

MEDICINE

# Eleven Viruses Attack Human Nervous System

Include Infantile Paralysis, Sleeping Sickness, Horse Sleeping Sickness and Even Fever Blisters

"ELEVEN different kinds of viruses are now known to attack the human nervous system and to produce as many distinct maladies," Dr. Albert B. Sabin, associate professor of pediatrics at the University of Cincinnati, declared at the meeting of the American Academy of Pediatrics in Chicago.

Viruses are disease germs so small that they cannot be seen under even high-powered microscopes. Influenza, measles and yellow fever are caused by viruses, but these are not the nerve-attacking type which Dr. Sabin described.

The eleven viruses that attack the human nervous system are: infantile paralysis; St. Louis encephalitis (encephalitis is popularly termed "sleeping sick-

ness"); Japanese encephalitis; Eastern equine encephalomyelitis (so-called horse sleeping sickness); Western equine encephalomyelitis; rabies; louping ill; lymphocytic choreomeningitis; pseudo lymphocytic choreomeningitis; "B" virus; and herpes simplex, or fever blisters.

Besides these 11 known viruses and the maladies they cause, there are at least two other diseases of the human nervous system which are probably caused by viruses although the infectious agents have not been isolated. These are the epidemic encephalitis or "sleeping sickness" which was so prevalent during and immediately after the last war and herpes zoster or shingles.

The first four of these viruses that at-

tack the nervous system have caused epidemics of diseases, affecting thousands of people at a time, Dr. Sabin pointed out, while the others occur only sporadically. Most of these viruses can produce unrecognized or very mild infections without any signs of involvement of the nervous system.

The virus of fever blisters is an example. It not only can invade the central nervous system of animals and produce fatal disease in them, but there is suggestive evidence that even in human beings it may wander beyond the skin and mucous membranes.

Lymphocytic choreomeningitis appears to affect mice and dogs under natural conditions but is transmitted to human beings. Pseudo choreomeningitis is a new virus recently identified in England. "B" virus occurs in monkeys under natural conditions and has been known to cause disease in at least two laboratory workers who were bitten by monkeys and presumably also in a former king of Greece.

The 11 known viruses that attack the nervous system are as different and distinct from each other as are the germs of tuberculosis, typhoid fever and pneumonia, and the viruses, even though they

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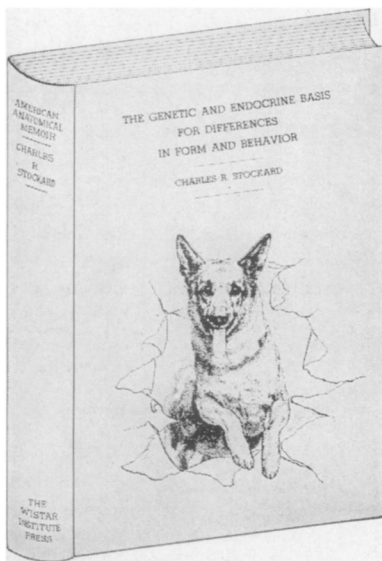
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cannot be seen under the microscope, can be identified with as much certainty as the tubercle bacillus. The identification is made by determining whether or not the unknown virus can produce disease in monkeys, mice, guinea pigs and rabbits and by estimating its approximate size from its capacity to pass certain filters and by the changes it produces in infected cells.

All these viruses except those of infantile paralysis, rabies and herpes have been isolated, recognized and identified within the past five to ten years.

*Science News Letter, May 24, 1941*

## PHYSICS

## Money May Last Longer As Result of Studies

**E**VEN though your paper money seems to vanish with ever-increasing speed, it may last longer as a result of a new wear test developed by F. T. Carson and Vernon Worthington, of the National Bureau of Standards. It is aiding the Bureau of Engraving and Printing to tell quickly the effect, for the better or otherwise, of changes made in the paper-making process.

The test is made in two stages. A specimen of the paper is automatically subjected to a crumpling by a piston in a cylinder, then to mechanical fingers which straighten it out. After this is repeated many times and the paper resembles a bill that has been in circulation for several months, air under pressure is forced through its fibers. Measuring the increase in the amount of air that can penetrate it has been found the most valuable criterion of the effect of the crumpling treatment.

This test shows how much the structure has been opened up. It is closely related to the fuzziness of the surface, its ability to catch dirt and to absorb oil or grease, as well as the probability of impairment of the printed images and figures.

*Science News Letter, May 24, 1941*

## MEDICINE

# Mouse Foster-Mothers Transmit Hereditary Cancer

## Young of a Resistant Strain, When Suckled by Adult Of Susceptible Strain, Also Develop Susceptibility

**M**ICE have shown that it is possible to drink in susceptibility to cancerous disease with their foster-mother's milk, in experiments performed by Dr. Lloyd W. Law at the Roscoe B. Jackson Memorial Laboratory in Bar Harbor, Me.

Dr. Law induced the formation of a lymphoid leukemia tumor (a kind of cancer attacking the circulatory system) in a mouse of an inbred pedigreed strain, by treatment with a cancer-causing chemical. Transplanted bits of the tumor produced the same disease in other mice of the same family tree, while mice of other hereditary strains remained resistant to it. However, when young of a resistant strain were suckled by foster-mothers of the susceptible strain, they developed some degree of susceptibility.

Whether these results can be reversed, to confer resistance on the young of the susceptible strain by transferring them to resistant foster-mothers, has not yet been decided. Susceptible young permitted to feed on their own mothers' milk until they were 12 hours old, and then transferred, proved still susceptible after being reared by resistant foster-mothers. The critical test will come when susceptible young are transferred immediately at birth, and never permitted to feed on their susceptible mothers' milk.

Effects of foster parentage of an even more intimate sort were tested, also on mice of cancer-susceptible strains, by Dr. Arthur M. Cloudman, at the same laboratory. His technique was to transfer

the fertilized egg, destined to become a mouse, from the body of its mother into that of a foster-mother of a different hereditary strain, and let it develop and come to birth.

Dr. Cloudman's two strains were both susceptible, but each had its own kind of cancer, to which the other strain was resistant. It was found that a young mouse developed in the uterus of a foster-mother of the other strain retained its hereditary susceptibility to its own kind of cancer, and at the same time picked up at least partial susceptibility to the foster-mother's kind, when bits of the diseased tissue were transplanted into its body.

This "foster-susceptibility," however, seems to diminish somewhat with age, for when the cancer-tissue transplants were made at the age of one month the young mice all developed the disease, whereas mice kept two months before receiving the transplanted tissue developed the tumors very slowly, and in only five cases out of seven.

Drs. Law and Cloudman both report on their researches in *Science* (April 18).

*Science News Letter, May 24, 1941*

## ● Earth Trembles

Information collected by Science Service from seismological observatories resulted in the location by the Coast and Geodetic Survey of the following preliminary epicenter:

*Tuesday, May 13, 11:01.8 a.m., EST*

About 150 miles off the northern coast of California. Latitude, 40.4 degrees north. Longitude, 126.0 degrees west. Strong shock.

For stations cooperating with Science Service, the Coast and Geodetic Survey, and the Jesuit Seismological Association in reporting earthquakes recorded on their seismographs, see SNL, Feb 22.

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