



**HIGH PURITY SILICON**—Dr. Hubbard Horn of the General Electric Research Laboratory, Schenectady, N. Y., is shown here demonstrating the "zone melting" process for production of high purity silicon. The method consists of successive recrystallizations of silicon as an ingot is slowly drawn through a gas-filled quartz tube.

## TECHNOLOGY

## Highly Pure Silicon

► **SILICON**, ABUNDANT non-metallic element, has now been isolated in what is believed to be its purest form to date.

The General Electric Research Laboratory, Schenectady, N. Y., has produced the crystals in a long, gas-filled quartz tube by the same method used in germanium refinement.

Purity of the element was measured in terms of "lifetime," or the time it takes for an excess of electrons injected into the crystals to disappear. For usual silicon this takes only a few ten-thousandths of a second or less, but the new crystals have a lifetime of more than a thousandth of a second.

Silicon is believed to be more efficient than germanium in transistors, which are versatile substitutes for radio tubes. Germanium begins to lose some of its valuable properties at temperatures above 200 degrees Fahrenheit, while silicon transistors work above 400 degrees.

The scientists used the "zone melting" process to purify the silicon. An ingot of high-quality silicon was drawn through a long, gas-filled quartz tube. Induction coils melted the element in narrow zones. Impurities remained in the high temperature zone and were swept to the end of the tube, leaving the purified silicon.

The GE scientists said they would try

for even greater silicon purity, which they hope will permit electronic controls that have been impossible to achieve so far. High purity, they point out, would allow a transistor to conduct electrons with a minimum of capture by imperfections.

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## PLANT PHYSIOLOGY

## Six Ears on One Stalk Goal of New Corn Study

► **CORN** MAY some day be available that will regularly produce six or seven ears on each stalk.

Dr. Ernest B. Earley of the University of Illinois College of Agriculture has begun a study of just how corn can be made to produce more than one or two ears per stalk.

In his investigations to date, the Illinois plant physiologist has found that there is an unknown factor in corn strains that causes them regularly to produce either one or two ears. He has also found that the blocking off of the point at which one ear is beginning to develop, causes the stalk to produce an ear at another point.

Multiple ear production on one stalk of corn is the aim of the project.

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## WILDLIFE

## Operation Billy Goat Successfully Completed

► **ANOTHER** "OPERATION Billy Goat" was acclaimed a victory when a successful airborne invasion of Chichagof Island, about 100 miles to the southwest of Juneau, Alaska, was made by four mountain goats.

Stocking goats on Chichagof Island is one of the series of game transplants being carried on by the U. S. Fish and Wildlife Service. When the two nannies and the two billies were uncrated after a 700-mile journey from the mainland shores of southeast Alaska to Chichagof Island, they brought to seven the total number of mountain goats so far liberated on the Island.

The Service reported that mountain goats transplanted on Baranof Island many years ago have increased in numbers to such an extent that there has been an open hunting season on them for several years.

Science News Letter, January 1, 1955

## TECHNOLOGY

## Acid Obtained From Low Grade Sulfur Deposits

► **A PROCESS** for extracting sulfur economically from low grade deposits was described at the meeting of the American Institute of Chemical Engineers in New York. The system would insure a continuous and economical supply of the important yellow element.

In the process, finely ground, low-grade sulfur is roasted at up to 1,600 degrees Fahrenheit in cylindrical reactors 25 feet high and 18 feet in diameter. A stream of air is fed through the molten ore. The sulfur dioxide gas produced, using ore with as low as 20% to 30% sulfur content, can be used to produce 450 tons of sulfuric acid a day.

The process was reported by R. B. Thompson and Donald MacAskill of Dorr Company, Stamford, Conn.

Science News Letter, January 1, 1955

## TECHNOLOGY

## Farm Tractor Can Generate Electricity

► **A TRACTOR** with a built-in electricity generator is now being tested by the U. S. Department of Agriculture.

International Harvester and General Electric, which cooperated in developing the device, say that it can supply normal and emergency power for almost any farm motor. The 30-ampere, 110-220 volt generator could be used when power lines are stormed out to keep milk coolers and lights going. It could also be used as a source of power in the field where electric lines do not reach.

The machine is described in the Department of Agriculture's *Agricultural Research* (Dec.).

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