

area receive certificates and a tree farm sign. The sign must be displayed on the woodlot at a point where it may best be seen by passing motorists.

To become a certified tree farmer, the woodlot owner is not required to join any organization. Neither does he pay any fees or assessments. He simply becomes a co-operator in a nationwide movement to grow trees as a crop. The tree farm system is merely a tool for recognizing his efforts and encouraging others. Periodic inspections by duly-appointed foresters assure maintenance of high management standards.

Voluntary Forestry Standards

The certified tree farmer follows prescribed tree farm standards on a purely voluntary basis. If he fails to meet the forest management standards, his woodlot cannot remain on the rolls as a certified tree farm. There is no penalty, no embarrassment, no high pressure applied by anybody.

With more than 50,000 large and small sawmills scattered over the country, the lumber industry ranks as America's tenth largest employer of men. In value of manufactured products, it ranks twelfth.

Railroads consume about 1,500,000,000 board feet of the country's annual sawtimber harvest for crossties, freight cars, trestles, snowsheds and a hundred other items. It takes 40,000,000 crossties a year just to keep the nation's railroad tracks in condition.

Pulp and paper also are forest products. Per capita consumption of pulp and paper stood at 391 pounds in 1953 in the United States, and it is increasing.

Every grocery store or drug store in the nation has its shelves stocked with products packaged in paper and made from wood. Even the tin can has a paper label.

Not since the Pilgrims landed on our eastern shores and started hacking into the virgin forests for wood to build homes and make wagon tongues and gunstocks have individual Americans turned such concerted attention to their woodlands.

Tree Farm "Families"

Some wood-using plants have their own tree farm "families." Under this plan, landowners in a given area will place their timberlands under management of a company which agrees to furnish forestry service and protection from fire and grazing. The landowner usually agrees to give the lumber firm first refusal of timber at prevailing market prices.

A Pennsylvania woodlot owner realized \$12,000 from a two-year cutting operation on his 500-acre farm. He received \$5,000 from the sale of about 100,000 board feet of sawtimber, \$1,000 for 52 tons of oak bark that he sold to a tannery, and \$6,000 for pulpwood.

"This sale," said the man, "gave me a clear profit of \$3,000 over the original cost

of the land, and in a few years I will be cutting it again for more profit."

In 1947, a Georgia man bought 825 acres of badly-worn land, using wartime savings he had invested in defense bonds for the down payment. Improvement thinnings helped him make the down payment. When his first daughter was born, he was unable to take out college insurance. So he planted 47,000 slash pine seedlings, a kind of insurance he could handle.

Two years later, a second daughter was born. He was able to buy an adjacent 303 acres. He planted it with 150,000 pine seedlings. In 1953, he marked inferior trees and started working them for gum and naval stores. This source alone will pay him about \$1,500 a year. In about eight years, the older daughter will be ready for college, and a major portion of the trees will be marked for sawtimber harvest.

Science News Letter, July 31, 1954

TECHNOLOGY

NBS Scientists Invent Hydraulic Tooth Drill

➤ A TOOTH drill that also has industrial possibilities has been invented by three scientists at the National Bureau of Standards. It has a tiny turbine, driven by water, that spins at a rate of 61,000 revolutions a minute.

Designed and constructed by Dr. R. J. Nelsen, now working at the Bureau on an American Dental Association research fellowship, and C. E. Pelander and J. W. Kumpula, both of the Bureau's staff, the new dental handpiece minimizes vibration and heating.

Its diamond-disk grinding point stops instantly when a finger is abruptly placed against its edge. It also stops if the dentist presses too hard while grinding a patient's tooth, or if the tool should happen to catch or bind in a manner that would be hazardous.

Grinding points of silicon carbide also have performed with "exceptional efficiency" in the drill, but milling cutters such as the steel and carbide burs of current design do not work well at such high speeds.

The high-speed drill also does not climb or roll out of the cavity. This is a drawback of some drills than run more slowly.

Nestled near the drilling point, the tiny turbine has six notched blades. Water is pumped to it through a flexible tube. After passing through the turbine, the water returns to the pump in another tube that jackets the inflow tube.

The dentist can stop the drill for a moment by stepping on a special tube filled with fluid. The fluid trips a pressure sensitive switch that shuts the water around the turbine.

The NBS scientists believe their tool promises to be of considerable use in industries where small bits of hard materials must be ground away, as in tool and die making.

Science News Letter, July 31, 1954

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