

## TECHNICAL NOTE NUMBER 179

FOREST PRODUCTS LABORATORY - U. S. FOREST SERVICE - MADISON, WISCONSIN

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### THE DE-INKING OF NEWSPAPERS *l. e. c.*

Although the de-inking and re-use of old magazines has been practiced for a long time, it has never been possible to apply the process to the recovery of old newspapers, because the strong alkaline solutions used in the process and the subsequent bleaching operation discolor any pulp containing groundwood. These solutions might be reduced in strength and temperature so as not to discolor the pulp and still serve to dissolve the varnish from the ink and free the carbon black. But the carbon particles would then collect in masses which would not pass through the washing screen, or would remain enmeshed with the paper fibers. It is therefore necessary to provide some finely-divided, colloidal carrying agent in the wash water which will help gather up the carbon and carry it off. Clays and talcs are used for this purpose, but ordinarily they are so coarse that they need to be peptized, or broken up, by strong alkalis at high temperatures before they are effective. It is this requirement that has made it necessary to use solutions in the de-inking process of such strength that they would discolor the groundwood pulp of which newspaper is made.

Experiments have recently been conducted by the Forest Products Laboratory of the U. S. Forest Service, Madison, Wisconsin, using bentonite, a very fine cream-colored clay found in Wyoming, as a de-inking agent. Bentonite occurs in finer particles than any other natural mineral substance, and will go into colloidal suspension in water without the aid of strong alkalis. In preliminary de-inking runs made on old newspapers at the Forest Products Laboratory, bentonite was used with an alkali solution just strong enough to loosen

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the ink without discoloring the paper. It was found that the bentonite particles were so small that they could gather up the freed carbon and still pass through the ordinary washing screen. In the experimental runs, paper fibers matted on the screen and tended to prevent thorough washing; but even with this difficulty a sheet almost equal in quality to the original was obtained.

De-inking trials made later at a Minnesota paper mill, using ordinary paper-making equipment except for a special washing screen, show that the process can be carried out on a commercial scale to produce a sheet which can compete in the open market with standard news.

From 2500 pounds of old newspapers 2000 pounds can be recovered by the new de-inking process. In Chicago alone, it is estimated, 325 tons of waste newspapers daily might be economically collected and converted into approximately 260 tons of clean paper ready for reprinting. This would mean a daily saving of the cut on 97 acres of 100-year old spruce wood. The total saving in pulpwood which appears possible through the erection of newspaper de-inking mills in metropolitan centers is equivalent to the cut on 275,000 acres of densely stocked spruce forests yearly.