

PULP WOOD OF CANADA

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Pulp Wood of Canada by George Johnson

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GEORGE JOHNSON

**PULP WOOD
OF CANADA**

PARIS INTERNATIONAL EXHIBITION

1900

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OF

CANADA

BY

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STATISTICIAN

DEPARTMENT OF AGRICULTURE, OTTAWA

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Pulp Wood and Wood Pulp in Canada.

BY GEORGE JOHNSON, F.S.S. (Hon.)

EGYPT AND CANADA.—The first was the land of the early paper plant; the second is the country of the latest paper tree.

Egypt was the land of the papyrus, from which the ancient dwellers on the banks of the Nile obtained the material on which to write those well nigh imperishable records which, three thousand years after they were stored away, have been produced from their hiding places looking as fresh with their cuttle-fish ink as though indited but yesterday.

The Papyrus, "the paper-reed of the brook," gave us the name "paper." The word "library" in English, and the French word "libraire," preserve for us a record of the fact that books were once formed of the bark (liber) of trees. The French word "livre" traces its origin to the same source. The English word "book" comes from the Anglo-Saxon word "boc," the beech tree; and was so derived because the early Anglo-Saxons, like the other Teutonic tribes, used the bark and wood of that tree for writing material.

In modern times we have reverted to the ways of our ancestors and have gone back to the arboreal growth for the supply of paper to meet the world's marvellous demands.

The banks of the Nile were the early store-house of the paper supply. The beech groves of Germany and of England succeeded Egypt. Then towards the close of the 19th century came the opening up of the Canadian spruce forests.

The slopes of the St. Lawrence, the St. Maurice, the Ottawa, the St. John, the Ste. Marie, the Fraser and the Qu'Appelle rivers are substituted for the Nile and the rivers of Europe. The eyes of commerce turn to the New World with confidence that there need not be a famine of paper while the spruce flourishes in Canada.

The centuries of the Pyramid-builders and the 20th century—the latest born—salute each other within the shades of Canadian forests.

Through the experiments of a student, working in the quiet of a German laboratory, untold millions have been added to the wealth of Canada.

The Cinderella of the forest trees of Canada takes rank with the best of her sisters and becomes the idol of popular interest, scattering largess among thousands of toilers.*

At what time in the world's history paper began to be used is a question surrounded with obscurity.

The Chinese appear to have employed the wood of the cotton plant reduced to a pulp in the manufacture of their paper. The first rude efforts in other parts of Asia to secure a material suitable for the purposes of man, as a record of his thoughts and transactions, can be traced beyond the Christian era back to the second century, B.C.

When the Arabs captured Samarcand, 704 A.D., they found the people skilled in the manufacture of paper from cotton and, learning the art, rapidly disseminated the knowledge throughout their empire.

The product of their skill thus acquired from the East became known as Charta—a specially fine quality being called Charta Damascena, from the fact of the best equipped factories being in operation in Damascus.

In Egypt there had been for many years a paper manufactured from papyrus, a member of the vegetable

*The Shawinigan Water and Power Company is less than a year old, but it has built up a prosperous village of 1,500 people where no one ever dreamed of living, and, within another twelve months Shawinigan Falls will be a town of 5,000 inhabitants.

world which, like the palm, was employed for a great variety of purposes. From the stem of papyrus were made boats, sails, mats, cloth, cords and paper. The pith was used for food. Sandals were made out of a material provided by the papyrus. The seams of ships were caulked with a tow made from it.

But the Asiatic plan of making paper from cotton seems to have spread all along the northern shores of Europe, to Greece, to Italy and to have been carried by the Moors to Spain.

As the industry went further and further afield from the home of the cotton plant, the ingenuity of man sought out other material from which to make the paper. In some cases a fair paper was produced by the mixture of woollen rags with the original material. Linen rags were added in countries where the flax plant flourished.

By the 14th century paper-making had become a recognized European industry.

At first Italy became the centre of the paper-making industry. Then Germany began to build factories after 1320, A.D. France secured her knowledge of paper-making from Spain late in the 12th Century; the early paper being made of cotton.

By the 14th century paper was not uncommon in England.

At first paper was made entirely by hand. Then, as in the history of most manufactures, machinery was invented for the more rapid preparation; then came the division into writing paper, printing paper and wrapping paper, cotton rags being still the chief source of the material from which paper was made.

The demand becoming greater than the supply, the wit of man became actively engaged in finding material from other plants possessed of the necessary fibre. The cotton plant, the papyrus and the palm, flax and some other members of the vegetable kingdom had been employed. But still the demands for paper were inexorable and constantly enlarging.

Every zone was searched for suitable material. It

was thought that in Esparto grass the requisite material had been discovered, and for years Esparto, treated after a somewhat similar fashion as rags, was extensively used.

The tenacity of fibre and flexibility of the leaves have led to their use for centuries for making ropes, sandals, baskets and ships' cables, and because they contain 56 per cent. by weight of fibre, or ten per cent. more than straw, they came into requisition as a substitute for linen rags in the manufacture of paper. About 200,000 tons of the fibre have been imported yearly into Great Britain during the past fifteen years, and its use continues to be maintained at about that rate, without, however, showing any tendency to increase.

Straw, de gras from Northern Africa, the leaves of the dwarf palm, sugar cane refuse, the stalks of the hop plant, nettles, the American thistle, peat and other articles have been successively or simultaneously experimented with in the hope of securing an ideal paper.

Bamboo cane has also been made the subject of experimentation.

Naturally those who were in search of a good material for the manufacture of fibre, reverting to the early employment of the palm tree for the purpose, began to experiment on other wood fibres.

In the year 1845, Keller took out a patent in Saxony for a process of manufacturing paper from ground wood. Before that date its pre-industrial history is known only to the chemist. After that date many improvements were made in the machinery and methods used in grinding, the main object being to produce a longer and finer fibre.

Business men soon began to realize that the students were on the right track. The chemists thus encouraged, made a series of experiments to ascertain the best commercial way of reducing wood to a fibre capable of being made into paper. As a result of their investigations two methods have been selected, (1) mechanical treatment and (2) chemical treatment.

Practically by the mechanical treatment, which con-

sists of grinding up the wood under water, a pulp has been obtained which answers for the inferior kind of paper.

But something more was wanted. Mechanical pulp is used chiefly as an adjunct in the manufacture of news and wall papers and printings, but there are several distinct classes of paper made from mechanical pulp without any other ingredient. Woodpulp boards are also made from mechanical pulp chiefly for the purpose of making paper boxes.

The rapid development of railways and telegraphs; the spread of education; exciting events on this continent, such as the civil war in the United States of North America, combined to create an enormous demand for news, and led to the establishment of many newspapers. The growth of the literary taste led to the development of book-making. In Canada, during the past 15 years, the number of newspapers increased from 644 in 1885, to 1,211 in 1899, and the daily newspapers from 71 to 121, with a circulation in the aggregate proportionately greatly in advance of the increase in the numbers.

The same development, or one nearly equal to the Canadian, taking place in other countries on this continent and in Europe, led to a very enlarged demand for paper, and soon paper-makers found it impossible to meet the ever-increasing demand. Rags, cotton waste, straw, esparto and all the other articles tried and used together were not sufficient. Nor did the price suit. Out of the necessity of the time came the development of the chemical processes and of the mechanical processes by which a good and cheap paper was evolved. Wood paper suited for most requirements was in fact invented.

Chemical pulp is used as an adjunct with esparto, rags or mechanical pulp in the manufacture of news, printing, colours and some kinds of wrapping paper.

By combining chemical pulp and mechanical pulp in the proportion of about 30 or 40 per cent. of the former a good paper results such as can be used with success for most of the purposes for which paper is needed.