularly in a cold climate, and there will be large heat losses.

### Filtration

The obvious purpose and intent of the filter-press, however designed and operated, is to effect a thorough and rapid separation of solids and liquids, thereby obtaining a clear filtrate and a clear solid mass in the shortest time, with the least expenditure of capital and labor. The filter-press, generally speaking, produces a cake when operating on this caustic sludge, containing about equal parts of solids and liquids; and when washed with a volume of water equal to the cake the caustic losses with the cake are 1 per cent and under. Therefore that system of forced filtration, which will take the hot boiling sludgy caustic liquor from the causticizer, of the desired strength, and effect a prompt and thorough separation, with the least expense for equipment and maintenance building, power and labor, is the system desired. If therefore the intermittent or continuous forced filter will accomplish this, obviously such a system has distinct advantages over any sedimentation plan.

It will of course require a higher degree of skill and intelligence to operate the more complicated and highly organized filtering machine than the foolproof old system of sedimentation and decantation in tanks. If we are content with slow, crude and cumbersome methods, we shall choose this. If however we want to be leaders in chemical processing, there is much to commend in the newer methods of forced mechanical filtration, intermittent and continuous.

Every problem involving a separation of solids and liquids has its individual and peculiar features, and we should join with the designers and builders of chemical appliances in solving our mutual problems. This meeting and our association are organized for just such problems.

## CLAY RETENTION

By JOHN D. RUE AND C. W. HALLAHAN, DEPARTMENT OF CHEMISTRY, UNIVERSITY OF MICHIGAN.

In an earlier paper on this subject a report was given of some preliminary work carried out in this laboratory on the effect certain factors had upon the retention of clay and other mineral fillers. The results of this preliminary investigation seemed to point to the need for a closer study of the influence of clay concentration, of alum concentration when used without size, and of size together with alum. The effect of these factors have been studied upon a domestic clay, an English clay and a talc. The two clays were mechanically analyzed in an elutriator into four fractions of varying degrees of fineness and the influence

of the above factors was determined, also, upon these individual fractions.

### Experimental Method

The method of carrying out the retention tests was the same as described in the earlier paper. The sheet machine used was improved by drawing the wire tightly over the cylinder and soldering it on permanently. After considerable difficulty this was satisfactorily accomplished so that the wire remained under tension and smooth and gave sheets of a uniform formation.

(Continued on page 48)



# TRANSPORTATION ???

We have at our mills hundreds of tons of paper products to supply all your needs, but with railroad facilities as to motive power overtaxed as they are today by the enormous movements of government needs—troops, supplies, ammunition—as well as the regular fall movements of crops and coal, it is reasonable to suppose that conditions will not rapidly improve. With the approach of winter, the situation, even in normal times, always gives shippers no little concern. From September to January in any year freight becomes abnormal in volume and as well suffers unavoidable delays in transit, but when the present conditions which concern every shipper are considered, it seems a waste of time to worry about "THE PRICE OF PAPER" or any other commodity, when just a little forethought now will unquestionably save time and money later. Even within the next sixty days, you may be glad to secure a shipment of any merchandise including "PAPER AT ANY PRICE." When the mills cannot get cars to ship in and the railroads have no engines to haul the cars, of what value will it be to you then to secure a lower price? We are doing our best now to expedite your orders. We cannot answer for future conditions in transportation and freight over which we both shall obviously have no control.

*THE ANSWER IS—ORDER NOW—  
or read this again in 90 days*

**Paper Mills Specialty Co., Inc. Chicago**

# Stuebing LIFT TRUCKS

"THE CHOICE OF THE GREATEST INDUSTRIES"



## Cut Handling Costs

One man does the work of five—with a **STUEBING LIFT TRUCK**. Get the benefit of the experience of Whittaker Paper Co., Franklin Board & Paper Co., Mead Pulp & Paper Co., The Winton Co., and others who have adopted the "Stuebing." Let us prove why you should have a Stuebing. Free trial in your own plant.

**The Stuebing Truck Co.**  
CINCINNATI  
OHIO



## "The Tank With a Reputation"

Cypress, of course, is the king of woods when it comes to tanks.

But it takes more than wood to build a satisfactory tank.

It is the application of approved engineering principles in the construction of the Caldwell Cypress Tank that has established it as "The Tank With A Reputation."

We know that every Caldwell Tank is mechanically correct before it leaves our factory.

*Send for Catalogue*

**W. E. CALDWELL CO.**  
INCORPORATED

2040 Brook St., LOUISVILLE, KY.

*Caldwell*  
TANKS  
AND  
TOWERS

# Starch

It takes more than a good argument to make a manufacturer change his process. It requires actual proofs. Today the leading manufacturers of high-grade paper and board are using **starch** for sizing where they formerly used an all glue size, and they are turning out a better and stronger paper at less cost.

**Fox Head Special Paper**  
**Niagara Buffalo**

Corn Products Refining Company  
17 Battery Place New York

# Starch

# Why it Costs Less to Buy and

The question of flat screens versus rotary screens is many sided—quality of paper, time lost in washing up, first cost of equipment, cost of power—these features must be considered.

In first cost, flat screen equipment for a given tonnage is somewhat less than that of rotary screen equipment, but the total cost considered over the life of the screen is far less for the rotary screen because of the lower cost of plate renewals and less cost for power. In fact, the saving in power alone will pay the extra first cost of the rotary screen *in one year*.

## Cost of Screen Equipment for a 30-Ton News Print Machine

### ROTARY SCREENS

First cost, Including Auxiliary Screen .. . . . \$4150  
 Plate Renewals, ten years 600  
 Power, 5 h. p. (yearly)... 200  
 Maintenance Cost, Low.

### FLAT SCREENS

First Cost, Including 5-year supply of plates... \$3300  
 Plate Renewals, ten years 1500  
 Power, 25 h. p. (yearly).. 1000  
 Maintenance Cost, Considerable.

### RESULTS

Uniformly Clean and of Uniform Weight  
 Few Strings, few Lumps, No Slime

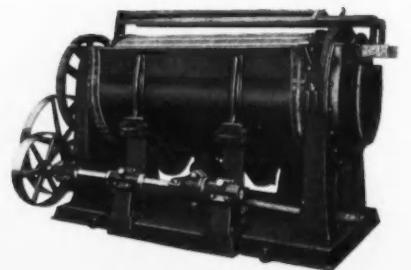
Little Attention

Accumulation of Dirt after a few hours

Loss of Production from breaks caused from strings, lumps, and slime

Loss of Production from wash up

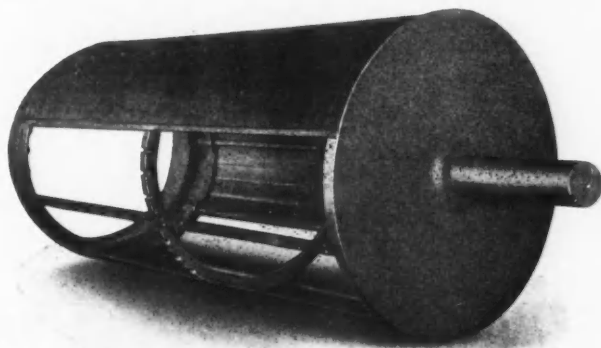
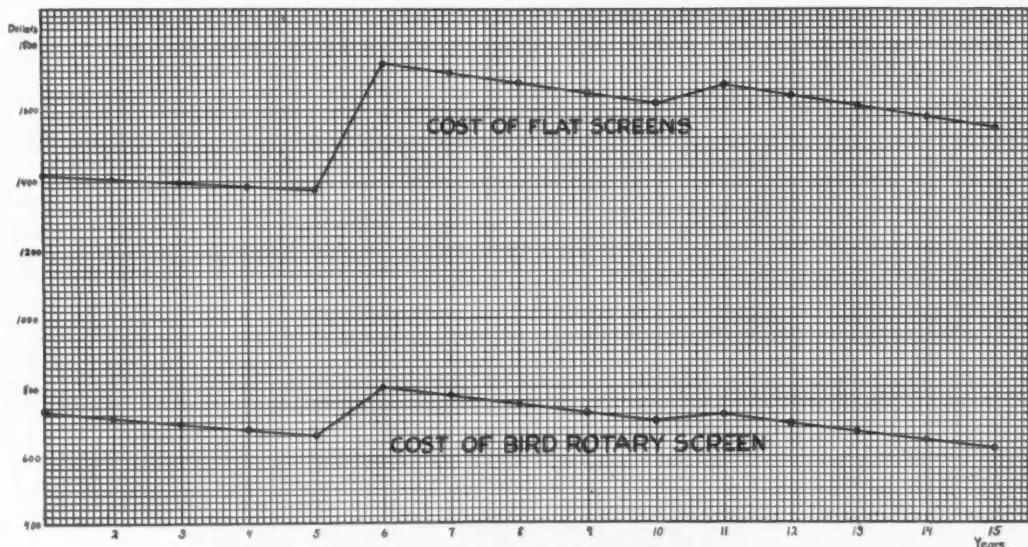
Constant Attention



# Operate a ROTARY SCREEN

## The Cost Curve

The following curve shows graphically the relative cost of rotary screen equipment and flat screen equipment for a 30-ton news print machine. The cost figures include initial cost, interest at six per cent, cost of screen plate renewals, and power. It is assumed that a horsepower costs \$40.00 per year, and a five-year supply of plates is purchased at a time.



Ask for catalog describing this screen.

Middle West Representative  
**T. H. SAVERY, Jr.**  
 1630 Republic Building  
 Chicago, Ill.

**BIRD MACHINE COMPANY**  
 East Walpole, Mass.

TECHNICAL ASSOCIATION MEETS AT HOLYOKE

(Continued from page 44)

All the tests recorded in this report with the exception of Nos. 1 to 6, Table 5, were made with the improved sheet machine. The duplicate tests show a satisfactory agreement for the retention values.

For each test 2 grams of pulp were used. This pulp was kept moist in well stoppered bottles. The moisture content was determined and a sufficient amount of moist pulp was weighed out to give 2 grams of bone-dry fiber. The clays and talc were used in the air-dry condition and the weights reduced by the moisture factor to the bone dry value. Where the furnish of the mineral, size or alum is expressed in percent their value is based on the weight of the pulp used. The weights of alum refer to the crystalline sulphate of alumina,  $Al_2(SO_4)_3 \cdot 18 H_2O$ ; the weights of size refer to actual rosin content.

The pulp, in order to produce a more uniform stock, was beaten with pebbles for 1 hour and 20 minutes in a jar mill rotated at 44 r.p.m.

The pulp was suspended in 40 Cc. of water, the clay added and shaken in glass bottles twenty-eight minutes in a mechanical shaker. When size and alum were to be added, the size was added and thoroughly shaken by hand, the alum added and the

retained, expressed as percentage of the amount added is shown in Curve II. This decreased from 67.8 per cent for a 1 per cent addition to a minimum of 20 per cent for about an 11.5 per cent addition and then increased again to 34.8 per cent for a 20 per cent addition.

TABLE I.

THE EFFECT OF CLAY CONCENTRATION ON RETENTION.

Two grams pulp used without size or alum. Domestic Clay.

Clay Added.		Clay Retained.	
Grams	Per Cent of Weight of Pulp	Grams	Per Cent of Clay Added
0.02	1.0	0.0136	67.8
0.04	2.0	0.0190	47.4
0.10	5.0	0.0339	33.8
0.20	10.0	0.0418	20.9
0.40	20.0	0.1392	34.8

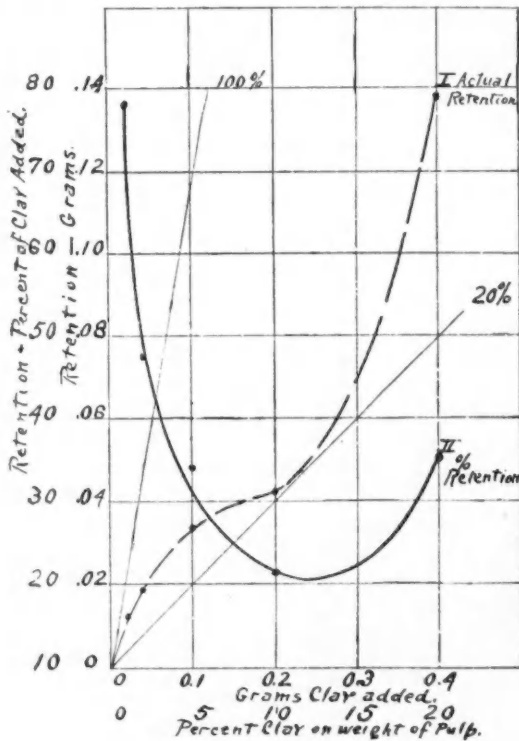


FIG. 1—DOMESTIC CLAY. 2 Gm. Pulp, No Size, No Alum.

whole shaken two minutes more in the shaker. The thoroughly suspended pulp was poured quickly onto the sheet machine, allowed to drain and 1/2 atmosphere suction applied.

The Effect of Clay Concentration

Amounts of a domestic clay varying from 0.02 gram to 0.40 gram, or from 1.0 percent to 20 per cent of the weight of the pulp, were used without alum or size. The retention values are shown in Table I and are plotted in Fig. 1. As the clay concentration increased the amount of clay retained constantly increased, but not at a uniform rate as shown in Curve I. The amount of clay

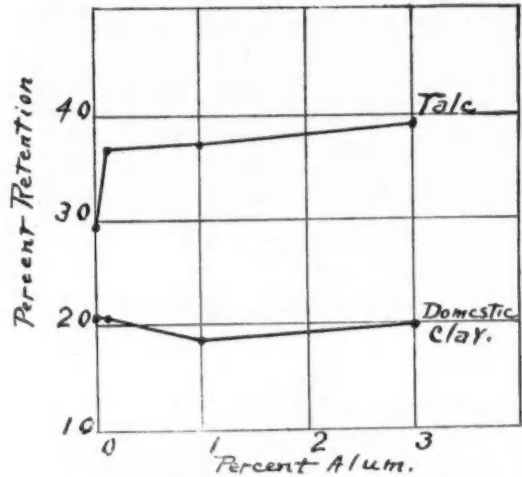


FIG. 2—EFFECT OF ALUM ON RETENTION. 2 Gm. Pulp, 0.2 Gm. Clay or Talc (10 Per Cent).

The two straight curves represent the 20 per cent and 100 per cent retention values for all proportions of clay added. It will be noticed that Curve I steadily recedes from the 100 per cent curve and meets the 20 per cent curve at about 11.5 per cent clay addition. From this point it recedes from the 20 per cent curve and approaches the 100 per cent curve again. This explains the percentage curve.

It would appear, therefore, that where no size and alum are used the largest percentage loss may be expected with this clay when used in the proportion of 110 lb. to 1,000 lb. fiber.

TABLE II.

THE EFFECT OF ALUM CONCENTRATION ON RETENTION.

Two grams pulp, 0.2 grams clay or talc (10 per cent of weight of pulp).

Alum Added. Per Cent of Weight of Pulp.	Domestic Clay Retained.	Talc Retained.
	Per Cent of Weight Added.	Per Cent of Weight Added.
0	20.9	29.5
0.1	20.7	36.9
1.0	18.4	36.6
3.0	21.0	38.9

(Continued on page 52)



# CALENDERS

FURNISHED COMPLETE, WITH ELECTRIC MOTOR LIFT,  
HYDRAULIC LIFT OR RATCHET LIFT,  
ALL OPERATED FROM FLOOR.

*Grinding Machines for Rolls of all sizes.*



**Lobdell Car Wheel Co.**  
Wilmington, Del., U. S. A.

# The Heller & Merz Co.

New York. Works: Newark, N. J.

Branches: Chicago Philadelphia Boston

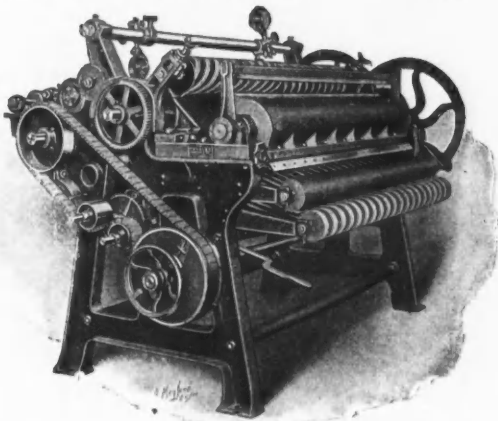
We can furnish all

## AVAILABLE COLORS

to advantage.

# Paper Cutters

Single, Duplex and Diagonal



Cutter Knives : Patent Top Slitters  
**HAMBLET MACHINE CO.**  
Lawrence, Mass.

"SAFETY FIRST"

"MADE RIGHT IN AMERICA"

## "NATIONAL ROPE DUPLEX"

made especially for wrapping Book Papers, etc., is the strongest Water-proof Case Lining Paper in the world. Made in either sheets or rolls. Send for samples.

**NATIONAL WATERPROOFING COMPANY**  
1054-1056 Drexel Building, Philadelphia, Penna.

# "DRAPER" FELTS

*For Any Grade of Paper or Pulp*

## ARE GUARANTEED

*To Give Entire Satisfaction*

MANUFACTURED BY

**DRAPER BROS. CO., CANTON, MASS.**

# Editorial

Vol. LXV. New York, Thursday, October 4, 1917 No. 14  
FORTY-SIXTH YEAR

## Government Contracts

It is not surprising, in view of the interesting events that transpired last year in connection with the bids called for by the Joint Congressional Committee on Printing to supply the Government Printing Office with paper during the year, that interest in these bids for the next year should be already beginning to manifest itself.

It will be recollected that the handling of these bids last year was unusual in various respects. Although the bids as regards the number of concerns represented showed a considerable decrease from previous years, the most surprising matter connected with this event, in view of the conditions of the market, was undoubtedly the fact that the number of concerns making bids was so great.

Prices, in many cases, as compared with former years, were admittedly high, but the abnormal conditions of affairs made these quotations for the services and risk demanded seem not at all unreasonable, so far as most persons concerned with the paper industry are concerned.

The fact that the government was willing to shop for this paper throughout the year and was the gainer by this policy does not alter the matter so far as the paper manufacturers and jobbers are concerned.

That the Joint Printing Committee won out on this policy was due to its willingness to assume the risk, which happily resulted to its benefit, but which a private individual could not be blamed for being unwilling to assume. In view of the action taken last year by the Joint Printing Committee, it is reasonable to believe that sellers of paper will not be likely to show more interest in the annual bidding for paper for the Government Printing Office than they did last year. Unless conditions change it would, in fact, not be taking a long chance to venture the guess that the list of bidders will be shorter this year than last.

Paper manufacturers and paper dealers are reasonably enterprising, to say the least, but if the bids are in large part to be sent out only to comply with the law and the old policy of shopping for paper that the Joint Printing Committee has been pursuing this year is again carried out, the thought will undoubtedly strike most of those who otherwise would be likely to enter bids that the time, money and effort required might more profitably be expended in some other direction.

## The Second Liberty Loan

The first Liberty Loan was a decided success. It was oversubscribed by a billion dollars. It reflected the temper of the American people in a crisis which may well be called the greatest they have had to face since this nation was organized.

The result of the first loan was never in doubt from the moment the country thoroughly realized what the nature of the proposition was that it had on its hands.

We now have another loan to float. The success or failure of this loan is not a matter of pitch or toss. *It means sacrifice.* Sacrifice from all—for only as all contribute can the undertaking be a success both from the financial and moral point of view.

To be a success the loan must be run from savings, which in this case is synonymous with sacrifice. The economic carrying on of the war must be effected by the sayings we make in the consumption of commodities and the use of unproductive labor. This is necessary in order that a balance may be struck in the diversion of our manhood to the army and to the shops.

Every saving that can be effected in this way should be available for subscriptions to the second Liberty Loan. Our future savings can be mortgaged to a certain point, but the piling up of these mortgages will not be a profitable proposition in the long run. So if we are to win we must save!

Europe has seen a great simplification of life during the war period. Waste has been eliminated as far as it was possible for human endeavor to do away with it the industrial capacity of manufacturing plants was developed to a scale never dreamed of before the war. And whole nations engaged in the present conflict have poured out their treasures in sacrifice.

And now this country is called upon to modify its scale of living. In the eyes of the world we have been hailed as a grossly extravagant nation both in modes of life and expenditures. And many Americans have reluctantly been forced to admit the justice of this criticism. To revise the conceptions of our economic life is in a good measure the work of the forthcoming Liberty Loan campaign. The only course consistent with our declared aims and purposes in this war is to check lavish expenditure and return to a sane and economical method of life.

So save—economize, not rashly to the detriment of industry, but sanely—eliminate waste—and then put the results of this sacrifice into Liberty Loan bonds!

## Canadian Paper Exports

The report of the Canadian Department of Customs for the month of July, just issued, indicates continued expansion in the exportation of pulp and paper. Paper exports, including under this head, printing, wrapping, felt, board and wall paper, amounted to \$2,839,856 in value and pulp exports to \$1,889,007. These figures compare with \$2,043,876 and \$1,622,054 respectively in July, 1916, and \$1,623,049 and \$911,361 in July, 1915; or these may be set down for comparative purposes, as follows:

	1915	1916	1917
Paper exports .....	\$1,623,049	\$2,043,876	\$2,839,856
Pulp exports .....	911,361	1,622,054	1,889,007
	<hr/>	<hr/>	<hr/>
	\$2,534,410	\$3,665,930	\$4,728,863

Exports of each particular line for July and for the four months of the fiscal year ending with July are as follows:

	July	4 mos.
Paper, board .....	\$102,179	\$ 435,724
“ wall .....	5,521	35,921
“ felt .....	28,021	69,967
“ wrapping .....	181,777	367,151
“ printing .....	2,512,958	10,266,148
“ other .....	19,400	39,149
Pulp, chemical .....	1,237,214	6,284,843
“ mechanical .....	651,793	2,254,064

The customs returns used to specify the countries to which commodities were exported and the amount shipped to each. As a war measure this has been discontinued and the gross exports only are shown. For this reason it is impossible to state just what portion of the foregoing exports went to the United States. It is safe to say, however, that the bulk of them went into the American market.

**Officers for Forest Regiment**

[FROM OUR REGULAR CORRESPONDENT.]

NEWTON FALLS, N. Y.—Frank L. Moore, president of the Newton Falls Paper Company, who was recently appointed by the Council of National Defense on a committee of recognized experts in the lumbering business to recommend men for officers of the 20th Regiment of Engineers, just returned from a meeting of this committee held in Utica. Ferris J. Meigs, a prominent lumberman from New York, heads the committee.

Mr. Moore said that the committee received 150 applications for the offices to be filled for this Forest Regiment to be sent to France. The committee will recommend a major at \$3,000 salary, three captains at \$2,400, five first lieutenants at \$2,000 and four second lieutenants at \$1,700 salary.

While the committee was unable to make selections at the first meeting, a large number of eminently able applicants appeared ready to enter the service. A later meeting will be held. Practical lumbermen of years of experience seek these offices, and the unit when ready for service will be made up of 7,500 such men. They will take charge of the government lumbering business in the French forests and assist in scientifically cutting out the timber needed for military purposes. Portable saw mills will be taken from America with them.

“I would go in a minute if my age was not such that I could not be accepted,” said Mr. Moore, when told that an editorial in the Watertown *Standard* recommended that he be chosen as Colonel of the new regiment.

**Want Paper Making Classes in Ottawa**

[FROM OUR REGULAR CORRESPONDENT.]

OTTAWA, Ont., October 1, 1917.—The idea has been suggested that technical classes should be started in one of the evening schools here for the benefit of the large number of employees in the two big mills of the E. B. Eddy Company, Limited, and John R. Booth. It is believed that such classes are not only feasible but desirable. Many of the employees would only be too glad to avail themselves of the opportunity to study the scientific side of the pulp and paper industry.

**J. B. Wagg Goes With American Writing**

WORONOCO, Mass., October 1, 1917.—J. B. Wagg, who formerly was in charge of the manufacturing at No. 2 mill of the Strathmore Paper Company at Woronoco, Mass., has gone to South Lee, where he has accepted a similar position in the Curburt Division of the American Writing Paper Company.

**Obituary**

**William Edward Ritchie**

William Edward Ritchie, president of W. C. Ritchie & Co., Chicago, manufacturers of paper boxes, died September 24 suddenly in St. Luke's Hospital, following an operation. Mr. Ritchie was only 55 years of age and is survived by his widow, Frances Beattie, and three children. His eldest son, Lyell, is with the United States expeditionary forces in France. Mr. Ritchie's loss will be sorely felt in the Chicago trade in which he has long been prominent. Notices of his death have appeared in the Montreal papers where he was also widely known.

**John Samuel Andrews**

John Samuel Andrews, a retired paper manufacturer, formerly for many years a member of the firm of Benedict & Andrews, in New York, died from pneumonia on Wednesday at his residence, 283A Hart Street, Brooklyn. Mr. Andrews was born in this city eighty-seven years ago and was a grandson of Abram Dalle, who was Collector of the Port of New York during President Jackson's administration. He was a prominent member of the Throop Avenue Presbyterian Church.

**Iver J. Terp**

[FROM OUR REGULAR CORRESPONDENT.]

APPLETON, Wis., October 2, 1917.—Iver J. Terp, Green Bay, until a few years ago secretary-treasurer and member of the board of directors of the Northern Paper Mills Company of Green Bay, and connected with other paper companies of the state, was asphyxiated by gasoline fumes in a garage attached to his home on Thursday evening. He was running the motor of his automobile to charge the electric battery. When he failed to appear at home at a reasonable hour, investigation was made and a search revealed his lifeless body in the garage. Indications were that he had been dead several hours before the body was found. Iver Terp was born October 31, 1869, in Agrtrup, Denmark. Surviving are his parents, his widow, one son and three daughters. The funeral was held on Sunday afternoon from the residence and was attended by a number of paper mill men of this valley.

**EDWIN BUTTERWORTH & CO.**  
MANCHESTER, ENGLAND

Packers of all kinds of  
**PAPER STOCK, COTTON WASTE AND GUNNY BAGGING, BUFFALO SIZING, Etc.**  
 Sole Agents **HAFSLUND**  
**BLEACHED SULPHITE PULP — BEAR BRAND**  
 Office in New York  
 JAMES PIRNIE, Manager, VANDERBILT BUILDING, 132 NASSAU ST.  
 Branch Offices at Boston: 160 Congress St.—CHARLES H. WOOD, Mgr.

**“WATERBURY”**



ORISKANY, N. Y.

**OUR TIGHT FITTING, DIAMOND “W” JACKETS**  
 WILL NOT LICK UP AT ANY SPEED

**1869** { MADE ONLY AND } **1917**  
 { GUARANTEED BY }

**H. WATERBURY AND SONS COMPANY, ORISKANY, N. Y.**

## TECHNICAL ASSOCIATION MEETS AT HOLYOKE

(Continued from page 48)

### Effect of Alum Concentration

Table II shows the effect upon retention of alum in amounts varying from 0.0 per cent to 3.0 per cent. Values were determined for both domestic clay and talc, using in each case 10 per cent of the weight of the fiber. The values are plotted in Fig. 2. Talc showed an increase in retention from 29.5 per cent for no alum to 36.9 per cent for 0.1 per cent alum, which is at the rate of 1 lb. per 1,000 lb. fiber.

Larger amounts, up to 3 per cent, gave only negligible increases in the retention. In the case of the clay, the alum caused no appreciable difference in the retention.

The effect of the alum is to coagulate the negative colloidal mineral particles. That there is no more marked increase in retention produced by this coagulation is probably due to the disintegrating action of the subsequent shaking. It would appear, also, from this fact, that there was no mordanting action of alum tending to fix the clay upon the fiber as there is with negative colloidal dyes.

The use of alum, without size, therefore, has no detrimental action upon the retention of this clay. It actually favors the retention in the case of the talc when used in the proportion of 100 lb. per 1,000 lb. of fiber.

### The Effect of Alum and Size and Alum

In Table III are recorded the results of a series of tests made to show the comparative retention of a domestic clay, an English clay and a talc. The tests were carried out under the following sets of conditions:

First, without size or alum, second, with 3 per cent alum, but

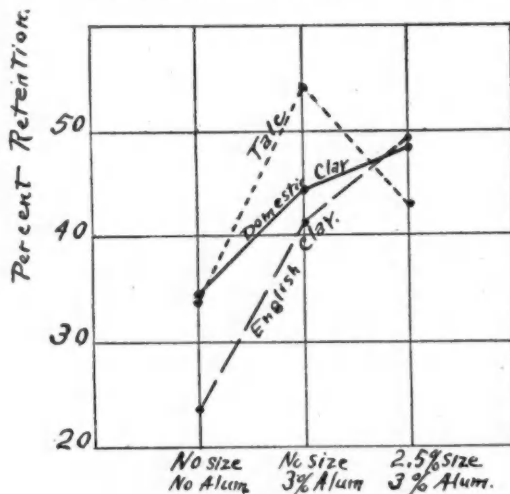


FIG. 3.—DOMESTIC AND ENGLISH CLAYS AND TALC.  
2 Gm. Pulp, 0.4 Gm. Clay or Talc (20 Per Cent.).

no size and third, with 2.5 per cent size together with 3 per cent alum. Fig. 3 shows the results graphically. Where no alum or size were used the domestic clay and the talc showed practically the same retention, about 34 per cent. The English clay was decidedly lower than the others, only 36.6 per cent being retained.

The addition of alum showed a marked increase in every case, although the domestic clay was much less affected than the other two. The actual increases in the three cases were:

	Per Cent.
Domestic clay	9.9
English clay	17.9
Talc	20.7

It will be noted that 20 per cent mineral was added in these tests. Where only 10 per cent was used—Table III and Fig. 3, no such marked influence was observed, as we have already seen.

The introduction of size prior to the addition of alum produced a still further increase in retention in the case of the clays, but showed a decrease in the case of the talc.

Domestic clay	4.2 Per Cent Increase
English clay	7.8 Per Cent Increase
Talc	8.1 Per Cent Decrease

Where size was used there seems to be very little difference between the retention of the two clays, both of which showed a higher value than the talc. In the earlier article mentioned above, the talcs were reported to have a higher retention than clay.

This apparent discrepancy can possibly be explained by the fact that the earlier tests were made with only two or three minutes' shaking by hand, while these samples were shaken in the machine for thirty minutes. It was demonstrated that agitation in a shaking machine decreased the retention even when both size and

TABLE III.

EFFECT OF ALUM, AND SIZE AND ALUM ON RETENTION  
Two grams pulp, 0.4 gram mineral (20 per cent on weight of pulp). Retention expressed as, per cent of mineral added.

Domestic Clay.		English Clay.		Talc.	
Per Cent.	Average.	Per Cent.	Average.	Per Cent.	Average.
36.2	34.8	23.4	23.6	35.4	34.0
Without Size or Alum.					
36.2	34.8	23.4	23.6	35.4	34.0
33.4		23.8		32.7	
With 3 Per Cent Alum and No Size.					
43.9	44.7	43.8	41.5	52.1	54.7
45.6		39.2		57.4	
With 3 Per Cent Alum and 2½ Per Cent. Size.					
50.0	48.9	48.9	49.3	42.7	42.8
47.9		49.6		43.0	

alum were present. The talc evidently suffered the greatest reduction from this cause.

It seems, therefore, that where as much as twenty per cent mineral is added to the beater, the talc, provided alum with no size is added, will give better retention than either the domestic or English clays. Where size is also added there will be little choice between the clays, but either will be better than the talc. Whether these results can be extended to minerals of other grades than those tested cannot be stated without further experimental evidence.

### Elutriation Analyses

The domestic clay and the English clay were subjected to mechanical analysis in the Nobel elutriating apparatus. (A sketch of this apparatus is shown in Fig. 4.) Only three of the conical flasks were used for the clay tests. These contained respectively 285 Cc., 1320 Cc. and 2960 Cc. The test was conducted as follows:

A 50-gram sample was thoroughly worked up to a cream with a little water and placed in the smallest flask. Water was slowly admitted from a constant level apparatus. In order to avoid any air bubbles the other two flasks and the connecting tubing were first carefully filled with water and when the small flask was full the tube connecting it to the medium flask was inserted so as to avoid entrapping air. The rate of flow was slowly increased so as to prevent eddy currents being set up in the flasks. A number of trials showed that a maximum rate of 136 Cc. per minute gave a satisfactory separation into four fractions which consisted respectively of a residue in each flask and the very fine

(Continued on page 54)



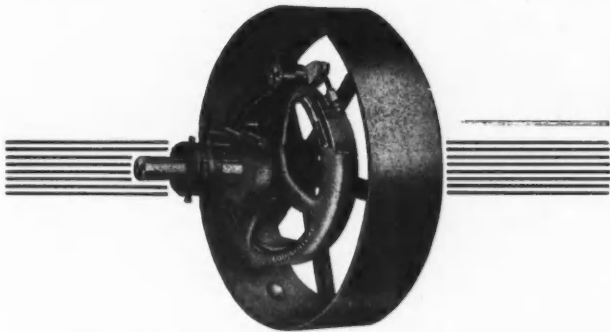
# SIZED LINING PAPER

A SPECIALTY OF THE

## WEST END PAPER CO.

CARTHAGE, N. Y.

SAMPLES AND PRICES MAILED ON REQUEST



### The Highest Clutch Efficiency

has been obtained in the strong, compact construction of the Caldwell Friction Clutch—built by engineers according to engineering principles.

The brake band is lined with Raybestos and grips the entire circumference of the friction ring, thereby transmitting the greatest power possible.

Easy and safe to operate because—One Lever Controls It: One Screw Adjusts It.

Send for Catalogue

**W. E. CALDWELL CO.**  
INCORPORATED

230 E. Brandeis St., Louisville, Ky.

*Caldwell*  
FRICTION  
CLUTCHES

### We Sell to Jobbers Only

THE NAME  
*Tamisco*  
STANDS  
FOR  
QUALITY  
REG. U.S. PAT. OFF.

**TWO TONE**  
"FABRIC"  
WRAPPING

Can Be Shipped in Car with General Line of Wrappings

Ask for Samples and Prices

**Paper Mills Specialty Co., Inc.**  
CHICAGO

**Marden  
Orth &  
Hastings  
Corp.**

61 B'way  
New York

Boston  
Chicago  
San Francisco  
Cleveland  
Seattle

ANTI-FOAM

OILS

# NIGROSINE

Water and Spirit Soluble

COLORS  
CHEMICALS

TECHNICAL ASSOCIATION MEETS AT HOLYOKE

(Continued from page 52)

TABLE IV.

ELUTRIATION ANALYSES.

Maximum Water Flow 136 c. c. Per Minute. 50 Grams Clay Used for Each Test.

Test No.	Clay Used.	Fraction 1 (In small flask.)	Fraction 2. (In medium flask.)	Fraction 3 (In large flask.)	Fraction 4. (In overflow.)	Total Recovered
1	Domestic	7.6 g.	31.8 g.	6.45 g.	3.85 g.	49.7 g.
2	"	6.0	39.5	3.80	1.70	51.0
3	"	6.7	37.1	3.65	2.20	49.65
4	"	6.0	36.8	5.00	2.40	50.2
Average		6.6	36.3	4.72	2.54	50.1
Per cent		13.2	72.6	9.4	5.1	
5	English	0.8	30.9	11.6	6.5	49.8
6	"	1.0	28.5	14.1	6.3	49.9
Average		1.0	29.7	12.8	6.4	49.85
Per cent		1.8	59.4	25.6	12.8	

particles carried over in the overflow. The separation was allowed to continue till the water passing from one flask to the next was practically clear. This required about three hours. At the end of the run the flasks were disconnected and their contents rinsed out into separate beakers. These beakers, together with

The results of a series of analyses made on both domestic and English clays are recorded in Table IV. A good degree of accuracy was obtained by this method as shown by the close agreement of the four tests run on domestic clay and of the two tests on English clay.

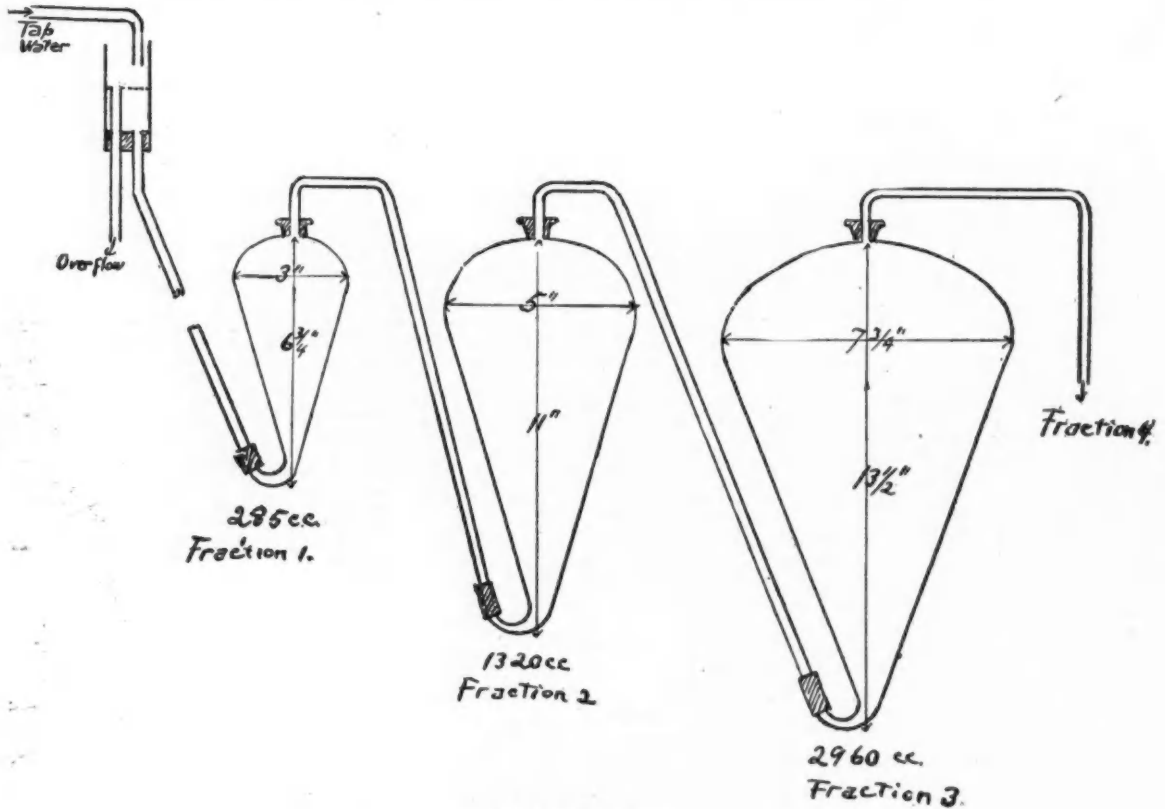


FIG. 4—ELUTRIATION.

the jar of overflow water were set aside to settle. The supernatant water was then syphoned off as completely as possible and the residue dried and weighed. The fractions were numbered consecutively beginning with the coarsest material which remained in the smallest flask.

The results show that there is considerably more relatively coarse material in the domestic than in the English clay. The small amount in English clay, 1.8 per cent, separating in flask No. 1 was made up of round particles, rather soft and dull in

(Continued on page 56)

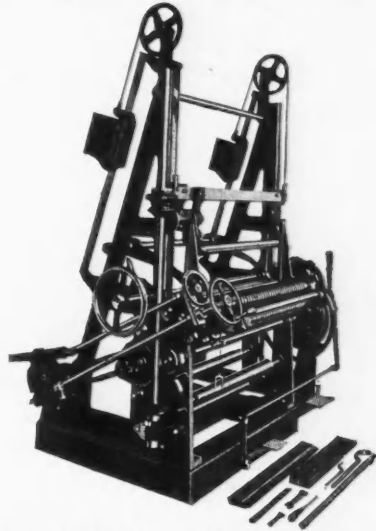
# *Fight* WITH STEEL *Pack* DRY PRODUCTS IN PAPER

THIS is the time to drive hard on the "SAVE WITH PAPER" slogan. Suppose our Government decreed a "Paperless Day"—it would be like setting back the clock of time—think of the chaos! PAPER IS A PRIME NECESSITY EVERY DAY. And especially vegetable parchment and waxed papers—which, with Pasteboard, produce containers that take the place of tin cans. Tin plate is 98% steel. Steel is needed for war. Let's all boost the economy and need of paper! It is one way to serve.



**KALAMAZOO VEGETABLE PARCHMENT COMPANY - KALAMAZOO MICHIGAN**  
Makers of Vegetable Parchment and Waxed Papers

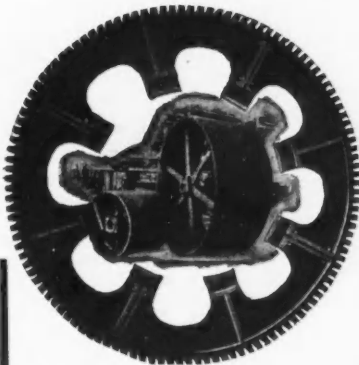
## Slitters & Rewinders The Best in the World



**KIDDER PRESS CO.**  
DOVER, N. H.

New York, 261 Broadway      Boston, 194 Summer St.  
GIBBS-BROWER CO., Agents      Toronto, 445 King St., West

## Power-Transmitting Machinery



We cast and finish Sheaves (with English or American grooves), Pulleys, Band Wheels, Fly Wheels, Gears, Sprocket Wheels, &c.

We design and manufacture complete rope drives. Our machine-molded sheaves are perfect in balance, accurately

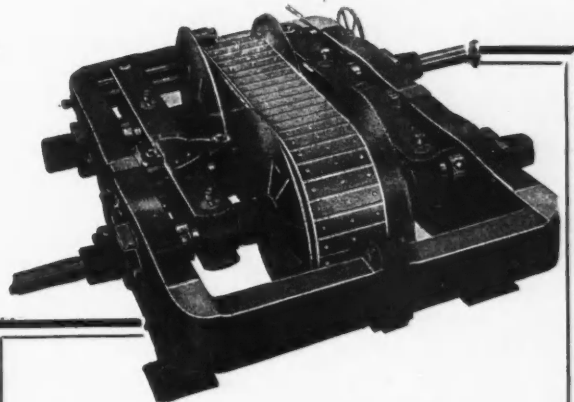
finished and free from flaws injurious to the rope. Rope drives designed by us are successful. Write us.

**H. W. Caldwell & Son Co.**

Chicago, Western Ave., 17th-18th St.

New York, Hudson Terminal, 50 Church St.

Dallas, Texas, 711 Main St.



*The Reeves*

**VARIABLE SPEED TRANSMISSION**

It has been found through a very exacting test by thousands of aggressive manufacturers that "The Reeves" Variable Speed Transmission is considerably cheaper and more efficient in getting the right speed than cumbersome, unreliable cones and step-pulleys.

A simple turn of the hand wheel by the operator gives you the right speed at the right time.

Tell us your speed problems—we are sure we can help you. Write to-day.

**Reeves Pulley Company, Columbus, Indiana**

Chicago Branch:

Cor. Clinton & Monroe Sts.

## TECHNICAL ASSOCIATION MEETS AT HOLYOKE

(Continued from page 54)

appearance. The similar fraction of domestic clay, 13.2 per cent, was sharp and gritty and composed of shiny particles or flakes. The English clay seemed especially rich in colloidal matter as indicated by the relatively large third and fourth fractions which amounted to 25.6 per cent and 12.8 per cent respectively, and by the slow rate at which these settled out of water. The domestic clay showed only 9.4 per cent and 5.1 per cent for these same fractions respectively.

The elutriation test as described seemed to offer a sufficiently accurate means clearly to differentiate between these two clays. Retention tests were next undertaken to determine, if possible,

2 and one-half per cent size. The results obtained for the two clays and their elutriation fractions are found in Table V and, graphically, in Figs. 5 and 6.

In the case of the domestic clay the retention of the whole clay as well as each of the elutriation fractions was lowest where no size and alum were used, while alum alone seemed to have less effect than size and alum combined, on the whole clay. Alum alone produced the higher retention with each of the fractions.

In the elutriation process we have a separation of the clay particles into four degrees of fineness. The amount of colloid actually present in a papermaking clay is small as indicated by

TABLE V.  
RETENTION OF ELUTRIATION FRACTIONS.

Two grams pulp.  
0.4 gram Clay (20 per cent of weight of pulp).  
Retention expressed as per cent of clay added.

### DOMESTIC CLAY.

Test No.	Size, Alum, Per		Per Cent Whole Clay,		Fraction 1.		Fraction 2.		Fraction 3.		Fraction 4.	
	Cent of Pulp.	Per Cent of Pulp.	Per Cent.	Average.	Per Cent.	Average.	Per Cent.	Average.	Per Cent.	Average.	Per Cent.	Average.
1.....	None	None	36.2	....	27.5		14.8		18.8		12.7	
2.....	"	"	33.4		27.5		17.4		20.8		12.1	
3.....	"	"			28.9		37.9		21.4			
4.....	"	"			43.4		34.4		15.6			
5.....	"	"			<b>40.2</b>		21.3					
6.....	"	"			24.6		21.7					
				34.8				24.6		19.1		12.4
7.....	3	"	43.9		65.1	32.0	48.7		65.6		63.1	
8.....	3	"	45.6		59.1		45.2		51.8		66.7	....
9.....	3	"							66.2			
10.....	3	"							75.2			
				44.7		62.1		47.0		64.7		64.9
11.....	3	2½	50.0		43.0		41.2		40.5		34.8	
12.....	3	2½	47.9		44.1		32.5		41.5		43.2	
				48.9		43.5		36.8		41.0		39.0

### ENGLISH CLAY

13.....	None	None	23.4				27.1		20.4		18.2	
14.....	"	"	23.8				25.3		21.5		16.6	
				23.6				26.2		20.9		17.4
15.....	3	None	43.8				45.0		40.0		41.9	
16.....	3	"	39.2					44.1		39.6		40.0
				41.5			43.2		39.2		38.2	
17.....	3	2½	<b>48.9</b>				35.1		42.8		45.4	
18.....	3	2½	<b>49.6</b>				39.5		46.1		41.6	
				49.3				37.3		44.5		43.5

the relationship between the elutriation results and the retention values.

#### Retention of Clay and of Its Elutriation Fractions

A series of elutriations were run on both domestic and English clay in order to secure fractions sufficiently large for the retention tests. These fractions were dried in the air without the use of the steam bath so as to avoid any change in colloidal properties which the application of heat might produce. Moisture determinations were made on each fraction and the air-dry sample calculated to bone-dry weight in the usual manner. Twenty per cent clay was used for each test. The retention was determined, first, without the use of alum or size, second, with 3 per cent alum and no size, and third, with 3 per cent alum together with

the relatively low plasticity. If we assume that the colloid is distributed over all the clay particles, some of it coating, to a certain extent, even the coarse particles, we can readily explain the curves in Fig. 4.

Clay colloid is negatively charged. Pulp is also a negative colloid. Two negative colloids act upon each other to produce greater dispersion. We cannot expect clay and pulp alone therefore, to aid retention by any sort of adsorption phenomenon. The retention in this case must be purely a mechanical filtration, so that the finer the particles, the lower should be the retention. This is seen to be the case. That the whole clay showed a greater retention than any of its fractions was doubtless due to the fine

(Continued on page 58)



# BURGESS SULPHITE FIBRE COMPANY

GENERAL  
OFFICE  
PORTLAND,  
MAINE  
U.S.A.

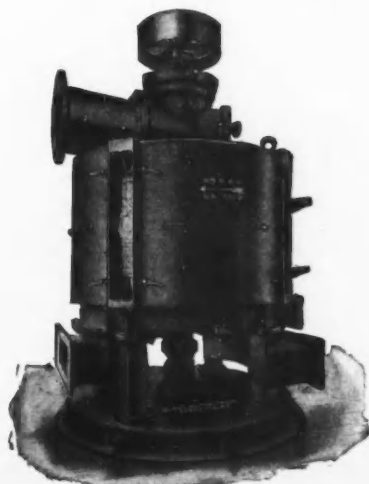


NEW YORK  
OFFICE  
233 B'WAY.  
MILLS AT  
BERLIN, N.H.

**Daily Capacity 450 Tons Air Dry Fibre  
Highest Grade Bleached**

**I**F sulphur and sulphite become scarce, partially or wholly substitute **ground wood**. We can show you how.

**Hall Process Corporation**  
Sherman Building : Watertown, N. Y.



## The Centrifugal Screen

This week we have received order from one of our customers in Canada for one of the Centrifugal Screens, they having placed their first order with us twelve years ago and in the meantime installed additional units as their production required. We believe no better endorsement than this could be asked and that it demonstrates that this screen is still the leader for screening all kinds of pulp.

We will be glad to send full particulars upon request.

**BAKER MANUFACTURING CORPORATION**  
Formerly BAKER & SHEVLIN CO. Saratoga Springs, N. Y.  
Sole Manufacturers

## TECHNICAL ASSOCIATION MEETS AT HOLYOKE

(Continued from page 56)

particles being carried along by mechanical association with the large particles which were readily held by the pulp. This view is further supported by the low retention of the English as compared with the domestic clay. The English clay contained a much smaller percentage of coarse particles in fraction 1, and therefore was less easily filtered out by the pulp. The first fraction was, in fact, so small that no tests could be made upon it. The second, third and fourth fractions showed nearly identical retention values with those of the similar domestic clay fractions. The similar fractions of the two clays having been obtained under similar elutriating conditions should have had the same size particles. It is evident, therefore, that retention in this case is primarily a function of the size of the particle.

If we apply our assumption of a colloidal coating on the particles to the tests where alum was added we see that coarse particles, such as we had in fraction 1, contain relatively a large weight of clay as compared to the amount of colloid coating on the particles. The coagulating action of the alum, therefore, would tend to produce large aggregates with a large ultimate retention. This is the case. The two finest fractions, fractions 3 and 4, contain a large amount of colloid relative to the total weight. Here the coagulating action of the alum is most efficient and again we get a large coagulant of a flocculent nature which lends itself to ready removal by mechanical filtration. Fraction 2 is composed of particles of an intermediate size. The hard crystalline centers exert an abrasive action upon each other during the subsequent shaking and disintegrate the aggregates formed by coagulation so that the final particles are smaller than those of a flocculent nature. They are also smaller than those of fraction 1 because the abrasive action here is less, inasmuch as there are not so many particles per unit weight and the chance of collision is less.

A consideration of the conditions which prevailed when size as well as alum was used reveals the following: The dispersing

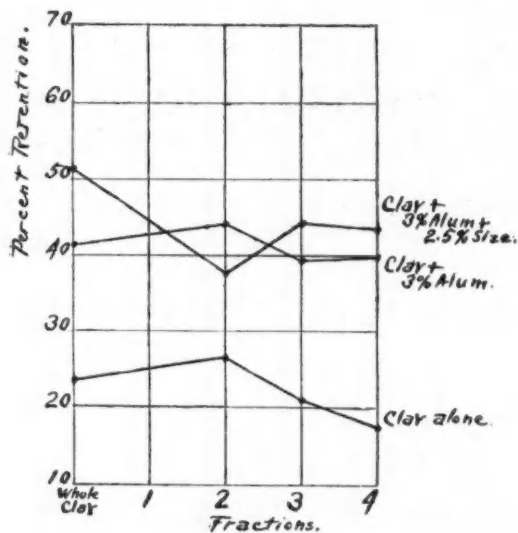


FIG. 5—DOMESTIC CLAY.

2 Gm. Pulp, 0.4 Gm. Clay (20 Per Cent.)

action of the alkali in the size tends to remove some of the fine colloidal coating of the particles. This leaves the coarser particles with less coating upon which the alum can later act to cause coagulation. The result, therefore, is a much lower retention of all the fractions than in the case where alum is used alone. The

remainder of the clay-alum-size curve can be explained in a manner similar to that used for the clay-alum curve.

The clay-alum-size curve for the English clay is very nearly coincident with that for the domestic clay.

The English clay-alum curve shows some points of difference, namely, that while the retention for the third and fourth fractions

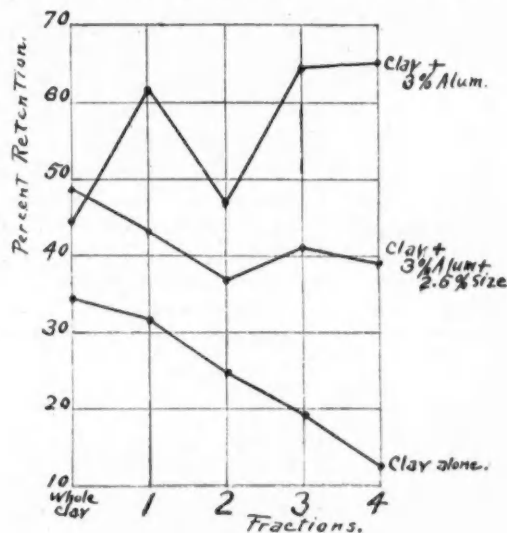


FIG. 6—ENGLISH CLAY.

2 Gm. Pulp, 0.4 Gm. Clay (20 Per Cent.)

were practically the same as was true for the domestic clay, they were both lower than the whole clay or for fraction 3; and also lower than the similar points on the clay-alum-size curve. To explain this apparent irregularity we may assume that the particles of the English clay in fractions 3 and 4, while of the same size in relation to rate of settling in water, are composed of a relatively large amount of colloid. The weight of the particle is, therefore, made up of a larger proportion of associated water which would give a lower retention of clay with the same number of retained particles. That these fractions of the English clay are more highly colloidal than the similar fractions of the domestic clay is evidenced, as has been pointed out, by the very long time required for the water suspension of the former to settle clear. The individual particles, containing less crystalline matter, are less affected by the alkali of the size and consequently the retention, whether with size and alum, or with alum alone, should be somewhat similar. This is seen to be the case.

Let us return now to a further consideration of the clay curves in Fig. 3 in the light of the elutriation analyses. The English clay, having the larger amount of the fine fractions shows a much lower retention than the domestic clay when no alum or size is used. The large amounts of the last two fractions indicate a larger amount of pure colloid. The freer this colloid is from crystalline material the lower the retention. Hence the lower value for English clay with alum alone.

The case which is of greatest practical importance to the papermaker is the one where size and alum both are used for this is the prevailing mill condition. The English clay shows a slightly higher retention than the domestic clay. This is not peculiar to the whole clay, but it is true of each of the fractions as well. The increase may be ascribed to the more colloidal nature of

(Continued on page 60.)

EFFICIENCY ENGINEERING BY EFFICIENT ENGINEERS

### FREDERICK L. SMITH

5 Beekman Street, New York

## PULP AND PAPER MILL ENGINEER

### HARDY S. FERGUSON CONSULTING ENGINEER

MEMBER AM. SOC. C. E.  
" AM. SOC. M. E.  
" CAN. SOC. C. E.

200 FIFTH AVENUE, NEW YORK CITY

PAPER, PULP AND FIBRE MILLS,  
INCLUDING BUILDING AND  
COMPLETE MECHANICAL EQUIPMENT,  
WATER POWER DEVELOPMENT,  
DAMS, STORAGE RESERVOIRS AND OTHER  
HYDRAULIC STRUCTURES.

EXAMINATIONS  
REPORTS.  
ESTIMATES OF COST.  
DESIGNS.  
SPECIFICATIONS.  
VALUATIONS.

### STEBBINS ENGINEERING & MFG. CO. WATERTOWN, NEW YORK. SULPHITE MILL EQUIPMENT

Acid Systems, Sulphur Burners, Digester Linings,  
Reclaimers and Digester Brick.  
PULP & PAPER MILL ENGINEERS.

### IF WOODMANSHIP COUNTS

hire us to do your timber  
estimating and surveying.

JAMES W. SEWALL Old Town, Maine

### IMPERIAL BAGGING CO. NORFOLK, VA.

Buyers of Burlap and Gunny Bagging.  
*Why not sell direct to us instead of dealers?*

## AGALITE FILLER

UNITED STATES TALC CO.  
GOVERNEUR NEW YORK

### THOMAS L. TOMLINES CONSULTING ENGINEER

ASSOC. M. AM. SOC. C. E.;  
M. AM. SOC. M. E.

FLOWER BUILDING  
WATERTOWN, N. Y.

Paper, Pulp and Fibre Mills, Hy-  
draulic Developments, Hydro-  
Electric Plants

Steam Power Plants, Plans and  
Specifications, Efficiency Engi-  
neering

CONSULTATION AND REPORTS

## GEORGE F. HARDY

M. AM. SOC. C. E.  
M. AM. SOC. M. E.  
M. CAN. SOC. C. E.

### Mill Architect and Consulting Engineer

SPECIALTY:

Paper, Pulp and Fibre Mills  
Water Power Developments  
Steam Power Plants  
Plans and Specifications  
Evaluations, Reports  
Consultation

Langdon Building

309 Broadway, New York

Cable Address:  
"Hardistock."  
A B C, 5th Edition,  
Bedford McNeill,  
Western Union.

### JOSEPH H. WALLACE & CO. Consulting Industrial Engineers

Temple Court Building  
New York

New Birks Building  
Montreal

## VITALE & ROTHERY FOREST ENGINEERS

527 Fifth Avenue

New York, N. Y.

## WINDERS AND REWINDERS SAMUEL M. LANGSTON COMPANY CAMDEN, N. J.

### P. B. SADTLER SODA & SULPHATE PULP MILL ENGINEERING 53 W. JACKSON BLVD. CHICAGO

## PULP and PAPER

Scientific Control and Investigation

### EMERSON LABORATORY

145 Chestnut St.

SPRINGFIELD

MASSACHUSETTS

## TECHNICAL ASSOCIATION MEETS AT HOLYOKE

(Continued from page 58.)

the individual fraction. The degree of increase is greater as the fractions become finer. The increase of the English over the domestic clay fractions is as follows:

- Fraction 2—0.5 per cent.
- Fraction 3—3.5 per cent.
- Fraction 4—4.5 per cent.

The larger, therefore, the fractions 3 and 4, the greater should be the retention of the whole clay. The experimental evidence is too incomplete so far, however, to state this as a definite rule.

In order for the mineral filler to give a smooth, soft finish to the paper, without grit, a finely divided product is necessary. That the elutriation test gives this information is well known. Whether this test can be used to advantage to indicate retention power remains to be proven. The above results point at least in that direction.

Since the retention values for fractions 3 and 4 are practically the same in all cases except where the clay and fiber are used alone, and since this is a condition rarely met with in practice there seems little use in making more than three fractions in elutriation analysis. The large flask could be dispensed with and the overflow from the second flask taken as the third fraction.

The conclusion drawn from the tests made on a single sample each of a domestic clay, an English clay and a talc may be summarized as follows:

- 1—The domestic clay, in proportions varying from 1 to 20

parts per 100 parts of fiber gave a minimum retention of 20 per cent when 11.5 parts per 100 parts of fiber were used.

2—With 10 parts of mineral per 100 parts of fiber alum showed practically no effect on the retention of the domestic clay in concentrations varying from 0.1 per cent to 3 per cent. Under the same conditions the retention of talc was increased practically the same amount by all concentrations of alum used.

3—With 20 parts of mineral per 100 parts of fiber the addition of 3 per cent alum produced a marked increase in all three filters, especially the talc.

4—When no alum or size were used the English clay gave a much lower retention than either the domestic clay or the talc, the retention of the two latter being practically the same.

5—With a 3 per cent addition of alum the domestic clay gave a higher retention than the English clay, while the talc was higher than the domestic clay.

6—With a 3 per cent addition of alum together with 2.5 per cent size the two clays gave nearly the same retention, while the talc showed a value lower than the clays.

7—The addition of 2.5 per cent size in connection with 3 per cent alum produced a decided increase in retention of the clays, but a decrease of the talc over that obtained when alum was used without size.

8—The elutriator gave satisfactory analyses of the clays, which could be used to indicate, to a limited extent, the relative retention value of the clays.

## SAMPLING AND TESTING LAP PULP

To the Secretary of the Technical Association:

Herewith is an article by J. B. Woodruff, of the Joint Sampling and Testing Committee of the American Paper and Pulp Association and the Association of American Wood Pulp Importers on *Determination of Moisture in Hydraulic Pressed Lap Pulp*. I would ask you to take this up with the appropriate committee of the Technical Association, with request that they continue the investigation of the method as described by Mr. Woodruff.

Mr. Woodruff will be pleased at any time to meet a committee of the Technical Association to go into further details of his method.

From our experience in shipping a great deal of hydraulic pressed lap pulp from our Canadian mills, we wish to say that we have found this method of sampling and testing to be most accurate.

In regard to sampling and testing wet pulp which has not been hydraulic pressed but is shipped as it comes off the wet machine, the joint committee discussed this matter and strongly recommended that the appropriate committee of the Technical Association take up this question also. It is our opinion that the only safe method of sampling pulp, that is run off a wet machine, is to deal with a strip taken from the entire width of the machine.

Yours very truly,

S. GOLDMAN,  
Secretary.

American Wood Pulp Importers.

NEW YORK, September 10, 1917.

Accompanying Mr. Goldman's letter as above was a description of the official method of sampling and testing baled pulp as adopted by the American Paper and Pulp Association and the Association of American Wood Pulp Importers, as well as a method of determining moisture in hydraulic pressed lap pulps proposed by J. B. Woodruff of the American Writing Paper Company. It is desired by the Joint Sampling and Testing Committee of the American Paper and Pulp Association and the Association of American Wood Pulp Importers, that the Technical Association refer this

subject of sampling and testing hydraulic wet lap pulp, and wet pulp not hydraulic pressed, to a committee for consideration and possible adoption by the association. The text of the methods of sampling and testing follows:

### Instructions for Sampling and Testing Pulp

BY THE JOINT SAMPLING AND TESTING COMMITTEE

All tests must be made by a chemist duly authorized and approved by the joint committee representing the Association of American Wood Pulp Importers and the American Pulp & Paper Association on one side and the Scandinavian Wood Pulp Associations on the other side, and must be made strictly in accordance with the following instructions—otherwise the committee reserves the right to withdraw the approval of any chemist at any time.

Before proceeding to the weighing and sampling the chemist must ascertain that not less than half of the parcel in question is available.

*Number:* Not less than 5 per cent, nor more than 10 per cent of the entire shipment, but not less than ten bales shall be sampled. Samples to be drawn only from sound and intact bales, from different sections of the entire shipment, and analyst shall be careful to observe that no unusual conditions prevail in the selection of the bales. The accurate weight of all bales sampled to be ascertained by sworn weigher before sampling, or, wherever sworn weigher is not available, by a competent person who must make sworn affidavit that weights are correct, and no other bales than those weighed to be sampled, and whenever bales are numbered, the number is to be given in addition to the weight.

### Method of Sampling

*Depth of Boring.*—The sample shall be taken by boring into a bale to a depth of three inches (7.62 centimeters) with a special auger which cuts a disk about 4 inches (10.16 centimeters) in diameter.

(Continued on page 62.)



# SULPHATE ALUMINA

**Cadillac and Cass Brands**

*Limited Offerings for  
Prompt Acceptance*

Manufactured by  
**Detroit Chemical Works**  
Detroit, Mich.

# COLLINS MANUFACTURING COMPANY

SAMUEL R. WHITING, Pres. and Treas.

Manufacturers of  
**LOFT DRIED PAPERS**  
**LEDGERS**  
**BONDS**  
**WRITING PAPERS**

Mill:  
North Wilbraham, Mass.

Main office:  
208 Race Street,  
Holyoke, Mass.

## Our Acme Shakeless Deckle Frame Supports

better the fibre and make stock run smoothly—leaving no slice marks in the paper. Nearly 300 now in use. We will equip your machines and grant you a 30 days' test. If results are not what we claim return to us at our expense. The test costs you nothing. Write us today.

**HUBAND & NASH CO.**

Menasha, Wis.

Sold by **THOS. H. SAVERY, Jr.**  
1630 Republic Building CHICAGO, ILL.

## DIETZ Automatic Tube Machines

For Making Tubes for Toilet  
Paper Rolls, Paper Towel Rolls



Patented

We also manufacture Toilet Paper Machines for making Toilet Paper Rolls with or without perforations and machines for making Sanitary Crêpe Paper Towels, Drop Roll Slitters, Slitting and Rewinding Machines, Side and Center Seam Merchandise Envelope Machines, Photo Mount Beveling Machines, Candy Bag Machines, Punch Presses for Playing Cards, Rotary Card Cutting and Collating Machines, Etc.

**DIETZ MACHINE WORKS**

126-128 Fontain Street : PHILADELPHIA, PA.  
Corner Waterloo St., Below Diamond St., Bet. Front and 2d Sts.

Capable of producing  
3,600 tubes per hour di-  
rect from roll or sheets  
cut to proper size.

**Towel  
Tubes**

are made at rate of  
1,800 per hour.

Substantially built and  
fully guaranteed.

## TECHNICAL ASSOCIATION MEETS AT HOLYOKE

(Continued from page 60)

**Selection of Disks.**—The disks shall be removed, and ten of them taken as a sample, these to be selected as follows:

- 1 disk 2nd sheet from the wrapper.
- 2 disk 1 in. (2.5 centimeters) deep.
- 3 disk 2 in. (5.05 centimeters) deep.
- 4 disk 3 in. (7.62 centimeters) deep.

10

**Location of Borings.**—The holes to be bored shall be so located that in five successive bales they will represent a portion extending diagonally across the bale. Each bale to be bored but once. The first hole to be bored at the corner, the edges of the cut being at a distance of one inch from the edge of the bale. The second

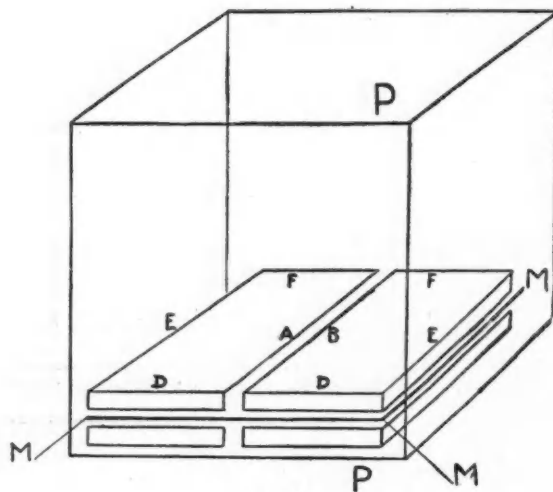


FIG. 1.

A and B are dry edges; D, E and F are wet edges; P is hydraulic press; M cocoa mats between each layer of pulp.

cut shall then be made half way between the location of the first cut and the center of the bale, the third bale shall be cut at the center, the fourth bale half between the center and the corner, and the fifth bale in the opposite corner in a position corresponding to the first.

All samples must be either weighed immediately after being drawn from the bales by accurate scales, or, when this is impracticable, must be put into air-tight vessels, made of metal or glass, with ground glass or metal stoppers, and due care must be used in the transportation of such samples until they can be properly weighed at the laboratory of the chemists. The entire bulk of samples selected from the bales must be dried out for the test. The temperature in the drying oven shall not exceed 212° Fahr.

Chemists must have proper and adequate equipment for weighing and sampling the bales, and for the weighing and drying of samples.

All sampling of pulp must be done by or supervised by the approved chemist personally, or by his *bona fide* assistants—each chemist to file with the committee a complete list of his *bona fide* assistants who will do the sampling, such list to have the approval of the committee. The chemist will be held responsible for the correct sampling by his approved assistants. The committee shall at any time have the privilege of investigating the sampling done by chemists or their assistants.

Every test certificate shall clearly state the name of the person who did the sampling.

The test certificates hereafter shall be uniform and in accordance with forms to be approved by the committee, a sample draft of which will be furnished by the committee to each chemist.

### PROPER METHOD OF SAMPLING PULP

BY J. B. WOODRUFF

#### The Process of Pressing Pulp

In order to fully understand the problem a short description of the process of pressing pulp will be given.

The pulp is taken off the wet machine in the usual manner, folded into laps and placed in two piles with cocoa mats between each layer of pulp, under the hydraulic press. In some mills the two piles of pressed pulp is called a "cheese." A cheese contains thirty or forty laps and weighs from 1,200 to 1,500 pounds after pressing. Pressed pulp usually tests 52 to 57 per cent air-dry.

#### Definition of "Wet and Dry" Edges

In a cheese made up of two piles it is evident that the inner edges of every set of two laps receives the full pressure of the press.

The water in the cheese must of necessity be squeezed to the outside. This results in the inner edge receiving greater pressure and therefore carrying a higher test than the other three edges. This edge is called the "dry" edge and experiments have shown it from 2 to 6 per cent dryer than the other three edges.

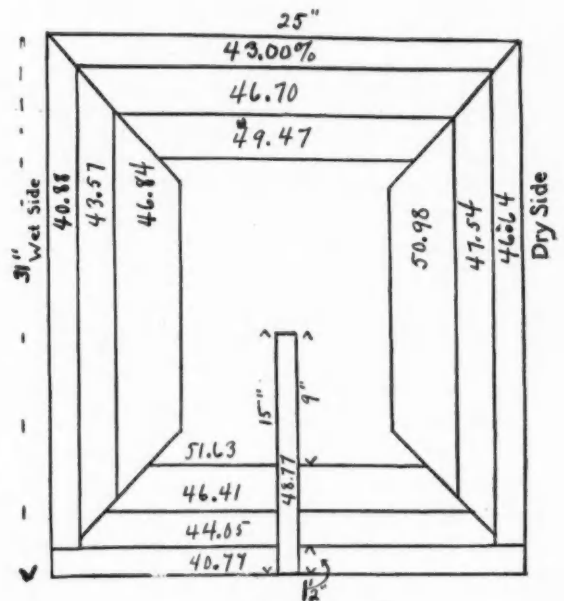


FIG. 2.

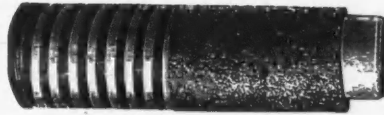
The accompanying sketch shows the edges which receive full pressure.

I have stated that the water content varies from center to edge. I have demonstrated this many times by cutting up a lap with a saw and testing each portion.

A typical lap tested is shown in the accompanying sketch, Fig. 2. Inasmuch as the center of a lap is the driest portion and the edges the wettest, and further, a lap of pulp is a rectangular figure, it is necessary in order to take a true representative sample to cut it of such a shape as will give the proper proportion of cen-

(Continued on page 64)

**WYCKOFF  
WOOD PIPE**



**OUTLASTS ANY  
METAL PIPE**

**WYCKOFF WOOD STAVE WATER PIPES** will not rust—resists freezing much longer than metal and will carry 14% more water than metal pipes of same diameter. Made in sizes up to 48" in 6 to 12 foot lengths—they cost less and are easily laid by unskilled labor. **WYCKOFF PIPE** makes an ideal Paper and Pulp Mill pipe where the pressure does not exceed 172 lbs. per square inch. Send for catalog.

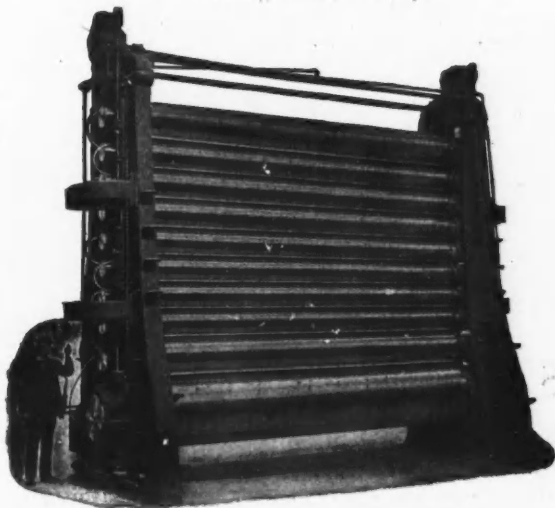
**A. WYCKOFF & SON CO.**

*Makers for 62 Years*

**ELMIRA, N. Y.**

**Farrel Foundry & Machine Co.**

ANSONIA, CONN., U. S. A.  
LARGEST MANUFACTURERS IN THE WORLD OF  
**CHILLED ROLLS**



**CALENDERS**

WITH PATENT HYDRAULIC LIFT  
**ROLL GRINDING MACHINES**

**FLOWER CITY TISSUE  
MILLS Co.**

Rochester, N. Y.

NEW MILL AT

**SCOTTSVILLE, N. Y.**

Will be ready and in operation by  
August 1st, 1917

MANUFACTURERS OF

High Grade Fourdrinier Tissues—Course Wrapping—Folder Stock—Light Weight Boards—Index Bristols—Hardware Wrappings, Card Middles—Fine White and Colored Card Board—Ticket-Tag Board—White and Colored Blanks and Specialties.

*JOBBERS—WRITE FOR PARTICULARS*

Address all correspondence to Rochester, N. Y.

**EMERSON MANUFACTURING CO. LAWRENCE MASS.**

See the Second-Hand Machinery ads and note the  
ABSENCE of

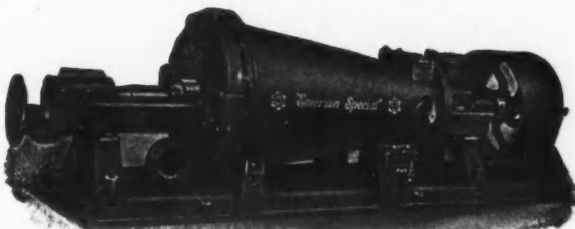
**EMERSON  
BEATING ENGINES**

They seldom wear out and are never thrown out.  
PERFECT CIRCULATION. NO "PADDLING"

**The "EMERSON" JORDAN**

does its work with half the power required by others of  
no greater capacity.

WRITE FOR DETAILS.



## TECHNICAL ASSOCIATION MEETS AT HOLYOKE

(Continued from page 62.)

ter and edge. In the ordinary lap one quarter of the bulk of the entire lap lies within one and a half inches of the outside edge.

A wedge shape sample is the only one that can fulfill these conditions.

Sindall and Bacon in *Testing of Wood Pulp* demonstrate this point fully. It can be shown that the wedge is at least theoretically correct.

I believe that pulp makers and buyers have accepted this statement in the past but have acquiesced in other methods because the actual cutting out of wedges appeared to be impractical. This objection is overcome by the following method.

### Method of Cutting Uniform Wedges

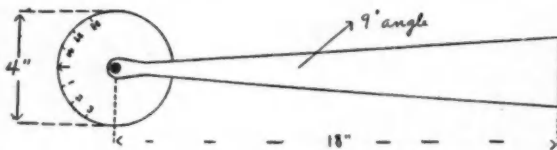
The lap is marked by means of a template. It is then cut out by means of a circular saw.

In order to reduce bulk the sample is split in halves.

The wedge should be cut to all points in the lap. In order to do this properly I would suggest a template made in the same manner as used by the British and Scandinavian Pulp Association but at an angle of 9 degrees. (See Fig. 3.) The disk at the center to be divided into 40.

### To Use the Template

Place the arrow toward the dry edge with the center point of template at the center of the lap and the brass wedge at number 1



on the disk. On the second lap place the arrow pointing toward the dry edge as before but move the brass wedge to position 2 on

the disk. If this process is continued on forty different laps it will be seen that one entire lap of pulp will be taken as a sample. I have selected forty laps as the proper number because there are about forty "cheeses" in a carload.

### Proof of Accuracy of Wedge Method

In the past it has been very difficult to prove the accuracy of any method on account of the inability of drying large units of pulp as a check against the proposed method. I have been able to overcome this difficulty as I have an oven in which I can dry out 800 or 900 pounds at a time.

In one case of twelve entire laps my test by the wedge method was 47.00 per cent and the actual test by drying out the entire laps was 46.69 per cent a difference of .31 per cent.

In another case of forty-three laps the test by wedge method was 46.91 per cent; entire laps, 47.07 per cent; a difference of only .16 per cent.

These results I think fully justify the wedge method and I hope steps will be taken soon to adopt a standard method.

### Remarks on Other Methods

A method widely used is the "strip" method. By this method a strip about fifteen inches long and an inch and a quarter wide is cut from the center to the edge. This is manifestly an unfair sample as it does not give a fair proportion of center and edge. I have stated that one quarter of the bulk of a lap of pulp lies within an inch and a half of the outside edge. It will be seen that in a strip fifteen inches long the outside 1½ inches or 10 per cent of the sample represents 25 per cent of the lap. Nine inches or 60 per cent of the sample is taken from the driest quarter (twenty-five per cent) of the lap. (See Fig. 2).

Another method consists in cutting a strip about 1½ inches wide diagonally across the lap. While this gives a larger proportion of outside edge, it does not give a proper amount and also gives a very large bulk of sample.

## RETENTION OF FILLERS BY PAPER PULP

By OTTO KRESS, IN CHARGE, SECTION OF PULP AND PAPER, AND G. C. McNAUGHTON, ENGINEER IN FOREST PRODUCTS, FOREST PRODUCTS LABORATORY, FOREST SERVICE, MADISON, WIS.

Mineral fillers are used extensively in paper to impart finish and feel, and to make it opaque, but comparatively little information is available as to the various factors affecting the retention of mineral fillers by paper pulps. This lack of information can readily be understood as the mills actually engaged in the production of paper cannot study these factors without seriously affecting quality and production; and, even if cost did not prohibit such experiment, there would be difficulties due to variations in the quality of the stock used, in the preliminary beater and jordan treatment, and in the control of the paper machine. Considerable work has been done on the study by making hand-samples of paper from pulps in which fillers have been used in varying amounts and under varying conditions, but the results obtained are not entirely satisfactory for comparison with results obtained in the mill. Having available at the Forest Products Laboratory an experimental paper mill equipment with which results more comparable with mill practice can be obtained, it appeared advisable to conduct investigations on the retention of china clay by paper pulp under varying conditions, at the same time observing the effect of the clay on the strength, color and ink resistance of the paper.

### Materials

Only two different grades of papers were made in these experiments—an all sulphite sheet made from unbleached Mitscher-

lich spruce sulphite and a sheet made on a furnish of 60 per cent unbleached hemlock sulphite pulp and 40 per cent unbleached aspen pulp. The sulphite pulps were commercial pulps while the soda pulp was made at the laboratory by the pulping of aspen wood. A sufficient quantity of each grade of pulp was prepared separately by giving the pulp a light brush in a beater and passing the pulp over our experimental paper machine, from which it was removed in the form of broke from the first press. The pulp was carefully sampled and stored in air-tight cans, so giving for any series of runs a stock which had received a uniform beater treatment.

The clay studied in these experiments was a china clay which on ignition in the muffle showed a loss of 12.57 per cent volatile matter, moisture and combined water. This clay was analyzed for fineness by H. W. Stewart, Department of Soils, University of Wisconsin, Madison, Wis., who reported as follows:

"The results of this analysis are based entirely on water-free material, all determinations being made in duplicate.

"In making the moisture determination, two 10-gram samples were used and kept at a temperature of 110° Cent. for twenty-four hours. The data obtained is as follows:

Sample	A	B
Per cent. moisture.....	.55	.54

(Continued on page 66)



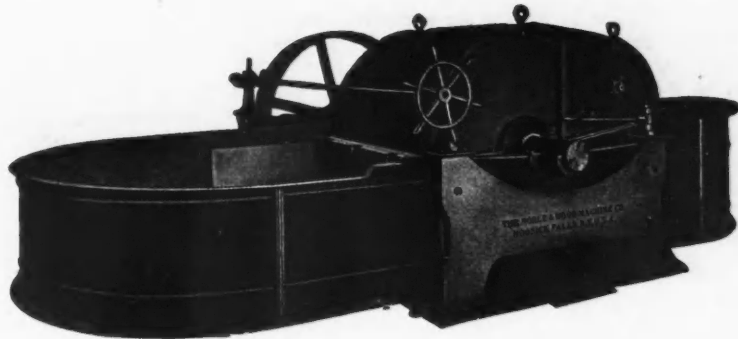
**Beating Engines**  
**Washing Engines**  
**Mixing Engines**  
**Breaking Engines**  
**Cooking Engines**

Wood or Iron Tubs; adapted to every paper mill condition

**Jordan Engines—**  
 (5 Sizes)

**Board Machines**

Stuff Chests, Dusters, Pumps, Etc., Etc.



**The Noble & Wood Machine Co., Hoosick Falls, N. Y.**



Special Shaped Carbon, Black Diamond POINTS FOR TURNING Paper, Cotton, Chilled Iron and Hardened Steel Calender Rolls, Hard Rubber, Fibre, etc.

Manufactured by **THOS. L. DICKINSON, 64 NASSAU STREET, NEW YORK**  
 Successor to JOHN DICKINSON, Established 1796.  
 Agents for Great Britain, C. W. BURTON, GRIFFITHS & CO.,  
 Ludgate Square, London.



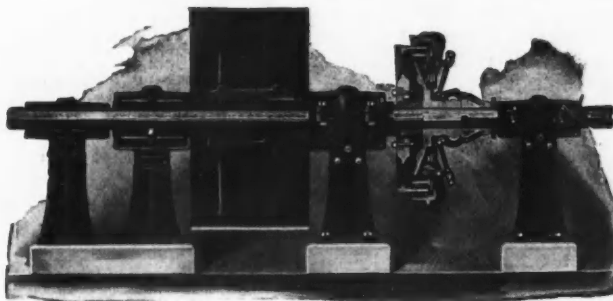
Thousands of Economy Safety-First Portable Tiering Machines are in use every day—

they are all saving time, money and space.

Put one on your pay roll.

**ECONOMY ENGINEERING CO.**

419 So. Washtenaw Ave., Chicago.  
 Foreign Agents—Brown Portable Elevator Co.,  
 Chicago, Ill.



# Hill Friction Clutches

Smith Type

## Friction Clutch Quill Installation

THE IDEAL METHOD FOR OBTAINING FRICTION CLUTCH CONTROL WITH HEAVY WIDE FACE PULLEYS OR ROPE SHEAVES, EMPLOYING HILL COLLAR OILING BEARINGS.

Send for General Catalog

**The Hill Clutch Company : Cleveland, Ohio**

New York Office: 50 Church Street

## TECHNICAL ASSOCIATION MEETS AT HOLYOKE

(Continued from page 64)

"The method employed in making the mechanical analysis is the one in use in the Soil Physics laboratory of the university. It is essentially as follows: Ten grams of the air dry material are shaken in 8-ounce shaker bottles with distilled water to which a little ammonia is added. The shaking continues uninterrupted for a period of time necessary to insure that all the particles are individually in suspension. The material is then transferred to wide-necked bottles. The silt and clay are separated from the sands by agitating the material with an inflowing stream of water and allowing the material to sediment so that all the silt and clay are in suspension and the sand has settled to the bottom. This is regulated by microscopic examination. The suspension (silt and clay) is then blown off under a constant air pressure into centrifuge tubes. This material is centrifuged until the silt is thrown down to the bottom of the tube and the clay left in suspension. This is decanted and the whole process repeated until a complete separation is made. After drying, the sands are separated into their respective groups by means of sieves so constructed as to make the correct separations.

"The results of the analysis are as follows:

Division	Name	Diameter in millimeters	Per Cent.	
			No. A	No. B
1	Fine gravel	2-1	0.00	0.00
2	Coarse sand	1-5	0.00	0.00
3	Medium sand	.5-25	0.12	0.20
4	Fine sand	.25-1	0.96	0.63
5	Very fine sand	.1-.05	2.37	2.49
6	Silt	.05-.005	50.91	52.42
7	Clay	.005 and less	45.91	44.26"

The size used in these experiments was a commercial prepared size, showing on analysis a total rosin content of 62.3 per cent, which was the basis for calculating the percentage of size used in the various experiments. The alum used in sizing approximated on analysis quite closely the ordinary  $Al_2(SO_4)_3 \cdot 18 H_2O$ .

### Experimental Methods

The pulp, which had been prepared as already described in order to secure as uniform a stock as possible, was weighed and placed into a 60-pound Marx beater, 15-pounds of bone-dry stock being used per run. The beater roll was adjusted at the begin-

ning of every series of experiments and maintained at that position throughout the series. Equivalent volumes of water were added to the beater for each run in order that the stock density in the beater should be the same. The order of addition in each case was clay, size and alum, which were added at intervals of five minutes each. The stock was circulated in the beater for twenty minutes, and then diluted in the machine chest to the same density for each run. The pulp was run over an experimental 15-inch fourdrinier machine and the paper machine conditions were held as constant as possible for each run. Attempts were made to adhere to a standard of a 50-pound sheet 24 x 36/500 basis, except in those experiments where the ream weight was deliberately varied in order to determine the effect on clay retention. The samples for testing represented uncalendered sheets, which were taken from the reel towards the middle of the run.

The finished papers were tested for strength at a constant humidity of 65 per cent, but the temperature at which these tests were made varied from 81° Fahr. to 93° Fahr. This variation of temperature could not be controlled without some means of refrigeration.

The percentage retention of filler may be expressed in several different ways, and the method finally decided on for these experiments, as shown by the following formula, is different from the ordinary mill practice.

$$\text{Per cent. retention} = \frac{B}{A}, \text{ in which}$$

B—Per cent. ash in paper

$$A = \frac{100 - \text{per cent. volatile matter in clay}}{\text{Weight of clay in furnish}}$$

$$\text{Per cent. clay in furnish} = \frac{\text{Weight of stock} + \text{Clay in furnish}}{\text{Weight of stock} + \text{Clay in furnish}}$$

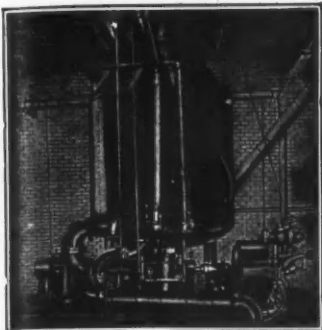
The particular china clay used in these experiments contained 87.43 per cent. non-volatile matter, the remainder representing volatile matter, moisture and water of combination. The percentage retention was then calculated by dividing the percentage ash of the papers by .8743 to obtain the equivalent percentage of

(Continued on page 68)

TABLE I.—EFFECTS OF VARYING AMOUNT OF CLAY IN THE FURNISH.

Run No.	Weight Per Ream, Lbs.	Thickness, Inches.	Strength Values.			Stretch, Per Cent.	Folds.	Color, Paris Black.	Sizing Test, Time in Sec.	Per Cent.	Ash.		Remarks.
			Strength Factor, Lbs. Per Sq. In.	Strength Ratio, Per 1000, of Thickness.	Breaking Length, Meters.						Clay Equivalent, Per Cent.	Clay Retention, Per Cent.	
1	All sulphite sheet.												
54	.00436	.68	.85	6020	3.57	704	127.4	*	0.64	...	...	0%	clay, no size, no alum
55	.00473	.60	.70	5310	3.56	731	110.3	*	5.02	5.74	63.1	10%	" " " "
53	.00441	.51	.62	4670	2.88	256	105.0	*	9.20	10.50	62.9	20%	" " " "
4	.00435	.45	.52	4430	3.08	159	97.2	*	12.60	14.40	62.4	30%	" " " "
5	.00559	.61	.72	5425	3.22	712	117.5	510	1.33	...	...	0%	clay, 2 1/4% size, 4 1/2% alum
6	.00479	.53	.61	4835	2.64	233	102.0	133	7.04	8.05	88.5	10%	" " " "
7	.00480	.41	.45	3905	3.00	98	89.7	72	11.80	13.50	80.9	20%	" " " "
8	.00472	.35	.38	3660	2.40	62	83.8	10	16.00	18.30	79.3	30%	" " " "
33	60% sulphite—40% soda.												
50	.00471	.53	.57	4680	2.69	68	127.0	*	0.56	...	...	0%	clay, no size, no alum
34	.00498	.47	.51	4080	2.46	72	123.0	*	2.36	2.70	56.8	5%	" " " "
35	.00489	.48	.53	3525	2.31	44	121.6	*	4.33	4.95	54.4	10%	" " " "
36	.00489	.38	.39	3375	2.36	26	115.5	*	7.87	9.00	53.9	20%	" " " "
37	.00453	.29	.32	2695	2.03	10	104.6	*	13.66	15.63	54.7	40%	" " " "
38	.00467	.42	.45	4025	2.22	28	118.6	391	1.82	...	...	0%	clay, 2 1/4% size, 3 1/2% alum
39	.00479	.37	.38	3575	2.10	24	114.7	210	3.91	4.47	94.1	5%	" " " "
40	.00450	.33	.37	3630	2.13	15	110.1	132	6.33	7.24	79.6	10%	" " " "
41	.00467	.27	.29	3010	1.83	6	101.9	70	10.67	12.21	73.1	20%	" " " "
42	.00437	.20	.21	2190	1.50	4	92.4	25	18.23	20.86	72.9	40%	" " " "
21	All sulphite sheet.												
50	.00429	.74	.86	5465	2.85	531	99.5	1	2.48	2.84	59.7	5%	clay, no size, no alum
47	.00423	.73	.81	5500	2.70	616	88.5	113	3.39	3.88	81.5	5%	clay, 2 1/4% size, 4 1/2% alum

\*Less than one second.



This shows latest model—driven by a steam turbine—the exhaust being used to heat water for next charge.

# WINESTOCK DE-FIBERING AND DE-INKING PROCESS

Patented

**Produces Strongest, Brightest and Best Pulp Obtainable from Waste Papers. Not a Mere Say-So, but a Fact.**

It de-fibres and liberates ink and color in one operation. It separates ink and color from fibres, instead of rubbing, grinding or kneading them in—thus shortening the time required for washing, and insuring a brighter pulp. The rapidly moving propeller blades actually "scrub" the fibres during the churning process.

*Correspondence Solicited*

**CASTLE, GOTTHEIL & OVERTON,**

Sole Selling Agents in the United States

**200 Fifth Ave. Building New York, N. Y.**

**ATTERBURY & McKELVEY, Inc.**  
**RAGS AND PAPER STOCK**  
**CASEIN**

**145 NASSAU ST. NEW YORK**

**SLITTERS AND REWINDERS**  
FOR EVERY PURPOSE  
**MEISEL PRESS MFG. CO.**  
944 DORCHESTER AVE., BOSTON  
10 YEARS' EXPERIENCE

## Niagara Paper Mills

LOCKPORT, N. Y.

**FINE COVER PAPERS AND**  
**HIGH GRADE SPECIALTIES**

Mat, Lining, Coating and Album Papers; Duplex Papers, Plain and Watermarked; Black Papers of Every Description.

## The Union Sulphur Company

Producers of the Highest Grade  
Brimstone on the Market . . .

**Absolutely Free from Arsenic or Selenium**

**The Largest Sulphur Mine in the**  
**World**

**Calcasieu Parish, Louisiana**

**Main Offices, Whitehall Bldg., 17 Battery Place, New York**

## ARTHUR D. LITTLE, Inc.

offers you the services of a competent staff and an Experimental Paper Mill for the solution of your paper problems. The mill equipment includes digesters, washers, beaters, Jordan and thirty-inch Fourdrinier and cylinder paper machine.

**ARTHUR D. LITTLE, Inc.**

Chemists and Engineers

**93 BROAD STREET BOSTON**

## Warehouse Capacity

increased from 50 to 300 per cent. and heavy loads piled faster, better and safer where the

## REVOLVATOR

Reg. U. S. Pat. Off.

is used for piling cases, rolls, barrels, etc.

*Our Bulletin PT-36 sent free upon request.*

**N. Y. Revolving Portable Elevator Co.**  
**357 Garfield Ave. Jersey City, N. J.**



## SCHORSCH & CO.

500 EAST 133RD ST., NEW YORK

MANUFACTURERS OF

**Quick Opening, Square and Flat**  
**Paper Bags & Sacks**

**Samples and Quotations on request**

## TECHNICAL ASSOCIATION MEETS AT HOLYOKE

(Continued from page 66)

clay in the paper and dividing this by the percentage of clay in the furnish. No correction was made for the percentage ash present in the pulp, nor for the ash from the size and alum employed. Such correction is only an approximation as the ratio of fiber to ash from the stock and from the sizing will vary with varying retention and ream weight. This will explain the very high retentions shown in the tables. For example, in run No. 45.

In the example given there was a loss of 10 per cent. in both the clay and the fiber during conversion of pulp to paper, but the ratio of clay to fiber in the furnish was not changed in the paper. In other words, in our experiments retention has been considered on a ratio basis while in mill practice retention is calculated from the weight of clay in the finished paper in comparison with the weight of clay in the furnish.

TABLE II.—EFFECTS OF VARYING REAM WEIGHT.  
Ash.

Run No.	Strength Values.					Folds.	Color, Parts Black.	Sizing Test, Time in Sec.	Per Cent.	Clay Equivalent, Per Cent.	Clay Retention, Per Cent.	Remarks.	
	Weight Per Ream, Lbs.	Thickness, Inches.	Strength Factor, Lbs. Per Sq. In.	Strength Ratio, Lbs. Per .0001" of Thickness.	Breaking Length, Meters.								Stretch, Per Cent.
9-30	All sulphite sheet.												
35	30	.00290	.37	.38	3445	2.30	13	66.8	9	16.70	19.10	82.8	30% clay, 2½% size, 5% alum
40	42.5	.00408	.39	.40	3310	2.72	23	66.4	15	17.80	20.35	88.1	" " " "
50	50	.00453	.34	.38	3280	2.93	26	66.9	21	18.30	20.95	90.8	" " " "
60	60	.00562	.36	.41	3260	3.00	58	65.7	6.2	18.80	21.70	94.0	" " " "
75	70	.00606	.39	.45	3280	2.70	68	65.3	116	18.80	21.70	94.0	" " " "
80	80	.00700	.37	.42	3170	2.82	162	65.5	140	18.50	21.20	92.0	" " " "
45-90	60% sulphite—40% soda.												
92	92	.00811	.21	.24	2465	1.89	10	96.5	472	14.95	17.10	102.4	20% clay, 2½% size, 3½% alum
80	80	.00721	.23	.26	2445	1.71	10	97.7	360	14.96	17.11	102.4	" " " "
70	68	.00616	.24	.27	2535	1.79	7	97.8	222	13.86	15.86	95.0	" " " "
60	61	.00573	.24	.26	2492	1.66	5	99.2	154	13.35	15.28	91.5	" " " "
50	50	.00508	.27	.28	2740	1.77	4	99.2	116	13.05	14.94	89.4	" " " "
40	40	.00387	.25	.26	2520	1.49	5	102.1	21	10.93	12.50	74.8	" " " "
30	30	.00320	.21	.20	2175	1.12	3	102.3	6	10.27	11.75	70.4	" " " "
25	25	.00273	.21	.19	2160	.95	1	104.3	1.4	8.19	9.37	56.1	" " " "

where the ream weight of the paper was varied from 25 to 90 pounds, and other conditions held constant, a retention of 102.4 per cent. was obtained by the method of calculation employed while the paper showed an ash content of 14.95 per cent. In run No. 38, where the same percentage of size and alum was used, but no clay, the paper showed an ash content of 1.82 per cent., which represents the ash from the unbleached pulps and from the sizing residues left in the paper. Correcting run No. 45 for

The retention as calculated in the mill involves the actual amount of paper made, and it is possible to have papers made from the same original furnish with different percentages of ash, but showing the same percentage of clay retention. The retention as ordinarily calculated is decidedly affected by the efficiency of the paper machine, the degree to which white water is recirculated, and other factors. It is, of course, evident why in commercial practice this method of calculating filler retention is used,

TABLE III.—EFFECTS OF VARYING AMOUNT OF SIZE.  
Ash.

Run No.	Strength Values.					Folds.	Color, Parts Black.	Sizing Test, Time in Sec.	Per Cent.	Clay Equivalent, Per Cent.	Clay Retention, Per Cent.	Remarks.	
	Weight Per Ream, Lbs.	Thickness, Inches.	Strength Factor, Lbs. Per Sq. In.	Strength Ratio, Lbs. Per .0001" of Thickness.	Breaking Length, Meters.								Stretch, Per Cent.
10	All sulphite sheet.												
11	50	.00415	.56	.68	4290	3.21	356	94.8	½	8.20	9.39	56.4	20% clay, no size, no alum
12	51	.00433	.52	.62	4200	3.07	356	86.7	½	9.60	11.00	66.0	" " ½% " 1% "
13	53	.00430	.47	.58	4045	3.04	207	83.1	5	11.15	12.80	76.8	" " 1½% " 3% "
14	53	.00410	.41	.53	3750	3.00	65	75.5	21	12.70	14.50	87.0	" " 2½% " 5% "
30	50	.00431	.40	.46	3650	3.10	58	73.1	97	14.00	16.00	96.0	" " 3½% " 7% "
30	All sulphite sheet—Sized with excess of alum.												
31	47	.00408	.32	.36	2965	2.49	35	70.7	9	17.70	20.30	88.0	15% clay, 2½% size, 5% alum
31	48	.00405	.29	.35	2975	2.45	14	67.2	42	17.60	20.70	87.5	" " " 7½% "
32	47	.00411	.33	.38	3160	1.64	18	59.3	60	17.00	19.50	84.5	" " " 10% "

this percentage of ash shows a clay retention of 90 per cent.

This high percentage retention would be decidedly decreased if the retention had been figured by the methods as usually used in the mill. For example: assuming a unit weight of 10 pounds of clay to 100 pounds of stock in the beater furnish and that 99 pounds of finished paper was made which contained 9 pounds of clay, the retention of clay according to mill practice would be 90 per cent., while the retention according to the method of calculation used in these experiments would be

$$\frac{9}{99} \times 100 = 100 \text{ per cent. retention.}$$

but for a study of the factors influencing filler retention by paper pulp we believe that the method of calculation as used in these tests has certain advantages.

The color tests were made with a tint photometer using a special daylight lamp, and, as would be expected with increasing clay retention, the papers showed a decrease in "parts black" equivalent to an addition of white proportional to the increased clay retention.

It is well known that papers loaded with fillers show slack sizing in comparison with papers made on a furnish with an equivalent percentage of size but without the addition of the filler.



A number of methods were tried for measuring the degree of ink resistance of the papers without obtaining completely satisfactory results. Squares of paper, cut 2½ inches square, were floated, wire side of the paper down, in a bath of ink and the time required for the ink to strike through to the upper surface of the paper, as caught with a stop watch, used as a numerical expression of the resistance to ink penetration. This method of numerically recording the ink resistance of paper is unsatisfactory as paper without size shows the ink penetration to the upper surface almost instantly, while with sized papers the sizing and formation of the paper is apparently not uniform and the ink does not penetrate to all parts of the upper surface at a uniform rate.

were made to observe the retention on sulphite paper with 5 per cent. of clay in the furnish. The stock used for these two runs was not prepared at the same time as that for runs 1 to 8, and, on account of not having received the same beater treatment, the results obtained are not comparable with series 1 to 8. They are of interest, however, in showing the effect of slight variations in the quality of the stock on the clay retention.

As would be expected, the strength of the paper decreases as the amount of clay in the paper increases. The enormous extent to which this occurred is evidence by any of the strength values in Table I.

With increased amount of clay, the color of the papers was

TABLE IV.—EFFECT OF ORDER OF ADDITION OF CLAY, SIZE, AND ALUM TO THE BEATER FURNISH. Strength Values. Ash.

Run No.	Weight Per Ream, Lbs.	Thickness, Inches.	Strength Factor, Lbs., Per Sq. In.	Strength Ratio, Lbs. Per .0001" of Thickness.	Breaking Length, Meters.	Stretch, Per Cent.	Folds.	Color, Parts Black.	Sizing Test, Time in Sec.	Per Cent.	Clay Equivalent, Per Cent.	Clay Retention, Per Cent.	Remarks.
15	All sulphite sheet.												
50	.00426	.39	.46	.46	3715	2.38	98	76.0	32	11.50	13.2	79.6	19.9% clay, 2.48% size, 4.97% alum
17	51 .00431	.41	.49	.49	3615	2.47	100	74.2	26	11.92	13.6	82.0	2.48% size, 4.97% alum, 19.9% clay
27	All sulphite sheet.												
50	.00437	.27	.31	.31	2370	3.03	17	62.0	12	19.05	21.8	76.3	40% clay, 2½% size, 5% alum
28	90 .00430	.25	.29	.29	2410	2.62	17	58.7	7	18.90	21.6	75.6	2½% size, 5% alum, 40% clay
43	60% sulphite—40% soda.												
51	.00495	.25	.26	.26	2350	1.86	6	98.0	29	16.26	18.60	80.5	30% clay, 2½% size, 4% alum
44	50 .00447	.23	.25	.25	2425	1.88	4	99.3	64	15.25	17.45	73.5	2½% size, 4% alum, 30% clay

**Effect of Varying Amount of Clay in Furnish**

When the percentage of clay furnished to the beater is increased, the percentage retained by the paper is decreased. With an unsized paper less is retained than with a sized paper, and low retentions result with the use of even comparatively small amounts of clay in the furnish. Much greater retentions with larger amounts of clay are secured when the paper is sized. Runs 1 to 4 and 33 to 37 (Table I) show, in tabulated form, the effect of increasing the amount of clay upon retention in unsized paper, while runs 5 to 8 and 38 to 42 in the same table show the effect upon retention in sized papers. It will be observed that the unsized, 100 per cent. sulphite papers, gave retentions of approxi-

materially brightened, as shown by the values for "parts black" computed from the tint photometer readings.

The increase in the amount of clay decreases the sizing effect of given proportions of size and alum. While in all the unsized papers the ink struck through the paper almost instantly, there was a difference in the sized sulphite papers of from 510 seconds to 10 seconds in the time required for penetration of papers made on furnishes containing 0 to 30 per cent of clay respectively. A similar tendency is shown by the sulphite-soda papers.

**Effect of Varying Ream Weight**

In runs 9 and 45 the ream weight of the paper was varied

TABLE V.—EFFECT OF HYDRATION OF STOCK. Strength Values. Ash.

Run No.	Weight Per Ream, Lbs.	Thickness, Inches.	Strength Factor, Lbs., Per Sq. In.	Strength Ratio, Lbs. Per .0001" of Thickness.	Breaking Length, Meters.	Stretch, Per Cent.	Folds.	Color, Parts Black.	Sizing Test, Time in Sec.	Per Cent.	Clay Equivalent, Per Cent.	Clay Retention, Per Cent.	Remarks.
23	All sulphite sheet—30% clay, 2½% size, 5% alum.												
49	.00433	.35	.39	.39	3250	2.05	26	70.2	17	16.9	19.3	83.6	Sedimentation test, 54 seconds
24	48 .00419	.45	.51	.51	3865	3.70	75	71.0	13	17.4	19.9	86.2	" " 103 "
25	50 .00404	.45	.55	.55	3490	3.96	112	75.6	15	17.4	19.9	86.2	" " 254 "
26	48 .00406	.45	.53	.53	3395	4.08	67	76.7	8	18.5	21.2	91.9	" " 574 "
46	All sulphite sheet—30% clay, 2½% size, 3½% alum.												
51	.00470	.30	.32	.32	2770	1.85	13	93.7	9.4	14.27	16.33	70.7	" " 53 "
47	50 .00423	.32	.37	.37	2620	2.02	4	107.5	15	17.05	19.51	84.5	" " 418 "
48	52 .00415	.31	.38	.38	2830	2.59	4	122.4	26	18.38	21.03	91.1	" " 1195 "
*49	54 .00453	.31	.37	.37	2470	1.66	8	99.4	12	17.18	19.65	85.1	" " 425 "

\* This run received approximately the same beater treatment as run 47 as may be seen in sedimentation value.

mately 63 per cent. and the unsized papers, 60 per cent. sulphite and 40 per cent. soda, retentions varying between 54 per cent. and 57 per cent. When sized, the sulphite papers gave a maximum retention with less than 10 per cent. of clay, and decreased to 79 per cent. when 30 per cent. of clay was used, while the sulphite-soda papers gave, with 5 per cent. clay, a retention of 94.1 per cent., which decreased to 73 per cent. with 40 per cent. of clay.

Two additional runs, indicated in Table 1 as runs 21 and 22,

over wide ranges to observe the effect produced upon the retention. With papers of light weight a lower retention of clay is secured than when heavier papers are run (Table II). In the sulphite series there was but slight difference in the retention after a weight of 50 lb (24x36/500 basis) had been reached. In the sulphite-soda series, however, successive increases in the ream weight gave increased clay retention, attaining a maximum value with the 80lb paper. The apparently erroneous retention values for the 80th and 90th papers has been explained in detail earlier

(Continued on page 70)

in this article as being due to the particular method used for expressing retention. In making the two series of papers, the beater in both cases was filled almost to capacity (about 60 lb) and variations in weight of paper made while running on this supply. In the sulphite series the variation was made from light to heavy weight paper, while in the sulphite-soda series the reverse order was selected. The difference in the weight at which maximum retention was reached is considered to be due to the different natures of the stock used. Sulphite soda stock is slower than a sulphite stock that has not been hydrated, thereby tending to increase the retention.

The brightening effect upon color of the paper with increased clay content is also shown in Table II.

Both retention and thickness of paper have an influence upon the degree of sizing. The clay retention increases with the thickness of the paper and tends to slack sizing, but the increasing thickness of the paper requires a greater time for the ink to pass through the sheet, thereby giving the impression of harder sizing according to the method used in these experiments. In these tests the latter effect is shown to more than balance the former tendency.

#### Effect of Varying Amount of Size

The manner in which increased amounts of size increase the clay retention is brought out in Table III. In these tests the alum to size ratio was maintained constant and the size varied from 0 to 3½ per cent. The retention varied between limits of 56.4 per cent. and 96 per cent. corresponding to these values. Accompanying the increased amount of clay in it, the strength and ink-resisting properties of the paper showed a marked deterioration, while the color was decidedly whitened as the retention increased.

In runs 30 to 32, inclusive, the per cent. of alum was varied from 5 per cent. to 10 per cent., the "parts black" decreased, the ink resistance of the papers increased, while the retention decreased slightly. This decrease in the retention may have been caused by the flocculating effect on the clay of the large excess of alum. It is well known that alkalies have a tendency to make clays colloidal while acids tend to flocculate the suspended clay.

#### Effect of Order of Addition

Several tests were made to determine the effect of the order in which the clay, size and alum were added to the beater. While it might be anticipated that greater retention would result if clay and size were added before precipitation with alum, just the reverse occurred. In all the trials in which the

#### Argentine Market for Toilet Paper

Before the war English and German toilet papers formed almost 60 per cent of the total importation in this line into the Rosario district, says Vice-Consul S. Reed Thompson, Rosario.

In 1915, 485,720 pounds of toilet paper were imported and in the first half year of 1916, 426,277 pounds. The value of these imports is calculated not on the actual or invoice value of the goods, but on the "aforo" or official valuation for customs purposes, which is 30 gold centavos (29 cents) per kilo (2.2 pounds), or 13 cents per pound.

Toilet paper and paper towels are classified under Paragraph 2608 of the Argentine import tariff and are subject to a duty of 25 per cent., to which must be added the regular surtax of 2 per cent. assessed on all imports the duty on which is 10 per cent. or over and a special additional surtax of 5 per cent., recently voted and in force until December 31, 1917, assessed on imports the duty on which is more than 20 per cent. This duty of 32 per cent. is collected on the "aforo" which is for the articles classified under Paragraph 2608 (as stated above) 30 gold

clay was furnished to the beater after the stock was sized, a higher retention with a decrease in ink resistance and in the "parts black" was observed.

#### Effect of Hydrated Stock

The degree of beating to which a stock has been subjected, or its condition of hydration, has a very marked influence upon the amount of clay retained by the sheet. This is shown in runs 23 to 26 and 46 to 49 (Table V). In the sulphite series the stock was left rather long, while in the sulphite-soda series the stock was subjected to increasing degrees of cutting so that the stock was very much more tender. The sedimentation figures which are given for the stocks from which the paper was made indicate a measure of the degree of freeness of the pulp for any given run. The number given represents the time in seconds required for a certain volume of water to drain from two grams of pulp suspended in 1,050 Cc. of water, using the ordinary apparatus for sedimentation tests. It will be noted that increase in the "slowness" of the pulp is accompanied by increased retention.

The brushing or beating of the pulp, however, produced a darkening effect upon the pulp which more than balanced the brightening effect due to the increased amount of clay in the sheet. It was interesting to observe that the ash from the papers produced from hydrated pulps were of various tints of pink, so colored by oxidation of the minute particles of iron which had been worn off the beater roll and bed-plate.

The results obtained, as given in this paper, on the study of retention of china clay by paper pulp, and the effect of the china clay on the quality of the paper, represent only a few trials using one filler and two kinds of pulp. The mechanical treatment of the stock aside from the inherent characteristics of the different paper stocks, as well as the specific gravity, fineness, solubility and the other mechanical and chemical qualities of the filler, will all have a decided effect on the retention of the particular filler employed. In the process of conversion of pulp to paper on the paper machine, factors such as the speed of the paper machine, degree of suction, size of mesh of the machine wire and fineness of felts, and percentage of fresh water used on the machine will all have a decided effect on the percentage retention of the filler. With so many variable factors to consider, the results obtained by us and other investigators must be supplemented by a great deal of further work before conclusions may be drawn regarding all of the factors influencing the retention of various fillers by paper pulp.

centavos per kilo. This makes the duty equivalent to a specific rate of 4.2 cents per pound. In addition to the import duty, the Argentine tariff prescribes certain official charges for customs handling, storage, and statistics, which amount to a little under 1 per cent. of the value of merchandise. The foregoing duty and charges apply to toilet paper imported from all countries, there being no preferential or conventional rates.

A fair grade of toilet paper sells here at \$1 for six rolls, although prices range from 11 to 25 cents a roll. Practically all of it is sold by the roll, the boxes feeding a sheet at a time being unknown. Paper towels have not yet been introduced. Public comfort stations are unknown and such accommodations in railway stations and trains, hotels, bars, etc., are not elaborate. The market in that article would have to be well pushed to give any result.

Every paper manufacturer and paper seller should have a copy of the "History of Paper Manufacturing in the U. S. A.," by L. H. Weeks. Price \$3.00 postpaid. Order from this office.

# PULP STONES

of absolutely the finest quality  
**LOMBARD & CO.**

Importers and Dealers  
236-238 A Street, Boston, Mass.  
Branch at Montreal, Canada

## A. Salomon, Inc.

E. SALOMON, Pres.

140 NASSAU STREET NEW YORK  
IMPORTERS : EXPORTERS

DEALERS IN

New and Old Cotton and Linen Rags, Gunny Bagging, Burlap Bagging, Rope, Hosiery Clips, Black Cotton Stockings, Cotton and Wool Waste.

**PAPER MAKERS' SUPPLIES**

We are prepared to deliver promptly in any desired quantities the following:

AURAMINE	ORANGE
BASIC GREEN	BASIC NEWS BLUE
CHRYSOIDINE R	BISMARCK BROWN
CHRYSOIDINE Y	PULP COLORS
METHYL VIOLET	VEGETABLE TALLOW

**A. KLIPSTEIN & CO.**

644 Greenwich St., NEW YORK CITY

## Mechanical Filters

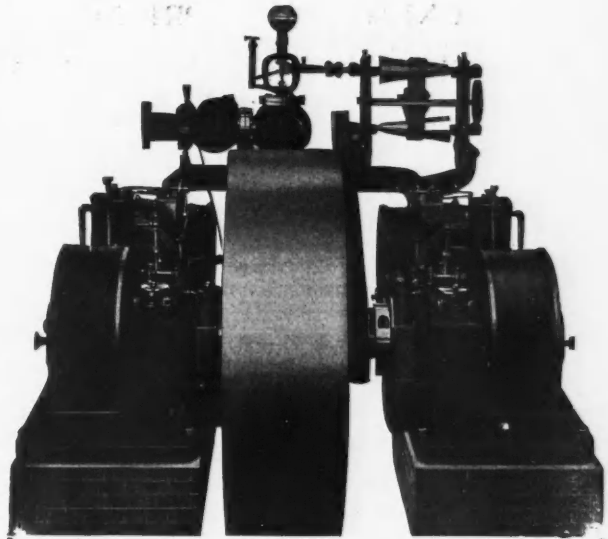
GRAVITY AND PRESSURE TYPES

All Sizes, to Suit Locations  
No Proposition too Large or Small

**WRITE OR WIRE**

WE WILL CALL ON YOU

**NORWOOD ENGINEERING COMPANY**  
FLORENCE, MASS.



## Are You Getting Maximum Production from Your Paper Machine?

Or do you lose time making speed changes or because of a variable speed drive that lays down on the job every so often.

**GET THE MOST OUT OF YOUR PAPER MACHINE BY USING A**

## Ball Variable Speed Engine

The twist of a handwheel changes the speed to any desired amount—*instantly*.

But the outstanding feature of the Ball Engine is its *dependability*.

We'll be glad to go over the matter with you.

*Ask for our Variable Speed Bulletin*

**Ball Engine Co. Erie, Pa.**



**"Service"**  
AND  
**"Quality"**

ARE TWO FEATURES ASSOCIATED WITH OUR **ENVELOPE DIES**

Which Will Commend Them to You. Write Us

**INDEPENDENT DIE CO.**

2637 LA SALLE STREET, ST. LOUIS, MO.

## HIGHER NEWS PRINT PRICES ARE INDICATED BY INQUIRY

**At Hearing Before Canadian Commissioner Pringle Statements Show Average Cost of Making Print to Be Almost 3c.— Yet for Some Time Past Manufacturers Have Been Compelled to Sell at 2½c.—Question of Readjustment Brought Up and Will Probably Be Made Immediately with Higher Prices Almost Certain—Fixed Price of News Print to Remain Until November 1.**

[BY TELEGRAPH TO THE PAPER TRADE JOURNAL.]

OTTAWA, October 2, 1917.—Statements of cost of production of news print paper by a quintette of the biggest paper mills in Canada compiled by government accountants and submitted at the final session of the news print inquiry which opened here today before Commissioner Pringle argued absolutely for a higher price than that fixed by the government.

It was shown that the average cost of producing a ton of news print paper at each of the mills for the first half of this year was \$56.43, \$58.21, \$62.03, \$56.66 and \$53.05. Thus the aggregate average was \$57.26; yet for months past the manufacturers have been compelled to sell to the Canadian publishers for \$50.

When the question of a readjustment of the burden of supplying the home market was brought up by the commissioner the experience related by H. Biermans, of the Belgo-Canadian Pulp & Paper Company, Ltd., proved illuminating. He said he was supplying twice as much as he should at \$50, and his company was losing seven thousand dollars a month.

The commissioner states that a readjustment would have to be made immediately and two accountants will look into the matter with a view to determining the proportion each mill will bear. It will be retroactive.

It was announced by Commissioner Pringle that the fixed price of news print would prevail until November 1.

It is believed that another sitting will see the close of inquiry and the commissioner will then commence the preparation of his report to the government.

The guess may be ventured that the recommendation of Mr. Pringle will be at least in favor of \$60 as a fair price per ton.

### News of the Chicago Trade

[FROM OUR REGULAR CORRESPONDENT.]

CHICAGO, October 1, 1917.—The big new mill of the Frank Gilbert Paper Company of Cohoes, and Watertown, N. Y., began operations October 1, a fact which, no doubt, gives pleasure to the western customers of the Forsythe Paper Company, which is the exclusive western agent for the Gilbert Company. There should be little delay in westbound shipments at this time, though traffic conditions seldom grow better with the approach of winter. In a year of traffic conditions as congested as this year promises to be, western distributors of an eastern mill ought to have somewhat the best of it.

A. C. (Doc.) Worthy of Beecher, Peck & Lewis, Detroit, has been among the honored ones, chosen for the new National Army. Meanwhile Mrs. Worthy is calling on her husband's customers and will take up his business as soon as he leaves for his army cantonment. Only another instance of how a woman can help win the war.

Many good fellows in the trade have asked us numerous times, "Why don't you write up McAlpine's big new Marmon car?" In a recent interview on market conditions, Mr. McAlpine of Brad-

ner-Smith had this to say for publication: "Get me a list of all those fellows and we'll take 'em for a trip through the cemeteries." So telephone THE PAPER TRADE JOURNAL, Harrison 1569, for accommodations. Don't wait to take your auto trip through Rosehill till it's too late for you to appreciate it.

They say that the real enjoyment in golf is to be found not in playing under 100, but in the Goodfellowship of a genial foursome. Here's a good foursome of well-known paper men, who have been missing from their offices several days during the glorious September days just passing: Lemmon, Bert Forsyth, W. C. Gillett and McAlpine. You might find another foursome that could trim this one on a best ball score, but the paper trade would look hard for a better foursome, if Goodfellowship were caddy and Goodtimes kept the score.

The Direct Trading Company of Chicago has opened a branch in Minneapolis at 257-258 Loeb Arcade, and also an office in the Woolworth Building, New York City. "Everything in Paper" is its slogan.

Jan. F. McNulty, one of the popular twin brothers of the McNulty Brothers Company, Chicago, paper and twine, is now in Rockford with his regiment in the new National Army. Question for exemption boards: When one of a pair of twins is drafted, what will you do with the other? A. W. McNulty, the other twin, is still on the job, ear to the ground for any orders, military, or paper and twine.

### Philadelphia Trade News

[FROM OUR REGULAR CORRESPONDENT.]

PHILADELPHIA, October 1, 1917.—The Philadelphia Card and Paper Company, formerly located at 30 North Fourth Street, has removed to larger quarters at 25 North Sixth Street. At this address the company has the entire four floors and basement of the building. The firm specializes in printers' supplies.

Francis A. O'Neill, president of the Philadelphia Paper Trade Association, has announced that a special meeting of the association is to be called within the next few weeks to work out plans for continuing the campaign of education started last spring.

William Crothers, formerly in charge of the specialty department of Charles F. Hubbs & Co., New York, has entered on his new duties as assistant salesmanager for Auer & Twitchell. J. F. Auer, of this firm, left this week for a ten days' trip to Quebec and Detroit.

Reigel & Co.'s new building at Sixth and Filbert Streets is to be equipped with something new in the line of paper racks. They are to be made of specially constructed steel pipe, instead of wood. The building is concrete, of fireproof construction, and will be one of the most up-to-date of its kind in the country when completed.

### Paper Can Factory for Sacramento


[FROM OUR REGULAR CORRESPONDENT.]

SACRAMENTO, September 28, 1917.—The Universal Paper Can Syndicate Trustees of San Francisco expects soon to establish a manufacturing plant in the bay district for the purpose of making paper cans and bottles.

Authority has been secured from Corporation Commissioner H. L. Carnahan to sell 50,000 unit interests at 50 cents each for the purpose of purchasing machinery for its proposed plant. It also has secured permission to issue to R. V. Daniels a like number of shares in exchange for a contract licensing the company to operate in eight western states.

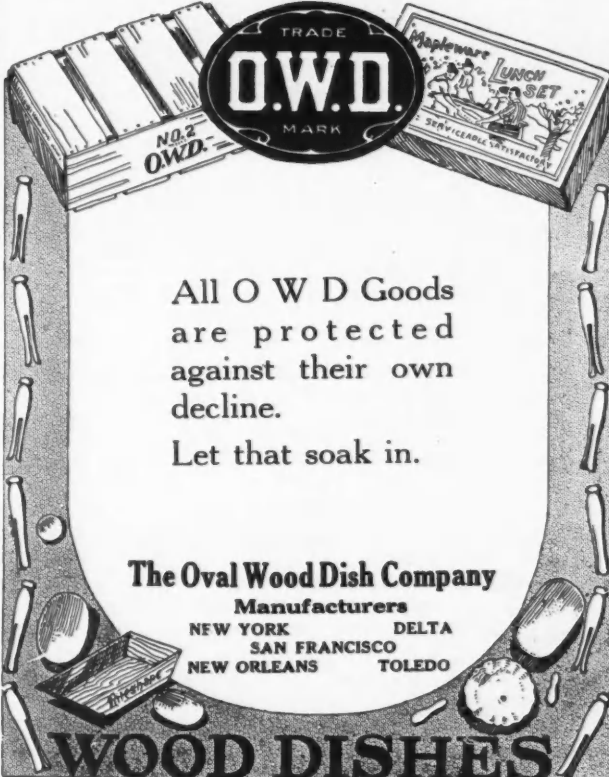
Subscriptions are to be taken upon the condition that the entire 50,000 interests be subscribed for on or before the 31st day of December, 1917. A commission not to exceed 10 per cent. is allowed for the sale.





**GRISSINGER**  
Patented  
**AUTOMATIC  
TUBE  
MACHINE**  
Wire Stitched Tube  
TOILET PAPER  
MACHINERY  
GRISSINGER MACHINE WORKS  
PHILADELPHIA, PA.

Patented



TRADE MARK  
**O.W.D.**  
NO. 2  
O.W.D.

Mapleware LUNCH SET  
SERV. 16 DISHES & 12 UTENSILS

All O W D Goods  
are protected  
against their own  
decline.  
Let that soak in.

**The Oval Wood Dish Company**  
Manufacturers  
NEW YORK DELTA  
SAN FRANCISCO  
NEW ORLEANS TOLEDO

**WOOD DISHES**



**The Mark of Excellence**

When you're selling Candy, Florists' or Bakers' Waxed Papers; Box Stays, gummed or plain; Gummed Label Stock; Glazed, Embossed or Printed Box Covering Papers; Litho Papers, or Cloth Lined Stock, be sure they are backed by the famous Nashua triangle trademark.

This trademark guarantees quality, service and absolute satisfaction to your customers.

Send for prices and information.

**Nashua Gummed & Coated Paper Co.**  
NASHUA, NEW HAMPSHIRE

**ALUM**  
FOR THE PAPER MAKER  
Manufactured by  
**The Jarecki Chemical Co.**  
QUALITY SERVICE  
Sole Selling Agents  
**ISAAC WINKLER & BRO.**  
CINCINNATI .. .. NEW YORK

**The Longest Runs**

are always made with the "Hamilton Felt"—absolutely the best results are obtained from its use. No wrinkling, no slack edges, "no blowing"—runs equally well on fast or slow machines. Send us a trial order now, with particulars as to stock used, quality of paper made and speed of machine.

**SHULER & BENNINGHOFEN**  
Hamilton, Ohio



For reliable running and average long life

**Lindsay Fourdrinier Wires**  
ARE UNSURPASSED

We make them for the largest and fastest machines. Cylinder Wires all sizes.

**The Lindsay Wire Weaving Co.**  
COLLINWOOD STA CLEVELAND, OHIO.

**BUSH, BEACH & GENT, Inc.**  
80 Maiden Lane, New York

**BLEACHING POWDER**  
35/37% guaranteed  
Prompt and Forward Shipment  
Sole Agents for  
**GREAT WESTERN ELECTRO-CHEMICAL COMPANY**

## COMMISSION WANTS REPORTS FROM THE BOOK PAPER MEN

Only Weekly Schedules Are Requested Now, but Later This Week It Is Expected That a Letter Will Be Sent Out Asking for Monthly Figures as Well, as Was Done in the Case of the News Print Manufacturers—Jobbers, It Is Reported, Will Next Be Asked to Furnish Reports, and Later on Newspaper Publishers Will Be Asked to Submit Figures to the Commission.

[FROM OUR REGULAR CORRESPONDENT.]

WASHINGTON, D. C., October 1, 1917.—Right in line with the announcement made in the PAPER TRADE JOURNAL last week, the Federal Trade Commission is today sending out blank schedules to book paper manufacturers all over the United States, asking them to furnish similar data to that now being furnished by the news print manufacturers.

The letters and schedules below, being sent to the book paper men, is only for the weekly report. It is understood that later this week a set of schedules for monthly figures will also be sent to the book paper men by the Commission, and that either this week or next schedules will be sent to jobbers, calling for information on both news print and book paper, and still later the newspaper publishers of the country will also be asked for similar information. When these schedules are all sent out, it will enable the experts of the Commission to keep a pretty good "line" on the paper industry of the country. Following is the letter sent to the book paper mills, and the weekly information asked for from them:

### Letter Sent to Book Paper Mills

In order that accurate information regarding conditions in the book paper industry may be available to manufacturers, dealers and consumers, the Commission will collect and compile statistics of production, consumption, shipments, stocks on hand, etc.

Manufacturers of book paper are requested to furnish a special report each week containing partial information and a special report each month containing more complete information. The weekly reports are for the operation of each mill making book paper and the monthly report for the total book paper operations of the company.

Forms for making the special weekly reports are enclosed herewith. Forms for making the special monthly report will be sent you in a few days.

The first weekly report must be mailed to the Commission on or before Tuesday, October 9, 1917, for the week immediately preceding, and the first monthly report on or before November 5, 1917, for the month of October.

The Commission will welcome any suggestions for improving the schedules before they are put in final form and printed.

### Special Weekly Book Paper Report for Manufacturers

#### Directions and Penalties:

The information required by this report is ordered to be furnished pursuant to the authority of the Commission under subdivisions of Section 6 of "An Act to Create a Federal Trade Commission, to define its powers and duties, and for other purposes."

This report must be mailed to the Federal Trade Commission, Washington, D. C., on or before Tuesday of each week for the business of the week immediately preceding. A week is defined for the purposes of this report as being from Sunday noon to the following Sunday noon.

Failure to mail this report within the time required will involve

the forfeiture of the sum of \$100 for each and every day of the continuance of such failure. (Section 10, Federal Trade Commission Act.)

Any person who shall wilfully make, or cause to be made, any false entry or statement of fact in this report shall be subject to a fine of not less than \$1,000, nor more than \$5,000, or to imprisonment for a term or not more than three years, or to both such fine and imprisonment. (Section 10, Federal Trade Commission Act.)

#### Company Reporting:

Name of firm or corporation.....  
Report of.....Mill located at.....

(A separate report is required for each mill.)

Report for the week ending Sunday noon..... 1917

(Signed)

(Position)

#### Book Paper Report.

For the purpose of this report "book paper" includes all grades of printing paper except news print such as M.F., S. & S.C., Coated, Cover, Lithograph, etc.

1. Machines run on book paper during week:  
Machine No. .... 1 2 3 4 5 6 7 8 9  
24 Hour Capacity (tons).....  
Hours run on Book Paper.....  
Hours run on Other Grades\*.....

\*State what grades in answering Question 2.

2. If week's run of any machine on book paper was more or less than 144 hours, state why for each machine.

Machine No. ....  
" " .....  
" " .....  
" " .....  
" " .....

3. Total book paper on hand at mill at beginning of week ..... tons.

4. Total book paper made by mill during week..... tons.

5. Total book paper shipped and invoiced by mill during week: (Include paper bill but not yet in transit)..... tons.

6. Total book paper on hand at mill at end of week: (Include any paper in transit but not yet billed to customer) .... tons.

7. Total book paper on hand at all other points at end of week ..... tons.

(To be reported for whole company.)

### Thomas Smiley Made a Captain

[FROM OUR REGULAR CORRESPONDENT.]

WATERTOWN, N. Y., October 1, 1917.—Thomas G. Smiley, manager of the New York Pulp & Paper Traffic Association, with offices in the Y. M. C. A. building, has received a commission as Captain in the Ordnance Department and left for Washington to assume duty Wednesday.

In the Spanish-American War he was in the service in charge of transportation facilities, and this experience has qualified him for the commission tendered. He will take charge of the field service of the supply division of the ordnance department, and will have direct supervision of the sending of men to France. Whether or not he will be sent across the Atlantic is not known.

J. D. O'Brien, Mr. Smiley's assistant, will take charge of the local office during his absence on duty.

Every paper manufacturer and paper seller should have a copy of the "History of Paper Manufacturing in the U. S. A.," by L. H. Weeks. Price \$3.00 postpaid. Order from this office.

New Edition Now In Press

# Lockwood's Directory

## of the Paper, Stationery and Allied Trades

1918—43d Annual Edition—1918

=====  
 The Standard Book  
 of reference of the  
 Paper and Allied  
 Trades

=====  
 Thoroughly revised  
 and brought up to  
 date

### TABLE OF CONTENTS

ALPHABETICAL LIST OF ADVERTISERS.  
 CITY ADDRESSES OF MILLS AND MILL SUPPLY HOUSES.  
 CLASSIFIED LIST OF ADVERTISERS.  
 CLASSIFIED LIST OF PAPER MILL PRODUCTS UNITED STATES.  
 CLASSIFIED LIST OF PAPER MILL PRODUCTS CANADA.  
 CLASSIFIED LIST OF PULP MILL PRODUCTS UNITED STATES.  
 CLASSIFIED LIST OF PULP MILL PRODUCTS CANADA.  
 COATED PAPER MANUFACTURERS.  
 ENVELOPE MANUFACTURERS.  
 GLAZED AND COATED PAPER MANUFACTURERS.  
 IDLE MILLS.  
 INDEX TO MILLS.  
 PAD MANUFACTURERS.  
 PAPER DEALERS, UNITED STATES.  
 PAPER DEALERS, CANADA.  
 PAPER STOCK AND RAG DEALERS.  
 PAPER BAG MANUFACTURERS.  
 PAPER BOX MANUFACTURERS.  
 PAPER AND PULP MILLS IN UNITED STATES.  
 PAPER AND PULP MILLS IN CANADA.  
 PAPER MILLS IN SOUTH AMERICA.  
 PAPER SPECIALTIES.  
 PAPER MANUFACTURERS.  
 PREFACE.  
 ROOFING PAPER MANUFACTURERS.  
 STATIONERS IN UNITED STATES.  
 STATIONERS IN CANADA.  
 STATIONERS IN CUBA.  
 STATIONERS IN NEWFOUNDLAND.  
 STATISTICAL INFORMATION.  
 STATISTICAL TABLE OF MILLS.  
 TABLET MANUFACTURERS.  
 TAG MANUFACTURERS.  
 TOILET PAPER MANUFACTURERS.  
 TRADE ASSOCIATIONS.  
 TRADE CUSTOMS.  
 TWINE MANUFACTURERS IN UNITED STATES AND CANADA.  
 VEGETABLE PARCHMENT PAPER MANUFACTURERS.  
 WALL PAPER PRINTERS.  
 WATERMARKS AND BRANDS.  
 WAXED PAPER MANUFACTURERS.

Largest Book and Largest Edition Ever Published

Price \$5.00 Express Prepaid

Lockwood Trade Journal Company, Inc.

10 East 39th Street, New York

## New York Jottings

Orlando A. Miller was a recent trade visitor. He stayed at the Waldorf-Astoria while in town.

John O'Connell, superintendent of the King Paper Company of Kalamazoo, was a trade visitor in town lately.

G. S. Davis, treasurer of the King Paper Company, of Kalamazoo, Mich., was among the trade visitors recently.

The Bermingham & Prosser Co. announces the removal of its offices to the Astor Trust Building, 501 Fifth avenue.

Among the paper men from the other side who have been visiting local circles is George Pauline, of Manchester, England. Mr. Pauline dropped into the PAPER TRADE JOURNAL office several days ago to pay his respects.

A. G. McIntyre, of the Committee on Paper of the American Newspaper Publishers' Association, is expected back shortly from a combined vacation and pleasure trip to the Harmsworth Mill at Grand Falls, Newfoundland.

It has been definitely established that the trial of the government's case against the indicted news print manufacturers will not be held until the early part of November. The suit will be tried in the Federal Building in this city.

M. L. Freeman, secretary of the Pulp Manufacturers' Association, is now back at his desk after enjoying a brief vacation. He feels so well that he resents the idea that people have thought him ill. "Never felt better in my life," cheerfully states Mr. Freeman.

A. G. Campion, of the Belgo-Canadian Paper Company, will shortly become the Montreal representative of the firm of Dillon & Barnes, of 52 Vanderbilt avenue. Mr. Campion's contract with the Belgo Canadian company expires at this time. He is well known in the trade, both locally and in Canada.

Walter Hicks, son of Daniel M. Hicks, dealer in paper manufacturers' supplies at 140 Nassau street, is prophesying better business this fall as regards the rag, bagging and old paper side of the paper situation. "It can't help but come," says Walter. "You see it's this way —" and then you have the whole story.

Those who went from New York to the Philadelphia golf tournament still speak with appreciation of the way the Philadelphians received them. "They did more than their share," said one local dealer. Some of the New Yorkers captured prizes in the tournament. Among these was Paul E. Vernon, of Paul E. Vernon, general paper dealers at 22 Reade street.

A. D. Naylor, representing the American Paper & Pulp Association, recently attended a meeting called by C. A. Richards, the director of the bureau of licenses at Washington in the assembly room of the Merchants' Association. At the meeting, which was held for the benefit of importers, Mr. Richards explained in full the requirements of the Exports Administrative Board in connection with the applications for, and the issuing of, export permits of paper and all other commodities.

## Charles Nelson Goes with Kimberly Clark Co.

[FROM OUR REGULAR CORRESPONDENT.]

HOLYOKE, Mass., October 1, 1917.—The ranks of Holyoke's veteran paper mill men are being rapidly depleted these days. Last week Charles N. Nelson announced his resignation from the superintendency of the Beebe and Holbrook Company division of the American Writing Paper Company. Mr. Nelson has been connected with the local paper industry for many years, coming here from Leon, Wis., 30 years ago. He returns now to his home state to take the more lucrative position of superintendent of one of the Kimberly-Clark Company's finest mills. Mr. Nelson was only a youngster when he came to Holyoke and went to work in a paper mill to finish his paper-making education. He gradually rose from the ranks until he was made assistant superintendent. At the resignation of his father-in-law, John Stalker, he was promoted to fill the vacancy as superintendent of the mills of the Beebe-Holbrook company division.

Harry Williams, up to about a year ago, in charge of the Parsons Paper Company division of the American Writing Paper Company, and for many years prior to that connected with the American Writing Paper Company, has been named his successor.

Another important change in the personnel of the American Writing Paper Company took place today. Alfred Leeds, of Springfield, for many years connected in an official capacity with the American Writing Paper Company, and widely known in the paper trade throughout the country, announced his resignation, to become effective today. Mr. Leeds in departing from the American Writing Paper Company goes to the Worthy Paper Company Association where he has associated himself with that concern as treasurer and manager.

Edgar S. Bliss, president of the Worthy Paper Company Association, will retire from the management of that concern, but will retain the presidency.

As an official, Mr. Leeds is one of the oldest members of the American Writing Paper Company. He became connected with the American Writing Paper Company when the company was organized in July, 1899.

For the past year and a half he has been vice-president and manager of sales.

## Canadian News Print Inquiry Resumed

[FROM OUR REGULAR CORRESPONDENT.]

OTTAWA, Ont., October 2, 1917.—The session of the news print inquiry which Commissioner R. A. Pringle, K. C., will open at the city hall here to-day promises to be the most interesting of the lot.

It is most likely to produce a fight between the manufacturers and their statement of costs compiled by their own auditors and the government investigators and the costs which they have been gathering in the past two months. The grouping system of obtaining costs by finding an average from the figures obtained from low-cost mills which it is understood has been adopted by the government accounts has aroused the ire of the manufacturers who consider it manifestly unfair that the large mills with high costs should be so discriminated against.

It is expected that the government commission will try to clean things up at this session and get the news print inquiry completed so that a report may be made to the government. This desire for haste is accentuated by the impending general elections in the Dominion.

The Graesonia Paper Mills, Inc., with offices and factory at Frankfort, N. Y., has filed a petition in bankruptcy in Federal Court, showing total liabilities of \$22,711.27 and assets of \$1,775.11.





CYLINDER

**SPECIFY  
"BIGGS"**

ROTARIES

IN "YOUR" NEXT  
INSTALLATION!

*There's a Reason*

Steel pressure and  
storage tanks for  
every purpose

WRITE FOR PRICES



GLOBE

THE BIGGS BOILER WORKS COMPANY, AKRON, OHIO, U. S. A.

## THE C. L. LABOITEAUX COMPANY

We call the attention of the Jobbing Trade to our unequalled facilities for prompt shipment of

Mill Blanks, Bogus Bristols, Marble Grained Jute Boards, Clay Coated Box Boards, Binders' Board, Paper Box Board, Pasted Boards, and Paper Board Specialties

CINCINNATI

CHICAGO

NEW YORK

CLEVELAND

Write for our new Blue Book, just issued, containing valuable information in regard to Box Boards, Paper and Specialties.



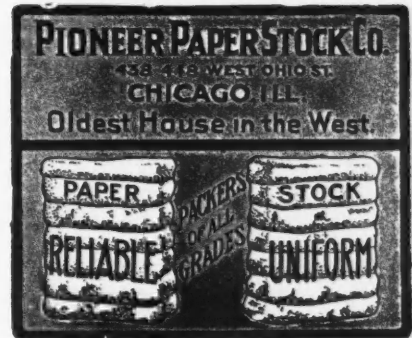
### Do You Want Help?

Or have you some Machinery you would like to dispose of?

Try the

JOURNAL'S

"Want Pages"



## Head Gate Hoists

ALL TYPES

**Dayton Beater & Hoist Co.**  
Dayton, Ohio

IMPORTERS OF  
Chemical **WOOD PULP** Mechanical  
Importers and Exporters of  
All Kinds of

## PAPER

**NEW YORK OVERSEA CO., Inc.**

Main Office: Christiania

17 BATTERY PLACE

NEW YORK

Branch Offices:

Stockholm  
Genoa  
Las Palmas

Tenerife  
Maranham  
Rio de Janeiro

Buenos Aires  
Valparaiso  
Hong-Kong

Tokio  
Calcutta  
Melbourne

## PRACTICAL QUESTIONS AND ANSWERS FOR MILL MEN

A Department for the Solution of the Troubles, Large and Small, That Are Encountered by the Workers in the Mills in the Course of Their Duties in Making Paper and Pulp — All Mill Men Are Invited to Send in Both Questions and Answers—A Free Exchange of Ideas Is Desired—By Active Co-operation This Department Can Be Made a General Clearing House for Information in Regard to Practical Paper Making.

### Calendering Sized vs. Sized

QUESTION No. 2413.—What is your experience in the super calendering of Book Paper unsized as against sized? In other words, does sizing help in supering and in retaining the finish, or is it of non effect? An answer from the P. T. G. would greatly oblige.

ANSWER 2413.—The writer has found that a sized sheet of book paper will hold a super finish much better than an unsized sheet of the same quality, and, although there is much opportunity for experimenting along this line in regard to finishes, etc., I do not think that an unsized sheet can be made to hold a finish as good as the sized paper.

### Why News Print Is Dirty

QUESTION No. 2414.—I am inclosing a sample sheet of news print paper that is extremely dirty and wish to know the cause of it and how it could be eliminated. Also would like to inquire through your questions and answers department why it is that two sheets of news print paper weighing exactly the same with the same surface, yet one will be thicker than the other.

ANSWER No. 2414.—Your sample sheet of news acquired its "dirt" directly from a poor lot of pulp wood which was converted into ground wood pulp, or possibly it might be due to poor grinding of the wood. In either case the remedy is cleaner pulp wood and better grinding facilities. The dirt might be indirectly caused by defective screens. The screen is a machine through which the pulp passes and its function is to remove the greater part of foreign substances. In answering your second question. The amounts of the several raw materials which go into the manufacture of paper will affect its bulk much more than its surface and weight. For instance a paper containing 40 per cent. sulphite and 50 per cent. ground wood and 10 per cent. mineral filler would bulk less than a paper containing 20 per cent. sulphite, 80 per cent. ground wood and no mineral loading, although they are the same weight and apparently the same surface. This fact is due to the physical build of the fibres in question, and also the added weight given to the paper by the mineral loading, which at the same time does not appreciably affect its bulk.

### Tests for Pulp

QUESTION No. 2415.—Will you kindly advise a test for an all Sulphate Kraft and if not asking too much we would also like a formula for a Sulphite test and a ground wood test.

ANSWER No. 2415.—So far as the writer knows, there isn't any practical test to determine the presence of sulphate fibres. There are one or two doubtful tests which may or may not identify unbleached sulphate fibres, but they are by no means practical. The most commonly used stain for identifying fibres microscopically is the Zinc Chloride-iodine solution, but even when using the stain one must have an intimate knowledge of the characteristics of the different fibres, as there is very little difference in the shade of blue which sulphite, sulphate, soda and several other fibres are colored by the stain. Ground wood is very readily identified as it takes on a bright yellow color from this stain and its characteristics show up very prominently.

### Maintaining Maximum Pressure

QUESTION No. 2416.—Will you please tell me through the "Questions and Answers" column why it is that unless the press and calender levers are kept nearly horizontal the maximum pressure cannot be maintained. On the calenders when changing from heavy to light sheets the nuts on the rods all have to be tightened up so as to make the levers hang straight.

ANSWER No. 2416.—The reason that the pressure is reduced with levers that are not horizontal is not because the leverage has been decreased for you still have the same weight applied and the same lengths between all fulcrums and weights. On the calenders you will notice that when the levers do not hang horizontal the set screw in the top lever does not bear down on the pin in a perfectly perpendicular line but at an angle of a greater or lesser degree according to the way the lever hangs. When this is so the leverage is not being exerted solely on the calender rolls but is being taken up by the friction of the pin against the calender frame for that is what the slanted set screws causes it to do.

Press roll and calender levers are very often neglected in many paper mills. It is well always to keep them slightly above the horizontal line.

### Cleanliness of Wood Pulp

QUESTION No. 2417.—I am very interested to know what in your opinion is the reason that wood pulp is received at the paper mills containing much more dirt and cinders in the winter months than during the summer. This does not always hold true but occasionally during the winter exceptionally dirty lots are received.

ANSWER No. 2417.—The wood which is piled in fields for storage is bound to get dirty and if in close proximity to a railroad (as is usually the case) will in time collect a large amount of cinders. When mills are using very dirty wood it is necessary to clean this off either with brooms, compressed air or other mechanical means. This of course is an exceedingly difficult thing to do in the winter time when the wood is snow covered and often ice caked, so new or clean wood is generally used, but when it is impossible to get clean wood dirty pulp is very apt to be the result. This seems to be the most plausible theory for dirty pulp in the winter time, but, of course, it is apt to run dirty at almost any time, no matter how much care is taken.

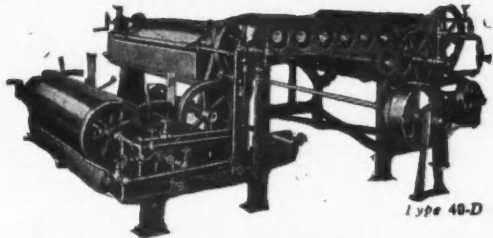
### Work Started on Edgewater Plant

[FROM OUR REGULAR CORRESPONDENT.]

MENASHA, Wis., October 2, 1917.—Work on the new plant of the Edgewater Paper Company was started last week and will be rushed to completion. The plan is to have the building under roof by the first of the year. The basement excavation work is already well advanced. The structure will be of brick and stone and will be 48x150 feet in size. It will be one story high, but with a foundation capable of supporting superstructure for more stories if it is found desirable or necessary later on to build more. The Edgewater Paper Company was organized several months ago.

# Wax Paper Coating Machines

Carbon Paper, Gumming and Gluing Machines



Will make all kinds of waxed and waterproof paper with finest finish and latest speed.

MAYER COATING MACHINES CO., Rochester N. Y.

# SULPHITE

Bleached :: Unbleached

# PARSONS Pulp & Lumber Co.

EDWIN J. DEWEY, Manager, Pulp Sales  
OFFICE, 1807-10 Finance Bldg., PHILADELPHIA  
MILL—PARSONS, W. VA.



# WALL BOARD CUTTER

Cuts to length all kinds of heavy Sheet Stock, Fiber and Wall Board. Gives Uniform Sheet Lengths, Clean Cut Edges, No Buckling of Web.

Write today for complete information

M. D. KNOWLTON CO.  
22 Elizabeth St., Rochester, N. Y., U. S. A.

Exclusively—  
Cutting Machines

# OSWEGO

OSWEGO MACHINE WORKS  
OSWEGO, N. Y. Write

# SUPERIOR CHEMICAL CO.

JOLIET, ILLINOIS

Manufacturers

PAPER MAKERS' and FILTER

# ALUM

# PULP MILL MACHINERY

3 and 4 POCKET GRINDERS	SCREENS
WET MACHINES	DECKERS
CENTRIFUGAL PUMPS	BARKERS
CHIPPERS	

Mr. H. E. Tidmarsh, founder of the Friction Pulley & Machine Works, is now connected with us, and we can furnish repair parts for all machines made by them before they discontinued business.

UNION IRON WORKS  
BANGOR, MAINE

# Federal Paper Stock Co.

ST. LOUIS, MO.

Packers of All Grades of

*Waste Paper and New  
Rag Cuttings*

# Missisquoi Pulp & Paper Co.

SHELDON SPRINGS, VT.

Manufacturers of

WHITE and COLORED BRISTOL  
MANILA TAG BOARD

and  
Specialties in Card Board

## CHAMPION COATED PAPER CO. GOES TO COURT OF APPEALS

Case Which the Supreme Court of the District of Columbia Refused to Hear Is Taken to Higher Court and Some Interesting Points Are Brought Out in the Appeal—Speculation Is Being Indulged In, It Is Stated, as to What Course the Joint Committee Will Take This Year Regarding the Annual Contracts for Paper Usually Let in February.

[FROM OUR REGULAR CORRESPONDENT.]

WASHINGTON, D. C., October 1, 1917.—What is undoubtedly one of the most interesting paper cases which has ever come up here, is the case of the Champion Coated Paper Company, of Hamilton, Ohio, against the Joint Committee on Printing of Congress. Frank E. Elder, the local attorney for the paper concern, has just filed his brief with the Court of Appeals of the District of Columbia, appealing to that body because the Supreme Court of the District of Columbia refused to entertain the case at all.

If the Champion Company should win a favorable decision when the case comes up this week in the Court of Appeals, the Supreme Court of the District will be ordered to hear the case, and the judge will then be called upon to call the Senators and Representatives, members of the Committee into Court. It will then be up to the two Houses of Congress, to decide whether or not they will allow this. Some eight years ago when a somewhat similar case was in court here, of the Valley Paper Company, the Senate would not allow its members to be hauled into court while the House did allow them to go to court.

Some mighty interesting points are brought out by Mr. Elder in his brief for the Champion Company dealing with awards of contract. He says, in part:

"The awarding of a contract for paper for the Government of the United States and the enacting of the circumstances antecedent to such an award are as clearly executive functions as any performed by a Cabinet officer or any of his subordinates. Who could be found to seriously claim that the advertising for proposals, the passing upon the formality of the proposals and the proposal bond and the awarding of a contract to one of the bidders is an administrative and executive function when performed by an officer in one of the executive departments, but a legislative function when performed by a committee composed of Senators and Members. This brings us to the irresistible conclusion that as the action of the committee respecting the awarding of the contract for paper for the public printing and binding for the Government is an administrative or executive act, in so far as the act is ministerial it is subject to review by mandamus. Here the question arises as to whether the discretion lodged in the committee to determine who was the lowest and best bidder in the case at bar, had been exercised. The fact that the committee awarded contracts for several items to the plaintiff at the opening of bids on January 20, seems to preclude all controversy as to whether or not the Champion Coated Paper Company was a reliable bidder."

### Speculations Regarding Paper Bids

A rather interesting question has been raised by some of the paper men who have been bidding on Government work and especially on the Government Printing Office work. This is as to whether or not the Joint Congressional Committee on Printing, in view of the fact that they are now purchasing such large quantities of paper on the open market, will go right on doing that or will ask for bids for the annual supply as usual.

There is no question, your correspondent is reliably informed, but what the Committee will ask for bids this year as usual. Of course this does not mean that they will make any awards at all. They are COMPELLED, however, by law to ask for the bids but they are NOT compelled to accept any of the bids. Members of the Committee are of the belief that they have saved thousands of dollars for the Government by not awarding many contracts this year, and this may influence the Committee again this coming year to reject many or all of the bids and buy on the open market as they are doing at present.

### First News Print Reports Almost All In

The first weekly reports from news print mills which have been requested by the Federal Trade Commission are arriving rapidly and are reported to be almost all in.

Several of the news print manufacturers, in accordance with the desire of officials of the Commission, have made some suggestions as to changes in the schedules sent out, and already printed in the PAPER TRADE JOURNAL in full. It is understood that some of the suggestions are considered very valuable and that doubtless changes will be made in the schedules in accordance therewith. Officials of the Commission who are in charge of this work point out that they wish to make the reports as workable as possible, that they understand that it is more or less of a hardship and that therefore they are going to do everything in their power to help the mills simplify matters in connection with compiling these weekly and monthly reports.

### Paper Mill Employes Show Increase

The Bureau of Statistics, Department of Labor, has just completed its work on the employment in paper mills for the month of July.

Requests for reports were sent to 82 paper mills by experts of the bureau asking for information as to the comparison of employment in identical establishments in July of this year and last year. Of this number 43 reported both years. These reports show that in July of last year there were 22,135 people employed in these 43 mills as against 22,953 this year or an increase of 3.7 per cent. The payroll for July, 1916, in these 43 mills amounted to \$300,491 last year and \$358,209 in July of this year or an increase of 19.2 per cent.

The same number of mills also reported to the bureau experts the employment in these establishments for June and July of this year. In the 43 mills there were 23,664 people employed in June as compared with 22,953 in July, or an increase of 3.0 per cent. The payroll in June in these mills was \$369,436, increasing to \$358,209 in July or an increase of 3.0 per cent.

Taking up the changes in wage scale in paper mills this month's report says:

"Of the 43 establishments in the paper-making industry, 3 show changes in the wage rates. Two reported an increase of 10 per cent. for all employes, while one reported a 'bonus' of 25 per cent. for the entire force for the period ending July 6."

For the State of New York only the report says:

"The paper group reported almost no change in July as compared with June. As compared with July of last year, the group employed 1 per cent. fewer workers and paid out 6 per cent. more wages."

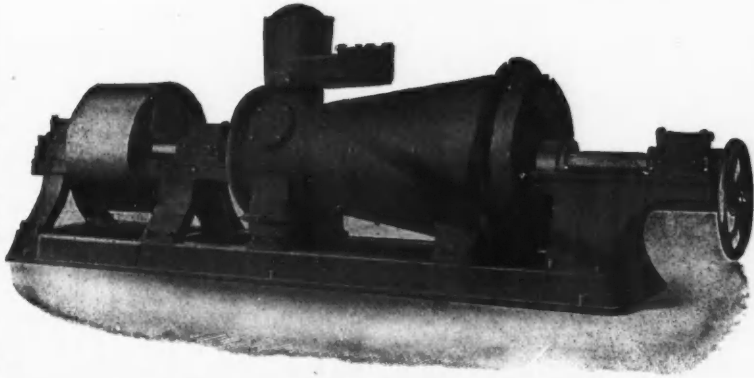
### News Print Trial November 12

[BY TELEGRAPH TO THE PAPER TRADE JOURNAL.]

WASHINGTON, D. C., October 3, 1917.—It is understood officially that the Department of Justice will not oppose the motion of the news print manufacturers to have their trial in New York City postponed from October 8 until November 12. Officials of the department say that the court has definitely decided on November 12 for the date to begin the trial.



# THE DILLON JORDAN



Our latest Improved Machine, three sizes; belt or direct connected motor driven. All Bearings self-oiling, adjustable and water-cooled. Outside stand fitted with gauge to keep the plug central with the shell.

*For full particulars apply to*

**DILLON MACHINE CO., Inc.**  
 Builders of Paper Mill Machinery  
 Lawrence, Mass.

17 YEARS' EXPERIENCE IS BUILT INTO OUR  
**SLITTING AND REWINDING  
 MACHINES**

CAMERON MACHINE CO., BROOKLYN, N. Y.

## HUNGERFORD FILTERS

The Filters that never require a renewal of the Filter Bed  
**HUNGERFORD & TERRY, INC.**  
 Engineers and Manufacturers of Water Filters  
 Pennsylvania Building PHILADELPHIA, PA.



**A Small Iron Speck  
 Makes a Large Rust Spot**  
 Use our Iron Extractor and take out the iron speck.

*Sent on approval*

**THE ROLAND T.  
 OAKES CO.**  
 ELECTRICAL CONTRACTORS AND  
 ENGINEERS  
 HOLYOKE, MASS.

*J. Marx & Co., London Agents for England and Europe.*

## EDWARD J. SMITH

75 PIKE SLIP,  
 NEW YORK

Fills all orders promptly

FOR

**Old Rags & Waste Paper**

Wire, Write or Phone

## NEW ENGLAND TANK & TOWER CO.



**WOOD TANKS  
 FOR ALL  
 PURPOSES**

Everett Station, Boston, Mass.

## VERA ROSIN SIZE

Guaranteed to Be Absolutely Clean and Pure  
**SHIPPED IN BARRELS and TANK CARS**  
**OUR VERA PAPER SIZE**

is the purest, strongest and highest free rosin size made. We can furnish you with an ideal rosin size and patented apparatus to use same.

**OUR VERA MILL SIZE**

is the best soluble paper makers' rosin size made. Ready to use in cold or warm water in the ordinary way without apparatus. Gives better satisfaction and is more economical than mill made size.

**OUR VERA BEATER SIZE**

Especially prepared to be dumped direct from the barrels into the Beater, without first dissolving it.

**VERA CHEMICAL COMPANY**  
 North Milwaukee, Wis. Stoneham, Mass.  
 Burlington, Ont., Canada

## PAPER MILLS IN CANADA LESS RUSHED WITH ORDERS

Extent to Which Demand Has Eased Up Is Evidenced by the Fact That Mills Which a Year Ago Took Two Months to Make Deliveries Are Now Filling Orders in a Week or Ten Days—Counsel Who Recently Retired from News Print Investigation Is Standing by Resolution Not to Take Part in the Inquiry Reopened This Week Before Commissioner Pringle.

[FROM OUR REGULAR CORRESPONDENT.]

TORONTO, October 1, 1917.—The extent to which the situation has eased up in Canada is evident from the speed with which mills can now make deliveries. One large consumer of book paper gave it as his experience at the present time that orders can be filled in a week or ten days which used to take two months a year ago at this time. He referred particularly to a monthly supply of paper, the manufacturer of which was unable to fill in full until quite recently. Now, not only is the required quantity being shipped regularly, but an extra amount is coming along as well. This consumer also states that salesmen for mills and wholesale houses, who had not been near him for over a year, are now canvassing him frequently for orders.

### Publishers and the News Print Inquiry

The Canadian Press Association, whose counsel retired from the paper inquiry when the Commissioner refused to go into the organization of the Export Paper Company, are still standing by their resolution not to take any further part in the investigation. They will not be represented at the resumption of the inquiry on Tuesday. A publisher, on being advised that it was the opinion of the manufacturers that the Commissioner would have to advise a higher price for paper than that at present in force, said that he was convinced there would not be any such recommendation. The exceptional profits of the big news print manufacturing firms like Laurentide, Riordon and Spanish River during the past year, was to his mind sufficient evidence that no higher price was justifiable. Asked as to whether he thought that the inquiry would be dragged over until after the election, he replied in the negative, saying that he was convinced that Commissioner Pringle would finish up his work promptly; that it would be in favor of the publishers and that the 2½ cent rate, or better, would be enforced from now on.

### The Current Situation

There is a fair volume of business being transacted at present, though the fact that there are very heavy stocks on hand in warehouses and storage buildings, is not conducive to much buying. Prices on several lines of bond papers have been lowered within the past week or two, mainly, it is said, to meet American competition. Book papers, however, are still being quoted at former prices and manufacturers show no inclination to cut. There have been some reductions lately in wrappings. Other lines are about stationary.

### Governor-General Visits Abitibi

The Duke of Devonshire, Canada's new governor-general, has been paying a visit to New Ontario and last week his itinerary brought him into the town of Iroquois Falls, the headquarters of the Abitibi Power & Paper Company and the site of its big paper mill. The town was en fete for the occasion and after the civic reception had been given, the Duke, Duchess and party were shown over the paper mill by R. A. McInnis, the manager, and entertained at tea at the director's house by Mrs. McInnis. F. H. Anson, Jr., assistant manager; H. L. Sanborn, electrical engineer; J. J. Ross, general superintendent, and J. J. Leland, Jr.,

engineer, were present and assisted in the entertainment of the vice-regal party.

### Movements Among the Paper Men

A. G. Pounsford, general manager of the Port Arthur Pulp & Paper Co., returned to Port Arthur this week, after spending several days in Toronto, arranging for certain equipment for the new mill.

Edward McWhirter, superintendent of the Georgetown mill of the Provincial Paper Mills, Limited, has gone to Regina for a holiday.

James Home, president of the Beveridge Paper Company, Limited, is at present absent on an extended trip to the Pacific Coast.

George Pauline, the well-known representative of several English paper houses, who has been visiting his son in Toronto, has gone to New York, whence he sails for home shortly.

Charles F. Mansell, sales manager of the Toronto Paper Company, Toronto, has been elected for the eleventh time Grand Treasurer of the Sovereign Grand Priory, Knights Templar, of Canada.

E. G. R. Clarke has resigned as Toronto representative of the National Paper Company and the office at 28 Temperance Street has been closed. Toronto business will in future be conducted from the Montreal office.

John Buss, son of C. F. Buss, superintendent of the Mille Roches mill of the Provincial Paper Mills Company, has returned to Queen's University after spending the summer in the engineer's office at the new plant of the Port Arthur Pulp & Paper Company.

### Business in New England Quiet

BOSTON, Mass., October 1, 1917.—Though there has been an improvement in general business and manufacturers generally are oversupplied with orders, neither the manufacturing nor jobbing branches of the paper industry have as yet felt the result of the improved conditions. Few paper mills in New England are operating anywhere near their normal capacity and jobbers are still looking forward to the prophesied fall rush of business.

The buyer is evidently playing a waiting game, hoping for a decline in prices, but there is little indication of his wishes being gratified as the market continues firm on all grades and a general advance likely to occur any moment.

One thing is certain, buyers are going to experience difficulty in obtaining goods, as the season advances, owing to the shipping problems, as the jobbers generally are not carrying much surplus stocks.

Paper stock dealers are finding it difficult to interest the mills in their offerings, yet prices have not been materially reduced on any grade.

### Welfare Work by Kimberly-Clark Co.

[FROM OUR REGULAR CORRESPONDENT.]

APPLETON, Wis., October 2, 1917.—Work is being rushed on the construction of a large number of homes for workingmen at the Niagara mill of the Kimberly-Clark Company. The company is spending nearly \$100,000 in homes and other improvements in its little northern village, which is rapidly reaching a stage of perfection exemplified only by Kimberly, another Kimberly-Clark Company village. About a dozen new homes are also being built at Kimberly by the K-C Company. In the two places the company now has about thirty-five homes under construction. A small hospital for its employees is also being built by the company at Niagara.

Lockwood's Directory will be out the latter part of this week. Order now from the Lockwood Trade Journal Company.

## BIG QUESTION IN CANADA IS WITH REGARD TO PRICES

Uncertainty as to This Important Matter Has Temporarily Suspended Many Schemes for Developing the Industry—Demand for Both Sulphite and Wood Pulp Is Improving—Current of Events Confirms the Judgment of the Laurentide Co. in Carrying Through Its Big Water Power Development at Grand Mere—Co-operative Buying for Paper Mills—Extensions to Plants.

[FROM OUR REGULAR CORRESPONDENT.]

MONTREAL, Que., October 1, 1917.—The big question in the industry here at the present time is—What are the prices going to be? The fact that there is a possibility of Government and private interests clashing over this question has given the whole industry a most uncertain outlook, and has temporarily suspended many schemes for developing the industry. The sooner this question is settled one way or the other, the better it will be for all concerned, but no decision is looked for in Canada, as a result of the investigation, for weeks yet. Meanwhile, the mills are making ready to cope with the full flood of business for fall and winter. The lavish manner in which advertising is now being distributed to the newspapers all over the continent is finding its reflection in a big increase in the demand for news print, and there is every indication that every mill in Canada will be taxed to its capacity to keep pace with the orders. Kraft paper mills, which have enjoyed a wonderful run almost from the outbreak of the war, have experienced a slackening off in orders during the past few weeks, but prices are being maintained, as the mill owners regard the present as only a temporary lull. The demand for sulphite pulp is looking up, and the same is true of mechanical pulp, although some of the mills are still manufacturing for stock.

### Increasing Demand for Power

The wisdom of the Laurentide Company, in carrying through its big scheme for water power development at Grand Mere, Quebec, is being emphasized every day, for the demand for power throughout the province is increasing every day. The Shawinigan Water & Power Company, which markets the power developed by the Laurentide Company, as well as the power developed in its own plant at Shawinigan Falls, is increasing its capital from \$15,000,000 to \$20,000,000, in order to develop further water power. During the present year, the company has made contracts for the supply of 24,000 horse power, in addition to the existing contracts. The many new industries at Shawinigan Falls are prospering beyond all calculation. In fact, J. E. Aldred, of New York, the president of the Shawinigan Water & Power Company, said in Montreal this week: "We have here in this province the greatest power situation in the world. We are using up power faster than in any zone similar to Shawinigan on the continent." Mr. Aldred added that instead of hawking the power around for sale, the demand was such that they had to hold the industries back until they were ready. As a result of this situation the resources of the Shawinigan system are being used up as fast as they can be developed. The Laurentide Company's output will be increased next year about 50 per cent. by the completion of the Government dam at the head of the St. Maurice river. That, however, is not the only dependence of the system for growth in the early future, as surveys have been started at the Gres Falls power site, purchased from the old Union Bag & Paper Company, with a view to development at an early date. As one example of the extensions that are constantly going forward, Mr. Aldred stated that an aerial span, 5,000 feet long, supported by towers 325 feet high, is now

being built across the St. Lawrence river at Three Rivers. This is one of the largest undertakings of the kind ever carried out in electrical transmission.

### Co-operative Buying for Paper Mills

An endeavor is being made here to form a mill supply buying organization to be supported by the pulp and paper mills of Canada. The idea is that only those mills who become shareholders in this organization will have the advantages of this co-operative buying. The mills of Canada, of course, buy large quantities of all kinds of supplies, most of it being obtained through merchants and jobbers. The idea is for an association of pulp and paper makers to buy direct through one organization, and thus save at least 20 per cent. that would otherwise be paid out in intermediate expenses and profits.

### Extensions to Plants

Among the announcements of the week are the following: The Belgo-Canadian Pulp & Paper Company, Shawinigan Falls, contemplate the erection of a new mill. La Cie de Pulpe de Chicoutimi will erect a \$100,000 stone and plastic brick machine shop; also a one-story grinder room, at a cost of \$5,200. The Whalen Pulp & Paper Company, which is establishing a large industrial plant on Vancouver Island, at the new town of Port Alice, near the head of the southern arm of Quatsino Sound, is starting shipbuilding, and will lay down two keels at a time until it has enough ships to handle its export trade.

### New Purchasing Agent

H. D. Bean, the new purchasing agent of the Abitibi Power & Paper Company, has had a long experience in the purchasing department of large corporations. He was with the Lanty Bros. & Co., boat manufacturers of Buffalo, N. Y., and later with the Minnesota and Ontario Power Company and associate interests at International Falls, Minnesota.

### High Wages for Cutting Pulp Wood in Maine

Higher wages are being offered woodsmen in eastern and northern Maine today than ever before, according to statements made by employers of labor. Experienced woodsmen are being paid as high as \$50 a month. The average pay is \$2 a day with board. Even at these figures men are difficult to get. There is work enough for everyone and there is no reason for anyone who is able bodied being without work this season.

Wages were high in the woods last season. Men were paid from \$35 to \$40 a month, which was then a top notch price. Usually woods pay has ranged from \$30 to \$35 a month. Cooks today are being paid \$3.40 a day; teamsters, \$2.25; and blacksmiths and filers about \$3.10. These figures are all for men with experience.

Many concerns who have formerly cut long lumber have abandoned that phase of the industry this season and are turning their attention to cutting four-foot pulpwood. They are being paid \$2.75 a cord for the green wood, which is from 50 cents to \$1 a cord over the usual price. Even with the high prevailing wage scale and the high prices which must be paid for provisions, there is an excellent profit if the operations are conducted in a business-like manner.

The spruce wood department of the Great Northern Paper Company is sending large numbers of men into the woods at present. Like all of the other operators, the company feels the cost of operations this season. It is necessary, however, to have the pulp wood for the big plant at Millinocket, and there will be no cutting down in the usual winter operations.

The high wages and comparative scarcity of men is attributed to the war. Many men who formerly went into the woods have taken positions in munitions plants at high wages or have entered factories in the cities to take the place of those who have been drafted for the new National Army.



# Want and For Sale Advertisements

Minimum rate for advertisements of 25 words or less, first insertion \$1.00.

**Situations Wanted**, 4 cents a word for first insertion and 2 cents a word for each subsequent insertion of same ad. No ad of less than 25 words taken.

**Help and Miscellaneous Wants**, and small **For Sale Ads**, 4 cents a word for each and every insertion. No ad of less than 25 words taken.

Answers can be forwarded care **Paper Trade Journal**, and will be promptly forwarded without extra charge. All should be sent to the New York office, 10 East 39th street. And all should be addressed as the advertisement directs in every case and not simply to the paper.

Cash must accompany order.

## HELP WANTED

**FOREMAN**—Binder board mill—experienced on calendars—also to act as foreman in small mill. Address Box 718, care **Paper Trade Journal**.

**POSITION OPEN FOR GOOD SOBER MACHINE TENDER AND BACK TENDER** in writing mill, located in good city in middle west. Address Box 719, care **Paper Trade Journal**.

**WANTED**—Three machine tenders, three back tenders, two beater engineers for new container board mill, good wages. Address Box 720, care **Paper Trade Journal**.

**WANTED**—Machine tender, must be experienced man, on three cylinder sheathing machine. Eight hour shifts. Highest wages. Address Box 721, care **Paper Trade Journal**.

**CHEMIST WANTED** who has had several years' practical experience in the manufacture of both soda and sulphate pulp and paper, and capable of taking technical control of their manufacture. Address Box 722, care **Paper Trade Journal**.

**WANTED**—First class man with complete wet mill experience. State age, experience, salary wanted. No attention to correspondence unless full particulars given in first letter. Address Box 723, care **Paper Trade Journal**.

**STENOGRAPHER, AMERICAN, FEMALE**, **WANTED** in New York City jobber's office, one acquainted with the business and with general office routine and telephone, accurate, quick, reliable. Only those looking for and who appreciate a permanent position need apply. State experience, where employed and salary expected, in confidence. Address Box 724, care **Paper Trade Journal**.

**WANTED**—First class machine room foreman, to take charge of paper machines, produce results, get good production and uniform standard quality on all sulphite papers. Address Box 725, care **Paper Trade Journal**.

## FOR SALE:—

One 106" B. & C. Duplex Cutter  
One 92" Dillon Single Cutter  
One 124" Black-Clawson Cutter

and one thousand other items for  
Paper Makers. Address:

**The Shurtle Brothers Machine Company**  
Middletown, Ohio.

## HELP WANTED

**WANTED AT ONCE**—Machine tender on high grade writings and wedding papers. Eight-hour shifts. Address Box 726, care **Paper Trade Journal**.

**WANTED**—Mechanical draftsman and engineer to assist chief mechanical engineer in a manufacturing plant. Young man with some experience preferred. Address Box 727, care **Paper Trade Journal**.

**WANTED**—In New England mill experienced cutter man capable to run duplex cutter with lay-boy attached. Must be able to furnish references. Address Box 733, care **Paper Trade Journal**.

**OLD ESTABLISHED** envelope and paper specialty house with office in Philadelphia wants salesman for local and suburban trade, limited amount of traveling. Address Box 706, care **Paper Trade Journal**.

**WANTED**—Two first class finishers in box board mill in Connecticut. Good town. Also one back tender. All must be A No. 1 men. Address Box 709, care **Paper Trade Journal**.

**WANTED**—Master mechanic for paper in the province of Quebec, must be capable man able to take complete charge of repair work, also steam boilers and engine. Only steady, sober men need apply. Apply with references to Box 710, care **Paper Trade Journal**.

**WANTED**—Superintendent for one Machine Board Mill near New York City. Apply stating experience. Address, Box 689, care **Paper Trade Journal**.

**WANTED FIRST CLASS PAPER MAKER** for binder board mill to take charge of entire plant. Call at Leonardis & Sons, 132 Nassau St., New York City.

**SUPERINTENDENT** for mailing case and tube factory in Ohio. Must be experienced and capable. State wages and experience. Address Box 708, care **Paper Trade Journal**.

**WANTED**—Research chemist familiar with ground wood pulp, sizing problems, etc. State experience references and salary expected. Address, Box 687, care **Paper Trade Journal**.

**WANTED**—First-class millwright, cylinder machine tender and beaterman; experienced on white, manila, colored and kraft tissues. Splendid opportunity for sober, industrious men. Give experience, references and wages expected. The Crystal Paper Co., Middletown, Ohio.

**WANTED**—Beaterman for mill in the East operating three eight hour shifts. \$3.00 per day. Address Box 696, care **Paper Trade Journal**.

**WANTED**—Machine tender and winder operator at once. Cylinder machine tissue. Address Box 674, care **Paper Trade Journal**.

**WANTED**—Man as bookkeeper with paper manufacturing company, operating two mill, must be over draft age. All applications treated strictly confidential. In reply state age, experience, salary expected and send copy of references. Address Box 675, care **Paper Trade Journal**.

**WANTED**—Two first class back tenders 60" cylinder machine. Good wages. Address New Castle Paper Mills, New Castle, Pa.

(Continued on page 85.)

## FOR SALE

**PAPER MACHINE**—1 90" Tissue Paper Machine, 10 dryers, 36" x 84".

**WET MACHINE**—2 48" Wet Machines for board.  
**PAPER CUTTERS**—1 112" Horne, 44", 41" Finlay, 44" Hamblet.

**RAG CUTTERS**—1 Taylor heavy type rag cutter, triplex bed knife.

**REAM CUTTERS**—1 48", 56" Acme, 48", 38" Cranston, 1 55" Seybold, 42" Sheridan.

**BOARD CALENDERS**—1 45" Farrel Board Calendar, 1 55" Downingtown.

**SUPER CALENDERS**—1 84" Stack Super Calendar.

**PRESSES**—6 Hydraulic Presses, 1 Boomer & Boschert Screw Press.

**JORDANS**—4 Jordan Refining Engines.

**FANS**—5 48" Perkins, 1 7" Horizontal.

**PUMPS**—1 9" x 12" Gould's Triplex. Several triplex, stuff and suction pumps.

**SLITTERS**—1 50" Black & Clawson, 1 74" slitter and winder, 1 110" Kidder.

2 Shredders.

2 Baker & Shevlin **WORM WASHERS**.

2 **KOLLERGANGS** with stones.

2 Centrifugal, two Wandel Screens.

1 76" x 14 1/2" Millsbaugh **SUCTION ROLL**.

1 Filter Press.

2 Trombley & Paul Sulphur Burners.

4 Water Wheels.

1 Lombard Governor.

12 Four Pocket Grinders.

1 Morris Safe, 72 x 60 x 36.

## FRANK H. DAVIS

175 Richdale Ave.,

Cambridge, B. Mass.

## FOR SALE

**BEATERS**—40x36" with iron tub, 17' long, two 65x54, one 42x42, one 48x48, 4 Clafins. New Umpherstons.

**CALENDERS**—Five roll 48", 9 roll 63", 7 and 9 roll 72", 3 roll 80", 9 roll 80", 9 roll 84", 7 roll 86". Four roll friction.

**COATER**—One 43" double Waldron coater.

**CUTTER**—100" Finlay, 72" Dillon, 68" Black & Clawson, 84" Moore & White, 48" Holyoke, One T & S rag cutter. Several ream cutters.

**CYLINDER MOULDS**—Two moulds 30" dia., 70" face.

**DRIVES**—One Moore & White No. 9 A.

**DRYERS**—26 new shells 36" dia., 124" face; 5 new shells 36" x 76"; also three 36 x 36 with frames, etc.; four 28 x 62" all ready to set up. Lot of odd dryers.

**DUSTERS**—One 6 bowl Holyoke revolving, also two railroad dusters.

**JORDANS**—Emerson & Horne type Jordans.

**MACHINES**—One 72", 2 cylinder machine.

**PUMPS**—One triplex self-contained suction pump, one 1,000 gal. Worthington, tank pump 10 x 16 x 16 Knowles, fifteen fan pumps. New stock pumps, single and duplex.

**ROTARIES**—About ten horizontal rotaries; three Globe rotaries.

**SCREEN**—One Wandel screen.

Also a lot of other machines which have not yet been listed. Write us for anything you want.

Lot of new split pulleys, sprocket chains, cone pulleys. Some new wooden pulleys with friction clutches.

**Mills Machine Company**  
LAWRENCE, MASS



(Continued from page 84.)

**SITUATIONS WANTED**

**CREDIT MAN** of mature judgment and experience desires connection with manufacturers. At present with large Eastern concern. Salary \$3,000 per annum. Address 736, care Paper Trade Journal.

**POSITION INSIDE DESIRED BY MAN THIRTY YEARS OLD.** Ten years' experience in wholesale fine paper business, including six years selling fine papers. Address Box 728, care Paper Trade Journal.

**EXPERIENCED SALESMAN SEEKS CONNECTION** with mills making M. F. Super, coated, writings, bonds, etc. Acquainted with jobbers, converters, lithographers, printers. Address Box 666, care Paper Trade Journal.

**SUPERINTENDENT WISHES TO MAKE CHANGE,** 38 years old, well up on bond, writings, envelope and kraft paper. Can get results. Address Box 729, care Paper Trade Journal.

**SITUATION WANTED AS ENVELOPE AND PAPER SALESMAN** in New England. Eight years' experience in envelope and paper business. Good habits, references. Address Box 730, care Paper Trade Journal.

**WOODPULP TRADE**—Experienced man, 30, speaking seven languages, with fine connections Scandinavia and England would like to establish branch office abroad for large concern. First class references. Address Box 731, care Paper Trade Journal.

**CYLINDER MACHINE TENDER WOULD LIKE TO MAKE A CHANGE.** Well up on all grades of box boards, news, chip, tag, bristols and containers of all grades made on cylinder machines. Sober, married and steady. Best references. Address Box 712, care Paper Trade Journal.

**SUPERINTENDENT WISHES TO MAKE A CHANGE.** Thoroughly practical on all grades of tissues, light weight manila, crepe towel and kraft with mechanical ability willing to work, strictly sober. Address Box 734, care Paper Trade Journal.

**WANTED POSITION AS SUPERINTENDENT** on board manilas, colored specialties, tube papers, wrapping, old paper stock or wood pulp. References given. Address Box 735, care Paper Trade Journal.

**SUPERINTENDENT NOW EMPLOYED WISHES TO MAKE CHANGE.** Fifteen years' experience on tissue wood and stock crepe specialties. Previous to this ran machine and beaters. Reference furnished. Address Box 699, care Paper Trade Journal.

**FIRST CLASS MAN DESIRES POSITION AS BOSS BEATERMAN.** All grades of stock, good on colors, repairs, etc. Make rapid changes. Address Box 700, care Paper Trade Journal.

**SITUATION WANTED AS SUPERINTENDENT,** well up on all grades of paper and stock and colors, light and heavy weight Bay Kraft, tissue, crepe towel. Good references. Address Box 705, care Paper Trade Journal.

**WANTED** by a thoroughly practical man, position as master mechanic. Wide experience in pulp and paper mills. Address Box 704, care Paper Trade Journal.

**SUPERINTENDENT** desires to make a change, experienced with fourdrinier flying dutchman and cylinder machines, up to date on colors, experienced on most all grades of paper, an all around practical man. Address Box 595, care Paper Trade Journal.

**SUPERINTENDENT** of experience with good mechanical ability, wants position in mill making Manilas, Tissues or News, Hangings or Specialty. Address Box 578, care Paper Trade Journal.

**MISCELLANEOUS**

**FOR SALE**—Thirteen Moore & White Farnham cylinder drives—also one Farnham patented bucket cylinder drive—in first class condition and as good as new. Address Box 692, care Paper Trade Journal.

**MISCELLANEOUS**

**WANTED**—Ten (10) second hand dryers—64" long, 48" diameter, with frames and gears complete. Address Box 732, care Paper Trade Journal.

**WANTED**—Second-hand steel chimney stack. Must be in first class condition. Approximately 48" diameter, no less, and about 60 feet high. Address J. B., P. O. Box 1784, New York.

**FOR SALE**—Second-hand Kidder 40" model S. L., and 60" Model S. H. slitters and rewinders, also model S. T. M. mill slitters, thoroughly overhauled and in A1 condition. Reasonable prices. Address Gibbs-Brower Co., 261 Broadway, New York.

**QUOTATIONS** given on cylinder molds and plain dandy rolls. Covering cylinder molds a specialty. At your mill or in our shop. Address Clark Mfg. Co., 79 Merrick Ave., Holyoke, Mass.

**WANTED**—One each double cutter 96" and 100" width. Also one second hand paper machine suitable for making newspapers or books, width 72" or more. Also one second hand water tube boiler of any good make, suitable for paper mill use. Address Box 714, care Paper Trade Journal.

**FOR SALE**—Six flat "Turtle-back" sulphur burners, in good condition. Address Box 691, care Paper Trade Journal.

**WANTED**—A second hand, but in good condition, machine for making wax paper or tar coated paper. Address Box 673, care Paper Trade Journal.

**WANTED TO PURCHASE** a second hand 14 foot globe rotary complete. Address particulars to Delphi Straw Board Co., Decatur, Ind.

**FOR SALE**

**NEWSBOARD CUTTINGS.**  
RANGE OF SIZES: From 1" to 5" in width; from 12" to 60" in length.  
CALIPER .230 to .330.

Apply to  
Agasote Millboard Co.  
Trenton, N. J.

**PICKQUICK**

This is IT



The Best  
**5c**  
ROLL  
in the  
U. S.

Write us for samples and prices. Salesman Wanted.

THE H. NORWOOD EWING CO.  
Woolworth Bldg. New York

**CORLISS ENGINES**

100 to 1000 H. P. Simple or Compound; perfect running order; complete fittings; prices reasonable. Also high speed engines.  
H. M. BRUCH, Corliss Specialists  
400 Gridley Bldg. Syracuse N. Y.

**YOUR WANTS**

are quickly supplied through the use of the

**CLASSIFIED COLUMNS**

of the

**PAPER TRADE JOURNAL**

Thousands testify to these facts

## BETTER PULP WOOD SUPPLY FOR NEW YORK PAPER MEN

Encouraging Signs Are Reported by Officials of the Remington Paper & Power Co. Who Have Just Returned from an Extended Trip Through Canada—Mark S. Wilder, President of the Company, Reports That a Decided Improvement Has Been Taking Place on the Border in the Past Few Weeks—Scheme to Fix Coal Prices Is Thought to Be Failure.

[FROM OUR REGULAR CORRESPONDENT.]

WATERTOWN, N. Y., October 1, 1917.—The pulp wood situation, so far as the Canadian supply is concerned, shows encouraging signs, according to President Mark S. Wilder and R. B. Maltby, secretary and treasurer, of the Remington Paper & Power Company, who just returned from an extended trip through the Dominion. The company has extensive timber land rights there and a tour of inspection of the pulp jobs and the rossing plants was made.

"We have two years' supply of pulp wood purchased now, and there is an abundant supply on hand," said Mr. Wilder. In speaking of the freight car shortage that has delayed delivery of the wood, he said that a decided improvement has taken place across the border in the last three weeks. "The situation is better on Northern Canada roads than it has been all summer."

The two officials went from their pulp wood terminal at Ogdensburg to Montreal, Quebec, LaToque, North Bay and Ottawa. They observed conditions in the coal and pulp wood line in all sections. "At every railroad terminal or roundhouse on the trip we saw huge piles of coal and pulp wood. These signs were encouraging, for with a sufficient supply of coal it will be possible to keep trains and mills running and get the pulp wood out."

Mr. Wilder admitted that the car shortage in Canada is still an embarrassment to paper manufacturers.

The prices for coal set by the government are being artfully dodged, according to statements being made by paper mill owners and other large manufacturers in this section. The prices are fixed all right, but no one is able to gain any advantage thereby.

Several paper manufacturers were questioned about the coal prices and supply, and they all seemed to hold about the same opinion. "If you want to get coal for your boilers and assure yourself of a supply, you had better not try to take advantage of the new price. Your order will be accepted, but the coal will not be delivered," said one.

Practically all the paper mill men have their supply on contracts, which are not affected by the order, and, therefore, are able to obtain delivery. In fact, some of them have at least six months' supply ahead. But those who have tried to take advantage of the new rate have been balked, for delivery is found impossible. It is only the price of about seven dollars a ton that can guarantee delivery.

It is pointed out here that the government undertook an impossibility when it said what the price of coal at the mines would be. No two mines can produce at the same figure, and therefore it is impossible for one to sell at the figure of another concern. They prefer to stop mining, and it becomes impossible to force them to deliver something they have not mined.

It is believed here that the whole scheme is a failure.

Knowlton Brothers have just been awarded another government contract for the furnishing of paper. For years this concern has bid on and been awarded similar contracts, and has made a great amount of paper of various varieties. While the prices paid by Uncle Sam have not been the highest on the market, this company has continued to submit bids.

The new order just announced on bids opened September 12, is as follows: 10,000 pounds of 20 x 25 in., 50 pounds, rough wove sage cover paper at \$.095 per pound and 10,000 pounds of 20 x 25 in., 50 pounds, rough laid terra cotta cover paper at the same price.

Lockwood's Directory will be out the latter part of this week. Order now from the Lockwood Trade Journal Company.

## PAPER BAG MACHINERY

Flat and Square  
Satchel Bottom

Single and Duplex all Rotary Machines

We guarantee very high production and very low percentage of waste.

Jobbers supplied with Bag Machines anywhere in the United States, any number, part payment down, balance of payment from one to five years, to responsible parties. We claim to have the fastest machines made.

LOCKPORT MACHINE CO., Wm. Muirhead, Pres.  
Lockport, N. Y.

TORONTO TYPE FOUNDRY CO., 78 York St., Toronto, Canada  
Agents for Canada  
CANADIAN-AMERICAN MACHINERY CO., London, England  
Foreign Agents

## Job Lots, Rejections, Side Rolls Wanted

SPOT CASH paid for jobs in bond paper, white or colors, any grade that will cut down to 11 x 17, any weight. Send samples, with lowest spot cash prices. No lot too small, and none too large.

MID-WEST PAPER CO., 732 Federal St., Chicago, Ill.

# JAMES COOKSON

STOCKPORT, ENGLAND

Packer of all kinds of

PAPER STOCK, BAGGING, SURAT TARES, Etc.

## PAPER STOCK PACKERS OF ALL GRADES

## Mendelson Bros. Paper Stock Co.

900 Michigan Blvd.

Chicago, Ill.

When you want quantity and quality and lowest prices, write us.  
Packing Houses and Warehouses, Chicago, Ill.

# Directory

Cards under this heading will be charged for at the rate of \$30 per annum for each card of three lines or less, payable in advance. Each additional line \$10.

## Architects and Engineers.

**BIGELOW, WM. C.**, Architect and Engineer, Specialties, Paper, Pulp, Fibre Mills, Hydro-Electric, Steam Power Plants, Biddeford, Maine.

**CAREY, JAMES L.**, Paper Mill Architect and Engineer, 208 North Laramie Ave., Chicago, Ill.

**CHAPMAN, C. A., Inc.**, Paper Mill Architects and Engineers, 28 Jackson Boulevard E., Chicago, Ill.

**FERGUSON, HARDY S.**, M. Am. Soc. C. E., Consulting Engineer, 200 Fifth Ave., New York.

**HARDY, GEO. F.**, M. Am. Soc. M. E., Consulting Engineer, 309 Broadway, New York.

**SNOW, S. M.**, Mill Architect, Engineer, Paper and Pulp Mills, Steam and Water Power plants, 55 Kilby Street, Boston, Mass.

**STEBBINS ENGINEERING AND MFG. CO.**, Architects and Engineers, Paper, Pulp, Soda, Sulphate and Sulphite Mills, Power Developments, 39-40 Smith Bldg., Watertown, N. Y.

**JOSEPH H. WALLACE & CO.**, Industrial Engineers, Temple Court Building, New York. Manufacturing Plants and Power Developments. Reports of Industrial Properties, Appraisals, etc.

## Bale Ties.

**WILSON, H. P. & H. F.**, Manufacturers of Steel Wire Bale Ties, for baling all compressible material, 544 West 22nd Street, New York City.

## Boards.

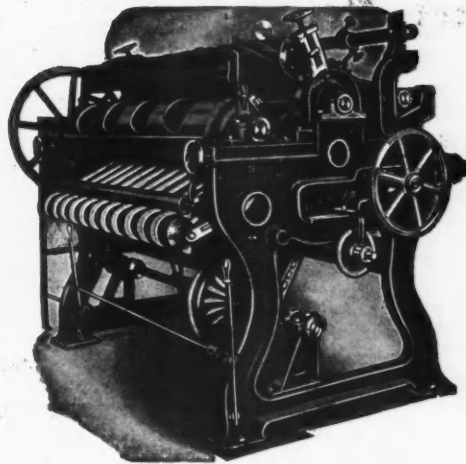
**MILLER PAPER CO., FRANK P.**, high grade specialties, Boards, East Downingtown, Pa.

## Forest Engineers.

**D. E. LAUDERBURN**, Forest Engineer, Timber Estimates, Reports, Maps, Logging Efficiency Service, 1 West 20th St., New York.

**Guaranteed Non-Curling Gummed Papers.**

**IDEAL COATED PAPER CO.**, Mills and Main Office, Brookfield, Mass. N. Y. Office 150 Nassau St. 452 Monadnock Bldg., Chicago.



## H. C. CLARK & SON MACHINE COMPANY

MANUFACTURERS OF

## Paper Mill Machinery

LEE, MASS.

- REVOLVING PAPER CUTTERS
- RAG CUTTERS
- CYLINDER PAPER MACHINES
- WASHING AND BEATING ENGINES
- CHILLED IRON AND PAPER CAL-  
ENDERS
- FAN AND STUFF PUMPS
- ENGINE ROLL BARS AND BED  
PLATES
- CYLINDER MOLDS
- MARSHALL DRIVES
- SLITTERS AND REWINDERS
- REELS
- DRYERS WITH IMPROVED PACKING  
ROLLS REGROUND  
BOXES
- WET MACHINES
- GUN METAL AND RUBBER ROLLS

## Metal Skylights and Ventilators.

WE manufacture metal skylights and ventilators for paper and pulp mills. **E. VAN NOORDEN CO.**, 944-52 Mass. Avenue, Boston, Mass.

## Patent Attorneys.

**BALDWIN & WRIGHT**, 25 Grant Place, Washington, D. C. Experienced in securing patents on paper machinery.

## Rags, Paper Stock, etc.

**BERLOWITZ, PAUL**, 132 Nassau Street, New York. Importer of Rags, Bagging, New Cuttings.

**BOYLE, LUKE**, 390 West Broadway, New York.

**CHASE & NORTON**, High Grade Shavings and Book Stock a specialty, 277 Water Street, New York

**FLYNN, MICHAEL**, 54 Columbia Street, Brooklyn, New York

**GOLDSTEIN, R. & SON**, Baltimore, Md. Cotton Rags and Paper Stock

**GRUNDY & SONS, LTD., JAMES**, Chorley, England, supply new and old rags of highest quality for paper makers. Enquiries solicited.

**HILLS, GEO. F.**, 108-112 Cliff Street, New York

**HOFELLER, THEODORE, & CO.**, 206 Scott Street, Buffalo, N. Y., buy Bagging and Burlap Baling from Paper Mills, also Second Hand Bags, Brass Wire, Cloth, Brass Screen Plates, Scrap Brass and Paper Mill Felts.

**JACOB & CO.**, Alexander, Wapping, London, England. Supply all classes Waste Papers and Shavings, Paper Making, Rags, etc. Correspondence Solicited. Paris Office, 3 Cite d'Hauteville.

**LIBMANN, JOSEPH, & CO.**, 174, 176 and 178 Hudson Street, New York

The only house in existence which deals EXCLUSIVELY IN NEW CUTTINGS of every grade and description.

**LIVERPOOL MARINE STORE CO.**, Liverpool England, L. M. S. Wood Tag, Manila, Rope and Star Brands (Registered).

**MCGUIRE, MICHAEL**, 100 and 102 Tenth Avenue, New York

**ROSENBAUM, INC., L.**, 316 Lafayette St., New York City. Packers exclusively of new cuttings.

**SIMMONS, JOHN, SONS**, Paper and Paper Stock, 28 and 30 South Marshall Street (formerly Decatur Street), Philadelphia, Pa.

## Special Machinery.

**DIETZ MACHINE WORKS**, experienced builders of special machinery with well equipped modern shop, can quote low prices in machine building. Send drawings, 126-128 West Fontaine Street, Philadelphia, Pa.

**SWIFT, GEORGE W., JR.**, Designer and Manufacturer of Special Machinery for Manufacturing and Printing Paper Goods. Bordentown, N. J.

## Straw Pulp.

**SCANDINAVIAN-AMERICAN TRADING CO.** Produce Exchange, New York. All other kinds of Pulp.

## DO YOU WANT HELP?

Or have you some machinery you would like to dispose of? Try the JOURNAL'S "Want Pages." They bring prompt returns.

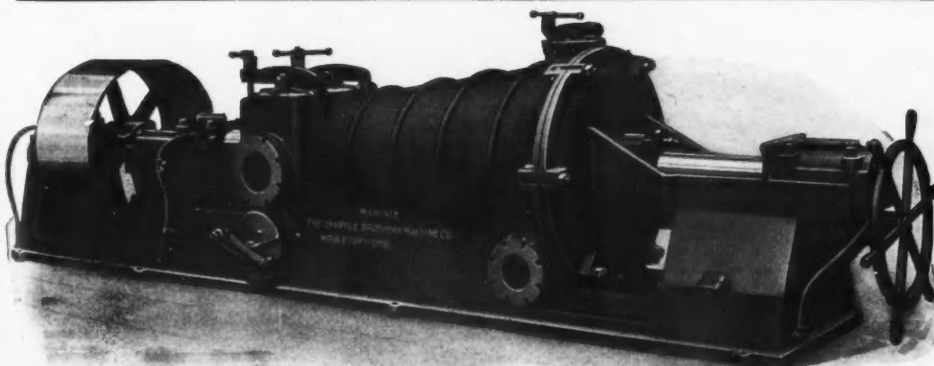


## Don't Guess at Important Matters BOWSER'S SPEED OF MOTION INDICATOR IS INDISPENSABLE

In obtaining a UNIFORM speed of machinery, and is one of the most PROFITABLE little devices ever put in a mill. Will pay for itself in 30 days. Dial 12 in. in diam. Weight, 10 lbs.

The N. P. Bowsher Co., South Bend, Ind.

The  
**Shartle Bros. Machine Co.**  
Middletown  
Ohio





## New York Market Review

Office of the PAPER TRADE JOURNAL,  
WEDNESDAY, October 3, 1917.

The paper market continued quiet during the past week. The so-called fall boom has not materialized as yet.

To say that such a condition was unexpected might be overstepping the mark. But it may be said in all truth that a boom was expected toward the latter part of September. But this has shown no signs of becoming an actuality. Yet the trade is confident that the demand will pick up and uncertainties give way to clear definite action so that the industry in general can move forward instead of marking time.

The state of the market in all papers is one of mixed weakness and strength. The weakness is evident by the price shadings, the rumors of which are springing up at every jobbers' establishment. Revised price lists with shadings amounting to \$20 per ton and going as high as \$30 per ton have been issued. These were only temporary and the admonition was given that the lists were not to be regarded as indicating anything else than the desire of one or two concerns to dispose of stocks on hand.

Contrary to the price shadings are the firmness of the regular quotations put forth by the large manufacturing concerns. These on the whole may be said to be firm and likely to keep so. But there seems to be a tendency in the trade no longer to be frightened at the lowering of prices but to expect them. In general a summary of the present paper market could be compressed in the two words—"waiting stage"—for the market is still in the waiting stage and preparing for developments.

Bonds and ledgers have remained much the same as last week. The demand is not exceedingly strong but there seems to be enough business to keep jobbers and mills moderately active. Fine writings are jogging along neither in great demand nor with a lack of demand—that is, very moderate. The consumption of fine writings with bonds and ledgers also has been affected to no small degree by the substitution of cheaper grades for the finer ones in business.

In news the situation has simmered down and the gradual approach of contract time seems to be the only event of interest on the calendar. In connection with contract prices one manufacturer said, "You cannot emphasize the fact too strongly that the lowest price on contract for news print will be 3c. and no lower." So there the matter rests. Something in the nature of a new development along these lines occurred recently when a contract which had been made at 3c. to cover 1917 was entered into by a news print concern with the proviso that a price revision of an advance of \$15 per ton be allowed over the price fixed. In other words the paper was not going to cost 3c. per pound but close to  $\frac{3}{4}$  of a cent more. In connection with the question of news print and pulp for making print paper it may be of interest to mention that the pulp brought from the Harmsworth Mill at Grand Falls, Newfoundland, by the American Newspaper Publishers' Association is said to be still unsold. This information was given a PAPER TRADE JOURNAL reporter with the added statement that the pulp would be hard to dispose of because of the quality.

Book papers are comparatively steady and being sold on contract. The market has seen no apparent increase in demand over last week. S & S C is quoted at 6 $\frac{1}{2}$ c. Machine finish is being sold at a quarter of a cent lower. Coated and enameled is selling at 8c. Lithograph holds at a half cent higher.

The tissue market is slightly stronger than last week. Jobbers are taking larger supplies and somewhat of a stronger undertone is being noted. Perhaps the first papers to denote a stronger fall and winter demand will be tissues. In a measure tissues may be said to be the barometer of the paper market. In the case of a decline tissues are usually affected first and the contrary is also true. White No. 1 is quoted at .90@1.00c. Manila No. 1 is at the same figure.

Kraft is somewhat weak. The first grade domestic is selling at 8c. per pound. The second grade is lower, being quoted at 6 $\frac{1}{2}$ c. Labels are quoted at 6c. and screenings at 4c. per pound.

Manilas have figured in the price cuttings during the past two weeks and are not very strong. No. 1 is selling at 5.25@6.00c. Fibre papers are selling at 6.60c. for No. 1 grade and 5.50c. for the second grade. Common bogus is now quoted at 3.50c.

The board market is rather firm with some increase in business being noted by jobbers due to the fall demand in the box making trade. Some mills however are restricting output. The range of price remains the same. Things are firm and no striking developments are looked forward to in the board market for the present at least. News board is quoted at \$55 per ton. Straw and chip are held at \$50 per ton. Binders' board continues at \$65@72.50 per ton.

### Mechanical Pulp Continues Firm

The firm tendencies of the market in mechanical pulp continue. Prices have held remarkably steady in view of a slackened demand. The trading taking place has been only very moderate. The price range is still \$39@42 per ton, f. o. b. pulp mill. The average quotation is about \$40 per ton at the mill. It is becoming increasingly difficult to buy pulp below \$39 per ton. One authority went so far as to state it could not be done. If such is the case the market has gained some strength and should be on the road to an increased demand.

Storage of wood pulp continues on a large scale. Such a course seems to be the only one possible for dealers and jobbers to pursue in the present condition of the market.

### Chemical Pulp Demand Slightly Stronger

The market in chemical pulp is slightly stronger than last week. The demand has increased somewhat and dealers are much more optimistic than for some time past. Prices have held steady and show no signs of sagging in either the domestic or foreign side of the market. Of course the domestic product enjoys by far the greater portion of whatever demand there is. This is due to many reasons, not the least of which is the great difference in foreign exchange.

On the foreign side of the market interesting developments have been noted during the week. It is stated on what appears to be the highest authority that the amount of pulp on the docks at Baltimore and New York is 50,000 tons. According to information which has reached local dealers seeping through from Washington the government is about to make a military survey of the docks at Baltimore and it is said, have the pulp removed from the wharves in order to make room for shipments of munitions, etc.

This might have an interesting effect upon the pulp market. Rather than hold the pulp some of the dealers, if the reported plan of the government is carried out, may dispose of the pulp at the best prices obtainable. In other words the policy of awaiting an increase in demand normally may give way to price shadings in order to stimulate the demand.

### Rag Market Rather Active

The trading in the rag market during the past week has been rather more active than has been the case for some time past. The general tone has been firmer and inquiries from the mills have been more frequent. Roofing continues to be off as regards the prices paid several weeks ago. The current quotations on roofing run from 1.90@2.10c. with the roofing mills reported as buying rather freely.

### Bagging Much the Same

The market in bagging remains in practically the same state as last week. Business continues to be rather light with the mills buying only from hand to mouth. Gunny has been called for by the mills during the week and is in fair demand. No. 1 scrap cut is also in fair demand and is quoted at 2.75@3.00c. The other grades have remained steady with little variation in either demand or price quotations.



# Market Quotations

## NEW YORK

### Trade Securities

Bid and asked quotations of securities listed on the Stock Exchange of companies interested in the manufacture of paper as reported on October 3, 1917, follow:

	Bid.	Asked.
American Writing Paper Company, pref.....	30	32
American Writing Paper Company 5s.....	85	—
International Paper Company, pref.....	60 1/2	61
International Paper Company, com.....	28	29
International Paper Company 6s.....	100 1/4	100 3/4
Union Bag and Paper Corporation, old com.....	9 1/2	11 1/2
Union Bag and Paper Corporation, new.....	70 1/2	72 1/2
United Paperboard Company, com.....	22	24

### Paper

Bond .....	10	@	—
Ledgers .....	10	@	—
Writing—			
Extra Superfine..	21	@	—
Superfine .....	19	@	—
Tub Sized .....	13	@	—
Engine Sized .....	9	@	—
News, f. o. b. Mill—			
Rolls, contract...	3.00	@	3.50
Rolls, transient...	3.50	@	4.00
Sheets, f. o. b.			
N. Y. ....	4.00	@	4.50
Side runs .....	4.00	@	4.50
Book—			
S. & S. C. ....	6 1/2	@	—
M. F. ....	6.60	@	—
Coated and			
Enamel .....	8.00	@	—
Lithograph .....	8.50	@	—
Tissues—f. o. b. N. Y.—			
White, No. 1.....	.90	@	1.00
White, No. 2.....	.90	@	1.00
Manila No. 1.....	.90	@	1.00
Kraft .....	1.10	@	1.20
Colored .....	1.40	@	1.65
Anti-Tarnish .....	1.35	@	1.45
Kraft—f. o. b. N. Y.—			
No. 1 Domestic..	8	@	—
No. 2 Domestic..	6 1/2	@	—
Imported .....	—		—
Label .....	6	@	—
Screenings .....	4	@	—
Manila—			
No. 1 Jute.....	9 1/2	@	—
No. 2 Jute.....	8 1/2	@	—
No. 1 Wood.....	5.25	@	6.00
No. 2 Wood.....	5	@	—
Butchers' .....	5 1/2	@	—
Fibre Papers—			
No. 1 Fibre.....	6 1/2	@	—
No. 2 Fibre.....	5 1/2	@	—
Card Middles .....	4	@	—
Common Bogus .....	3 1/2	@	—
Boards, per ton, f. o. b. N. Y.—			
News .....	55.00	@	—
Straw .....	50.00	@	—
Chip .....	50.00	@	—
Binders Board..	65.00	@	72.50
Manila Lined Cp.	65.00	@	75.00
Wood Pulp .....	77.50	@	—
Tag Board .....	140.00	@	220.00

### Mechanical Pulp

(f. o. b. Pulp Mill.)

No. 1 f. o. b. Mill..	39.00	@	42.00
-----------------------	-------	---	-------

### Chemical Pulp

(Ex-Dock, New York.)

Sulphite (Foreign)—			
Bleached .....	8.50	@	9.50
Easy Bleaching..	5.25	@	6.00
No. 1 Unbleached	5.00	@	5.75
No. 2 Unbleached	5.00	@	—
Kraft (Foreign)..	5.50	@	6.00
Sulphate—			
Bleached .....	—	@	—
No. 1 Unbleached	5.00	@	5.50
(f. o. b. Pulp Mill.)			
Sulphite (Domestic)—			
Bleached .....	6.00	@	6.35
Unbleached .....	3.50	@	4.00
Mitscherlich .....	3.50	@	6.00
Kraft (Domestic)			
delivered .....	4.50	@	5.00
Soda Bleached .....	5.25	@	—

\*—Dash means nominal.

### Twines

India, No. 6 basis—			
Dark .....	15	@	15 1/2
Light .....	16	@	17
B. C., 18 basis....	27	@	29
A. B., Italian, 18 basis	38	@	—
Finished Jute—			
Dark, 18 basis...	20	@	21
Light, 18 basis...	22	@	23
Jute Wrapping, 2-6 ply—			
Extra No. 1.....	22	@	23
No. 1 .....	21	@	22
No. 2 .....	19	@	20
Paper Makers' Twine			
Balls .....	13	@	14
Box-Twine, 2-4 ply.	16	@	17
Jute Rope .....	11	@	27
Amer. Hemp, 6...	23	@	25
Sisal Hay—			
No. 1 Basis.....	22	@	23
No. 2 Basis.....	21	@	22
Sisal Lath Yarn—			
No. 1.....	21 1/2	@	21 1/2
No. 2.....	19 1/2	@	20 1/2
Manila Rope .....	30	@	31

### Old Waste Papers

(f. o. b. New York.)

Shavings—			
Hard White, No. 1	4.25	@	4.50
Hard White, No. 2	3.50	@	3.75
Soft White, No. 1	3.20	@	3.50
Colored, No. 1....	1.50	@	1.60
Flat Stock—			
Stitchless .....	1.50	@	1.75
Over Issue Mag.	1.60	@	1.70
Solid Flat Book.	1.25	@	1.35
Crumpled, No. 1.	1.10	@	1.15
Solid Book Ledger.	3.00	@	3.25
Ledger Stock .....	2.50	@	2.75
No. 1 White News.	2.20	@	2.30
New B. B. Chips..	.60	@	.70
Manilas—			
New Env. Cut....	3.25	@	3.50
New Cut, No. 1.	2.50	@	2.75
Extra No. 1 Old.	1.30	@	1.40
No. 1 Old.....	.90	@	1.10
No. 2 Old.....	.75	@	.85
Bogus Wrappers..	1.20	@	1.30
Old Krafts .....	2.90	@	3.00
New—			
Strictly Overissue	1.20	@	1.30
Strictly Folded..	.85	@	.90
No. 1 Mixed Paper.	.60	@	.65
Common Paper ..	.40	@	.45

## CHICAGO

[FROM OUR REGULAR CORRESPONDENT.]

### Paper

Bonds .....	11 1/2	@	—
Ledgers .....	13	@	—
Writing—			
Superfine .....	22	@	—
Extra Fine .....	17	@	—
Fine .....	12	@	—
Fine No. 2.....	10	@	—
Book, S. & S. C..	8 1/2	@	—
Book, M. F. S....	8 1/2	@	—
Book, Coated .....	9 1/2	@	—
Label .....	9 1/2	@	—
News .....	3 1/2	@	4 1/2
(f. o. b. Mill.)			
Manilas—			
No. 1 Manila....	6.00	@	6.25
No. 1 Fibre.....	6.25	@	6.75
No. 2 Manila....	4.75	@	5.00
Sulphite, No. 1..	7.00	@	7.25
No. 1 Kraft.....	7.50	@	8.00
Butchers' Manila.	5.25	@	5.50
White Manila....	4.00	@	4.25
Screenings .....	3.50	@	4.50
Boards, per ton, delivered—			
Plain Chip.....	45.00	@	50.00

Solid News .....	50.00	@	55.00
Manila Lined			
Chip .....	65.00	@	70.00
Container Liner..	80.00	@	85.00
Solid Wood Pulp.	70.00	@	75.00
Straw Board.....	45.00	@	50.00
Filled Pulp			
Board .....	65.00	@	70.00

### Old Papers

Shavings—			
No. 1 Hard White	4.00	@	4.25
No. 1 Soft White	3.00	@	3.25
No. 2 Soft White	1.75	@	2.00
No. 1 Mixed.....	1.50	@	—
No. 2 Mixed.....	1.25	@	—
Ledgers & Writings			
Solid Books .....	1.60	@	1.70
Blanks .....	1.35	@	1.50
No. 1 Books, light.	2.00	@	2.25
Extra No. 1 Manila	1.10	@	1.25
No. 1 Manilas....	1.25	@	1.50
Folded News (over issue)	1.20	@	—
Old Newspapers..	.75	@	.85
Mixed Papers .....	.60	@	.70
Straw Clippings ..	.75	@	.85
Binders' Clippings.	.60	@	.70

## PHILADELPHIA

[FROM OUR REGULAR CORRESPONDENT.]

### Paper

Bonds .....	11	@	31
Ledgers .....	14 1/2	@	30
Writings—			
Superfine .....	18	@	—
Extra Fine .....	19	@	—
Fine .....	15	@	—
Fine, No. 2.....	13	@	—
Fine, No. 3.....	11	@	—
Book, S. & S....	8 1/2	@	—
Book, M. F.....	10	@	—
Book, Coated .....	10	@	13 1/2
Coated Lithograph.	10 1/2	@	—
Label .....	11	@	—
News .....	5 1/2	@	—
No. 1 Jute Manila.	—	@	—
Manila Sul., No. 1.	8 1/2	@	—
Manila No. 2.....	7 1/2	@	—
Common Bogus ..	4 1/2	@	—
Straw Board .....	50	@	60
News Board .....	50	@	55
Chip Board .....	45	@	50
Wood Pulp Board.	70	@	85

(Carload Lots.)

Tarred Felts—			
Regular .....	62	@	65
Slaters' .....	69	@	70
Best Tarred .....	75	@	82
Best Tarred, 1-ply (per ton) ..	75	@	82
Best Tarred, 3-ply	1.10	@	1.20

### Bagging

Gunny No. 1—			
Foreign .....	2.75	@	3.00
Domestic .....	2 3/4	@	3
Scrap Burlap .....	3.00	@	3.25
No. 1 Scrap .....	2.00	@	2.25
Wool Tares, heavy.	3.75	@	—
Wool Tares, light.	4.00	@	—
Manila Rope, No. 1	5.00	@	5.25
Mixed Rope .....	2.50	@	2.75
No. 1 New Lt. Bar-lap .....	6.00	@	7.00
New Burlap Cuttings	3.75	@	4.00

### Old Papers

Shavings—			
No. 1 Hard White	4.25	@	4.50
No. 2 Hard White	4.00	@	4.25
No. 1 Soft White	3.00	@	3.25
No. 2 Soft White	1.75	@	2.00
No. 1 Mixed.....	1.25	@	1.50
No. 2 Mixed.....	1.00	@	1.15
Solid Ledger Stock	2.50	@	2.95
Writing Paper .....	2.00	@	2.25
No. 1 Books, heavy	1.25	@	1.30
No. 2 Books, light.	.80	@	.90
No. 1 New Manila.	2.50	@	—
No. 1 Old Manila..	1.30	@	1.40
Old Kraft .....	3.25	@	3.30
Overissue News ..	1.35	@	1.40
Old Newspaper....	.85	@	.90
No. 1 Mixed Paper	.70	@	.75
Common Paper .....	.40	@	.65
Straw Board Clip..	.70	@	.75
Binders Bd. Chip..	.70	@	.75

(Continued on page 92)

# Imports and Exports of Paper and Paper Stock

NEW YORK, BOSTON, PHILADELPHIA AND OTHER PORTS

FOR THE WEEK ENDING OCT. 2, 1917.

## NEW YORK IMPORTS

FOR THE WEEK ENDING OCT. 2, 1917.

### SUMMARY.

Cigarette paper	587 cs.
Printing paper	200 cs.
Miscellaneous paper	56 cs.

### RAGS, PAPER STOCK, ETC.

International Purchasing Co., Bristol, 303 coils old rope.
Salomon Bros. & Co., Bristol, 43 coils old rope.
Castle, Gottheil & Overton, Manchester, 88 bags glue stock.
Castle, Gottheil & Overton, Hull, 506 bs. rags.

### China Clay

New York & Cuba Mail Steamship Co., Bristol, 200 bags.
J. Richardson Co., Bristol, 10 casks.

### PAPER.

British American Tobacco Co., Barcelona, 56 cs.

### CIGARETTE PAPER.

American Tobacco Co., Havre, 350 cs.
P. J. Schweitzer, Havre, 82 cs.
Equitable Trust Co., Havre, 284 cs.
American Express Co., Havre, 71 cs.

### PRINTING PAPER.

Herman Lips, Havre, 200 cs.

## PHILADELPHIA IMPORTS

FOR THE WEEK ENDING OCT. 2, 1917.

Castle, Gottheil & Overton, London, 373 bs. rags.

## BOSTON IMPORTS

FROM SEPT. 24 TO OCT. 2, 1917.

### Paper Stock

Edwin Butterworth & Co., Cottlesmore, Liverpool, 98 coils manilas.

## EXPORTS

FROM AUGUST 15 TO AUGUST 31, 1917.

### PAPER BAGS.

Costa Rica	\$77
British West Indies	172
Peru	2,513
Panama	1,323
Danish West Indies	78
Barbados	315
Chile	624

### BOXES AND CARTONS.

Norway	\$10
Mexico	1,087
S. Domingo	22
British South Africa	1,480
Canada	317
Jamaica	2,391
Argentina	1,025
Panama	879

Cuba	2,338
Colombia	209

### CARBON PAPER.

Spain	\$1,525
Cuba	972
Uruguay	59
British East Indies	84
Nicaragua	10
Argentina	2,821
Venezuela	6
British South Africa	1,848
Mexico	1,836
Chile	1,447
India	3,090

### PAPER BOARD.

Spain	\$105
Panama	1,000
S. Domingo	1,268
Peru	1,731
British South Africa	27,439
Bermuda	25
Newfoundland	265
Brazil	6,336
Venezuela	306
Guatemala	148
Jamaica	44
Colombia	2,430
India	5,682

### PAPER HANGINGS.

Nicaragua	\$35
Argentina	3,013
Newfoundland	49
Chile	3,298
Haiti	33
Ecuador	575

### TISSUE AND TOILET PAPER.

Italy	\$76
Panama	90
Trinidad	37
Brazil	3,770
England	2,083
Mexico	1,246
Cuba	3,525
Colombia	41
Guatemala	144
Barbados	32
S. Domingo	135
Uruguay	189

### WRITING PAPER.

France	\$111
Scotland	200
Honduras	335
Trinidad	929
Haiti	745
Colombia	4,546
China	89
Norway	245
British Honduras	40
Panama	5,525
Cuba	12,190
Argentina	6,716
British Guiana	26
Portuguese Africa	722
Spain	1,440
Costa Rica	237
Mexico	3,900
Brazil	69
Dutch West Indies	15,154
Uruguay	1,971
British East Indies	33

### OTHER PAPER.

Jamaica	\$1,250
British West Indies	563

Cuba	8,532
Danish West Indies	140
French West Indies	113
Haiti	134
S. Domingo	166
Argentina	9,952
Bolivia	175
Brazil	5,592
Chile	2,901
Colombia	1,948
Ecuador	967
British Guiana	321
Peru	836
Uruguay	2,331
Venezuela	363
China	534
India	328
British South Africa	2,796

### WRAPPING PAPER.

Mexico, 44,812 lbs.	\$3,748
Barbados, 35,627 lbs.	1,773
Trinidad, 1,108 lbs.	1,299
Cuba, 762,672 lbs.	35,294
French West Indies, 11,156 lbs.	928
S. Domingo, 27,334 lbs.	2,037
Brazil, 3,666 lbs.	427
Colombia, 18,455 lbs.	2,000
Peru, 165,247 lbs.	13,478
China, 1,665 lbs.	129
Newfoundland, 8,884 lbs.	1,264
Jamaica, 116,264 lbs.	6,579
British West Indies, 5,189 lbs.	341
Dutch West Indies, 1,480 lbs.	68
Haiti, 3,634 lbs.	409
Argentina, 37,157 lbs.	3,535
Chile, 278,544 lbs.	16,771
Ecuador, 43,219 lbs.	4,225
Venezuela, 30,759 lbs.	3,052
British South Africa, 47,822 lbs.	4,090

### NEWS PRINT PAPER.

S. Domingo, 1,968 lbs.	\$666
Bolivia, 22,300 lbs.	1,022
Chile, 629,567 lbs.	26,041
Ecuador, 6,145 lbs.	356
Uruguay, 1,972 lbs.	69
British South Africa, 687,600 lbs.	27,325
Argentina, 823,116 lbs.	48,393
Brazil, 1,618,957 lbs.	81,706
Colombia, 43,995 lbs.	2,073
Peru, 631,235 lbs.	25,287
Venezuela, 6,735 lbs.	476

### OTHER PRINTING PAPER.

Mexico, 229,683 lbs.	\$20,486
Barbados, 2,085 lbs.	184
Trinidad, 46,740 lbs.	1,934
Cuba, 436,385 lbs.	45,079
French West Indies, 1,588 lbs.	241
Argentina, 544,508 lbs.	52,521
Brazil, 750,502 lbs.	64,368
Colombia, 8,622 lbs.	919
British Guiana, 834 lbs.	108
Uruguay, 4,898 lbs.	787
India, 232,719 lbs.	20,756
Japan, 22,104 lbs.	5,181
Newfoundland, 810 lbs.	82
Jamaica, 6,332 lbs.	618
British West Indies, 225 lbs.	30
Danish West Indies, 888 lbs.	156
S. Domingo, 37,002 lbs.	3,759
Bolivia, 44,088 lbs.	4,507
Chile, 832,001 lbs.	83,858
Ecuador, 4,662 lbs.	660
Peru, 76,501 lbs.	7,504
Venezuela, 72,107 lbs.	7,609
British East Indies, 7,782 lbs.	727
British South Africa, 454,004 lbs.	38,104

## To Consider News Print Resolution

[BY TELEGRAPH TO THE PAPER TRADE JOURNAL.]

WASHINGTON, D. C., October 3, 1917.—The Senate Committee on printing met this afternoon to discuss the Smith News Print Paper resolution but were unable to take action owing to the absence of a quorum. It is understood that a meeting will be called for later this week and that a favorable report will be made to obtain a good place on the senate calendar for next session.

## Using Jasperson Process in Ohio

In its issue of last Saturday, the Jasperson process of converting printed news paper waste into usable news print paper will be put into operation next week in the Fox Paper Company's mill, Lockland, Ohio.

Every paper manufacturer and paper seller should have a copy of the "History of Paper Manufacturing in the U. S. A.," by L. H. Weeks. Price \$3.00 postpaid. Order from this office.

**DAILY CAPACITY 300 TONS**

# MAIN PAPER STOCK CO., INC.

**SPECIAL GRADERS OF PAPER STOCK  
NEW AND OLD COTTON RAGS**

*If you have special requirements we can certainly please you.*

Branch, 321 Pearl St.                      25-27-29-31 Peck Slip                      New York City

**MARX MAIER, Inc.**  
200 FIFTH AVENUE                      NEW YORK  
FOREIGN AND DOMESTIC  
New and Old Linen and Cotton Rags  
Jute Stock, Flax and Cotton Waste

**THEODORE HOFELLER & CO.**  
BUFFALO, N. Y.  
Carefully assorted Paper Stock, Rags and New Clippings  
Buyers of  
BRASS WIRE CLOTH, BRASS SCREEN PLATE, SCRAP BRASS,  
PAPER MILL FELT, BAGGING & BURLAP BAILING,  
SECOND-HAND BAGS.

**Atterbury Brothers**  
(INCORPORATED)  
Wood Pulp, Rags and Paper Stock  
French Caseine  
145 NASSAU STREET                      (Potter Building)                      NEW YORK

WILLIAM B. DILLON                      J. SANFORD BARNES

## DILLON & BARNES

*Paper Mill Products and Supplies*  
52 VANDERBILT AVENUE                      NEW YORK  
Telephone, 7353 Murray Hill

ESTABLISHED 1851

IRA L. BEEBE                      CYRUS E. JONES


## IRA L. BEEBE & CO.

132 Nassau St., New York

## Salomon Bros. & Co.

Importers of all Grades of Rags and Paper Stock                      299 BROADWAY  
New York

Representing GEBR. SALOMON & CO., Harburg, Hamburg, Germany.  
SALOMON FRERES, Lille, France. GEBR. SALOMON, Hanover, Germany.  
SALOMON BROS., LTD., Manchester, England; Bombay, India; Milan, Italy.



IMPORTERS OF

## Wood Pulp

and  
Packers of Paper Stock

PACKING HOUSES: 312 Pearl Street and 12 Peck Slip                      NEW YORK

**EXPORT ONLY**                      All Grades of PAPER and BOARDS

## A. M. Capen's Sons, Inc.

Established 1870  
60 Pearl Street, New York City

**E. J. KELLER CO., Inc.**  
E. J. KELLER, Pres.  
200 FIFTH AVE.                      NEW YORK  
Importers and Dealers  
New and Old Cotton and Linen Rags,  
Gunny Bagging, Burlap Bagging,  
Ropes, Flax Waste, Cotton Waste,  
Paper Stock, Wood Pulp and  
Rag Pulp.  
Inquiries Solicited

FOREIGN AND DOMESTIC

## Paper Stock New Cuttings AND Rags

Jute  
Stock,  
Sizing, Sulphite  
and Soda Pulps

200 FIFTH AVE., NEW YORK

**CASTLE, GOTTHEIL & OVERTON**







# The Mathieson Alkali Works, Inc.

WORKS AT

SALTVILLE, VIRGINIA, and at  
NIAGARA FALLS, NEW YORK

---

---

## “Eagle-Thistle” Brand BLEACHING POWDER

HIGH TEST

Packed in Steel Drums, air tight, insuring full strength at point of consumption

---

---

## LIQUID CHLORINE

in Airtight packages

### Soda Ash

48 per cent. and 58 per cent.

### Caustic Soda

60 per cent., 70 per cent., 72 per cent., 74 per cent., 76 per cent.; also 78 per cent. Our 78 per cent. Caustic Soda is an article of greater purity than has ever before been produced in a commercial way, analyzing 99.70 Hydrate of Soda

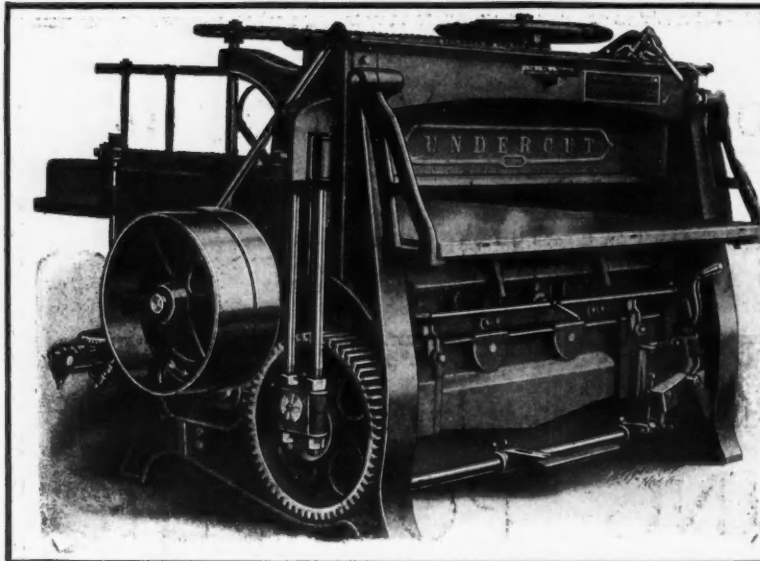
### Bicarbonate of Soda

Packed in Kegs, Barrels or Bags; also Cases

# Arnold Hoffman & Company, Inc.

SOLE AGENTS

PROVIDENCE: 55 Canal Street    NEW YORK: 61 Broadway    BOSTON: 88 Broad Street  
PHILADELPHIA: Delaware Ave. and Green St.    CHARLOTTE, N. C.



## The Undercut Trimmer

The Paper Mill Cutter, combining the highest degree of accuracy, speed and simplicity for the most exact trimming.

The clamping power of the Undercut is not equalled by any other cutter, and assures absolute accuracy in trimming. The safety in operating an Undercut is a very important fact to be considered, as well as simplicity of design and construction carried out in the best manner and workmanship possible.

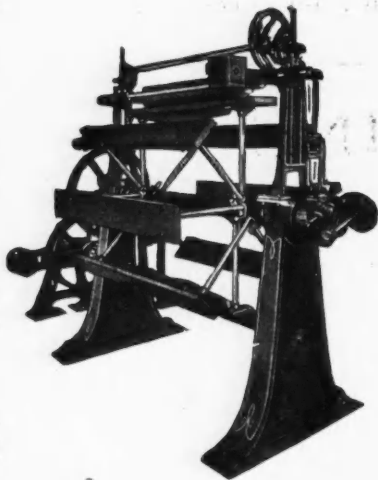
The speed of the Undercut is such that more cuts can be utilized in the working of our machine than in the high-speed cutters, which not only consume power, but wear out rapidly.

Our Power Back Gauge Drive enables the operator to handle material quickly, easily, and more in quantity than can be secured in the use of other machines.

For further and full information, call upon

## The Smith & Winchester Mfg. Co.

Builders of High Grade Paper Mill Machinery and Paper Bag Machinery  
South Windham, Conn.



## THE ONLY SUCCESSFUL AUTOMATIC COLLAPSIBLE REEL

for

### TISSUE AND CREPE PAPERS

Many so-called Collapsible Reels have been designed, and some have been tried.

The **DOWNINGTOWN** is the only successful reel.

Because it is the only truly **AUTOMATIC** reel.

The paper itself Operates the reducer.

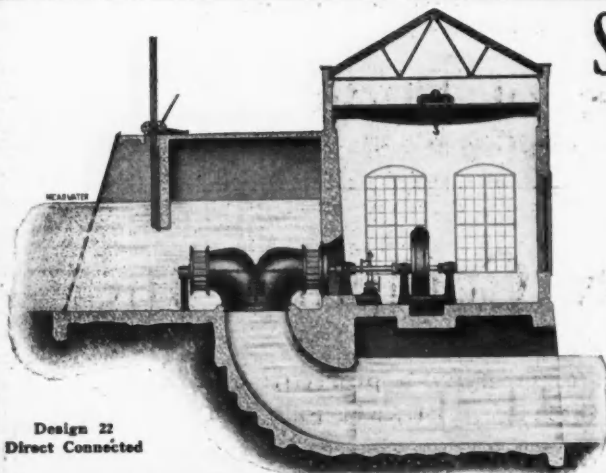
No calipering is necessary.

A 20-lb. sheet can be wound after a 5-lb. sheet with no change of adjustment, and with absolute uniformity of length between first and last sheets.

Write us for references.

**DOWNINGTOWN MFG. CO.,**

**Downingtown, Pa.**



Design 22  
Direct Connected

## Samson Turbine Water Wheels

### Vertical and Horizontal Designs

Direct Connected, Driving Generators, Pulp Grinders, Milling Machines, Pumps, Etc.

### HIGH EFFICIENCY UNITS

Write for Bulletin 54

## THE JAMES LEFFEL & CO.

304 Lagonda Street, SPRINGFIELD, OHIO, U. S. A.

SALES ENGINEERS

L. B. Dow, Inc., 75 Milk St., Boston, Mass.  
The Colby Engineering Co., Inc., 70 First St., Portland, Ore.  
H. H. White, 378 Piedmont Ave., Atlanta, Ga.  
William Hamilton Company, Ltd., Peterborough, Ont., Canada



1  
4  
1  
1  
1



# Dry Rosin Size



Brittle and easily soluble. Cheapest size out. Cheaper than mill made size. Also our hot and cold water sizes; standard quality. Cleaner, more uniform and economical than either mill made sizes or those offered by our competitors. Also Arabol Paper Size, Splicing Gums, Condensed Paste Powder, Paper Makers' Starches.

**Arabol Manufacturing Co.**  
100 William Street : NEW YORK

**FRANKLIN PAPER CO.,** HOLYOKE MASS.

Manufacturers of

**Index Bristols, White Bristol Blanks, Etc.**

**UNION TALC COMPANY**  
**Finest Grades of Agalite**

132 Nassau Street New York

**The Harmon Machine Co.**

WATERTOWN, N. Y., U. S. A.

**High Grade Diaphragm Screens**

INCLINE AND FLAT

ALSO

**Stone Trueing Tools. Centrifugal Pumps**

**J. L. & D. S. RIKER**  
(Incorporated)

Importers and Manufacturers' Agents

19 CEDAR ST., NEW YORK

All Tests  
SODA ASH  
and  
ALKALI

Sole Agents for the United States and Canada of THE UNITED ALKALI CO., LTD., of Great Britain, for the sale of their various brands of

**BLEACHING POWDER**

S K F on calender rolls means a large saving in power and elimination of attention and repairs.

**SKF BALL BEARING CO.**  
Hartford, Conn.

Manufacturers of All Special Small Roll Products

Adding Machine, Cash Register, Die Wiping, Hand Rolls, Etc., Etc.

PAPER MANUFACTURERS CO., Inc. :: PHILADELPHIA, PA.

**Tanks of Cypress or Yellow Pine**



**Heavy Paper Mill Work**  
A SPECIALTY

OUR AIR DRIED CYPRESS IS REMARKABLE FOR ITS GREAT DURABILITY

We handle Cypress and Yellow Pine from the Stump, and have Twenty Million Feet Seasoning

**THE A. T. STEARNS LUMBER CO.**  
125 Taylor St., Neponset, Boston, Mass.

**Why Waste Good Stock?**

When You Can Save It at a Small Expense by Using Our

**SCREENING GRINDER**  
**"SUCCESS"**

Which we offer to the trade. It will successfully reclaim and grind sulphite and ground wood screenings into a marketable pulp, which can be sold at a profit.

The following leading mills are using the "Success" with success:

JONQUIERE PULP CO., Jonquiere, P. Q., Canada.  
SPANISH RIVER PULP & PAPER CO., Ltd., Espanola, Ont., Can.  
DELLS PAPER & PULP CO., Eau Claire, Wis.  
WOLF RIVER PAPER & FIBRE CO., Shawano, Wis.  
THE FALLS MFG. CO., Oconto Falls, Wis.

WRITE FOR INFORMATION

**APPLETON MACHINE CO., Appleton, Wis.**

# EASTWOOD WIRE MFG CO. FOURDRINIER WIRES BELLEVILLE, NEW JERSEY, U.S.A.

## THE WM. CABLE EXCELSIOR WIRE MFG. CO.




Established 1848  
Incorporated 1870-1890



MANUFACTURERS OF

Superior Fourdrinier Wires  
Cylinder Wires  
Brass, Copper and Iron Wire Cloth of every description  
Best Quality of Wire Rope

Dandy Rolls  
Cylinder Moulds

 Write for Price List

88 AINSLIE ST., BROOKLYN, N. Y.

## NATRONA POROUS ALUM

MANUFACTURED BY

PENNSYLVANIA SALT MFG. COMPANY

PHILADELPHIA

## C. K. WILLIAMS & CO., EASTON, PA.



Proprietors of the Penna. Dry Paint and Color Works and the Helios Dry Color, Chemical and Copperas Works of Allentown, Pa.

Manufacturers, Miners and Importers of Coloring Materials, such as Venetian Reds, Red, Brown, Black, Yellow, Oxides, Chrome and other Ochromes, also Paper Fillers—as Agalites, Mineral Pulp, Talc, China and other Clays.

### COLORS FOR PAPER MANUFACTURERS' USE

## Facts About Gumbinsky Bros. Co.

*Largest dealers in paper stock and rags  
in the world*

**CHICAGO, ILL.**

Occupy more than six acres of a sprinkled floor space, equipped with six electric freight elevators, twenty-two large electric power presses, private switch tracks and platforms for forty cars at one time; over 300 employees grading and packing Rags and Waste Paper; best service on any grade, any quantity and at any time.

**GET IN TOUCH WITH US**



## FOURDRINIER CYLINDER WASHER

# WIRES

50 years' experience as wire makers  
insures highest quality of product

**"Appleton Wires  
Are Good Wires"**

**APPLETON WIRE WORKS, Appleton, Wis.**