

MEDICINE

Drug Can Check Diabetes

THERE IS NO immediate cure for diabetes, despite hopeful statements in Congressional hearings that the tendency toward this disease can be reversed if caught early enough.

Dr. Riley Thomas of Howard University Medical School, Washington, D. C., who has been testing an oral anti-diabetic drug for three years, reported that results show a six-week treatment will protect a person for about 18 months if the diabetic tendency is caught early enough. (See SNL, 72:19, 1957)

However, in practice, he said, the person probably would take regular amounts of the oral drug.

Dr. Thomas' experiments on tolbutamide, produced as Orinase by the Upjohn Company, Kalamazoo, Mich., are among several being conducted here and abroad. Studies at the University of Michigan indicate that the drug keeps diabetes under control by increasing the pre-diabetic's tolerance of sugar.

About 2,900,000 Americans are diabetics. Nearly half of these are undetected cases who are not getting treatment. If the disease is to be stopped, early detection is essential.

The injectable form of Orinase, produced for experimental purposes only, has shown

promise as a simple test for diagnosing diabetes, especially early, mild cases. An injection of Orinase reduces blood sugar levels of non-diabetics in 30 minutes. If the suspect is diabetic, the time required is more than an hour.

In addition to checking and detecting diabetes, Orinase has also saved the lives of unborn babies.

It is generally known that women with uncontrolled diabetes often miscarry or give birth to abnormal babies, many of them stillborn or with congenital defects. Dr. W. P. U. Jackson of the University of Cape-town, South Africa, found that even before overt diabetes developed, prediabetic mothers gave birth to abnormally large babies and nearly half were stillborn or died soon after birth.

Dr. Jackson treated the pregnant women as though they were frankly diabetic. He put them on a low carbohydrate diet and induced labor early, before the fetus had grown too large. The babies were treated as premature infants.

Six treated women later had children, all living. Two other women suspected of being pre-diabetic did not return to the clinic when they became pregnant again, and both produced stillbirths.

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ROCKETS AND MISSILES

Polaris Is Missile Trump

POLARIS, America's trump in the deadly missile game, is no mere missile. It is an enormously complex missile system.

The instrument itself is a 30-foot, solid-fueled, submarine-launched rocket that can leap out of the water and streak 1,500 miles to its target carrying an atomic warhead.

The Polaris system represents the work of many prominent men.

Rear Adm. Hyman C. Rickover, father of the world's first atomic submarine Nautilus, saw the atomic submarine's potential as a missile base capable of remaining submerged and hidden for long periods of time in enemy waters.

In 1954, Adm. Rickover formally proposed a Polaris-like system. But the Nautilus had just been launched and was not yet proved and missiles were unreliable. The Rickover proposal was shelved.

Later, the reduction of the size of megaton bombs and improvements in missile thrust and guidance reduced objections to the concept of submarine-launched missiles.

In 1955 at Dr. Wernher von Braun's headquarters in Huntsville, Ala., the Army and Navy joined in work on a 1,500-mile missile. The Navy, however, began to fear liquid-fuel missiles were too dangerous for submarine use.

Potentially simpler and safer than liquid-fuel rocket engines, solid-fuel rockets were far from perfected. The solid-fuel rocket was in some ways as fool-proof as a Fourth

of July rocket which it resembles. But thrust per pound of fuel was low. A missile with enough fuel to go 1,500 miles was much too big for a submarine to carry.

A chemist whisked out of Germany after World War II, Dr. Karl Klager, attacked the problem for Aerojet-General Corporation of Azusa, Calif., a subcontractor of the Lockheed Missiles and Space Division, which then had the Navy's prime contract for Polaris development.

Dr. Klager's team not only increased thrust per pound, it also hit on a crucial (and top secret) system of cutting off the thrust at just the right time. This cut-off must be exactly timed if the missile is to be at proper altitude and on proper course to begin the long, unguided glide to its target.

Polaris was taking shape as a compact missile about 30 feet long. Through its solid fuel, a star-shaped hole was cast to afford a larger burning surface and improve the missile's performance. A synthetic material from which foam rubber is made was found to bind the fuel together.

Meanwhile, the Massachusetts Institute of Technology and General Electric Company worked on the guidance system. A missile computer was developed into which target and navigational data are fed just before the missile is launched.

To supply the missile's "brain" with precise information on the submarine's posi-

tion, a new navigational system had to be devised.

Underwater launching also posed problems. The Navy did not want the missile to ignite until the missile was away from the submarine. A misfire might destroy a whole sub and its crew.

A compressed air system was devised. It can shoot the missile 50 to 100 feet into the air from a submarine far below the surface of the ocean. Then the missile engine ignites.

Today, the system seems ready. Beginning next fall a U.S. Polaris submarine with 16 Polaris missiles should be sailing at all times.

One Polaris missile could destroy a city the size of Washington, D.C.

The Navy expects to increase the Polaris range to 3,000 miles. And it plans a fleet of 45 Polaris submarines costing \$100,000,000 each. Appropriated for the development of the Polaris system through June of this year: \$2,742,648,000, or about \$15 for every man, woman and child in the United States.

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METEOROLOGY

Light or Heavy Rainfalls Recur on the Same Dates

LARGE AND SMALL amounts of rain seem to fall on certain dates year after year, a survey shows.

Glenn W. Brier of the U. S. Weather Bureau reported that three series of weather records show a pattern of recurring high or low amounts of rainfall on the same calendar dates.

By comparing the days in the three series that coincided as having high, low or normal rainfall on the same dates, it was found that the three series were related. Mr. Brier said that there was less than one chance in a hundred that the recurring rainfall pattern found over the years could be accidental.

One series studied contains the records of world rainfall from several hundred stations for the period of 70 years between 1880 and 1950. These data were collected by Dr. E. G. Bowen, chief of the radio-physics division, Commonwealth Scientific and Industrial Research Organization, Australia.

The second series covers the daily rainfall from 150 weather stations in the U. S. between 1952 and 1957.

The third series shows the average daily rainfall amounts from the same U. S. weather stations during 1958.

Mr. Brier said that either or both of two factors might cause this pattern of unusual rainfall on certain dates. First, it could be due to the internal mechanism of the earth's atmospheric system.

Secondly, extra-terrestrial causes such as meteoritic dust coming into the atmosphere on certain dates each year might influence the rainfall pattern. This hypothesis was first proposed by Dr. Bowen.

The study was sponsored jointly by the U. S. Weather Bureau and the National Science Foundation.

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