NEUROLOGY

Reversible Change Made In Nervous System

➤ "MESSAGES" transmitted along a nerve can be stopped and will later start up again through the use of controlled dosages of ultrasonic radiation at various points along the nerve pathway.

The fact that these reversible changes can be made in the central nervous system offers "unique opportunities for three-dimensional mapping of central nervous system function," they say. Previous research with the effects of high intensity ultrasound on nervous tissue has resulted in lesions being formed.

By stimulating a cat's eye with a series of three light flashes before, during and after ultrasonic irradiation of a particular area of the brain, the lateral geniculate nucleus, the scientists were able to show "reversible suppressions" of the animal's response. Measured electrically, there was complete recovery of response to a flash of light 30 minutes after stimulation by ultrasound.

Drs. F. J. Fry and W. J. Fry, biophysical research laboratory of the University of Illinois' College of Engineering, and Dr. H. W. Ades, division of neurophysiology and acoustics, U. S. Naval School of Medicine, Pensacola, Fla., report the research in *Science* (Jan. 10).

Science News Letter, February 8, 1958

INVENTION

U. S. Inventors Respond To Armed Forces Ad

➤ A GOVERNMENTAL plea to the average American for ideas and inventions of space platforms, jets and rockets has become a best-seller.

It also promises to become a potential source of new developments heretofore unthought of.

In the first days of Nov., 1957, the National Inventors Council of the U. S. Department of Commerce issued a 34-page want-ad entitled "Inventions Wanted by the Armed Forces." The booklet lists 387 inventions needed by the military and invited the nation's amateur and professional inventors to send in their ideas.

The demand for the attractive blue-covered booklet has been so great that the National Inventors Council has been having trouble meeting it. The first run of 10,000 copies has long been exhausted. A second run has been made, and a third and possibly fourth run is anticipated.

"We think it will be out of all proportion to similar pre-sputnik pleas and will have a total circulation of from 30,000 to 40,000," Leonard Hardland, the Council's chief engineer, said.

Inventions to match those needed by the Armed Forces have been trickling in, too. However, it takes time and thought to turn out worthwhile ideas, the Council outlines, and it will be sometime in the future before all of the ideas are received and evaluated. The first ones indicate that they are being developed by American amateurs, as well as professionals, and from all walks of life.

In addition to inventions relating to space travel, jets and rockets, the Armed Services are in need of developments in many other areas. One of these has been termed "Blue Sky" Problems and includes, for example, a non-magnetic compass; a destructive ray that is capable of producing "death rays effective at 500 yards without excessive power input;" a practical means for getting men and vehicles underground in less than a minute; and an atomic fire-fighting method.

The booklet is free for the asking and outlines how the NIC works and what its requirements are. It can be obtained by writing to the National Inventors Council, U. S. Department of Commerce, Washington 25, D. C.

Science News Letter, February 8, 1958

MEDICINE

Start Polio Shots at Two Months of Age

➤ POLIO shots should be started in infants as young as two months instead of waiting until the infants reach six months of age, as is now generally done.

This is recommended by Dr. Lauri D. Thrupp, U. S. Public Health Service's Communicable Disease Center, Atlanta, Ga., in the *Journal of the American Medical Association* (Jan. 11).

Studies have shown that many infants lose the natural immunity with which they are born before they reach six months.

"The importance of early immunization against poliomyelitis is becoming increasingly evident," Dr. Thrupp reports.

During 1956, attack rates of paralytic polio were highest in one-year-old children and the largest proportion of cases occurred in the under-five-year age group. Preliminary data for 1957 indicate that a comparably high proportion of paralytic cases is occurring in pre-school-age children.

The American Academy of Pediatrics has now recommended that the shots be started at two months. The third shot should follow the first two by at least six or seven months, Dr. Thrupp reports.

Science News Letter, February 8, 1958

PUBLIC HEALTH

55 Million in U. S. Infected With TB

➤ THERE ARE now 55,000,000 people in the U.S. who have been infected with the tuberculosis germ and may or may not come down with an active case of the disease.

This was revealed by the National Tuberculosis Association.

Of these millions, the statistical odds are that 2,750,000 of them will break down with active TB sometime during their lives.

At present, about 80,000 new cases of TB are reported annually although the death rate from the disease reached its all time low in 1956: eight deaths for every 100,000 people in the U. S.

Science News Letter, February 8, 1958

IN SCIEN

PHYSIOLOGY

Mouse Tails Grow Longer in the Heat

➤ THE LENGTH of a mouse's tail can be changed by rearing him in a "tropical" atmosphere, an Egyptian veterinarian reports in *Nature* (Jan. 25).

High temperatures cause longer tails and at the same time retard the growth of the mice, M. A. El-R. Ashoub, University of Cairo, Giza, discovered.

Mice were separated into two groups at weaning time. One group remained in a cold environment of about 50 degrees Fahrenheit while the second group was transferred to a hot environment of about 92 degrees Fahrenheit.

After four weeks in the hot room, all mice were weighed and the length of the tail measured from its tip to the point where the hair on the body ended.

The cold-reared mice grew normally, weighing in at two thirds of an ounce and having a tail length of about two and three-quarter inches. Their hot-reared litter mates, however, weighed only about a half an ounce and had tails about three and one-eighth inches long.

The tail change appears to be a reaction for increasing or decreasing the body surface area to speed either heat loss or heat conservation respectively.

Science News Letter, February 8, 1958

TECHNOLOGY

Rain Simulator Measures Erosion Effects on Soil

➤ A LARGE-SCALE rainfall simulator has been developed that promises to cut years off the amount of time now required to evaluate the effects of rainfall on farm land.

Donald Meyer of Purdue University told scientists at the American Society of Agricultural Engineers meeting in Chicago how the device works.

The simulator is constructed in units 18 feet wide and 20 feet long. Simulated rain can be made to cover three plots, 12 feet by 75 feet each, at the same time. Water is sprayed with an irrigation pump through nozzles at intensities of either two and one-half or five inches per hour.

The runoff from the simulated rainfall is channeled through a flume and a small amount can be collected for analysis. Both erosion and the amount of water absorbed by the soil can be measured. A thorough evaluation by natural rainfall of the factors that influence erosion and runoff requires 15 to 20 years.

Parts of the device, developed by Mr. Meyer and Donald McCune, soil scientist at Purdue, can be used to measure natural rainfall also.

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CE FIELDS

CHEMISTRY

Finding May Result in More Oil Resources

➤ THE FIRST demonstration that crude petroleum is a colloidal dispersion, containing minute undissolved particles measuring about 150-billionths of an inch in diameter, has been made by Dr. Paul A. Witherspoon, professor of petroleum engineering at the University of California.

The finding resolves an old dispute about the fundamental nature of petroleum and may show the way to new oil resources and permit extraction of more oil from old wells.

Using an ultracentrifuge, Dr. Witherspoon forced sediment in crude oil to the bottom of containers by the high speed spinning. The sediment was composed primarily of asphaltenes, tiny particles normally found in asphalt and tars. The particles are so small they are at the very limit of resolving power of an electron microscope.

Dr. Witherspoon said studies of the suspended particles may help in recognition of various types of oils. The age of oils varies from 20,000 to 500,000,000 years, and types and amounts of particles may vary according to age. Such knowledge may help identify potential source beds of oil and tell whether they are profitable to develop in given localities.

Asphaltenes also may be important in holding oil to the surface of sand and rocks in oil beds. The study of these substances may lead to a loosening agent that could be used to detach oil from surrounding materials, resulting in greater recovery from existing oil reserves.

Science News Letter, February 8, 1958

MEDICINE

Contracts Given for Anticancer Compounds

➤ RESEARCH contracts for new compounds to be tested against cancer have been announced by the National Cancer Institute, Bethesda, Md.

The six contracts are part of the continuing program to study chemicals that might turn out to be useful, and do not represent any major "breakthrough" in cancer research.

The National Cancer Institute said the contracts call for the synthesis of compounds similar to purines, pyrimidines, amino acids and porphyrins, all of which are found naturally in the body.

It is hoped some of the synthetics will turn out to be antimetabolites. They are compounds that slow cancer growth by blocking certain of the cells' metabolic processes needed to sustain life.

The antimetabolites resemble the needed chemicals and so they are accepted by the cells. However, they differ from natural chemicals enough to interfere with the processes of self-repair and self-reproduction.

New types of hormone-like substances are also being synthesized since both male and female sex hormones have shown some activity against certain kinds of cancer.

The research organizations receiving the contracts for antimetabolites are the Stanford Research Institute, Menlo Park, Calif., the Southern Research Institute, Birmingham, Ala., the Medical College of Virginia, Richmond, and The Monadnock Research Institute, Inc., Antrim, N. H.

Contracts for new hormone substances went to The Upjohn Company, Kalamazoo, Mich., and the University of Chicago.

New compounds produced under these contracts will be sent to the National Cancer Institute for testing against cancers in mice. Some may show promise, others may be useless.

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ENTOMOLOGY

Army Scientists Call For War on the Cockroach

➤ COCKROACHES have been indicted as highly dangerous carriers of human disease by two Army scientists.

"There is no question," Drs. Louis M. Roth and Edwin R. Willis of the Quartermaster Research and Engineering Center say, "about the ability of cockroaches to carry pathogens in or about their bodies . . ."

At least 18 species of the pest known to inhabit houses have been incriminated, naturally or experimentally, in transmission of infectious agents or have been claimed to bite man, the scientists claim in a report published by the Smithsonian Institution in Washington.

Although the cockroach has never been proved to transmit desease, and with very few exceptions has been exempt from blame for specific outbreaks of disease, Drs. Roth and Willis indict them nevertheless.

Several of the commonest species, they say, have been captured repeatedly in sewers, cesspools and septic tanks and have been found traveling from these places into buildings.

Four strains of polio virus have been found occurring naturally in wild-caught cockroaches.

In addition, they can harbor, experimentally, Coxsackie, mouse encephalomyelitis and yellow-fever viruses. About 40 species of disease-causing bacteria have been isolated from naturally contaminated cockroaches; and two species of fungi that have been associated with human maladies have been found.

The Army scientists call for a declaration of war on the cockroach pointing out:

"Cockroaches are tough, resilient insects with amazing endurance and ability to recover rapidly from almost complete extermination. They will probably always be with us, and we can only temporarily reduce their numbers. But, as in all battles, recognition of a common enemy is essential to successful combat."

Science News Letter, February 8, 1958

GEOPHYSICS

Take Ice Cores From Depths of Antarctica

➤ ICE CORES from depths more than 1,000 feet below the surface have been taken in Antarctica, the U. S. National Committee for the International Geophysical Year of the National Academy of Sciences, has reported.

The deep-drilling project at the IGY Byrd Station reached the 1,013-foot mark on Jan. 26. Ice cores taken from the drill hole preserve in their annual layers clues to Antarctic climate for many past centuries.

The cores are obtained by personnel from the Army Snow, Ice and Permafrost Research Establishment of the Corps of Engineers. Because of the relatively small annual accumulation of snow in the Antarctic, ice at 1,000-foot depths is roughly equal in age to ice at the 2,000-foot level in Greenland, where development of techniques and equipment for deep drilling to obtain undisturbed cores was inaugurated.

Byrd Station cores will be broken into three-inch units for density measurements, visual examination and determination of yearly accumulation when possible. It is expected volcanic ash from the eruption of Katmai in 1912 will be found in the Antarctic cores, as it was in those from Greenland.

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BIOLOGY

Curious Reptiles Abound in Cuba Coast

➤ "BULLETPROOF" LIZARDS, bat-crushing snakes, pygma boa constrictors and two unusual frogs—one that never is a polywog and a pigmy — are among the strange Cuban animals collected for the Smithsonian Institution.

David Hardy of the University of Maryland reported finding one "bulletproof" lizard, or iguana, that had 22 shots in its body. Its apparent immunity to bullets may be due to a tough hide and "the quite primitive organization of the nervous system."

The bat-crushing snake takes advantage of the very narrow entrance to the bats' cave in order to ambush the bats as they make their nightly exit, one by one.

The pygma boa has the side-winding motion typical of rattlesnakes but otherwise unknown. The movement may relieve the snake from the hot sand since its body it repeatedly lifted off the ground. It is less than two feet long.

Apparently an all-swimming stage is not necessary for the species of frogs that goes without a tadpole form. They are creatures of the rain forest canopy, found only in the tops of the tallest trees and chiefly in high mountains. The eggs, laid in the water that collects in the hollows of large leaves, hatch as frogs. Metamorphosis is completed entirely within the egg.

The "very rare" pigmy frogs, less than one-third inch long, are found throughout the island.

Science News Letter, February 8, 1958