

PATHOLOGY

Filter-Passing Pathogen Found in Brains of Mice

A NEW disease-causing agent, seemingly related to the filter-passing viruses but different from them in some respects, has been isolated from the diseased brains of mice at the Rockefeller Institution for Medical Research by Dr. Albert B. Sabin. (*Science*, Aug. 26)

The new disease cause was found associated with a large one-celled parasitic animal form known as toxoplasma. Its discovery was partly the result of accident, when a culture of toxoplasma was unintentionally killed by freezing at the low temperature of 80 degrees below zero Centigrade. A fluid separated from the dead toxoplasma was still able to cause the disease, destroying nervous and other tissues when injected into them. It could be passed from mouse to mouse, like a filterable virus, but it does not spread at all by natural means.

Like the better known filterable viruses, it can pass through the pores of some types of fine-grained porcelain filters. Other, smaller-pored filters, however, will stop it. By these and other

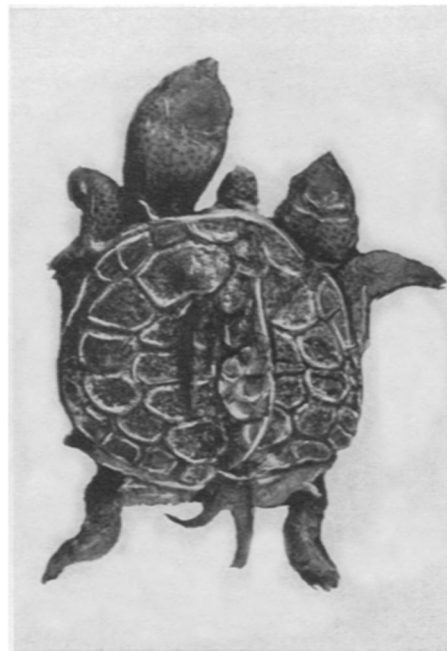
means the diameter of its "elementary bodies" was estimated at about the wavelength of the lower brackets of ultra-violet light.

By most ordinary microscopic methods it is invisible, but under special staining treatment some exceedingly minute ring-shaped or oval objects were detected under high magnification. There were also occasional larger rings, triangles, and quadrangles.

How this disease agent spreads is still a mystery. It cannot spread by itself or be carried by an insect, so far as can be told at present. It may imaginably be carried by the toxoplasma organism, but that only pushes the mystery back a step: How does the toxoplasma get about?

Any ultimate decision, Dr. Sabin states in conclusion, "must be postponed until further opportunity is given other investigators as well as ourselves to determine whether or not it may occur spontaneously in mice under conditions other than infection with toxoplasma."

Science News Letter, September 10, 1938



SHELL-MATES

Sharing the same house of shell, these "Siamesed" turtles have two independent heads and two tails, but only four legs. The stub projecting between the heads appears to represent a suppressed foreleg, or perhaps two of them.

BIOLOGY

Siamese Twin Turtles Rare, But Interesting

SIAMESE twins are not confined to the human species by any manner of means. Turtles have 'em, too. They range in Siameseness all the way from being two animals joined at some point at the sides or fronts of their shells to just having two heads on one neck, with all the rest an apparently normal turtle body, ambling around as usual on four stubby legs.

The one shown in the accompanying illustration represents more or less of an intermediate condition. The little reptile had two heads and two tails, but any extra legs that may have got started on the joined-together sides are represented only by the stub between the heads, which is presumably the rudiment of one or both front legs.

Presumably there are two bodies, at least partly independent of each other, within the shell, for the shell structure is somewhat abnormal. It is not simply an unusually wide single shell, nor yet is it two shells joined together; it has features that suggest both conditions.

It will be noticed that the right-hand turtle twin is somewhat smaller than its

GENERAL SCIENCE

Scientist Has Plan to Salvage "Lost" Research

EVERY college and university in America should profit by the new proposals now being made to salvage "lost" research in the sciences. Out of the plan science, and America, should profit.

In many colleges of the nation heavy teaching burdens and lack of equipment prevent good research men from undertaking creative research which, by training, they are capable of doing. The work these men might do is "lost" research. Dr. J. C. Boyce, of Massachusetts Institute of Technology, has a plan which would salvage some of it.

Dr. Boyce proposes that the universities and larger colleges should "farm out," as it were, some of the many minor problems which arise as part of their general broad research programs. Many of these problems would seem to be trivial and uninteresting if tackled

singly but when pursued as part of a larger and broader research endeavor they take on new meaning and disclose significant findings.

Such problems would give a stimulus to men who now may form one-man departments in small colleges. They could be carried out in several ways: During summer school sessions or on sabbatical leave; or in the larger university laboratories where there is close geographical linkage; or finally, by the loan of research equipment to the smaller institution for the joint investigation. In general it would seem best to Dr. Boyce to have the experimental work carried out in the larger institution and the data examined and worked over in the smaller. Writing in the *Review of Scientific Instruments*, Dr. Boyce sees benefits to all by his plan.

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shell-mate. Presumably they started out evenly, but one of them may have dominated the other, Dr. Samuel F. Hildebrand, of the U. S. Bureau of Fisheries, who discusses turtle twins in the *Journal of Heredity* (Sept.) states that even turtles that are thus compelled to live side by side in the same house will frequently fight over morsels of food.

Turtle twins are known from all over the world, yet they seem to be comparatively rare. At one station of the Bureau of Fisheries, the hatchery in Beaufort, N. C., there are records of 100,000 young terrapins emerging from the shell, over a period of 25 years; yet only two cases of these conjoined twins have been observed.

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Chemistry

Synthetic Fertility Vitamin To Be Given Clinical Tests

American Chemical Society Hears Reports on New Drugs, Medicinal Value of Onions, and Gasoline From Coal

SYNTHESIS of the anti-sterility vitamin E is now an accomplished fact, and science stands on the threshold of being able to prove one way or the other whether certain kinds of human and animal sterility can be cured by feeding this vitamin E in the diet. At the meeting of the American Chemical Society in Milwaukee, the methods used in the laboratory creation of this important vitamin were described in a report by seven University of Minnesota chemists.

Lack Causes Sterility

Vitamin E is the factor in the diet whose absence has been proved to cause sterility in experimental animals, such as rats. It was originally discovered by Dr. Herbert M. Evans, of the University of California, in research begun some 16 years ago.

Ever since its discovery there has been much research seeking definite proof that the absence of this vitamin caused sterility in the larger, domesticated animals and even in man. Through the years studies with animals have shown evidence pro and con for this view. And there has grown up the suspicion, not yet confirmed clinically, that vitamin E—the so-called “essence of fertility”—might aid in certain types of human sterility.

Early in the present year, the Swiss scientist Dr. P. Karrer, and his associates, H. Fritzsche, B. H. Ringier, and H. Salomon, reported the synthesis of alpha tocopherol, a chemical apparently identical with vitamin E. Swiftly following, American scientists, banded together from three institutions, likewise reported synthesis of the vitamin.

Members of the department of chem-

istry at the University of Minnesota, who did the chemical side of the synthesis program, described the technical steps in its production. These scientists were Prof. Lee Irvin Smith, H. E. Ungnade, W. W. Prichard, J. W. Opie, S. Wawzonek, F. L. Austin and H. H. Hoehn. Cooperating in other phases of the work were Drs. Herbert M. Evans, Gladys A. Emerson and Oliver H. Emerson, of the University of California and Merck and Company.

In proving the effect on sterility of alpha tocopherol, the Minnesota chemists' report cited experiments in which sterile rats, lacking vitamin E in their controlled diet, were given doses as small as three milligrams of the chemical vitamin E and restored to fertility. Human tests have not yet been undertaken but are expected to be launched now that sizable supplies of the synthetic vitamin can be made.

Sedatives and Hypnotics

New sedatives and powerful sleep-producing drugs which do not harm the animal body have been developed by Bryn Mawr College chemists. The new drugs are a further step toward the long-sought goal of chemistry of finding a potent but harmless and non-habit forming drug to replace morphine, said Drs. Arthur C. Cope and Evelyn M. Hancock in presenting their report.

Many sleep-producing drugs have been derived in the past from barbituric acid derivatives but ordinary methods failed to create one special type; a class in which vinyl groups were attached to the barbituric molecule. The barbiturate sedative drugs as a type are not considered habit-forming, at least in the

creation of drug addiction. The Bryn Mawr chemists, however, have now solved the problem by special methods and have created over 40 new vinyl barbituric acid compounds. Several of these are effective in low dosage and are relatively non-toxic when applied to experimental animals. The new compounds produce either brief, moderate or long sleep, according to their chemical structure.

Synthetic Ephedrine

Research may soon free America and the rest of the world of dependence on a small area of China for its supply of ephedrine, the powerful alkaloid drug used in cases of low blood pressure and as an astringent nasal spraying agent, it was also reported at the meeting. Dr. Jonas Kamlet, of Israel Zion Hospital, New York City, described researches seeking the production of the drug synthetically.

Heretofore, he pointed out, the world's supply of ephedrine has come from the ma huang shrub, grown in a small area near Tientsin, China. This area was one of the first to be taken by the Japanese in their undeclared Chinese war and the supplies of the drug were stopped. The price, for a time, skyrocketed. Efforts to grow ma huang in other parts of the world are not notably successful.

Cost Still Excessive

Small amounts of ephedrine and its derivatives can now be produced in the laboratory, Dr. Kamlet reported, as he described a simplified method for its production. The synthetic ephedrine is identical with the natural variety but its cost is excessive. However, if the world's supplies were cut off, chemistry could come to the aid of medicine.

Grandmother's remedy of eating raw onions to cure a cold may not have been just superstition after all. The vapors of onions, that for centuries have made people cry, have the power to kill germs. E. F. Kohman, chemist of the Campbell Soup Company, told his colleagues of his research on the chemicals which onions liberate as their lachrymal agent. They are the potent aldehyde family of compounds. Most familiar of the aldehydes is formaldehyde, used in preserving biological and medical specimens and as a germicidal agent.

The U. S. Bureau of Mines' Pittsburgh plant for converting coal into petroleum is now able to obtain from 70 to 75 per cent. yields of oil convertible to gasoline, it was reported by an eight-