

NEUROLOGY

Test Drugs With Reflexes

Experiments are being done in Russia for observing the effects of drugs on behavior through the research on conditioned reflex, Marjorie Van de Water reports.

► RESEARCH ON CONDITIONED reflexes is being used by Russian scientists to learn the exact effects of new drugs. At the same time the drugs are used to reveal more about the workings of the nervous system and man's behavior.

This was brought out by reports of leading Russian physiologists and neurologists at a Pavlovian conference in New York, sponsored jointly by the USSR Academy of Medical Sciences and the New York Academy of Sciences.

An injection of chlorpromazine, one of the tranquilizers, completely eliminated the rise in blood pressure and other similar signs of pain reaction that normally are caused by applying an electric current to the sciatic nerve, according to the Russian Academician Dr. P. K. Anokhin.

But the tranquilizer did not eliminate the saliva secretions that result from weak stimulation of the tongue nerve.

Other scientists have found, he said, that

displeasure in children or adults results when a characteristic slow rhythm of five to six cycles per second of electrical impulses is given to the brain cortex. This stress rhythm is somewhat lower in amplitude and more regular than the brain waves characteristic of rest.

A special technique for injecting chlorpromazine into a rabbit's ear from a distance, and without the awareness of the animal, made possible the experiments to observe the very different effects of drugs on fear and on human behavior.

When the animal was cringing in fear of an expected pain stimulation, the tranquilizer would cause him to come out of the fear posture. He moved about freely, searched for food and devoured it greedily. Brain waves typical of defense reaction were slowly replaced by those characteristic of rest.

• Science News Letter, 78:277 October 29, 1960

OCEANOGRAPHY

Danish Deep Sea Research

► TWO CENTURIES of Danish deep sea research are on view at the Smithsonian Institution, Washington, D. C., until Nov. 10.

The Danish King Frederik and Queen Ingrid opened this historic exhibit as part of their visit to the United States. This October it is exactly ten years ago the King and Queen visited the vessel Galathea on its second expedition, 1950-1952. Dr. Anton F. Bruun, professor of oceanology at the University of Copenhagen was the scientific leader of this expedition around the world.

The first around-the-world Galathea expedition took place in 1845-1847. Deep sea exploration in Denmark began with the Arabian Expedition to the Red Sea in 1761.

Among the discoveries made by the Danes are the breeding place of the American and European eel and a class of mollusks, *Neopilina*, supposed to have become extinct over 300,000,000 years ago. The exhibit includes three-dimensional wax-plate reconstructions of the gills and internal organs of the *Neopilina*.

The Danes brought back several thousand new species from their expeditions. One of the rarest catches made was that of the Abyssal brotulid fish (*Bassogigas*) from the Sunda Trench south of Java at the depth of 21,450 feet. Only three specimens of fish have been recorded between 21,000 and 22,500 feet. This may be the extreme limit of fish life in the ocean.

Other deep sea specimens shown are brittle stars (*Ophiura*) caught at 12,000

feet and a few caught at 20,100 feet in the Kermadec Trench (the deepest catch of brittle star). Two starfish (*Dytaster*) were caught at 14,400 feet north of Madagascar. One of these specimens has a partly digested fishbone protruding from the mouth and the distensible stomach.



RAT-TAIL FISH—Shown by Dr. Anton F. Bruun.

Two fish, belonging to the family of sea-snails (*Liparidae*), were caught at 20,100 feet in the Kermadec Trench, and blind deep sea lobsters with very feeble claws were found at 11,000 feet in the Bay of Bengal.

Most of these deep sea specimens have the same sandy color with only a few rusty spots or stripes.

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GEOPHYSICS

Diamonds May Be Formed As Meteorites Hit Earth

► DIAMONDS MAY BE FORMED in large meteorites when they hit the earth and not, as is now thought, be already formed before the meteorite hits, the Philosophical Society of Washington was told in Washington, D. C.

Dr. Edward Anders of the Enrico Fermi Institute of Nuclear Studies, University of Chicago, said that, after studying two iron meteorites with diamonds, he believes his new impact theory explains the formation of diamonds. He, and a graduate student, Michael Lipschutz, worked with fragments of the meteorite from Meteor Crater and a huge Czechoslovakian meteorite.

So far, scientists have believed that the high pressure needed to form diamonds was gravitational pressure inside the parent body from which the meteorite came, Dr. Anders said.

He said the pressure needed to form diamonds is 30,000 atmospheres, or about 500,000 pounds per square inch. If the old theory is true, a body as large as the moon or larger would be required to produce such pressures.

With Dr. Anders' impact theory, there is no need to expect that diamond-bearing meteorites came from a very large body. However, it would take a very large meteorite, one of considerably more than 100 tons, to produce pressures large enough to create the diamonds.

These huge meteorites, unlike small meteorites, hit the ground with the same velocity they have in space, between 10 and 15 miles per second.

Dr. Anders said that the iron meteorite of Meteor Crater, Ariz., has been estimated to weigh 2,000,000 tons by Dr. Ernest J. Opik of the University of Maryland. He said this meteorite hit the earth at about 10 miles per second. This meteorite, called Canyon Diablo after a nearby canyon, dug itself about 600 feet into the ground before it exploded and was vaporized.

Dr. Anders said Dr. Harvey H. Nininger of the American Meteorite Museum, Sedona, Ariz., has found that fragments of this meteorite containing diamonds showed signs of having been heated strongly and were found on the rim of the crater. The fragments without diamonds did not show any signs of reheating and were found away from the crater.

Four large meteorites are known to contain diamonds. Two stony meteorites, containing diamonds but not studied by Dr. Anders, are located in Russia and India.

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