The Supply of Wood For Paper Pulp
A Problem Uncle Sam Is Investigating

If the Scientists of the Forest Service Can Find a Substitute for Spruce that Is Plentiful, the "Paper Age" Will Be at Hand---Houses Will then Be Built of Paper.

A TYPICAL PAPER PULP MILL AND ITS SUPPLY

THE paper you hold in your hand as you read this is made of wood. It is the product of a ground-up or macerated tree, and if you look closely you can see the wood fibers, like small splinters, all thru the paper, but more discernible in the margins where the printing does not cover. And not only are all newspapers made of wood pulp, but so are almost all other cheap papers. Book papers are generally made from wood; so are wall papers, cheap writing papers, wrapping papers and a variety of others. But the main use of wood pulp paper is for printing. A clever statistician has calculated how many acres of forest go into the "best seller" by Winston Churchill, and the figures are appalling, especially when one realizes that the wood used is practically all of one kind, spruce, found chiefly in the northeastern United States and Canada.

Paper always has been made from vegetable fiber. Material for receiving printed or written characters have not always been of paper; the Assyrians used clay tablets, medieval Europe used parchment made from sheepskin. But paper, by its very derivation from the Egyptian "papyrus," the plant from which the oldest known paper was made, is of vegetable origin, and is now made principally of rags, wood, straw and like substances, the rags themselves being generally of cotton or flax.

The demand for paper has made the supply problem grow rapidly. There has never been an era like the present for cheap printed matter. This is the day of the newspaper; the newspaper uses wood-pulp paper. The drain upon the spruce forests is so great that there may be a famine of that wood. Therefore an effort is being made to get another wood to replace it—a hard thing to do since spruce is admittedly superior to others. Since paper-making began there has been a constant search for paper material. Egypt has an ideal plant for its own uses in the papyrus. Its paper was not made by reducing the plant to a mass and then spreading it out into sheets by pressure. The stem was split, the outer layers were peeled off and their edges glued together to form long sheets. The papyrus stems also furnished material for sails, mats, cloth and cords; the pitch was used for food; sandals were made of a material provided by papyrus, and the seams of ships were caulked with a tow made from it.

As the word "paper" comes from the name of a paper-making plant, so the word "library" has a similar derivation from the bark (liber) of trees because books were once made on sheets of bark, just as our American Indians have put records on the bark of the birch. "Book" comes from Anglo-Saxon "boc," or beech, since early Teutonic tribes used the bark of that tree for writing material.

The eastern nations have used paper for a long time, the Chinese and Japanese have made paper from cotton, from straw and wood fibers, and from the pitch of various plants. Japan now uses a number of fibers, including bamboo and many grasses; the Polynesian islands make use of tapa cloth and paper, made from the paper mulberry.

When the Arabs captured the wonderful city of Samarkand, 704 A. D., they found a people skilled in the manufacture of paper from cotton, and they in turn disseminated the art thruout their empire. Their product became known as "charta," which has given name to "card" and to "charter." The making of paper from cotton was common thruout Europe; later linen rags and flax were used. Still the demand grew and it became necessary to search new fields and new materials. Esparto, a Spanish grass, was finally decided on and still is used. About 200,000 tons are annually imported into Great Britain for paper-making. Palm leaves, cane, hop stalks, nettles, thistles, ramie, peat and a great many other things have been tried with indifferent success. Bamboo fiber has been used, but paper made from it is not good for printing because of hard particles that destroy type.

In 1845 Keller of Saxony took out a patent for making paper from wood-pulp. His success led others to investigate, until two methods were devised, the mechanical and the chemical processes. Both are used in the United States. The mechanical process consists merely of grinding the wood with water until it is reduced to a pulp mass. The pulp mills are situated where the wood grows, and generally on a good water-power. The product is not as high grade as the chemical pulp, giving a longer and tougher fiber. For most cheap papers the mechanical pulp is used as a basis, with about one-third of chemical pulp added to give toughness.

The chemical processes are two; one uses caustic soda and the other sulphurous acid to separate the useless matter from the fiber. The caustic soda process, which gives its name to soda pulp, is used mainly for poplar.

The plant of a typical sulphite pulp mill consists of a saw for cutting the logs into a size easily handled, a wood-preparing, or rossing, room, in which the bark is stripped off, and a chipper to reduce the wood to small pieces for the acid in the digester. The digester plant has a tower in which sulphur is burned at the base, and the fumes pass up thru cooling pipes to meet water which percolates thru limestone from the top. This forms sulphurous acid, which is drawn off into the digester, filled with chips. Steam is turned on under pressure, and the whole mass is cooked until sufficiently digested, when the cooked pulp is blown out and washed with water. Other processes follow in which the fiber is formed into sheets and is squeezed thru power presses to remove the water. The pulp may be then shipped to the paper mill, where it is bleached and otherwise prepared for special uses, or to factories which make use of the material in the manufacture of pails, dishes, boxes, picture frames, mattings, carwheels, steam and water pipes, telegraph poles, electric conduits, insulators, coffins, shoe heels, horseshoes, spools, tool handles, buttons, pulleys, paving blocks, surgeons' splints, astronomical observatory domes difficult or expensive to bleach.

Four hundred or more raw materials are used in the manufacture of paper pulp, but wood furnishes by far the greater quantity. Many American woods have been tried, including spruce, poplar, basswood, balsam, pine, beech, willow, cedar, hemlock, maple, birch and aspen. Of these spruce is most used. Balsam is also good. Both are valuable for their special quality of fiber and for their lack of color, being nearly white and therefore not difficult or expensive to bleach.

To arrive at definite conclusions as to the various pulpwoods and how to treat them the forest service has established at 696 East First street, Boston, Mass., a laboratory for the purpose of making investigations and experiments in the manufacture of sulphite woodpulp.

Even with the seemingly exhaustless spruce forests of Canada, in addition to those of the United States, it does not need an expert statistician to foresee the day, not far in the future, when the spruce pulp supply will be exhausted, or at least so depleted that the cost of the wood will be prohibitive. Therefore a principal object of the forest service laboratory is to experiment on the pulp-making possibilities of other woods, with reference to obtaining, first, a pulp that will approximate spruce pulp to supplement it; second, other fibers that may have qualities peculiarly adapted to special kinds of papermaking; third, a pulp of marketable value as a by-product from the waste material of lumbering and milling operations.

So far there seem to be more possibilities in balsam than in any other wood. Yet the most interesting possibilities lie in the line of discovering other fibers that may have properties peculiarly adapted to special kinds of paper making. Here the realm of conjecture is as bewildering as it is broad, for few countries can present a greater variety of woods than the United States and its possessions. Special woods may be discovered which will supply the basis for special papers, until there may indeed be brought about a "paper age," as a German scientist has predicted, wherein all vegetable fibers will find place in making boards, bricks, moldings and nearly all structural materials. Here, too, there is opportunity for utilizing wood waste, sawdust slabs, and edgings—all to be made into pulp, and thence into finished paper products.

The forest service experiment station is conducted in connection with a model plant fully equipped. The samples of wood used will be collected by members of the forest service in order that there may be no question as to their identification, and then treated in every way as if in a regular pulp mill. Sulphite pulp will thus be made from a great variety of American woods. The fibers will be studied microscopically, and good-sized samples of the pulp will be distributed among paper manufacturers, so they may judge of their usefulness for general or specific purposes.

More than 1,500,000 cords of wood are used annually in the production of sulphite pulp, and of this nearly four-fifths is spruce. With such an enormous demand there is a rapid diminution of the supply of standing spruce and a consequent marked increase in its cost. Moreover, since small sizes are not only available for pulp, but are even preferable, the lumberman, in cutting for pulp, is likely to work on the theory that "all is fish which comes in his net." Notwithstanding this, the principles of forestry are being applied by many lumbermen to cutting pulpwood and provision is being made for the future. This is quite practicable, since spruce is a fairly rapid grower and in comparatively few years attains marketable pulpwood size. Yet under the most favorable conditions spruce will have to be supplemented by some other material, because the use of paper, especially for cheap printing stock, is increasing out of all proportion to the supply of the raw material now in sight.

This is only one of the many ways in which the forest service is helping toward a proper utilization of the forest products of the country. Pulpwood is recognized as a valuable forest crop to be gathered in quantity and from the greatest number of sources. Care should be taken to secure future crops by cuttings that will not destroy the growth counted on for a later supply; to handle the product so economically that waste will be minimized both in the lumbering and milling, and to give adequate protection from forest fires.

Yet, in spite of the present effort to find a paper pulp substitute, for several years to come, when you pick up your newspaper you will be holding a pliable sheet of wood or wood fiber.

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Local "News" a Quarter of a Century Old

Culled from The Journal of this Date, 1881

The Minneapolis Evening Journal.

Vol. 3. No. 189. MINNEAPOLIS AND ST. PAUL, FRIDAY, NOVEMBER 11, 1881. Fifty Cents per Month.

We predict that Andreas U. will land safely in the probate office.

President Arthur went to New York to vote. A good stalwart never misses a chance to vote.

If this muddy business keeps on much longer the citizens of Minnesota will become webfooted.

It is to be hoped that the six new street commissioners will be strong men—strong enough to raise the sidewalks and street crossing about a foot.

If the star route gang had only had the genius of Cashier Baldwin they might have got away with the whole United States treasury, except the vault.

When Captain Paul Boyton finishes his float down the Missouri river he will have the proud satisfaction of having accomplished the champion fool feat on record.

Bob Ingersoll didn't inject much logic into his speech in the star route cases. He didn't have to. The government case was so weak that a bald-headed joke brought it down.

The democratic party in the senate will oppose the admission of Dakota, but David Davis will throw his weight into the favoring scale and tip the democratic party on its beamends.

The Fergus Falls Journal says that General Johnson "was squashed by the rolling over him of a large vegetable of the Hubbard variety." But the general is elastic and will inflate again all right.

The rural members of the legislature no doubt imagine that they have perpetrated an immense joke on Ramsey and Hennepin counties by tying them up in one congressional district like a couple of Kilkenny cats swung across a clothesline.

SOCIETY CIRCLES

The Record of a Pleasant Week and How It Was Spent by Pleasure Seekers.

Wedding Bells Ring on Several Notable Occasions—Romance in Real Life.

Pleasant Club, Society and Church Entertainments—Personal and Social Items.

On Monday a very pleasant reunion and celebration took place at Anoka, the occasion being the golden wedding of Mr. and Mrs. Daniel Robbins. Only the descendants of the aged couple were present, but twenty-nine children and grand-children made the house hum with joy and merriment and the various testimonials of love and affectionate remembrance which they brought were rich and elegant.

Mr. and Mrs. Robbins have passed the meridian of life, he being 75 and she being 71, but they are hale and hearty still and this promise of a still longer life added not a little to the joy of the gathering. They moved to Minnesota in 1855 from Maine and have done even more than their share to build up the commonwealth with which they have been so long identified. The children present were D. M. Robbins, St. Paul; Mrs. J. W. Henion of this city, Mrs. H. J. G. Crosswell of Minneapolis, A. B. and J. S. Robbins of Willmar, D. D. Robbins of Anoka, their wives and husbands and fifteen grand-children. May they all live to celebrate their diamond wedding.

Commodore Wiltse and family will spend the winter in the east.

Hon. and Mrs. R. B. Langdon took a trip to Milwaukee last Tuesday.

Mr. and Mrs. Otto E. Greeley indulged in the delight of a visit to Chicago last week.

Mr. and Mrs. John Goodnow are at Red Wing, where Mr. Goodnow is ill with typhoid fever.

Samuel S. Linton, late of Butler, Mo., has removed to this city with his family and will engage in business.

W. W. Eastman and wife and Mrs. P. M. Babcock expect to start next Wednesday on a journey to the Pacific coast.

The Zouaves will give a mask ball next Wednesday evening at Turner hall. They will have Danz' full orchestra to mark time for the flying feet.

Mr. Joseph Pettit, who has been spending the summer with his children, C. H. and W. M. Pettit and Mrs. O. J. Griffith, returned to his Ohio home last Wednesday.

ELECTION ECHOES

Sure Enough Republican Victories in New York, Wisconsin and Virginia.

But the Democrats Make Important Legislative Gains in Three States.

Minnesota, However, Rolls Up 35,000 Majority on A Very Light Vote.

From New York the later returns come in so favorably to the republicans that the drooping spirits of those at the headquarters revived very perceptibly, and it was conceded that the entire state ticket had been elected by a majority estimated at from 2,000 to 3,000, except Husted for treasurer, who is certainly defeated, having run several thousand behind the ticket.

From Virginia the tidings of a sweeping victory for the ticket of the republican - readjuster combination comes in with unmistakable emphasis. The readjusters cut heavily into the funder vote, and they elected Colonel Cameron and Senator Mahone by a vote of 12,000 to 20,000, judging from the returns already in. The Richmond Whig is extremely jubilant.

In Wisconsin a republican victory is conceded, and the state ticket is elected by a vote variously estimated at 2,000 to 4,000.

Minnesota.

The returns in this state show a remarkably light vote, and it is altogether probable that when all are in there will be not more than 90,000 votes polled, against 150,000 polled last year. The result of the election is, however, unquestioned, the entire state ticket being elected by a majority of 30,000 to 35,000. Of the 45,000 votes already reported, Hubbard gets 32,720, Braden 34,249, and Vanderburgh 29,816.

ST. PAUL SPLINTERS

The legislature will get itself together tonight and find something to talk about.

The Evening Journal proved a very good prophet yesterday with one exception, that exception being a very grievous one; it is the defeat of Colonel Kiefer for clerk of the district court.

Commodore Kittson made three purchases at the late Lorillard sale of thorobred horses in New York, viz: Nell Gwynne, Beware and Glenivon, paying respectively $400, $500 and $350.

Only two more steamers from below are promised for the season, the Mary Morton of the Jo line, due tomorrow, and the Arkansas of the Saints line, due Monday.

LATEST CITY NEWS

George H. Johnson has come back to Minneapolis to reside. He will be deputy sheriff again.

The Little Giant Bible class passed a resolution yesterday requesting General Reynolds to appoint a committee of arrangements for celebrating the seventh anniversary of their organization.

F. F. Davis and Robert Odell, two lawyers from western New York, have opened an office in the Academy of Music building.

George A. Brackett has come home to spend the winter. General Rosser will remain on the road for some time yet. Andrew and George Smith returned with Mr. Brackett.

Poundmaster Jerry Sullivan found his own cow violating the law and like a good faithful shut her up, fined her and then paid the fine himself.

The whistle of the motor broke down yesterday morning and kept tooting till all the steam was exhausted, leaving the motor stranded at Seventeenth street.

Hon. George A. Pillsbury, who returned home last night, was today notified of his election to fill a vacancy in the Fifth ward aldermanship. He has not yet signified his acceptance, but will probably do so soon.

The noon train on the Milwaukee road carried two sleepers full of passengers today.

Thirty-two carloads of coal came into Minneapolis today.

W. D. WASHBURN & CO.,
Manufacturers and Dealers in Every Variety of Pine Lumber.
Steam Sawmill and Yard at Anoka.
Minneapolis Yard Corner Second St. and Tenth Av. S.
General Office No. 1 Westfall's Block.

CITY BANK.
J. W. JOHNSON.....President
JOHN WATSON.....Vicepresident
F. J. BUXTON.....Cashier
C. McC. REEVE..Assistant Cashier
In accordance with a recent resolution of the Board of Directors this Bank will no longer issue interest-bearing certificates of deposit except to persons having active business accounts with the Bank.

ONE OF THE FIRST ENVELOPES EVER MADE IN AMERICA

CAPTAIN JOHN TAPPER'S HISTORIC ENVELOPE MADE WITH A PAIR OF ARMY SHEARS.

Mrs. F. A. Dunsmoor recently discovered in an old trunk which had belonged to her father, Dr. Seth Turner, U. S. A., an envelope that appears to have been one of the first made in America and was undoubtedly the first that Mrs. Dunsmoor's mother had ever seen.

The man who made it, Captain John Tapper (he wasn't a captain then, only a civilian high private in the rear rank) is now its happy possessor, for Mrs. Dunsmoor presented it to him a few days ago.

While stationed at Camargo in 1847, Tapper saw in the mail that arrived from the states directed to the commissary, a letter enclosed in a cover which hid its entire contents. Before that time the sender of a letter or package trusted to the wax with which it was sealed to protect its contents from prying eyes. This innovation in a covering which was not a part of the letter itself, at once took Tapper's fancy and as soon as he returned to the doctor's quarters he set about making some envelopes, the one enclosing the doctor's letter to his wife being the first perfect one.

Altho showing the marks of travel and age, it is still in excellent condition. On one side is the address: "Mrs. Mary E. Turner, care of Robert Stuart, Esq., Lockport, Illinois"; the postmark, "Fort Isabel, Feb. 9, 1847," and the written acknowledgment, "Received Feb. 11, 1847. Camargo."

The expense of sending the letter, which in those days was borne by the recipient, was 10 cents, indicated in large figures in the upper right-hand corner. Perhaps the most interesting thing about it, from a historical point of view, as indicating that this was the first envelope that the doctor had ever seen, was the note which he wrote under the flap on the reverse side, "Tapper's manufacture. Make some of these covers, they are so convenient."

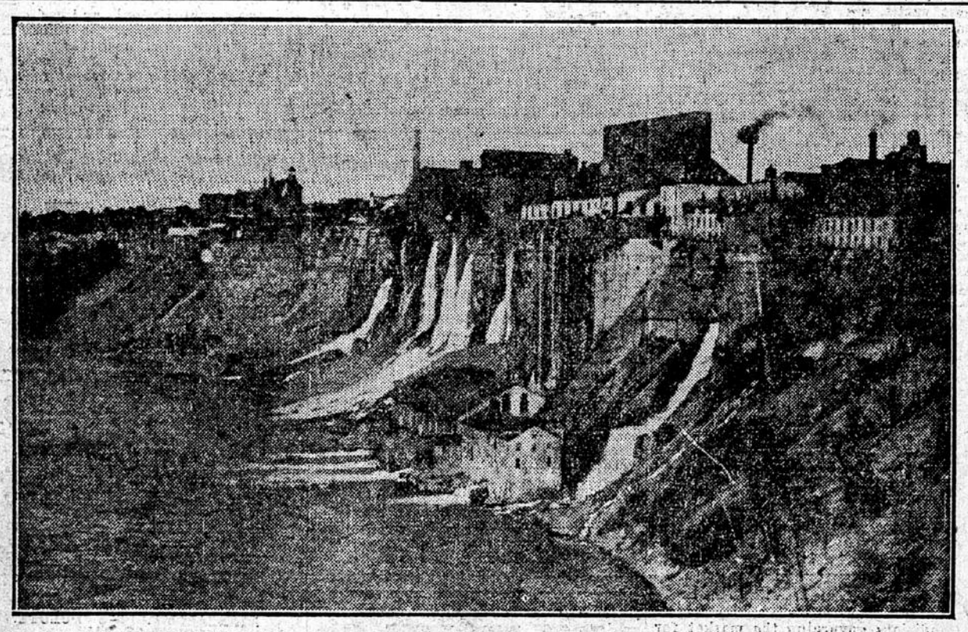
THEY WON'T WORK UNDER HOUSEKEEPERS.

New York Sun.

The manager of an employment agency which places many servants in large establishments contributed a bit of information the other day when she told a client that not a servant in the place would go to a home in which a housekeeper is employed.

"They are brought in always for the purpose of reducing expenses," the manager said, "and they begin, of course, on the servants. Maids employed under one of these women often have insufficient food. It is by no means unusual for the servants in the house to arrange that one shall every day buy something for them to eat. Every servant buys for one day in the week and only in that way are they able to get enough to eat.

THE SPOLIATION OF NIAGARA



This photograph, taken recently, shows the scenic beauty of the Niagara gorge is being ruined and the volume of water which passes over the falls diminished by the many power plants along the American side.

LANPHER
MEN'S FUR-LINED COATS

THERE are more fur-lined coats made in St. Paul than in any other city in America—probably more than all else put together. What does that mean? The highest priced fur designers and furriers—the top-notchers in their art—are at St. Paul. A man may be a good custom tailor but he may not be able to build a fur-lined coat that will have the right hang and keep it.

Our coats are designed and made from start to finish in our own 6-story fur factory—one of the largest in the United States—they simply must be right in every respect.

The shell—as we call the cloth part—is made by our own tailors in our factory. They are made of the finest selected Kerseys, Doeskins and Broadcloths, thoroughly shrunk. The fur lining is made by our most experienced furriers and the trimmings are all the very best. The coats fit properly and hang properly and wear until they become a part of yourself.

Here is a practical coat for the business man. It looks rich, hangs well, and will wear well.

DIPPED MUSKRAT LINED Kersey Coat with unplucked Otter collar and facings..... $75.00

We make fur-lined coats costing as little as $30 and all the way up to $400 each. Over 100 different varieties in fur, cloth and facings.

We have in stock Men's Fur Coats at $16 up to $600 each. Every one a good coat; every coat appropriate for some uses; well made without a single exception. If it's a LANPHER FUR it is made as well as if we made it for our own use; none are made better.

LANPHER FURS are sold by the leading dealer in every community. Write to us for the book "Judging Furs," and we will also send you the address of our nearest dealer.

LANPHER, SKINNER & CO., St. Paul.

"We dined in some of the finest hotels and restaurants, but did not find any coffee to excel in quality Arbuckles' ARIOSA."

That is what one lady writes and millions of others prove they believe, by using more Arbuckles' ARIOSA Coffee than all the other packaged coffees in the United States put together.

The fact that Arbuckles' ARIOSA Coffee costs less and has suited the health and taste of most American people for over 37 years, ought to induce everybody to at least sample it.

The cities hide many country girls and boys who secretly sigh for a cup of good coffee like "mother" made. "Mother" probably used the old original "Arbuckles'" the first roasted packaged coffee.

See that you get the sealed package, one pound full weight, bearing the name ARBUCKLES' ARIOSA COFFEE and the signature of Arbuckle Brothers, which entitles you to presents.

That is the genuine article, no matter where you buy it or what price you pay for it.

Same old Coffee, same old firm.

If your grocer won't supply, write to

ARBUCKLE BROS.,
NEW YORK CITY.

Defective Page