TECHNOLOGY

First Ocean Phone Cable

Ship begins laying lines for telephone cable to carry 36 simultaneous calls between North America and Europe. First conversations are expected to be made late in 1956.

➤ LAYING OF the world's first transoceanic telephone cable, linking North America and Europe, was started when the Monarch, the largest cable-laying ship, began rolling out the line on June 22 at Clarenville, Newfoundland.

The 2,372-mile underwater cable will cover the 2,250 miles between that point and Oban, Scotland. The extra length is needed because the cable will follow the ocean's uneven floor, which sometimes rises in mountains and which, at other points, is more than three miles below the surface.

Transatlantic telephone calls today are transmitted by bouncing radio signals off the ionosphere. Such beams carry about four simultaneous conversations, but the system is hampered by interference. The new cable will handle 36 calls at a time and, except for rare accidents, will be thoroughly dependable.

Deep under the water, the cable is safe not only from storms and fire but from farmers, who have plowed up land cables. It faces new enemies, however.

Whales, for instance, have been known to get tangled in such lines and damage them. Icebergs hit the lines and smash them, fishermen haul them up and either break them or cut them, ship anchors sometimes tear them.

To prevent storm and fisherman damage, portions of the cable near the shore are about two and a half inches in diameter, while the deep water cable is only about an inch in diameter. Wrappings of copper tape protect the cables from the teredo worm, a marine borer. Outside are wrappings of anti-corrosion tape, jute, armor wires, then two more coatings of jute cushioning.

The core of the cable is a copper wire, wound with more copper and coated with plastic.

Telephone engineers believe that in calm, deep waters the cable will be safe from damage, except possibly from earthquakes.

If there is a break or failure, electronic gear will locate the trouble point within a half or quarter of a mile. Ships then will go out and grapple for the line, bring it up and make the repairs.

Use of underwater cables to carry the human voice has been made possible by development of a rugged amplifier called a "repeater" to be placed at 40-mile intervals. Developed by Bell Telephone Laboratories, the device is 2.8 inches in diameter, eight feet long and is built in as part of the cable. The repeater is designed to hold up under pressures of 6,000 pounds per square inch and to last for 20 years or more.

The new repeaters take over a year to manufacture and cost $70,000 each. They are made by Western Electric at Hillside, N. J. Atmosphere in the plant is kept 100 times cleaner than rural air and the workers are dressed in white, lint-free uniforms.

After laying the cable to Scotland, which will take about four months, the ship will return next summer to lay the east-to-west line. The first conversation over the cables is expected to be made late next year.

The system will be linked to the United States through a single cable between Clarenville and Sidney Mines, Nova Scotia, and a radio relay from there to Portland, Maine. The entire network is expected to cost about $40,000,000.

Science News Letter, July 2, 1955

AGRICULTURE

Lack of Fertilizers Cuts USSR Agriculture

➤ RUSSIAN FOOD production is kept low by lack of fertilizers, while fertilizer production is being held back by emphasis on heavy industry, according to Dr. Mirko Lamer, Russian expert for the Council for Economic and Industry Research in Washington.

Fertilizers are so scarce in the USSR that they are something of a luxury item, but in order to boost stocks of fertilizers, Russia would have to alter its economic goals and move emphasis away from war production, Dr. Lamer pointed out in the *Journal of Agricultural and Food Chemistry*.

On paper, the Soviets seem ready to attack this shortage. According to plan, fertilizer production should hit 16,500,000 to 17,500,000 metric tons in 1959 and 28,000,000 to 30,000,000 by 1964.

Actual production figures make these plans unrealistic. Production only increased from 4,900,000 in 1950 to 7,200,000 tons in 1954, while no new plants were constructed that could raise the output suddenly to 17,000,000 tons in five years, Dr. Lamer said.

A change to large-scale fertilizer production would call for the establishment of many new plants throughout Russia, but it is doubtful that such a switch is possible in the present period of industrial mobilization in the development of heavy industry, he said.

A peace economy would make this kind of change a lot easier to accomplish.

While Russia is having trouble growing enough food for itself now, Dr. Lamer said that crop yields in the USSR can be significantly increased by the use of fertilizers, lime and gypsum, all of which could be produced on a large scale in the country.

Science News Letter, July 2, 1955

DRAWING A THREAD—Much as a housewife tests candy, Frank A. Sattler, supervising chemist at the Westinghouse Research Laboratories in Pittsburgh, checks the laboratory preparation of a new silicone-modified insulating enamel for copper wire. It can withstand temperatures of 325 degrees Fahrenheit.

TECHNOLOGY

New Wire Coating Will Permit Smaller Motors

➤ A SILICONE-MODIFIED enamel for electrical wires, which can stand higher temperatures for longer periods of time than any non-silicone enamel, has been developed by scientists in Pittsburgh.

The insulator is expected to permit development of smaller electric motors with greater power.

Tests at the Westinghouse Research Laboratories showed that a motor having wires coated with the new polyester-type enamel can operate continuously for 10 years at a temperature of 325 degrees Fahrenheit without damage to the insulation. This is equivalent to normal operation of a refrigerator motor for 30 years or a washing machine for about a century.

Science News Letter, July 2, 1955

BIOCHEMISTRY

Anti-TB Drug May Be Good Weed Killer

➤ ISONIAZID, NOW widely used as a remedy for tuberculosis, may join the ranks of weed killers that can be put into the soil to stop the plants before they have grown above the earth.

Studies showing this are reported by Dr. A. G. Norman of the University of Michigan in the journal, *Science* (June 10).

Science News Letter, July 2, 1955