

WOOD PULP ~ ~ DEPARTMENT

PULP WOOD—TREATMENT OF THE RAW MATERIAL IN THE LOG AND ITS MEASUREMENT.*

By A CANADIAN PULPMAKER.

CHAPTER I.—THE RAW MATERIAL.

Although the ordinary text-books on paper-making and the manufacture of wood pulp give mention of a large variety of woods for the production of fibre, yet in actual practice the number of woods used is very limited. Of recent years, however, the inevitable law of supply and demand has made itself felt, with the result that it is being found possible to utilize material that at one time manufacturers would not look at.

In the various reports of the Forestry Bureau of the United States Government we find the following woods mentioned as being suitable for pulp wood, viz: Spruce, Pine, Fir, Balsam, Hemlock, Poplar, Larch, Tamarac, Aspen, Cottonwood, Basswood, Birch, Maple, Cypress, Willow, Beech, Chestnut.

Now while it is true that a certain percentage of cellulose can be obtained from all these woods, and that the quantity of fibre producible from a given weight of raw material does not vary largely as between the several woods mentioned, yet there are important qualifications outside of the mere yield of cellulose which effect the suitability of any particular wood far more than the percentage yield.

It is this fact that limits the choice of wood, and so long as the supply of the wood giving the best results with least cost has been abundant, the pulpmaker has confined his attention to those woods which give a fibre of good colour and strength at a minimum expenditure of labour and material.

Until quite recently, therefore, pulpmakers have confined their attention almost exclusively to the use of spruce, because this wood has always proved to be the best for the production of pulp, either in the form of mechanical wood or as chemical pulp.

That spruce ranks first as a pulpwood more on account of its physical properties than for the chemical composition of the raw material may be judged from the following table, showing the proportion of cellulose in certain woods:—

Wood.	Cellulose %
Poplar	62.77
Silver Fir	56.90
Birch	55.52
Willow	55.72
Pine	53.27
Spruce	53.00
Chestnut	52.64
Beech	45.47
Ebony	30.00

The woods which are mainly utilized either in conjunction with spruce or alone as pulp-woods are poplar and balsam. It is, however, worthy of notice that while spruce is equally suitable for mechanical pulp or for chemical, these other woods have only a limited application. Thus the use of poplar is almost entirely confined to the production of soda pulp, while balsam is generally worked in with spruce in the manufacture of ground wood.

In actual practice the rules followed, and the methods adopted, are so much a matter of local circumstances that it is not easy to describe, or define, under what conditions the best results are to be obtained.

For instance, some pulpmakers have a great objection to the use of balsam in the manufacture of ground wood. On the other hand, it will be found that in many mills balsam is used to the extent of 20 to 25 per cent. The chief difficulty experienced with balsam is that the wood grinds somewhat flaky and gives an irregular fibre. In the majority of mills using this wood the usual practice is to keep the proportion down to about 10 to 12 per cent., and in this way the inferior condition of the fibre does not seriously affect the pulp made.

It might be noticed in passing that the admixture of other woods with spruce in the manufacture of mechanical pulp will often account for irregular running on the paper machine, because the physical condition of the fibres from different woods is not the same. Every papermaker knows that some pulps work free while others act just the opposite on the machine. Sometimes it is necessary to run the pulp with a large proportion of water in order to get the stuff to felt properly, and for reasons of this kind the papermaker is apt to blame the quality of the pulp, and attribute the irregularity to the wrong causes.

A good deal might be done in this direction to determine the approximate effect of certain percentages

*From Paper and Pulp.

of any particular wood added to spruce, say for instance the balsam, so that the maximum amount might be made known. For this it would be desirable to have a number of tests made with varying proportions of the added wood in which the conditions of manipulation and behaviour on the paper machine would be closely watched.

For the preparation of chemical pulp a greater number of woods are available, and it is easy to see that such would naturally be expected. By the process employed the non-cellulose matters are more or less eliminated, so that the resultant cellulose, or fibre proper, would not differ much as to its chemical composition, the difference being mainly those of a physical character. These are very varied, and then to such an extent that pulp prepared from one class of wood is not suitable for the uses to which pulp made from another wood can be applied.

Thus, while spruce makes a good strong white pulp, poplar will only produce a soft pliable pulp, which in its way is, however, as useful a material as spruce.

Of late years hemlock has been tried as a pulp wood with a moderate degree of success. The fibre obtained is somewhat dark colored, and of coarse quality, and is not suitable for anything but common paper. Another wood on which experiments have been made is tamarac, also known as larch. So far this wood has proved to be of little or no service for pulp. The cost of production is too high, as the amount of sulphite liquor required per ton of raw wood is greater than with spruce, and the complete removal of the resinous matters is a difficult operation. The subsequent process of bleaching is also an expensive one, and since the fibre produced without bleaching is poor the pulp cannot be used for good papers. It is claimed that the proportion of chips and shives in fibre prepared from tamarac is another serious objection to its use.

It is interesting to note in connection with the subject of spruce as the raw material for pulp that methods have been introduced to utilize the wood to the fullest extent, so as to obtain a high percentage yield. In some districts where the spruce is used for the manufacture of lumber as well as of pulp, an arrangement is made whereby the logs are converted into lumber and the smaller ones into pulp. In this way there is a material saving effected. When small logs are cut up into lumber a large proportion of the wood is wasted owing to the necessity of cutting the round log into a square piece of timber, whereas with a large log the amount is much less relatively speaking. For the manufacture of pulp the small logs are as equally serviceable as the large ones, while some claim that the former usually make the best pulp, so that the exchange is of advantage to all parties. Moreover, a machine has recently been introduced by means of which the slabs, as they are called, cut off from the large logs can be barked and eventually chipped up for conversion into chemical pulp. The economy effected is said to be considerable, though it is obvious that such a method of using all the wood can only pay when the cost of the raw material is fairly high, seeing that the expense attaching to the adoption of any such process as that described must be great, because of the labour required to handle the slabs produced.

Generally speaking it is certain that the utilization of woods other than spruce will only be achieved as circumstances demand, and it is hardly to be expected that pulp manufacturers will experiment with such woods until the supply of spruce runs a bit short so that the manipulation of them can be managed at a profit. The present price of pulp does not seem to warrant many attempts in this direction just now.

But at the same time the supply of good sound spruce in abundant quantities easily and cheaply got from the forests will not last for ever under existing conditions of lumbering, and steps ought to be taken to see that the supply is not unduly shortened.

BRITISH WOOD PULP ASSOCIATION.

A committee meeting of this Association was held in London on August 21st.

Members of the Association having received communications from certain papermakers who wish to introduce a new clause into the contract note, empowering them to entirely reject deliveries of pulp when they are found to be inferior in value to the contracted quality to the extent of 5s. per ton, the matter was discussed at some length, and it was decided to communicate with the Papermakers' Association on the subject.

Communications having taken place with the Statistical Office of the Custom House for the supply of weekly returns of the imports of wood pulp into each part of the United Kingdom, and comprising the particulars from the entries for this article as contained in

Bill of Entry B, it was decided to accept the offer made by the Custom House and to supply these returns weekly to members at a charge of £1 1s. 6d. per annum.

Disputes have arisen as to what the minimum percentage of variation in moisture in wood pulp, from the 10 per cent. basis, should be before either party could claim for the difference, analysts engaged in this class of work were consulted, and it is decided to lay their replies before the Papermakers' Association and ask for an expression of opinion. The majority of the analysts considered that one-half per cent. would be a fair allowance.

The arbitration submission form recommended at the annual general meeting was revised, and temporarily agreed to.

Some discussion took place as to the advisability of amending the "force majeure" clause of the Contract Note so as to better define its object, but no decision was arrived at.

PULP NOTES.

The Thorold Pulp Company, which recently commenced operations at Thorold, Ont., has made a proposition to the town to start a paper mill.

It is reported that the demand for pulp wood in Quebec this fall shows a marked falling off from previous years. The price is lower, and the demand from the United States very light.

Through the efforts of the British Wood Pulp Association the statistical office of the London custom house now make separate returns of both dry and wet mechanical pulp and dry and wet chemical pulp.

It seems that a settlement in the arbitration case of Edward Lloyd versus Sturgeon Falls Pulp Company has not yet been reached, as proceedings are about to be again opened in the Superior Court at Toronto.

The wood pulp market in Great Britain is rather firmer than it was one month ago.

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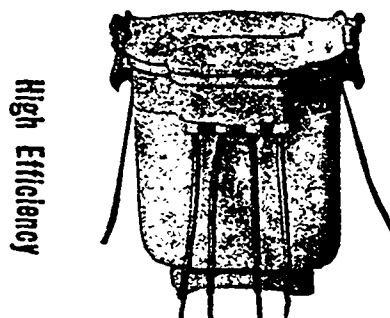
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