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## SOIL EROSION

## A Problem for the Hydro-Electrical Engineer

**M**ANY of us have stood on the bank of a swollen stream and watched the muddy waters swirl by. However, very few of us have attached any importance to the fact that the water was muddy. The fact that water will carry silt is of importance to all engineers. It is of vital importance to the hydro-electric engineer. Many hydro-electric projects call for large expensive dams for storing flood waters. Flood waters contain a great amount of silt which settles behind the dam, and cause a loss of pondage. Over a period of twenty years a very expensive dam may become practically useless. Army engineers report that large deposits of silt in the reservoir at Muscle Shoals have already reduced the pondage. It is amazing to know the amount of silt some of the rivers carry. The yearly burden of the Tennessee River is 11,000,000 tons of soil. It has been estimated that during a flood, the James River moves between 275,000 and 300,000 yards of soil every twenty-four hours. The silt burden of these rivers is large that the useful life of a storage dam is materially shortened. This suspended material comes from the erosion of abandoned farm lands and unwooded slopes. A great amount of this erosion can be prevented. Two methods have been used with success.

The first method is to build a small dam above the main reservoir. This dam is built where the river is wide and shallow. Its purpose is to check the flow of the river enough to cause it drop the suspended material. This plan works very well until the deposits reach the same level as the dam, when the silt goes on down the river as before.

The second method is conceded as the better of the two, and while requiring a larger investment will pay dividends on the money invested after a few years. This method consists of the complete reforestation of all the barren slopes and valleys about the reservoir. Trees carefully chosen and scientifically planted will make a valuable stand of timber in a few years' time. Native species give best results and yield more lumber per acre. In this way a fair profit on the money invested can be realized. Quick-growing shrubs are sometimes planted in gullies and on steep banks where trees are slow to take root. Results show that money used to lengthen the life of a storage basin is not wasted, but is a good investment. A million-dollar power site may become useless if erosion is left in full sway for a few years. The problem of reforestation barren lands has become so important that specially trained men are needed to carry it out effectively.

—Wm. Layton, E. E. '30,

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