



#### FOR ISOTOPES

Hubert E. Tanis, Jr., of General Electric Laboratory staff, adjusting the thermal diffusion apparatus.

#### PHYSICS

### Towering Test Tube May Separate Power Atoms

**A** TOWERING instrument 14 feet high, in the General Electric Research Laboratory, may prove the forerunner of the equipment with which science will one day separate power-producing atoms in sizable quantities.

The device is a "thermal diffusion apparatus." It is used in the separation of



## WYOMING

Fish in its mountain streams. Ride horse-back thru its hills and canyons. Find Indian relics and marine fossils in this region of great historical and geologic interest.

The Patons welcome a limited number of guests at their ranch home in the Big Horn country. Cabins are comfortable, food good and horses gentle.

Write for illustrated folder with map

**Paton Ranch, Shell, Wyoming**

isotopes, which are forms of the same chemical element of different atomic weight. It was once thought that all atoms of the gas chlorine, for instance, weighed the same—about thirty-five and a half times that of the hydrogen atom.

During the past quarter century researches have shown that chlorine, like most elements, really consists of atoms of different weights. About three-quarters of the ordinary chlorine atoms are of weight 35, one-quarter of weight 37, while there are a very few of weight 39.

Two German scientists at the University of Munich, K. Clusius and G. Dickel, a few years ago devised the thermal diffusion method, which has proven to be one of the most efficient methods for separating the different forms, or "isotopes," of the elements. With it, they have separated not only the isotopes of chlorine, but those of neon, krypton and others.

Potentially of great importance is the fact that the same method may be used to separate the 235 isotope from the heavy element uranium. This isotope is the one that may prove capable of yielding practicable atomic power, as it is estimated that a pound of U-235 would pro-

vide several million times as much energy as a pound of coal. More than a year ago, scientists in the General Electric Laboratories, as well as at the University of Minnesota, succeeded in securing exceedingly minute amounts of the isotope by another method, but not enough to test its power-producing capabilities.

The G. E. thermal diffusion separator consists of two glass tubes, 14 feet long, one inside the other, and a gold wire extending from top to bottom in the inner tube. It contains, in gaseous form, the material to be separated, which is kept at a fixed temperature by passing steam through the outer tube. When the gold wire is heated, the lighter atoms go to the top and the heavier atoms to the bottom where they are collected. A gold wire is used because a baser metal might be consumed or attacked by the material being studied.

For separating uranium isotopes, a material other than glass would have to be used, since the only gaseous compound of uranium is uranium hexafluoride. Because of the fluorine in it, this gas attacks glass. If the tubes were also made of gold, they would not be affected.

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#### MEDICINE

## Hope for Chemical Cure For Human Tuberculosis

### Guinea Pigs Exposed to Infection Saved From Disease By New Sulfa Drug Promin; Effect on Humans Not Known

**H** OPE that a chemical to cure tuberculosis in humans will eventually be found is strengthened by results in treating tuberculosis in guinea pigs with a new sulfa drug, promin, reported by Dr. William H. Feldman, Dr. H. C. Hinshaw and Dr. H. E. Moses, of the Mayo Clinic, at the meeting of the American Association of Pathologists and Bacteriologists in New York.

More than four-fifths of the guinea pigs treated with promin survived infection with human tuberculosis germs for 189 days, although all the untreated animals were dead of the infection by that time. No gross signs of tuberculosis could be found in 60% of the promin-treated animals. All the animals that survived had gained weight and were alert and as active as normal guinea pigs.

Whether the drug was given before, at the same time as, or weeks after the

tuberculosis germs, the "expected course of the disease was unmistakably altered," the Mayo Clinic doctors reported.

To expect equally good results in treating tuberculosis in humans with promin would be "injudicious," the scientists pointed out, because the human tuberculosis patient presents a distinct and different problem that may or may not respond to this or any other chemical remedy.

"However," they state, "the observation that an established infection of guinea-pigs with a human strain of tubercle bacilli can be modified to the advantage of the host leads confidence to the belief that eventually a chemotherapeutic agent may be found that will exert a favorable effect on tuberculosis infections of human beings."

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