

is dissolved, the former furnishes "pulp," the latter, "chemical fibre." Both require the careful removal of every scrap of the bark, else the paper will be discolored with spots.

Wood is ground into pulp by swiftly moving cylinders of steel. The block is pressed against such a cylinder, the grain running along its side. Water constantly flows upon the stick, and the particles torn off are almost a perfect powder. The thin "mush" is strained on wire and run several times through rollers to squeeze the water out. When bleached, just as cloth is bleached, the pulp is ready for the paper machines. Paper made of pulp alone has scarcely any toughness so it is mixed with some material, as cotton or linen rags to furnish fibre and give strength.

Chemical fibre is made by dissolving the gums and leaving only the fibrous part of the wood. The solvent is either a strong solution of soda or sulphurous acid, usually held loosely by the sulphite of magnesia. Either of the solvents leaves a pulp of fibres several inches long, and the product of the two processes is essentially the same; the papermakers

generally prefer the "sulphite fibre."

To make paper fibre, the wood is cut by a machine into pieces a few inches square and placed in large tanks lined with lead (digesters), capable of holding ten cords or more. The dissolving liquid is then run in until the wood is covered, and then the mass is heated by steam to a temperature of about 300°F. and kept there until the wood becomes perfectly soft. The whole is then blown out by the pressure of the steam through a hole a few inches in diameter into a "washing tank," where it is washed until the chemical is removed. The fibre then closely resembles cotton. For use, it requires bleaching, the same as ground wood.

A good paper contains about ten per cent. of some fibre. Since cotton and linen rags have become scarce, the chemical fibre has been used almost exclusively. It is fully as good, and it can be made at such a cost as to be preferable to rags unless they can be procured cheaply. Very fine paper, such as "cream laid" or "bond linen" is made of the fibre with no wood pulp.—*The School Journal*.

DEVELOPING APTITUDE FOR BUSINESS.

PROFESSOR A. C. MILLER.

WHAT is the basis of faith in the practical value of higher commercial education? Precisely the same as that in any other kind of special training. Certainly not the expectation that the school or college of commerce can make of any or every young man a competent or successful merchant. No educational institution can undertake to guarantee success in any line of activity. The justification of schools of law, medi-

cine, or engineering, is not that they invariably make successful lawyers, physicians, or engineers. We all know men who have had exceptional educational opportunities, and yet have failed. But what does this mean? Simply this, that other things besides knowledge and training enter into the essentials of success. There are other men whose education did not extend beyond the three R's, whose success is startling. There are men posses-