ENGINEERING

Split Second Phone Calls

Speedy coder sends out digits so fast it may make the telephone dial obsolete. The electronic device, in the testing stage, is based on a new mathematical coding concept.

➤ A NEW SIGNALING system for telephone dialing—so fast that it may do away with the dial itself—has been developed by Bell Telephone Laboratories in New York.

The device, called a polytonic coder, sends out digits just about as fast as they can theoretically be packed into a line. A test model can send 100 digits a second reliably over almost all telephone connections.

To use such speed, the present dialing system might be replaced, perhaps by a push-button system.

With the new phone, you would punch out your party's number on buttons on the phone's base while the receiver is still on the hook. When you pick up the receiver, your party's phone will start ringing. If the line is busy, you need not dial again. The button setting will remain until you change it. All you need do is pick up the phone again.

Present dials are too slow for the new signaler. It takes up to 12 seconds to dial a seven-digit phone number—almost all wasted time—besides a delay while the connection is made.

Results of laboratory tests with the signaling system were so encouraging, Dr. C. A. Lovell, J. H. McGuigan and O. J. Murphy report in the *Bell System Technical Journal* (July), that arrangements were made to try it on New York circuits.

The tests showed the polytonic signal could be used on all except a few telephone connections in this country, Dr. Lovell told SCIENCE SERVICE.

Need for a signaling system in the future significantly faster than today's dial spurred the development. The term "polytonic" was coined because the system uses five separate frequencies. Each digit is represented by a different two-tone combination. The device is based on a new mathematical concept of electronic coding.

Today's dial system depends on timing. The time it takes for the wheel to come to rest determines the digit sent over the lines to the central connecting office. If you get impatient and try to force the dial around faster than it would go naturally, you might get a wrong number.

There would be no impatient dialers if the new system is adopted. It can transmit digits many times faster than any human can send them. To make efficient use of the device's speed, the telephone number would have to be set up first on the phone and sent out after the setting has been completed.

Science News Letter, August 13, 1955

ENTOMOLOGY

See Victory Over Budworm

➤ INSECT FIGHTERS are scoring a whopping victory over one of the nation's major insect pests, the spruce budworm.

Some 4,000,000 acres of rich spruce-fir timberland have been almost totally cleared of the destructive spruce budworm since mass spraying of infested forests with DDT was begun in 1949, Everett Clocker of the U.S. Forest Service's timber management division said.

In the closing weeks of July, the Forest Service sprayed 2,250,000 acres of spruce-fir forest in Oregon, Idaho, Montana and New Mexico, where there had been a tremendous build-up of the budworm. If the mass spraying hits the spruce budworm this year as it has up to now, this great area should be almost completely cleared of the pest.

The Forest Service calculates that there are some 12.3 billion board feet of timber, valued at $38,000,000, in this year's sprayed area. Cost of the aerial spraying averages little more than one dollar an acre.

The spraying must be carried out during the few days, usually in July, when the budworm larvae are exposed while feeding on the needles of fir trees. One pound of DDT in fuel oil per acre is sprayed over the forest from low-flying planes. This dosage is enough to kill the budworms without causing significant harm to wildlife.

Before the mass spraying technique was perfected, timbermen had almost no means of fighting the budworm, which could put them out of business during years of serious outbreaks. During the 1919-20 season, budworms destroyed a volume of wood in Canada said to equal a 40-year supply for all the pulp mills then operating there.

That same season, the budworm killed 70% to 90% of the mature fir stands in Minnesota and Maine.

For next year's spraying, plans center about a badly infested area of Montana, in a location the Forest Service could not work this July, even though budworm infestation has been very serious there this year.

Science News Letter, August 13, 1955

FORAGE CROPS—From first cross hybrids of sorghum-Johnson grass, such as this, new forage plants have been developed that combine the valuable feed carbohydrates of sorghum and the perennial habit of Johnson grass.

AGRICULTURE

Cows Choose Their Favorite Forage

➤ SINCE THE customer is always right, scientists are letting cows decide which hybrid forage plants are best in experiments to cross carbohydrate-rich sorghum with perennially growing Johnson grass.

Palatability of each of hundreds of sorghum-Johnson grass crosses has been tested by letting cows feed on them. The animals chose to dine on those with juicy, succulent stalks.

From work done jointly by the U. S. Department of Agriculture and the Mississippi Agricultural Experiment Station, sorghum-Johnson grass crosses have been made that yield over 30 tons of forage an acre. If field tests this year confirm expectations, seed supplies of the best crosses may be built up for release to growers.

Science News Letter, August 13, 1955

TECHNOLOGY

Solution to Toll Takers' Frozen Fingertips Found

➤ A SOLUTION to the greatest occupational gripe of toll takers—frozen fingertips in winter months—has been found.

In colonial days, toll collectors on the old turnpikes used foot warmers containing hot coals. Now an electric hand-warmer has been developed for toll takers by the Delaware River Port Authority. Twenty have already been installed in collection booths of the Philadelphia-Camden Bridge.

Science News Letter, August 13, 1955