

washing and bleaching and soda recovery—had not, even in combination with pulp partly made of wood by mechanical means and partly made of rags, etc., produced the ideal paper.

The world was ransacked for the proper wood. All the earlier efforts at wood-pulp making had been confined to pine wood and to poplar wood. Experiments were also made with the wood of the willow, bass, cedar, hemlock, maple and birch. Experiments were further made with trees of various ages, and in this respect it was found that for chemical pulp trees on an average of 20 years old were the best, the younger growth producing fibre of inferior quality.

The different kinds of wood suitable for the manufacture of pulp are white and black spruce, Canada balsam, poplar, aspen and pine; spruce and balsam being the most valuable on account of the special quality of their fibre, and also on account of their colour. These comparatively soft woods are easily ground. Poplar and aspen have the same quality but they are faulty on account of knots and black veins which spoil the colour of the paper. Pine, which, in the earlier stages of the development of the wood-pulp, was used in far the greatest proportion, is now used only in the manufacture of chemical pulp. It gives a good pulp but the process required to bleach is somewhat expensive. Besides the wood is too high-priced to be used profitably in the manufacture of paper. With the low rates that have ruled for paper for some years pulp manufacturers require wood of small value if it can be obtained without the sacrifice of length of fibre.

When, therefore, the chemist hit upon spruce and balsam and found them suitable in every respect for the production of the ideal cheap paper, and commercial men realized that these woods were comparatively cheap, quick of growth and well located for the needs of commerce—the world knew that at length, after all the centuries of seeking, the right paper, meeting all requirements, had been invented.