

WHAT THE TREE IMPROVER CAN DO FOR THE PAPER MAKER 1/

by R. C. Crain^{2/}

The tree improver can make a substantial contribution to the pulp and paper industry by developing trees that will permit production of better paper at lower prices.

The pulp and paper industry uses a variety of woods for an even greater variety of products. The ideal requirements of cellulose fibers for these different grades vary widely, depending on whether the pulp is produced for making artificial silk or explosives or for paper and whether the paper is tissue paper or paperboard, absorbent or grease resistant, for printing or wrapping purposes, or for use in many special industrial applications. In all cases, however, lower cost is desirable, and this could result from tree improvement programs providing a greater growth rate or more wood per acre, trees with fewer branches and easy bark removal, trees that are insect and disease resistant, and, perhaps less obviously, by wood from trees having low pitch or resin content, more cellulose and less lignin, and, particularly in hardwoods, longer fiber. Increase in wood density or decrease in lignin content would be almost directly reflected in lower pulp-and-paper raw material costs.

In addition to these rather obvious things many other advantages might develop from tree improvement programs, for one or more of the many different uses, if changes were produced in the fibers themselves. Greater fiber length is desirable by itself for some uses, as is a change in the ratio of length to diameter, or change in the cell-wall thickness. Change in the chemical structure of the outer cell walls could make the resulting pulp easier to hydrate or easier to maintain absorbency. Changes in the cell-wall structure could increase fiber strength. Changes in the lignin could make it easier to remove or more useful after removal. By appropriate selection and blending almost any of these changes which were reproducible with reasonable uniformity could be used to advantage in the manufacture of pulp and paper.

1/ Dr. Crain did not prepare a written paper. This is a brief abstract of his remarks.

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Even a 5-percent increase in wood density and a 2- or 3-percent decrease in lignin content would be a substantial contribution to the paper industry. Such developments would enable paper mills to produce better quality paper at less cost to the consumer. The paper industry will, however, find good use for whatever new trees are developed by genetics or silvicultural research.

Considerable detailed information giving wood requirements for different purposes is being developed and publications in this field should be noted. As a starting point the report appearing in the November 1960 TAPPI Magazine should be read. This is a report of the Forest Biology Committee of the Technical Association of the Pulp & Paper Industry.