MEDICINE

Medical Scientists Wage War On Infantile Paralysis

First Objective is Test to Show Susceptibility, Search Next Will Be for Preventive or Curative Serum

INFANTILE paralysis, dreaded enemy of young people, will receive its first major defeat when medical science discovers a way to pick out persons who are liable to contract it. Toward the development of such a susceptibility test research workers are now devoting their best efforts.

The development of a vaccine which will protect children against infantile paralysis will represent a great advance in the control of this disease, but to insure its widest application this test for individual susceptibility will also be required. This is because a comparatively small number of children will contract the disease in its paralytic form, and without a test for susceptibility a great number of non-susceptible children would be injected in order to protect a very small number.

Prominent medical opinion in Washington, D. C., holds that the newspaper publicity which has recently been given to research in this connection is unfortunate in that it promises much to the public long before such a vaccine could be made available even should it later develop that it had any value.

Not a Big Problem

As a public health problem, infantile paralysis does not rank with such diseases as diphtheria, tuberculosis or cancer. Because infantile paralysis often, but not exclusively, attacks little children, it has a peculiar heart-rending appeal. No other disease of childhood is as much dreaded by the parents of young children. This is due to the very severe crippling which sometimes follows the infection; the fear is out of all proportion to the actual numbers of children affected.

Considered in proportion to the total number of children of the most susceptible age, very few show any recognizable sign of the disease even during epidemics. It can not compare in infectiousness with such diseases as, for example, measles and chicken-pox, to which practically all children are susceptible. The paralytic form of infantile paralysis is probably one of the least prevalent diseases of childhood. Even in epidemics seldom more than three or four in 1,000 children are affected.

In a Score of Places

In a score of American research laboratories attempts are under way to develop means of combatting infantile paralysis. Epidemics, such as the one that is subsiding in California, offer opportunities for clinical and experimental research.

One of the first steps in studying any disease is to find an animal that is susceptible to it. Research on infantile paralysis is made slow and expensive because the only animal, except man, to which the disease can be given is the monkey. And monkeys are expensive animals to use, compared with guinea pigs and rabbits.

The development of vaccines or serums has proceeded along two converging lines: 1. A treatment for minimizing or moderating the course of the disease in its early stages after the child has become ill. 2. A vaccine for making susceptible but as yet healthy persons immune to the disease.

The present striving toward the conquest of infantile paralysis began in 1910, when Drs. Simon Flexner and P. A. Lewis, of the Rockefeller Institute for Medical Research, observed that monkeys which had recovered from the disease resisted a second attack. Several scores of investigators here and in Europe carried on from this point, first discovering that what are called antibodies or neutralizing substances are present in the blood of recovered animals and people. These are, in effect, soldiers of the blood, that repulse the attacks of the invisible virus that causes the disease.

It was a logical step to use the blood of a recovered man to attempt to transfer the survivor's immunity to a person exposed or actually in the first stages of the disease. This was done by preparing "convalescent serum" from immune blood and injecting into patients early in the disease. It was later found that the blood of normal adults, particularly in cities, contained as much of the protective substances as the blood of recovered patients, if not even more.

Not Sure

Mixtures of virus and immune serum have been used with considerable success to immunize monkeys but since an occasional animal gets the disease, this vaccine can not be used in humans. Immunity for two or three weeks may be conferred by injecting the so-called convalescent serum alone; this method has been used in recent years in fighting epidemics.

The simplest method of attempting to protect a child who has been exposed to the disease is to give injections of the blood of any adult, usually that of the child's parent, or that of persons who have recovered from the disease. The procedure is very simple; it consists of taking an ounce of blood from the arm vein of the donor and injecting it immediately into the child's muscles. The family physician can do this. Since there is little danger in this procedure, it is recommended by authorities in the case of an epidemic.

As has been the case with other virus diseases, injections of human blood, convalescent or adult, have not been found to be of value when administered after the onset of the disease, both before and after paralysis develops.

The next step toward a vaccine for protection against infantile paralysis consisted of attempts to devitalize the virus sufficiently to make it harmless and yet produce a reaction within the body that would combat the disease. In this the medical investigators had the example of the famous Pasteur treatment for rabies, which utilizes a partially killed virus, and the Fermi or Semple method, which consists of dead virus.

This is probably the type of vaccine

that Dr. Maurice Brodie, of New York University, is using, while Dr. John A. Kolmer, of Temple University, Philadelphia, may be working with a virus which is still alive. Using monkeys, they infect them with the disease. The spinal cords are removed, ground up, and treated with a chemical to completely or partially devitalize the contained virus. Dr. Brodie uses formalin and Dr. Kolmer uses castor oil soap. Dr. W. T. Harrison, of the United States Public Health Service, is known to be working on a similar vaccine, but he has as yet made no report of procedure or results.

As yet the use of such vaccines is far from being a practical procedure. Even though medical men were quite sure that there would be no danger in treating children with the vaccines, there is still the lack of a simple test for susceptibility to tell which children are already immune and which should be immunized.

Under present conditions it would be necessary to use one and sometimes two monkeys in testing each child: One monkey to tell whether the child's serum will destroy the virus; children whose serum did not possess this property would be immunized and a second monkey used to determine whether the serum had taken on this property. Since monkeys cost $15 each, it is apparent that such a test could not be used on a large scale.

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AGRICULTURE

Back to Land Movement No Solution for Farm Ills

FEWER people on the land, working shorter hours with modern machinery and other scientific aids, to operate bigger farms at a lower cost per bushel of grain or pound of meat produced: this was the somewhat unorthodox picture of real agricultural reform presented before the meeting of the British Association for the Advancement of Science by Prof. J. A. S. Watson of Oxford University, president of the section on agriculture.

The strong movement to send people back to the land, in Prof. Watson's opinion, is based mainly on blind tradition and can find very little rational or economic support. But such ideas die hard, he admitted.

"It is still considered a meritorious thing to employ an agricultural laborer, but there is no particular feeling about the employment of barbers, haberdashers or electricians," he said. "It is somehow more honorable to plough a field than to let it lie in grass. It is a nobler thing to grow wheat (even if nobody wants to eat it) than peaches or strawberries.

Legacy From Past

"These notions are a legacy from the time when the world was hungry of necessity, and when people lived healthily in the country but died quickly in the towns. We must realize that these conditions have ceased to be. There is a superabundant organization for food production and there is no difficulty about breeding up a good and healthy human stock in the modern city. It seems to me that there is no argument for keeping unnecessary workers in agriculture or for driving people back to the land."

Neither had Prof. Watson much respect for the various schemes on which nations are working, each to make itself agriculturally self-sufficient, and at the same time to boost its exports of farm products.

He flicked at these schemes a whiplash of ironic comment:

"Some of these measures, indeed, are not so much rational means to assist agriculture as the weapons of economic warfare, in which apparently one of the objects of strategy is to force upon the enemy more food than he can eat."

The complex of causes of the agricultural depression, as seen by Prof. Watson, has a striking resemblance to the same picture as viewed by the American Secretary of Agriculture, Henry Wallace, and the economists on his corps of assistants. Factors in the farmer's losing fight have included the continual opening up of rich new lands where grain could be produced at ever-decreasing costs, improved heavy-yielding crop plants and the overcoming of a lessening world demand in the face of this increasing world supply, a general slump in the whole economic set-up, currency value fluctuations resulting in a mounting burden of unpayable debt.

The principal weapon available to a planned agriculture, Dr. Watson felt, is greater efficiency per working unit—a larger output from fewer but better equipped and less overworked farmers.

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An albino elk, very rare, was seen this year in Glacier National Park.

FORGOTTEN ENMITIES

Even traditional enemies do not inspire fear, if they refrain from aggressive acts, as this water-snake did, at least for the time being. *(See page 186)*