

MEDICINE

Drag-Net on Childhood Foe Being Drawn in Closer

Physicians and Medical Scientists in Texas, California, Michigan, Canada, Chicago, Cleveland Battling Polio

A DRAG-NET has been spread right across the nation to catch that crippling, maiming and killing foe of children, infantile paralysis. The men who have spread the net are doctors and medical scientists working in laboratories and hospitals in Texas, California, Michigan, Canada, Chicago, Cleveland and other research centers. They have not yet outwitted the criminal but they are drawing the net closer, reports to the National Foundation for Infantile Paralysis in New York show.

Following the trail into the body of the virus that causes the disease, some of these scientists have swung away from the nose route and are apparently picking up a trail that leads into the body through the mouth. On this trail, Dr. John A. Toomey, of the Western Reserve University School of Medicine, has found a clue that may lead to solution of the mystery of why some persons get the disease while others do not. The reason, Dr. Toomey believes, has something to do with germs of an entirely different kind, the typhoid fever, paratyphoid fever and colon bacilli, which are germs of the intestinal tract.

These germs produce a toxin or poison which apparently increases the virulence of the infantile paralysis germ or virus. When the poison and the virus have been mixed together, the virus causes infantile paralysis in the cotton rat which ordinarily does not get infantile paralysis. Before Dr. Toomey's report, only one strain of infantile paralysis virus was found to attack these animals and make them sick, although many different strains make monkeys and humans sick with the disease. Dr. Toomey, however, has found that mixing the virus with the colon-typhoid-paratyphoid germs' poison gives to more than one infantile paralysis virus strain the power of producing the disease in cotton rats.

Clues to why some children can resist infantile paralysis, or have immunity to it, while others do not, have been sought on another trail by Dr. John F. Kessel, at the University of Southern California. Vaccination against the disease in the ordinary way of vaccinating is not likely

to protect children from the disease, Dr. Kessel believes. He bases his views partly on the fact that both monkeys and humans can and do get second attacks of the disease. This seems to mean that resistance to this disease does not depend on the body being able to build up infantile-paralysis-fighting antibodies when the virus attacks, as it can build such antibodies for protection against attacks of other disease germs.

Protection against the disease is, therefore, not likely to be achieved by vaccinating with small doses of killed or weakened infantile paralysis virus. But the grandpa of all vaccines for protecting against disease, smallpox vaccine, was not made from smallpox virus, Dr. Kessel pointed out. It was made from the

virus of another, very similar disease, cowpox. Protection against infantile paralysis might be possible, he suggested, if scientists could find a virus closely similar to the infantile paralysis virus, but unlike it in being harmless to humans. Viruses that cause sickness in mice by attacking their brains and central nervous systems, as the infantile paralysis virus does, have been studied, but none so far found has the power to confer immunity or resistance to the infantile paralysis virus.

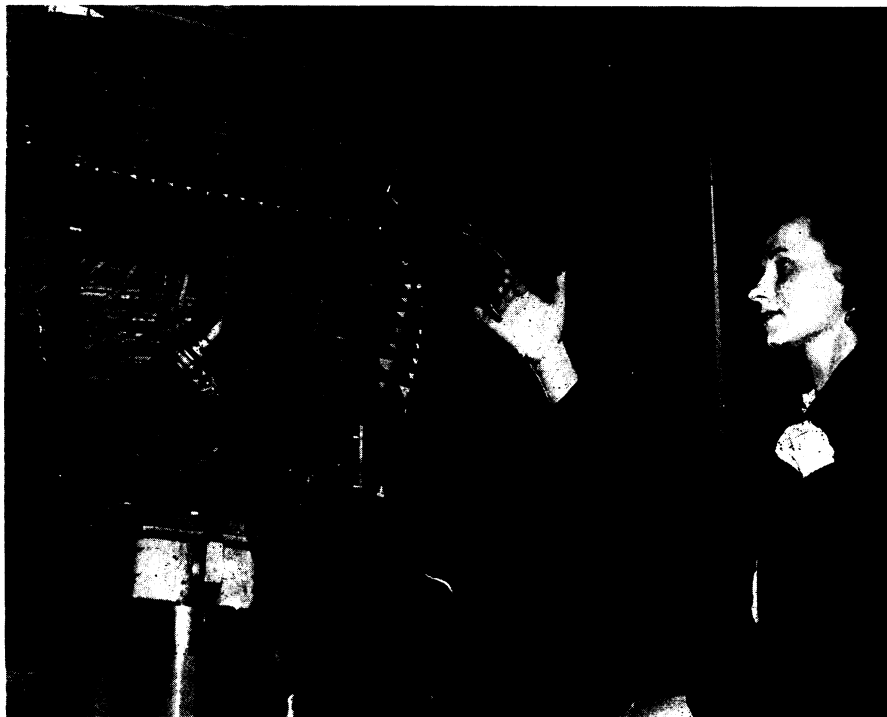
The next step which scientists are hoping to take is the discovery of this innocuous virus. At present, this detective story of medicine is like a serial story, "to be continued."

Science News Letter, November 16, 1940

New Kind of Protection

ENCOURAGING results in efforts to create a new kind of protection against infantile paralysis were reported by Dr. Harold K. Faber and associates of Stanford University School of Medicine at the meeting of the National Foundation for Infantile Paralysis in New York.

The new kind of vaccination is aimed at protecting the central nervous system



DEFIES LAW OF GRAVITY

This ordinary screwdriver is held in space on the fingertip of a visitor to the Westinghouse laboratories by magnetic lines of force from the ball-shaped mass spectrometer. This sorting machine for molecules and their constituent atoms divides them according to mass as they travel at some 16,000 miles a minute.

Science News Letter, November 16, 1940

where the virus of the disease does its damage. Previous efforts at vaccination against infantile paralysis have failed, it is generally believed, because the vaccine reached the blood cells, but not the cells of the central nervous system where it was needed to combat the virus. Vaccines against other diseases succeed when they cause an increase in germ-fighting substances in the blood.

Dr. Faber and associates have been trying to produce immunity to infantile paralysis by applying killed infantile paralysis virus directly to the cells of the central nervous system.

"Results to date offer encouragement," although the studies have not progressed far enough to allow for an evaluation. Dr. Faber and associates have, however, been able to produce considerable penetration of the dye, Prussian blue, into the central nervous system, and it may be possible by the same method to get the vaccine into the central nervous system.

Science News Letter, November 16, 1940

Tonsils Lessen Risk

A CHILD who has had his tonsils removed is in greater danger of getting infantile paralysis than one who has not had this operation, Dr. Alfred E. Fischer, of New York University School of Medicine, believes as a result of studies during the 1937 outbreak in and around Toronto.

The child whose tonsils have been removed is not only in greater danger of getting the disease but is more likely to get it in the form which may make him a candidate for an iron-lung existence. This is the bulbar type of infantile paralysis that attacks vital centers of the brain, such as those controlling

breathing. The incidence of the bulbar type of the disease was twice as great in patients who had had their tonsils removed at any time during the past, Dr. Fischer found, as compared with those whose tonsils were intact.

"Thus it would appear," he stated, "that not only a recent tonsillectomy but tonsillectomy at any time increases the likelihood of developing this disease."

Science News Letter, November 16, 1940

Muscle-Grafting Operation

USELESS muscles of infantile paralysis victims may be given strength for work by a new muscle-splicing operation reported by Dr. Herbert E. Hipps, of the Crippled Children's Hospital, Marlin, Texas, to the National Foundation for Infantile Paralysis.

Muscles paralyzed by infantile paralysis sometimes fail to work because of bands of diseased tissue within the muscles, Dr. Hipps and associates discovered. To repair such muscles, he cuts out the bands of diseased tissue, or weaves through them strips of tendon from the bulky part of the muscle, sewing these strips into the good muscle bulk below and above the paralyzed muscle.

In six out of 12 cases, good results were obtained with the operation.

More patients might be helped and the operation might be more useful if it were possible to determine the exact condition of the muscle without making a large cut for looking at it. Dr. Hipps suggests that if the muscles of an arm or leg are large and firm, yet graded "poor" or "trace" in respect to function, they will probably show the irregular degenerative changes that might be

helped by the operation. If, however, the muscles are soft and small, or if no knots are felt, a general degeneration may be present and the splicing or grafting operation probably would be of no avail.

Science News Letter, November 16, 1940

New Muscle Strength Test

RESULTS with a spring-scale muscle tester and recording device for determining accurately the actual power of paralyzed muscles was reported by Dr. A. A. Schmier of The Hospital for Joint Diseases.

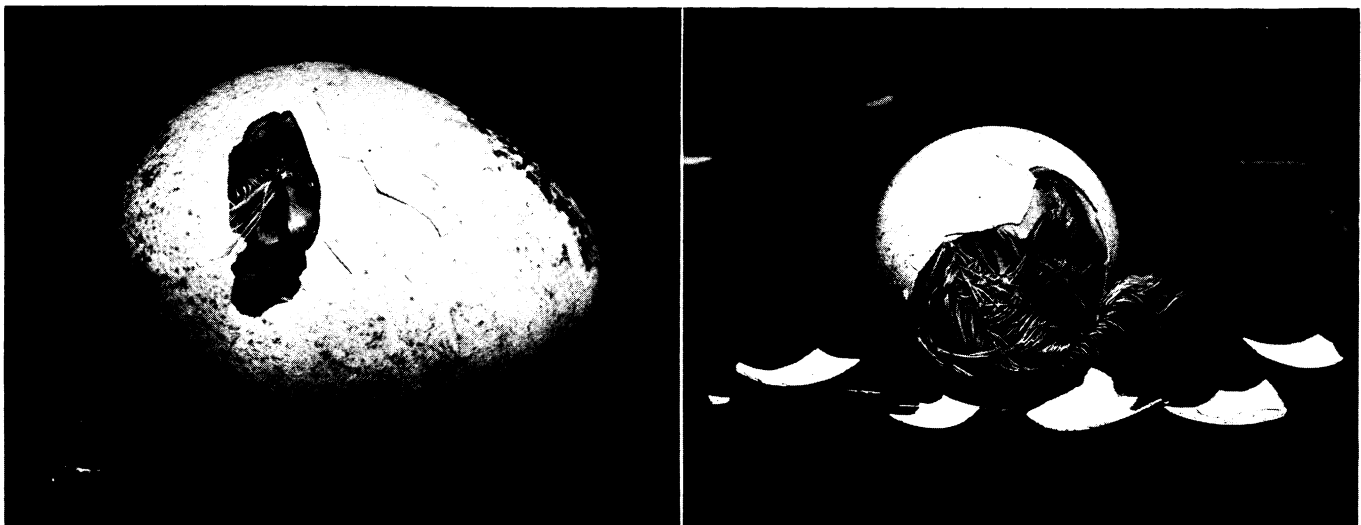
Practically all the muscles of the legs and arms can be accurately evaluated by use of this new device, while the strength of the muscles concerned with the motion of the trunk and pelvis can be measured by a swivel table with a gravity principle scale devised by Dr. Leo Mayer and associates at the same hospital.

Science News Letter, November 16, 1940

Swimming Cuts Resistance

FATIGUE and exhaustion from swimming may pave the way for an attack of infantile paralysis and make it more severe. This notion has long been held by many scientists because in so many cases infantile paralysis patients had been swimming or engaging in some other sport that tired them just before they got sick. The idea is now given considerable scientific confirmation by studies on monkeys reported by Dr. Sidney O. Levinson, of Michael Reese Hospital, Chicago.

As a result, parents may be warned to keep children from swimming, getting



chilled or engaging in tiring sports and contests when there is an infantile paralysis epidemic.

Dr. Levinson infected monkeys with a standard strain of infantile paralysis virus which is known to produce a disease relatively low in mortality and with a fairly fixed degree of paralysis. The monkeys were divided into three groups. One group was left in cages and disturbed only to take temperatures. Another group was immersed in water up to the neck and restrained. The third group was placed in a tank of water at monkey body temperature and forced to swim until fatigued.

In the first group, seven of the 14 animals escaped the disease. None developed paralysis in all four limbs. One developed paralysis of one side of the body with paralysis of one limb on the opposite side. Five developed paralysis of the legs and lower part of the body, and one developed paralysis of but a single limb.

Of the 12 animals kept in water but not allowed to exercise, only two escaped the disease. Six developed paralysis in all four limbs, one developed paralysis of one side and the opposite limb, and three developed paralysis of the legs and lower part of the body.

Of the 15 forced to swim until tired, four escaped the disease, three developed paralysis in all four limbs, one developed a facial paralysis and seven developed paralysis of the legs and lower part of the body.

Not only fatigue from the exercise but the water immersion itself proved a harmful influence, Dr. Levinson said. This is possibly due to chilling, and must and will be studied, he says, during the coming season.

Science News Letter, November 16, 1940

MEDICINE

Cancer-Causing Stuff Found In Non-Cancerous Livers

Persons Suffering from Cancer in Other Parts of Body Accumulate Substance in Liver; Understanding Aided

A CANCER-CAUSING substance (or substances) accumulates in the livers of patients suffering from cancers in other parts of their bodies. Suitably extracted and prepared, it is capable of producing new cancers when injected into mice.

Such is the announcement, possibly heralding an important new advance in the scientific understanding of cancer (and hence its ultimate control) by Dr. Paul E. Steiner of the University of Chicago. (*Science*, Nov. 8.)

The chemical nature of the substance is still unknown, but Dr. Steiner states that he is at work on this, as well as on the questions of its origin and its distribution within the body.

In one of his experiments, the Chicago researcher started with approximately two pounds of liver tissue, obtained from persons who had died of cancer in five different organs, but none of them involving the liver. After repeated extractions with a strong alkali, there was left a flaky, brown, ill-smelling residue. Dissolved in sesame oil and injected in small quantities into the bodies of mice, this produced typical cancerous tumors in a convincing number of cases.

Elaborate control experiments were performed, to eliminate the chance that

the new cancers might be arising from some other cause, but in every case the indications pointed back to the brown liver extract as the most probable cause. Further intensive research is now in progress.

Science News Letter, November 16, 1940

CHEMISTRY

Invention Tells Instant Chemical Action Occurs

THE so-called "magic eye" used in radio sets for tuning has a new use in the field of analytical chemistry. It shows the instant that all the chemical changes are completed in the process called "titration" and will be useful in analyzing the manganese content of steel, of the chromium in chrome-tanned leather.

Science News Letter, November 16, 1940

FOR SOMEONE'S FEAST

The series of photographs on this and the facing page shows the hatching of a baby turkey on the farm of Clifton Timmerman in Jefferson County, N. Y. The first view was taken 28 days after the egg was put into the incubator, just as the little bird pecked through the shell. The next view is 12 hours later. He gets his head out after another ten hours. Finally, another 24 hours later, he is all fluffed up and ready to scratch.

Science News Letter, November 16, 1940

