

# The Paper Trade Journal.

VOL. I.

NEW YORK: AUGUST 15, 1872.

No. 6.

## Improvements.

### NEW ENGLISH BOILING PROCESS FOR PAPER MAKING.

The English Paper Makers' Monthly Journal contains a long account of experiments being made in the North of England, by several experienced gentlemen, on fibrous materials for paper making purposes. Mr. Roebuck, the inventor of the new process, and who is well known to paper makers as having devoted a considerable portion of his life to the theory of treating wood fibre for paper making, was the first to suggest the use of steam, and the idea that there were other fibres in existence which could be worked at a greater advantage, while being procurable in equally suitable quantities; they offered the same advantages as are held out by the use of wood, and with that of enhanced profit. He immediately endeavored to devise some means of successfully overcoming their natural instability, of which the present trials are the result. Throughout these experiments Mr. Roebuck is being assisted by the experience and co-operation of an eminent chemist of the North of England, Dr. G. Lange, President of the Chemical Association, at whose suggestion the first trials of this new process were made, and subsequently they have been carried on at the South Tyne Paper Mills. So far as the promoters of the great utility of the scheme, that they have fitted up a laboratory for these trials, not on a model or an experimental scale, but of a full size for general use; their ascertained data can therefore be confidently relied on, without the doubt which sometimes occurs, whether the same process on a small scale will answer equally well when brought into practical use.

### PROCESSES FOR TREATING SUGAR CANE AND SORGHUM FIBRE.

A new process of treating sugar-cane leaf, bagasse, and sorghum for cleaning the fibre, has been invented by Theophile Harang, of Banata Grove Plantation in the parish of La Fourche, Louisiana.

The great bulk of such leaves or bagasse, and the consequent expense and difficulty of transporting the same to mills where the fibrous material can be extracted for use, make the same at present an unprofitable burden to planters, which it is most economical to destroy. In this manner enormous quantities of valuable material are utterly lost to the people and the government.

By the use of this invention planters will be enabled cheaply and conveniently to extract the fibre from their refuse sorghum or sugar-cane plant, and then transport the valuable matter to other places where it can be worked into paper or woven fabric. The fabric alone is not bulky, and comparatively inexpensive to transport.

The following is a description of the mode of preparation and manufacture:

The leaves must be operated upon while green. The disintegration of the textile being difficult, and the leaves being brittle, they should be submitted to the action of hot water or steam and boiled before coming in contact with the rollers, as otherwise they will be cut or chopped up and yield nothing but dust or powder, or a finely-granulated substance resembling hominy or cornmeal.

The leaves, duly saturated with hot water or steam which is impregnated with lime, are then passed between a certain number of rollers—say three, more or less, sets—which gradually crush them, with intermediate combs or teeth to separate and disintegrate the fibres. They are then passed through a solution of lime, and finally submitted to the action of a gin, or of any machine that will properly clean and separate them.

The same operation is performed with regard to the bagasse and sorghum refuse.

## CONSUMPTION OF PAPER IN PITTSBURGH.

The manufacture of paper in the United States has grown within a few years to such an extent as to now rank as fourth in magnitude among the industries of the country. The vast increase in the number of newspapers and the magnitude of their editions—the increased market for book and periodical literature—the wonderfully increased use of flat papers, brought about by the many additions to the railway and transportation companies, the manufacturers and merchants, with a growing business requiring blank books, labor-saving forms, and for purposes innumerable—together with the fact that paper has been adapted to many uses but recently thought of—has within fifteen years brought this industry up from a comparatively insignificant trade, to one which promises to rival the strongest manufacturing interest in the country.

Pittsburgh does not consume an amount of paper proportionate with her importance as a manufacturing city. She has no large manufacturing plants, for the supply of a far-reaching territory, like Boston, New York, Philadelphia, Washington, Buffalo, Cincinnati, &c. Her trade in this particular is almost exclusively local. Yet the value of the paper consumed here, as shown below, and the amount of capital invested in its production, will give some idea of the paper business in the West and a large proportion of the South, as many cities similarly situated rank with her in this particular. The mills from which she draws her supplies of news, wrapping, and sack paper, are those of the Pittsburgh Paper Company, Steubenville, Ohio—news and book.

Frazier, Metzger & Co., Pittsburgh, mills at Beaver Falls, Pa., and Latrobe, Pa.—wrapping.

Markle & Co., Pittsburgh; mills, West Newton—print.

Harvey & Co., New Castle, Pa.—sack.

Conchocton, Ohio, Mills—yellow wrapping, straw.

Godfrey & Clarke, Pittsburgh; mills at Monongahela City—sack.

Smith's Westmoreland Mills—straw wrapping.

The Harvey Mills, Wellsburg, W. V.—straw wrapping.

Spang's Mills, Blair County, Pa.—print.

The aggregate capital invested in these mills and the stock required to run them, foots up at \$700,000. Of these sales the product is all consumed, or goes into merchandise in Pittsburgh, except to the amount of about \$175,000 in print which goes abroad; leaving paper to the amount of \$525,000 for home use, about one-half of which is print, or newspaper. The finer grades of paper, comprising extra book, super sized and colored, flat and colored, are not made at any of the mills named, and as there are but some seventeen printing machines used a portion of the time on newspaper work, while there are seventy-five presses in use on these finer grades, which are far more expensive, it is safe to conclude that the value of the paper consumed in Pittsburgh is not less than that of the former, making a total, for all grades, of \$1,800,000. This estimate is low, we are satisfied, and while it seems like an immense sum to expend for paper alone in a single city, it is not one-sixth part of what Philadelphia pays for the same product.

The largest consumer of paper in Pittsburgh is Dr. Hostetter, whose contract with the Pittsburgh Paper Company this year, for stock for ten millions of almanacs for 1873, which he is printing on ten Campbell cylinder presses, amounts to nearly \$100,000.

Below we give the proportions of stock used at the Steubenville Mills in one month, for the production of 147,000 pounds of paper: 161,683 lbs. of rags, 26,185 lbs. old newspapers, 65,450 lbs. straw, 34,542 lbs. soda ash, and 14,000 lbs. chloride of lime, making 319,810 lbs. of stock and materials, or one hundred per cent. more than the product.—*American Manufacturer.*

## HYPOSULPHITE OF SODA.

The use of this substance, which commenced with the art of Daguerre, has since extended to a variety of uses. As an antichlor, it is introduced into paper pulp to decompose the last traces of bleaching powder, which, if allowed to remain, attacks the paper and renders it brittle and fragile. So much of this salt is now used that one establishment alone in Lancashire makes three to four tons a week. This salt is made in two or three ways. Kopp's method is to form it by a double decomposition with carbonate of soda and hypsulphite of lime. This substance can be readily obtained by oxidizing the soda waste and evaporating the resulting solution of hypsulphite of soda to the point of crystallization. It is also formed by first converting the sulphate of soda into the sulphide by heating with carbon, dissolving in water, and treating by a current of sulphureous acid until the reaction is acid, neutralizing with a little caustic soda and evaporating to crystallization. Sometimes stacks of coke are used to bring the sulphide of sodium and sulphurous acid in contact, the solution of sulphide trickling downwards and the sulphurous acid ascending.—*J. Lawrence Smith, in Am. Chemist.*

A factory for the construction of the Chromatic Printing Press is to be built at Canton, which will employ 400 hands.

Pittsburgh wants to have an Industrial Exhibition.

A new flume has been built at the Monmouth Mills at Housatonic, of which John M. Seely is agent.

## Manufacturing News.

A new mill is being built at Franklin, Warren Co., Ohio. It will make Manila paper.

The new paper mill at Neenah, Wisconsin, is nearly finished.

Middletown, Ohio, contains eight paper mills, which turn out nearly eighteen tons daily, valued at about \$4,000.

Mr. John H. Tangeman, Lockland, Ohio, proposes to build a Wrapping mill next season about four miles below Middletown.

Messrs. Lewis, Manning & Shultz are running Print paper at their new mill at Miami, six miles south of Dayton, Ohio.

We are under obligations to J. J. Merwin & Co. of Holyoke, Allen Bros., of Sandy Hill, and Owen Bros., of Housatonic, for favors received.

The Hurbuts of South Lee have just commenced to put in a foundation for a new paper mill.

Whenever you meet with any interesting items of news about paper in reading the papers, just clip and forward them to us.

Allen & Co.'s paper-mill, formerly at Burlington, Iowa, has been removed to Council Bluffs, in the same State.

Mr. Frank Scriber, executor of the late William P. Drake, at Ashland, N. H., is running the paper-mill owned by the latter.

The Boston Traveler says that Dr. Ayer, of Lowell, is likely to be an aspirant for the Congressional seat now occupied by Mr. Crocker.

J. T. Barker, of the Hallowell Manufacturing Company, Maine, and a son of G. I. Barker, agent of the Bates cotton mill of Lewiston, Maine, has been appointed to take charge of the Hampton mills in Holyoke.

A large paper-mill is to be built at Belleville, Illinois, and persons are negotiating for purchase of property there for the site, on which the mill building will be begun shortly.

A new pulp mill is shortly to be erected at Hardens Falls, by Messrs. Clandinar & Plummer; it will be two stories high, 72x36 feet in size, and will employ from ten to fifteen hands.

Evans & Lowell's new mill at Salscrapp is on the site adjoining Link & Weston's flour mill. It will have four 36-inch paper machines, with a capacity for turning out two tons daily.

The burnt mill at Fort Edward, N. Y., belonging to Hodgeman & Polser, is being repaired. One machine is already set up, and a second is nearly ready at Worcester.

At South Hadley Falls, Mass., the following factories were paid: Hallowell Paper Company, \$2,422.97; Carey Paper Company, \$1,301.81; the highest individual tax is Joseph Carey's, \$754.23. Agawan Manufacturing Company, \$138.75.

The New England Card and Paper Company has been recently started at Springfield, Mass., by C. M. Gage, late of Nashua, N. H., and Wm. B. Smith, formerly of Hartford, Conn. They make enameled paper, card-board, &c.

About ten days since, the building occupied by John E. Potter & Co., book publishers, No. 613 Commerce street, Philadelphia, was damaged by fire to the extent of \$30,000, less fully insured.

Messrs. Dow & Davis's new mill, which was built last year at Warner, Mass., is run in the winter season on straw boards, and in the summer on shingles, &c.; they have also a machine shop, where they manufacture W. S. Davis' (of this firm) patent turbine water-wheel, &c.

A set of paper car-wheels on one of the Pullman cars running to Jersey City, have run over 100,000 miles of track, and worn out entirely one set of steel tires, which have been replaced. The ordinary wheels, it is said, will only run 60,000 miles.

Pultz, Walkley & Co., paper bag makers, of Plantsville, Conn., have purchased the Horton & Stearns mill at Westfield, Mass., and now manufacture paper for their own consumption. Crane Bros. have only one mill there, in which they employ fifty hands in the manufacture of fine writing and ledger papers, and as a specialty long linen-fiber paper for bathing, &c.

Mr. H. Powell Ramsdell, of Newburg, N. Y., called July 27th, and informed us that he is running the old O'Connor mill at that place, and is turning out 5,000 lbs. of rag book paper daily, using both steam and water. Messrs. Campbell, Hall & Co. are his New York agents.

There are three mills at Sandy Hill, N. Y., which are all busy, as the water supply at that place is unaffected by drought. These mills are those of Allen Bros., and N. W. Wait & Son, both for making wall paper, and Howland & Miller, for making manilla.

At Baker's Falls, just below Sandy Hill, the old T-F mill, which was burned last year for the third time, is being rebuilt by W. H. Miller, formerly of Howland & Miller, and will make manilla. It will have two machines, and turn out between twelve and fourteen tons per week. The new building will be of brick.

## The Chatham Courier says, "We know of a first-class location for a manufacturing enterprise, to be run by steam power."

Mr. C. F. Davis will rebuild his paper-mill recently burned, and Messrs. Clark & Van Deusen are to have the contract for the machinery.

Orr & Co.'s paper mill at Pittstown has lately been fitted up with two double Leffel's turbine water wheels, and the head and fall increased about twelve or fourteen feet.

The Chatham Courier well deserves the name of an enterprising paper, and is full of items of interest, especially local news, which are the life of every journal. Its record of information about the paper mills in that vicinity is also very full and complete, and we have found much valuable matter in its columns.

Extensive improvements are being made at the paper mill of the Columbia Paper Co., at White Mills, N. Y. They have put in two large boilers, and will erect another stack. When the arrangements are completed, the mill will be run entirely by steam when the water is low.

The London Paper Makers' Club is still concerned over the subject of a more complete organization of the Association of Paper Makers, and they will shortly issue a circular for the purpose of obtaining the views and co-operation of paper manufacturers throughout Great Britain.

Messrs. Frazier, Metzger & Co., of Pittsburgh, Penn., are running two mills at present. One located at Latrobe, Penn., 40 miles from Pittsburgh, and now making 20 tons per day of Straw Wrapping, and the other at Beaver Falls, which is a large stone mill, turning out 5,000 lbs. Manilla, Coffee, and Roofing.

The first paper mill in Western Pennsylvania was built in 1798, near Brownsville, on the Monongahela river. It was called the Old Redstone Mill, and was torn down a long time since. The first paper mill in Pittsburgh, Penn., was built in 1823, and the building is now occupied for steel works.

There are no mills in Western Pennsylvania making a good article of Book or Fine paper. One reason is the scarcity of good water, the water in this section being strongly impregnated with iron and sulphur.

From Dayton, Ohio, to Cincinnati, located near the Big Miami river, there are 27 paper mills now in operation, and making nearly sixty (60) tons paper daily. There are also three large mills in the same locality now in the course of construction.

Mr. C. F. Markle, Pittsburgh, Penn., is now putting a 120 horse power engine in his Mill-Grove mill. Mr. Markle appears to be full of business at both his mills. He is also very largely engaged in manufacturing "coke."

The Owen Paper Company, at Housatonic, has put in one of the most substantial foundations for a new paper mill in the country. This mill is located some 120 rods below their present mill, it is to be 480 feet long, 70 feet wide, and three stories high. It is to be of pressed brick made in Hudson.

The new Keith mill now building at Turner's Falls, will contain two machines, and be ready to begin operations in September. John Keith is the owner and manager, and the mill is expected to be one of the best in the country. When fully completed it will contain four machines, though half that number is all the present complement. Its capacity will be about five tons per day of writing paper.

The following officers of the Felton Paper Co., were chosen at the annual meeting on the 31st inst.: President, W. Felton; Treasurer, H. A. Chase; Clerk, C. P. Chase; Directors, W. Felton, C. H. Smith, Frank Holister, Edwin Chase and Joseph E. Chase.

While the paper mill of Messrs. Morris & Boice at Chatham, N. Y., was being repaired lately, the water was let off from the pond in order to make some repairs to the dam and remove the gravel. When the water gate of the dam was closed to allow the pond to fill up, something gave out and allowed the beam at the dam to move from its regular position, causing a break at the bottom, so that it is feared a new dam will have to be built.

The recently organized Bridgeport Paper Co. has a capital stock of \$100,000, with the following officers: President, S. E. Dean; Vice-President and Treasurer, A. H. La Monte; Secretary, William K. Seely. The company own a valuable water-power and dam, buildings partially erected, boilers, engine, water-wheel, &c.; they also own the right to use valuable machinery for reducing vegetable fibre to pulp; by this process the raw material is mashed while boiling under a high pressure of steam, thus saving one-half of the alkali ordinarily used.

In our late notice of the paper manufacturing interests of Lawrence, we omitted to fully describe Mr. Jas. Bacon's mill, of which Mr. Geo. W. Seowerns is superintendent. It has three Fourdrinier machines—one 84-inch, one 73-inch, and one 62-inch, making six and a half tons of paper per day of No. 1 book, No. 3 book, and Nos. 1 and 2 news, employing from 65 to 70 hands. There is also a leather-board mill run by Davis, Book & Co., of four engines, and one 54-inch cylinder machine, which turns out 2,500 pounds of very fine board per day.

## G. F. & F. Quahman have just started a mill at Lisbon, N. H., for the manufacture of paper pulp from poplar wood.

The number of mills in working order in England, in 1871, was 273, and the number unoccupied or still, 14; the number in working order in the same year in Scotland was 60, and the number unoccupied or still, one. The Irish mills show a tendency to decline.

Messrs. Oglesby, Moore & Co., Messrs. Sutphin & Wrenn, and Messrs. Wardlow, Thomas & Co., located at Middletown, Ohio, are all running their mills to their full capacity. The first named firm have two mills, one on Book, the other on Wrapping, Sutphin & Wrenn make Printing, and Wardlow, Thomas & Co. Manilla paper.

Mr. Peter Adams is enlarging his mill at Newburgh, N. Y., by lengthening the machine and finishing building and adding a wing to his machine-room, in which he is placing a steam-engine to drive the paper machine. He is also about to add another large steam-boiler to the works. When these improvements are completed the mill will be able to make three tons of paper per day. This with Mr. Adams's mill at Buckland, Conn., which produces nearly two tons daily, makes him one of the largest manufacturers of the country, and shows our young paper-makers how integrity, industry and perseverance will advance a poor boy to honor and wealth in our own trade.

G. W. Erwin & Co., Middletown, Ohio, have just started up a new mill on Manilla paper. The mill contains four 500 lb. engines—one 68-inch double-cylinder machine, two large stacks of rolls, and two turbine wheels. Capacity, two tons daily. Mr. Erwin is also connected with Messrs. Harding, Erwin & Co., whose mill is located some three miles below Middletown, and which is at present making nearly 3,500 lbs. daily fine papers.

H. V. Butler, of New York, so suddenly killed by being thrown from his carriage at Stowe, was widely known as one of the wealthiest and most successful paper manufacturers in the country, and as recently President of the Paper Manufacturers' Association of the United States. He carried on an extensive paper mill at Paterson, N. J., and was among the first to supply fine Book Papers to the trade. He had spent several summers at Stowe, where he had nearly completed an elegant summer residence and grounds at an expense of more than \$85,000.

Messrs. A. Hill & Sons, Middletown, Ohio, are now making three tons No. 1 Manilla paper daily. Mr. Hill started here some eight years ago with two engines and a 36-inch machine. The mill now contains six engines from 3 to 100 lbs., one 56 and 62-inch double-cylinder machine, and also a 100 horse power engine to run the mill during the short-water season. Messrs. Hill & Sons are doing a very prosperous business, and are well known as manufacturers of a first-class Manilla paper.

The paper-mills at Ashland, N. H., of H. Carter & Wright, Land & Co., were purchased last summer by Wilder & Co., 100 and 102 Milk street, Boston, at cost of about \$30,000, and have been refitted and refurnished with improved machinery; they have five 40-inch, and four 30-inch engines, with two machines 54 and 84-inch rolls, capable of turning out about three tons of the best wrapping paper a day. The machinery is driven by two "Hudson wheels" under about fifteen feet fall.

Messrs. Beech & Wood have bought W. S. Ritchie's mill, and are now making bogus manilla. They intend to enlarge next fall, and will put in a patent machine for making manilla from straw, by boiling and grinding straw manilla, though half that number is all the present complement. Its capacity will be about five tons per day of writing paper.

The cause of the accident is uncertain. The Holyoke Transcript says the most lucid explanation we have heard is that the accident is a retributive "visitation" for the common practice of drawing off the canals and making repairs on Sunday, but why these particular corporations should be selected for an example was not disclosed. The Massachusetts Paper Co., upon whom the loss falls the heaviest, by reason of the delay in the completion of their new mill occasioned by the destruction of its race-way and pen-stock, were nearly ready to commence operations, and were intending to start the wheels in a day or two. At the time of the accident the gates had not been opened and the pen-stocks were empty.

The whole loss is variously estimated at from \$30,000 to \$25,000. The Massachusetts mill, which was nearly ready to commence work, cannot be put in running order for several months, and the Hampton mill will be obliged to suspend for want of water, as it is located below the dam. The "Newton lot," where the disaster occurred, is now owned by these two mill corporations and by the Warren Company and Jared Beebe of this city. The premises therefore were now in possession of the present Holyoke Water Company, and the works which broke away in the first place were not built by the Newtons. The streets of Holyoke presented a lively scene, as 6,000 mill hands were out of employment, and thousands came from all quarters to view the scene of disaster.

The Holyoke Transcript thinks the late accident in disguise, as it may lead to greater care in future by providing safeguards against the necessity for a general suspension of manufacturing, in the event of an accident to one mill, or a group of mills, on either of the three levels. Under the latter head, it has been suggested that a system of gates or coffer-dams, built at proper points in the several levels, would entirely obviate this drawback. Three hydraulic engineers have examined the locality and will make a report on the probable cause of the accident.

## THE WATER SUPPLY.

In Virginia and Maryland there has been a severe spell of dry weather.

The springs and streams of Delaware are low, and there is but little water in the Brandywine.

The supply of water in the Welland canal is very low, but navigation is not impeded.

Great damage has been done to the mills in Alabama by the late heavy floods.

The rain fall for the month of July was 6.2 inches, the largest amount that has fallen in July for six years.

Richmond, in Western Massachusetts, is so short of water, that the cats are sent by rail to Hudson to be drowned.

A dryness prevails throughout Southwestern Connecticut, especially along the line of the Fumell river, and the mills are suffering from want of water.

At East Hampton, Mass., there is a good supply of water, but Bridgeport, Conn., has been rather stinted of late.

The Connecticut river, August 5th, stood at 3 feet ten inches above low water, the highest point known at this season for many years.

Great improvements are being made at Sterling, Ill., which will double the water power there, and increase the manufacturing facilities greatly.

There has been a great lack of water in the Northwest. The Wisconsin is so low, says the Grand Rapids Reporter, that the fish talk about using Spalding glue to keep their scales on.

## TERRIBLE FLOOD AT HOLYOKE.

On the morning of August 8th, the wall of the Upper Level Canal, at Holyoke, gave way between the two lead gates, on the Massachusetts paper mill. A raging flood poured through the breach, carrying everything before it for a distance of 200 feet, and emptying itself into the second level of the canal.

The spectacle revealed was one of wreck and ruin. About fifty feet of the heavy stone canal wall was demolished, and a hole fifty feet wide and from thirty to fifty feet deep was ploughed along the northern side of the Massachusetts mill to the other canal. The large underground tail race, constructed of brick, was torn to fragments, the pen-stock was broken down in the centre, and the walls of the mill were undermined for a considerable distance. Had it not been for the prompt closing of the gates at the dam the mill itself would have been swept away.

The canals having been drawn off to meet the emergency, all of the mills necessarily suspended operations in the departments requiring power, giving thousands of operatives an enforced holiday. The Water Power Company also promptly commenced to rebuild the dam in the upper canal north of Dwight street, about one thousand feet above the point where the break occurred, and when this work is accomplished and the bank of the lower canal is made secure, the water will be let on and the mills will resume operations. The damage done by the flood is estimated to be about \$20,000, which will probably be distributed among the several corporations whose sites are involved.

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DIRECTORY.

Table listing various companies and their addresses, including 'NEW YORK HOUSES', 'PAPER AND PAPER MAKERS' SUPPLIES', and 'BOSTON HOUSES'.

Abstracts from the European Press.

Abstracts from the European Press. Prepared expressly for THE PAPER TRADE JOURNAL. Le Monteur de la Papeterie française. JULY 15th, 1872.

material and paper from one part of the premises to another. At the next meeting the Rules of the Club will be brought forward for the purpose of determining whether they shall be subject to revision previous to reprinting.

Diaper's Polytch Journal. METHOD FOR TESTING BLEACHING POWDER (Hypochlorite of Lime), by Dr. GRAEGER. The author prepares a very dilute and strongly acidified solution of protosulphate of iron...

CHINESE VARNISH—DR. H. SHERZER. Under the name of seho-lia, the Chinese apply a varnish freshly defibrinated blood mixed with powdered sulphur-lime...

Table listing various paper products and their prices, including 'Imports of Paper and Paper materials', 'Exports of Paper, Books, &c.', and 'Paper, books, &c.'.

Advertisement for C. B. HEWITT & BRO. PAPER, BINDERS' BOARDS, BINDER'S BOARDS, &c. Includes 'Paper Warehouse' and 'Bleaching Powders, Soda Ash, RAGS, GUNNY and Kentucky Bagging, MANILLA & HEMP ROPE'.

MARKET REPORT.

change to record in the market of the past month. Mills, orders, or are, at all events, the demands of the season...

VIENNA UNIVERSAL EXHIBITION.

We give a translation of the articles of the arrangement, which are of special interest to paper manufacturers.

IMPORTATIONS OF PAPER STOCK.

AT THE PORT OF NEW YORK, FROM JULY 30 TO AUGUST 14, 1872, INCLUSIVE.

Advertisements.

FOR SALE. A 62 inch Cylinder Mould, 25 inches diameter, in first class order, only for use, will be sold at a low figure.

PAPER MILL PROPERTY AND MACHINERY FOR SALE.

For particulars of location, price and terms of the property mentioned below, address: HOWARD LOCKWOOD.

Advertisement for J. HENRY BLANCHARD.

J. HENRY BLANCHARD, BROKER IN PAPER MAKERS' SUPPLIES, 45 & 47 CHAMBERS ST. NEW YORK.

Advertisement for THOMAS SMITH.

THOMAS SMITH, Wholesale Dealers in all kinds of Cotton and Woolen Rags, 108, 110 & 112 Norfolk St., New York.

Advertisement for W. KELLY & SON.

W. KELLY & SON, Wholesale Dealers in all kinds of Cotton and Woolen Rags, 66 & 68 SHERIFF ST. NEW YORK.

Advertisement for RAGS.

RAGS, GUNNY and Kentucky Bagging, MANILLA & HEMP ROPE, 108, 110 & 112 Norfolk St., New York.

Advertisement for GOLDEN BROTHERS.

GOLDEN BROTHERS, PRINTERS, 56, 58, 60 PARK ST. NEW YORK.

Advertisement for JUTE BUTTS.

JUTE BUTTS, Hop Sacking, 1000 BALES PER EDITH WARREN, WILLIAM B. COOPER, JR. & CO.

Advertisement for BRONZE HARDWARE.

BRONZE HARDWARE, DOOR KNOBS, BUTTS, Ornamental Front Locks, &c., RUSSELL & ERWIN MANUFACTURING CO.

Advertisement for FILES.

FILES, 45 & 47 CHAMBERS ST. NEW YORK.

Advertisement for PULP PROPPELLER.

PULP PROPPELLER, BEATING ENGINES, THOMAS NUGENT & CO., PATENTEE'S, Whippany, Morris Co., N. J.

STRAW-BOARD FOR CAR WHEELS.

BY W. E. PARTRIDGE.

In a previous article on the subject of paper wheels we promised to say something in regard to the material used in their manufacture. This material is straw-board, of the same quality as that used for the making of paper boxes. The supply is enormous, and seems to be capable of indefinite extension. The first lot was offered for sale in New York city in 1844, and consisted only of one or two tons. This small lot was regarded by the box manufacturers with a good deal of indifference, and was bought by Mr. Butterfield, of the present firm of Mallory & Butterfield, who from the first took a great interest in the product. In 1865, he rapidly had the trade grown, the paper-board makers no longer made use of what are called hand-board boxes. The product in 1860 was only 8,000 tons, while during the past year it is estimated at no less than 18,000 tons. There are now about sixty straw-board mills in the country, and in case of a demand, the product could easily be increased to 30,000 tons. Aside from the use now made of the material, including its recent application to car-wheels, there are obviously many other purposes for which it may be made available in the range of the mechanic arts.

The question occurs as to whether we have not here a substitute for wood in many kinds of light ornamental work where strength and durability are requisite? Some well-ascertained facts seem to justify an answer in the affirmative. This paper-board, when made into a panel, is stronger and lighter than wood; it has a perfect surface, will not shrink, and is not liable to warp. Doors made of it will bear a great deal of hard usage without showing it. It can be fashioned into any required form and fastened in its place like an ordinary wood moulding, and will take paints, oils and varnish in the same way. These are the points which any car-builder will readily appreciate. The writer has seen entire doors, saving the outside framing, made from a set of panels which were made in a single piece. These panels were an inch in thickness, and by a peculiar arrangement of the paper inside, were partially hollow, which diminished the weight without impairing their strength. It is quite probable that a car-body might be lightened twenty five per cent. by the use of this material instead of wood for panels, doors, and ornamental work. If proper precautions were taken, even the posts and all the framings above the truss-plank, except the ribs for the roof, could be made of this material.

The consumption of our native woods for building purposes of every description is so enormous, that timber will become more and more valuable, and the supply less and less in proportion to the demand, until straw-board and paper-board will be cheaper than wood for many purposes before another half-century has elapsed. Before this time comes, however, we shall be able to produce an article which will, to a great extent, take the place of wood and render us independent of our forests—National Car Builder.

PAPER MATERIAL.

Hay, nettle, hops, mallow, couch-grass, licorice, marsh-mallow, stems of peas, beans, buckwheat, rashes, reeds, the bark of the linden tree, little sticks of beech, willow, aspen tree, lichens, leaves of the chestnut tree, potato stems, corn stems, to which Dr. Dallas was the first to awake the attention, those of the artichoke, so common in the south of Europe, have been successively proposed as furnishing material for paper, but the greatest part of these vegetables produce only paper of a rather inferior quality.

There is a very interesting book in the British Museum, written in the Dutch language, and published in 1772, which is printed on seventy-two kinds of papers produced from as many different materials, which is an irrefutable proof of the numerous trials made to find substitutes for rags. Straw was used for paper in the year 1766 by a German manufacturer, and in the year 1800 the Earl of Salisbury presented the king of Great Britain with a book printed on straw paper. Proposed again in the beginning of this century by Arn. Seguin, straw seems to be, in spite of the hardness produced by the silica it contains, one of the materials most fitted for the bleaching, and giving the more favorable results. This industry has been improved especially in America, Germany, England and Belgium. Similar manufactures exist too in France, and at Sevrenhem, near Bruxelles.

The straw used for paper can be divided into two categories, those from wheat, rye, barley, etc., and those from leguminous plants like peas, beans, lentils, and even colwort straw, which has been recently proposed. Corn-straw has been recognized as one of the most convenient substitutes for rags. Experiments made at the Royal Manufactory of Prussia give a paper of great strength, very suitable for printing official acts, but not quite so satisfactory on account of the bleaching. This application is not very new. In the seventeenth century, near Rimini, in Italy, paper-mills were using only corn-straw, the products of which obtained a high reputation—Dictionnaire de Arts et Manufactures de Labeoulaye.

MANUFACTURE OF BANK NOTES.

The Bank of England has always claimed a superiority over all other institutions of the kind in the world, in the mechanical characteristics of its notes, the quality of its paper, the execution of the plate printing, type printing, etc.

The paper used for this purpose is of a peculiar white color, which is neither cold in the shade, nor used for any other purpose whatever. Its thinness and transparency prevents any of the printed part of the note being washed out by turpentine, or removed by the knife, unless a hole is made in the place thus practiced on; and there is a peculiar crispness and toughness to the paper which enables those who are accustomed to handling it to distinguish instantaneously, by the touch alone, from false paper.

Wire marks or water marks are produced in paper when in a state of pulp, and consequently a forger must procure a mould and make his own paper. But both the workmanship of the mould, and the manufacture of the paper, from its intricate surface, require the greatest skill.

Another peculiarity is the three deekel edge of the note. The mould contains two notes placed lengthways, these being separated by the knife in a future stage of the manufacture. The deekel or wooden frame of the paper mould produces that peculiar effect which is seen on the edges of uncut paper. As it is caused when the substance is in a state of pulp, imitation is extremely difficult. The strength of this paper is also very great; thus, in its water-leaf, or unstaked condition, a note will support thirty-six pounds, and when one grain of size has been diffused through it, it will lift half a hundred-weight.

THE FIRST PRINTED BOOK.

It is a remarkable and most interesting fact that the very first use to which the discovery of printing was applied was the production of the Bible. This was accomplished at Mentz, between the years 1440 and 1445. Gutenberg was the inventor of the art, and Faust, a goldsmith, furnished the necessary funds. Had it been a single page, or an entire sheet, which was then produced, there might have been less occasion to have noticed it; but there was something in the whole character of the affair, which, if not unprecedented, rendered it singular in the usual current of human events. The Bible was in two folio volumes, which have been justly praised for the strength and beauty of the paper, the exactness of the register and the lustre of the ink. The work contained twelve hundred and eighty-two pages, and being the first ever printed, of course involved a long period of time, and an immense amount of mental and mechanical labor; and yet, for a long time after it had been finished and offered for sale, not a human being, save the artists themselves, knew how it had been accomplished. Of the first printed Bible eighteen copies are known to be in existence, four of which are printed on vellum. Two of these are in England, one being in the Grenville collection, one in the Royal Library of Berlin, and one in the Royal Library of Paris. Of the fourteen remaining copies ten are in England—there being a copy in the libraries of Oxford, Edinburgh and London, and several in the collections of different noblemen. The vellum copy has been sold as high as £1,300. James Leaux, Esq., of New York City, has a copy in his library, which was purchased by Mr. Davidson at auction, in London, in 1848, for the sum of £500 sterling, equal to \$3,200 independent of freight or duties. The custom-house officers passed it free of duty in consideration of it as a curiosity. It is the only copy upon this side of the Atlantic.

For the discovery of wood fibre in paper, Julius Wiesner thinks the only safe method is the microscope, and discusses the subject in *Dingler's Politechnisches Journal*.

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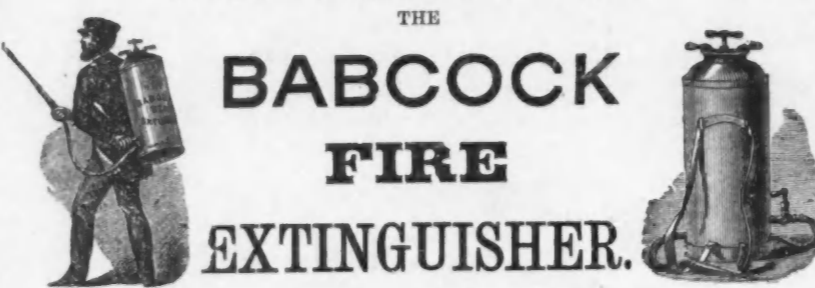
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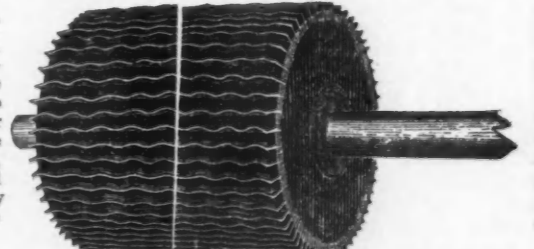
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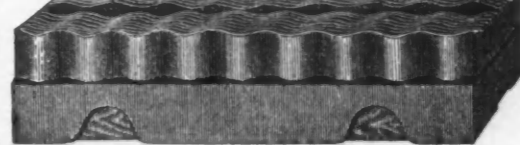
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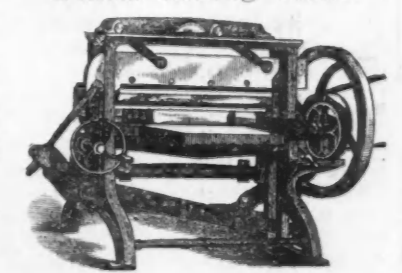
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PAPER AND

The materials of white paper are hemp and straw also large of paper. Hemp is



currency. The tests of the fabrics are, however, of paper, since paper which he regularly sells are isolated, microscopic alone the furnishes also the most operation of standing, it can never not entirely torn away will always be distilling the woody fibre will by the dotted appearance and so will the strength of the halm.

Some kinds of paper are placed either very slightly water is at once absorbed in watery solution. When no stain for staining, the border they exhibit a blue paper are generally water, of which a blue test; sometimes blue produced will depend starch present; but by glue, a brown spread to examine paper is fibres, a piece of it is taken; this is softer, then placed upon with a pin, covered with and placed under the power of from 120 to

is now the object of some unaltered fibres labyrinth of completely adhering granulated paper. The cylinder-former, while the twisted, cotton; the torn moly consists of both

Figures 1 shows fibrous paper. The cylinder-former, while the twisted, cotton; the torn moly consists of both

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