PHYSIOLOGY—MEDICINE

Rats' Tasting Abilities Show Life-Saving Function of Tongue

Psychiatrists Are Told That Taste May Point to Dietary Needs; Fatal Brain Ailment Described

YOUR tongue saves your life, Dr. Curt P. Richter of the Johns Hopkins Hospital told the American Neurological Association as the result of tasting tests.

Not only can it save you from swallowing poisons, but the tongue and its taste buds can guide your selection of foods so that you will get all the life-essential elements of diet, from salt to vitamins.

"The tongue is the watchdog of the diet," Dr. Richter said, "but dietitians and doctors have largely neglected it in their consideration of human diets."

The tragic story of a three-year-old baby girl whose craving for salt was not recognized as a vital demand of her body until too late to save her life was a dramatic example of the importance of the tongue as a guide to diet that occurred coincidently with Dr. Richter's innumerable tests of rats' tasting abilities which were the actual basis of his report.

The little girl was brought to Johns Hopkins Hospital from Florida to find why she was growing up too fast, with precocious sexual development. While in the hospital she was given the dietetically correct food for her age. After her death, it was found that a tumor of the adrenal glands was responsible for the sexual precocity. More than this, it had crowded out the vital outer part of these glands, causing a condition like that in once-fatal Addison's disease.

In this condition, large amounts of salt are lost from the body and must be made up in the diet. Because the condition had not been recognized before her death, the child was not given any extra salt. But afterwards her mother reported that the child had for a long time craved salt, eating it by the handful, as most children like to eat sugar.

This same condition in rats helped Dr. Richter to discover the vital importance of the tongue and its taste buds. Rats, he has found, can tell the sweetness, sourness, saltiness and many other flavors of foods or drinks. They tell it by taste.

This was proved when the animals lost their tasting ability after all nerve connections were cut between the taste buds of the tongue and the brain centers. So long as some of the nerve connections remained the animals could detect different tastes.

The rats that had no adrenal glands, for example, could detect salt well enough to save themselves from death by drinking all the salt water they needed. When all the nerves were cut, however, taste was completely destroyed. The animals drank indifferently from either salted or unsalted water supplies. They thus failed to get enough salt and died.

Taste guides the animals not only to enough salt. Normal rats, relying on taste alone, can select as good a diet for themselves, with the necessary amounts of fat, sugars and starches, proteins, minerals and vitamins, as scientists with all their knowledge can provide. Dr. Richter discovered this when he supplied the animals with a wide variety of food substances and let the animals help themselves.

When he gave them a diet lacking in any essential, vitamin B, for example, and supplied this in a tube of water identical with the drinking water tube, the animals invariably drank enough of the vitamin B water, although the only way they could tell it was by the taste.

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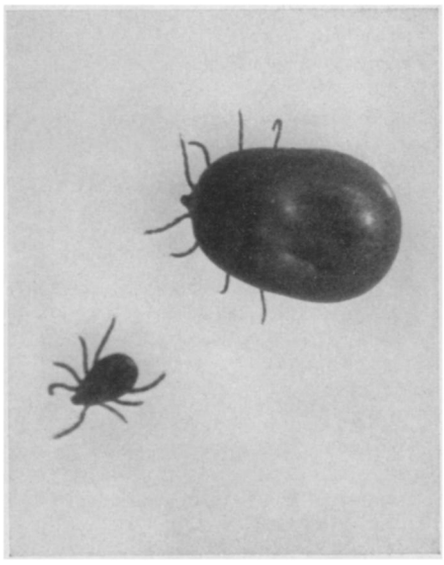
Fatal Brain Ailment

DISCOVERY of a new and fatal convulsive ailment of babies, caused by a germ that attacks the infant's brain, probably before birth, was announced by Drs. Abner Wolf, David Cowen and Beryl H. Page, of the College of Physicians and Surgeons, Columbia University.

Five cases of the new ailment have been recorded. It has been given the jaw-breaking name of toxoplasmic encephalomyelitis, to show that it is a brain and nervous tissue ailment caused by a toxoplasma. This is a rather large germ which has (*Turn to Page 382*)



HOW THEY LOOK

Here is the tick before and after gorging on a dog. Be careful how you remove this pest from your pet. It may be infected.

MEDICINE

Rocky Mountain Fever Is Vacation Time Ailment

ONE of the most serious of the dangers that threaten the vacationist, especially the one who goes on camping and hiking trips into the country, is Rocky Mountain spotted fever.

The disease is caused by the bite of an infected tick. The common dog tick and the wood tick carry the germs.

Rocky Mountain spotted fever had the reputation some years ago of killing 85 or 90 out of every 100 persons who got the sickness. More recent reports to the U. S. Public Health Service put the rate at about 18 or 20 deaths for every 100 cases.

This serious sickness got its name because it was first discovered in the Rocky Mountain area, specifically in the Bitter Root Valley in Montana, and was for a long time believed to be limited to that area. It has gradually spread throughout the country, and cases have now been reported from 31 of the 48 states, including the District of Columbia. It is most prevalent in the Pacific and Mountain states and the South Atlantic states.

The disease starts, from 2 to 14 days after the virus or germ has entered the body, with a chill, headache, sweating, and pain in the abdomen, bones and muscles. Other symptoms are the mottled rash and the fever.

A vaccine which protects against the disease has been developed and is prepared in large quantities each year by the U. S. Public Health Service. So far, the disease has not been sufficiently prevalent in the East to warrant widespread use of the vaccine, but it has been used in the West to protect sheepherders, foresters and others whose work takes them into infested regions.

For those who may only occasionally be exposed to the disease, protection against it depends chiefly on special vigilance against ticks.

Remove Them Soon

Infected ticks do not usually transmit the infection until from two to eight hours after they attach themselves to the body, so if you are alert to watch for and remove them, you may save yourself from the ailment. Use a tweezers or piece of paper, not the bare fingers, to remove the ticks, because you can get the disease from handling crushed infected ticks.

If possible, stay out of tick infested areas, health authorities advise. If you must go into such regions, wear high leather boots or socks outside of trousers (women as well as men) to keep the ticks from getting a foothold and crawling up the clothing to the neck or arms. Inspect the bodies and clothing of yourself and your children at least twice daily, if you are in tick infested areas.

Do not depend on feeling the tick crawling on you, health officers warn. Ticks are especially apt to fasten themselves on the back of the neck and along the hairline. In some cases they have even been found in the ear canal.

Derris for Dogs

Pet dogs should also be inspected for ticks. Derris, used either as a powder or a wash is effective in destroying ticks already attached to dogs, U. S. Department of Agriculture scientists have found. The powder should be used every two or three days, the wash or dip every five or six days. The derris powder should have a rotenone content of at least two per cent. An effective wash can be made by dissolving an ounce of soap in a gallon of water and adding two to four ounces of derris powder with a rotenone content of four per cent.

For further protection against ticks, the government scientists advise clearing away undergrowth and keeping grass closely cut near houses, camps and other places frequented by humans.

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BIOLOGY

Electricity Exists Wherever There is Life, Scientists Find

If It Behaves in Living System as It Does Elsewhere The Electrical Field May Determine Nervous Structure

By DRS. H. S. BURR and PINCKNEY J. HARMAN, JR.
Yale University School of Medicine

(Electricity is the architect of the human body. Experiments by Drs. Burr and Harman, reported to the American Neurological Association, hold important implications in the understanding of health and disease in the human body, including perhaps even cancer.)

IT IS becoming increasingly clear that wherever there is life there is electricity. Apparently, a portion of the energy absorbed by a living thing from food and air and sun, is converted into electrical energy.

This energy is present in a relatively steady state just as in a battery there is a relatively steady voltage between the two poles of a battery. Some organs of the body, as for example, the heart and the brain, modify this direct current electricity to form an irregular alternating current which we recognize in the heart waves and in the brain waves. Studies of the direct current characteristic of the electricity found in living beings show that these are relatively stable but may be changed by fundamental biological activities such as menstruation, ovulation, cancer, growth, and wound healing.

However, it is well known that whenever electrical energy flows through a conductor, an electrical field can be found surrounding the conductor. Since electrical energy does flow through the living system, one should expect to find a field in that living system, unless electricity in living things is different from electricity in physical things.

May Play Major Role

If such a field can be demonstrated experimentally, it is by no manner of means impossible that it plays a major role in determining the pattern of organization in the living system. It has been possible to demonstrate the field experimentally by rotating a salamander on a revolving turntable under certain conditions. If this is done, the salamander produces a sine wave alternating current output analogous in every way, except in frequency and magnitude of output, to that of the ordinary electric dynamo. This suggests that voltage gradients in the nervous system may be responsible for the presence in the nervous system of a field which determines the location of nerve cells and the direction of growth in nerve fibers.

Voltage gradients in the nervous system of the white rat have been determined in some forty animals and show that the brain is positive to the spinal cord and to the peripheral nerve. The voltage rises as anesthesia deepens, and lessens as anesthesia lightens. In no case is there any reversal of polarity. When the animal dies the voltage drops slowly to zero, usually within an hour. However, the voltage between the spinal cord and the nerve may persist for several hours.

Infer Nervous System Field

Since these voltages in the nervous system are analogous to those found in the whole living animal, and since the whole animal possesses an electrical field, it is logical to infer that the nervous system also possesses a field and it may well be that this field determines the structural arrangement of the parts of the nervous system.

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ETHNOLOGY

Indians Use Airplane To Round up Wild Horses

USING an airplane to round up wild horses is just "horse sense" the way Yakima Indians of Washington State see it. They tried hiring a pursuit plane, piloted by a white man, last year and directed the pilot by flags planted on the ground, to head off the horses.

Delegates from the tribe, conferring with Indian Service officials, said they might try it again this year.

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Speedmeters have been devised which record the exact speed of every vehicle passing selected points on a highway.