ZOOLOGY

Rare Reptile Survives

A REPTILE UNTIL recently believed to be extinct on the New Zealand mainland has been found to exist on the North Auckland peninsula.

The reptile or tuatara is known as the "midget dinosaur" because it is the sole survivor of the order *Rhynchocephalia,* which flourished 200,000,000 years ago.

Closely related to the prehistoric dinosaur, the tuatara combines features of bird and reptile. It has ribs similar to a bird with hook-like attachments known as "uncinate processes," and it has a large bird-like breastbone. Like a crocodile, it has normal chest ribs as well as abdominal ones underneath. The pineal "eye" is another feature that marks the ancestry of the midget dinosaur. The eye, found on top of the head, is overgrown with scales.

Tuataras have been known to exist on the Poor Knights Islands, 11 miles off the east coast of New Zealand. The one found at Tutakaka on the North Auckland peninsula measured 21 inches and weighed two pounds.

Specimens taken from the Poor Knights Islands have been sent overseas to the Zurich Zoo, the California Academy of Science and the Washington National Zoological Park under the direction of the Smithsonian Institution.

Many inquiries and requests have been made to the New Zealand Government for the tuataras, but the requests are seldom granted. The animals are only allowed out of New Zealand for scientific and educational studies at approved institutions.

The tuataras were once plentiful in New Zealand, but were almost destroyed by the rooting habits of pigs introduced to the country.

The survivors, believed extinct in the mainland, have existed on the offshore islands safe from marauding animals. The reptile has been protected for 35 years.

The Austrian naturalist, Andreas Reischek, collected dozens of tuataras to send to Europe in the late 1800's when the Government took no steps to stop the flow of unique natural history treasures being exported from New Zealand.

The tuatara lives on snails, small lizards, wetas, flies or beetles, which it hunts, while making noises like a frog.

The female tuatara lays eggs, a dozen at a time, in holes scraped out by her forepaws in the burrow. The eggs, an inch long, drab-colored, are covered with soft sand and leaves. When hatched about a year after the laying of the eggs, the youngster hacks through the shell with the sharp-pointed cutter atop his snout.

Thirty tuataras were home-raised at Auckland many years ago. Since then no tuataras had been bred in captivity until 1950 when H. W. Dawbin, zoology lecturer at Wellington University, was successful in hatching two. Later he hatched two more.

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TECHNOLOGY

Metal Disk Is Shaped By Underwater Spark

IN A CRACKLE of electricity, a flash of fire and a clap of man-made thunder, a small disk of metal is suddenly "exploded" into a new shape.

The job is done underwater with high precision, Adolph Kastelowitz, director of manufacturing research for Republic Aviation Corporation, Farmingdale, N. Y., reports.

Small sheets of metal 1/16th inch thick already have been shaped experimentally in the laboratory. Researchers now are working on a more powerful experimental version of this electrical metal-shaping device for heavier metal operations.

By charging storage condensers to 20,000 volts, then discharging this power between two underwater electrodes, scientists make a spark that generates a powerful shock wave in the water. The shock wave blasts the metal into the shape of the die upon which it rests.

Mr. Kastelowitz said the system promises to be useful in working some newer steel and titanium alloys that require heavy, complicated equipment to shape them into the close tolerances and aerodynamic smoothness needed.

From the U. S. Naval Ordnance Test Station at China Lake, Calif., Edward W. LaRocca and John Pearson report they have been able to "explode" powdered titanium into simple metal objects using conventional explosives, rather than electricity.

The powdered titanium is put in a small die. The powder is rammed into a solid piece by a piston. A small explosive charge is used to shove the piston fast and hard into the powdered metal.

The forces appear to be so great that metals can be bonded together by this method when they cannot by normal rolling methods. Also, it appears possible to bond dissimilar materials.

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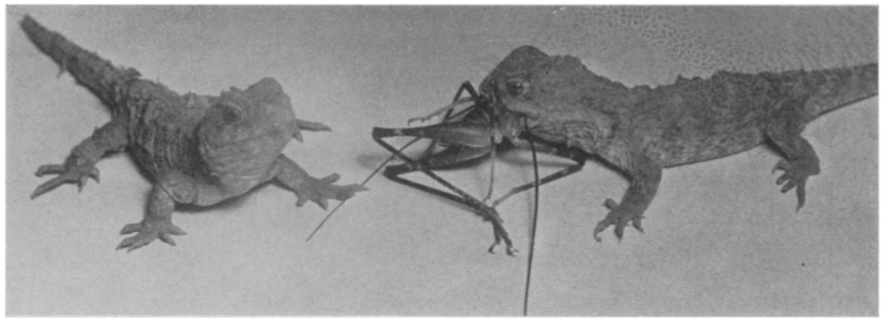

MIDGET DINOSAUR—A tuatara, a reptile until recently thought to be extinct, is in the process of eating a New Zealand native insect, a weta. These tuataras are the first ever raised in capivity.

PHARMACOLOGY

Cancer Drugs Derived From Mustard Gas

TWO PROMISING new strategies in the war against cancer have been reported. One is a technique for tailor-making drugs from nitrogen mustard, the crippling war gas used in World War I.

The other is a new screening technique for potential drugs. This technique has been used to find two new drugs that are now ready for clinical tests on human beings.

Dr. William J. Steele, a research associate at the John Harrison Laboratory of Chemistry at the University of Pennsylvania, announced the tailor-making technique at the American Chemical Society's third Delaware Valley Regional meeting at Philadelphia, Pa. The chemist's research indicates the possibility that drugs of the nitrogen mustard type can be designed to attack specific kinds of cancer cells.

The war gas itself has long been used against certain cancers. But it was not thought that modifications of the molecular structure of the gas would radically change its action.

Dr. Steele found they did have different actions. He tested modified drugs on DNA, an acid in body cells that influences their growth.

Dr. Robert J. Rutman, senior research associate at the same lab as Dr. Steele, announced his new screening test. Instead of comparing animal tumors treated with a new drug against untreated tumors, he compares the tumors treated with the new drug against tumors treated by the standard drug now in use by doctors. This eliminates drugs that are helpful but not as good as present drugs.

Dr. Rutman compares an old and a new drug on many kinds of tumors in several kinds of animals. The different animals are used because no single animal has quite the characteristics of man.

Dr. Rutman said the new drugs found by the tests are both chemically related to nitrogen mustard.

Dr. Roger P. Staiger, associate professor of chemistry at Ursinus College in Collegeville, Pa., told at the meeting of a four-week experimental course in chemistry. He said it demonstrated that high school students could readily grasp college-level chemistry concepts.

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