the physics of semiconductors since World War II.

Impurities are responsible for the success of the silicon solar battery. Very pure metallic silicon is grown into single crystals. Then, one ten-thousandth of an inch under the surface of the wafer of silicon, impurities are diffused. This produces positive and negative layers of controlled thickness, and these p-n junctions are the heart of the solar battery.

How soon the silicon solar battery can take on greater jobs is problematical. But the wafer-thin strips of silicon, about razor blade size, are extremely sensitive to light. They can be linked together electrically and then deliver power from the sun at 50 watts per square yard of surface.

One of these solar batteries is pictured on the cover of this week's SCIENCE NEWS LETTER. The razor-sized silicon wafer is also shown.

Daily the sun supplies over a thousand trillion kilowatt hours of energy, comparable with all the reserves of coal, oil, natural gas and uranium found on earth. The solar battery taps this stupendous energy from the sun.

Scientists have long sought a practical method of directly converting the almost limitless energy of the sun to electricity. Until now, only the thermocouple and the photoelectric cell have been available, and they are limited to handling minute power quantities.

The thermocouple use small temperature differences in two dissimilar metals to produce a tiny electric current.

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SOLAR POWER SOURCE—The sun's rays falling on the solar battery are the only source of power needed to operate a small mobile radio transmitter. Here D. E. Thomas talks to M. B. Prince across the lawn at Bell Telephone Laboratories.

DENTISTRY

Heredity Affects Caries

Tooth decay is influenced by heredity, a 17-year study with rats has shown. Findings cannot be applied to man, however, without research on humans.

➤ TOOTH DECAY is influenced by heredity, a Michigan State College research team reports from a 17-year study of rats.

"Although we have proven the hereditary influence of tooth decay in rats," explained Dr. Harrison R. Hunt, professor emeritus of the department of zoology, "we cannot apply our findings to man without research on man himself."

Dr. Hunt and Dr. Carl A. Hoppert, professor of chemistry, were joined last September in their long-range study by Dr. Samuel Rosen, research assistant in the department of zoology.

Twenty-five generations of rats have been studied by Profs. Hunt and Hoppert since their project began in 1937, and more than 600 of the animals are being studied for further clues of tooth decay. Dr. Hunt foresees another 20 years of observations.

It all began in 1937, Dr. Hunt explained, when Dr. Morris Steggerda, anthropologist for the Carnegie Institution in Washington, suggested that the inheritance factor in tooth decay be studied. Dr. Steggerda's suggestion resulted from his study of primitive peoples who have less tooth decay than "civilized" man.

The two professors placed 119 rats on a "Hoppert diet," which is nutritious but produces tooth decay in rats. The animals were carefully observed, and separated according to the speed with which they developed cavities.

Careful breeding followed, until decay-resistant and decay-susceptible strains were developed. During this process, a detailed history of every rat was recorded. Approximately 10,000 such histories have accumulated thus far, Dr. Hunt said.

Today, after the years of careful breeding and selectivity, the susceptible strain takes 30 to 60 days to develop tooth decay, while the resistant strain does not develop tooth decay for at least 550 days. The normal life of a rat is 700 days. Factors of sex and age made little difference in the tests, the researchers found.

"There is no doubt of inheritance as a significant factor," Dr. Hunt concludes.

Dr. Rosen, the newest member of the team, is interested in the part bacteria play in tooth decay. His investigations in this direction are to be emphasized next year. Sponsor of the research is the Public Health Service, Department of Health, Education and Welfare.

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MEDICINE

New Anti-TB Drugs May Help in Resistant Cases

➤ A NEW class of chemical remedies against tuberculosis, some of which may be useful when TB germs grow resistant to the currently used isoniazid, has been developed.

Dr. A. E. Wilder Smith of the Ed. Geistlich Sons, Ltd., Chemical Works at Wolhusen, Switzerland, announces the development in *Science* (April 16).

Trials of some of the chemicals in human patients are now under way.

The chemicals are called oxdiazolones. They are made from isoniazid by treating the latter with phosgene, better known as a war-time poison gas.

Although slightly less active against TB germs than isoniazid in the test tube, one of the oxdiazolones was somewhat more active against TB germs in guinea pigs. In mice, it is about one-tenth as toxic and in rabbits, one-third as toxic as isoniazid.

"Chronic dosing" of guinea pigs with this oxdiazolone in four times the remedial dose for two months resulted in favorable weight gains by the animals and no signs of damage to any organs.

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