

MEDICINE

Blood Carries Polio Virus

► BLOOD AND bruises play a part in determining what happens when the polio virus gets into the body. Whether the invading polio virus reaches the brain and spinal cord, how severely it paralyzes and which muscles in the body are paralyzed are all determined apparently by the blood and bruise situation, though other factors, such perhaps as chilling and hypodermic injections, may also play a part.

This new explanation for some of the difference in virulence of polio virus strains was presented to a New York Academy of Sciences polio conference in New York by Dr. David Bodian of Johns Hopkins University, Baltimore.

The polio virus, Dr. Bodian believes, penetrates the brain and spinal cord from the blood rather than by way of regional nerves from the stomach and intestines.

The degree to which the virus invades the brain and spinal cord is related to the ability of the particular virus to make a mass invasion of the bloodstream, developing a high titer in the blood, as scientists say.

Previous injury to muscles apparently causes a reflex change in the blood vessels of the part of the brain or spinal cord controlling those muscles. This makes it easier for the virus, when it gets into the blood, to penetrate that part of the brain or spinal cord and set up infection there. The resulting paralysis is then more likely to come in the muscles under the control of that part of the brain or spinal cord.

The previous injury would not necessarily be a bruise in the ordinary sense. Dr. Bodian made his discovery by hypodermic injection into the calf muscles of monkeys of several non-virus materials. Given before virus was injected into the veins, this increased the rate of paralysis and caused a preferential localizing of the paralysis in the injected legs. This happened whether the injection was given a few minutes or as long as two weeks before the injection of polio virus into the veins.

It may explain an association, reported previously by other scientists, between "shots" given to protect against various diseases, and development of paralysis in child polio patients in the leg or arm where the immunizing injection has been given. Doctors now avoid giving such injections during the polio season.

Dr. Bodian's theory that the polio virus travels to the brain and spinal cord in the blood, instead of along nerves, is based on the following evidence:

Polio virus is often found in the blood of human patients before symptoms develop.

Virus or virus-caused damage cannot be found consistently in nerves leading from the digestive tract to the brain and spinal cord, as would be expected if the virus traveled these nerve pathways. This part of the evidence comes from study of polio

paralyzed chimpanzees and of the bodies of human polio victims killed by the disease.

In chimpanzees fed polio virus during the period before the virus got into the blood, Dr. Bodian and associates were only able to find the virus in the intestinal wastes (feces) and in lymph glands associated with the digestive tract.

When the virus is fed to cynomolgus monkeys, its invasion of brain and central nervous system is correlated with its occurrence in the blood stream.

Science News Letter, February 5, 1955

PHYSICS

Subatomic Paths Traced In Bubble Chamber

► A NEW tool for catching atomic collisions and studying high-speed particles from giant atom smashers is the bubble chamber devised by Dr. Donald A. Glaser, University of Michigan physicist working on Michigan's Phoenix project.

It is a quart-sized container of clear, super-heated pentane petroleum fraction kept under high pressure to delay its boiling. Subatomic particles plunging through it set up trains of bubbles, just as in the saturated water vapor of the familiar cloud chamber fog trails form.

A bubble chamber six inches long is equivalent to 140-foot cloud chamber.

From photographs of the bubbles, masses and energies of the colliding or created particles can be calculated. In Dr. Glaser's first 22 photographs of particles produced in the two-billion-electron-volt cosmotron at Brookhaven National Laboratory, eight photographs showing pi mesons decaying into mu mesons and then into electrons were obtained.

Science News Letter, February 5, 1955

GENERAL SCIENCE

Honorable Mentions In Science Talent Search

► HONORABLE MENTIONS in the Fourteenth Annual Science Talent Search were announced in Washington by Watson Davis, director of SCIENCE SERVICE. Of the 260 outstanding seniors in the list, 55 are girls and 205 are boys. The division was determined by the ratio of girls to boys who participated in the competition.

The 260 young people to whom Honorable Mention listing was given go to school in 170 communities, located in 34 states and the District of Columbia. They were chosen from among 16,033 entrants, 2,575 of whom completed the science aptitude examination, submitted recommendations and scholarship records and wrote reports on "my Scientific Project."

Forty highest-ranking boys and girls al-

ready have been notified that they are winners of all-expense-paid trips to Washington. They will spend five days as participants in the Science Talent Institute, to be held in Washington Feb. 24 through Feb. 28. At the closing session of the Institute, \$11,000 in Westinghouse Science Scholarships will be distributed.

In the 13 preceding Science Talent Searches, most of the students named in the Honorable Mentions list have been offered scholarships, and many of those named this year will qualify for valuable scholarships and other financial aid in the colleges, universities and technical schools of their choice. The judges found all 300 boys and girls to be students of outstanding ability.

Students in the Honorable Mentions list invariably rank high in their high school graduating classes: 37.5% of the boys and 42% of the girls stood first, second or third in their high school classes.

The Honorable Mentions did not win their places merely by keeping their noses in books. Without exception, they show records of participation in extracurricular activities. Science clubs have attracted 223 of these students. Most of these clubs are affiliated with Science Clubs of America. About one-fourth of the Honorable Mentions have had experience in local, regional, or state science fairs. Six of them have been finalists at the National Science Fair, conducted by Science Clubs of America.

For a booklet containing the names and addresses of the winners and Honorable Mentions and details of the Fourteenth Annual Science Talent Search, send a three-cent stamp with a self-addressed envelope to Science Clubs of America, 1719 N St., N.W., Washington 6, D. C.

Science News Letter, February 5, 1955

TECHNOLOGY

Self-Propelled, Plastic Barge Built for Army

► A SELF-PROPELLED plastic barge that can be dismantled and moved by airplane has been developed.

The craft is 51 feet long, and is believed to be the largest reinforced plastic structure ever built. It weighs 10.2 tons, yet settles only 21 inches in the water when carrying a load of five tons. The barge is powered by two 165-horsepower diesel engines, and can push a fleet of non-powered barges carrying cargoes of up to 100 tons.

The hull is constructed of phenolic impregnated cotton duck sandwiched between two sheets of plastic reinforced by glass fiber. It was molded in a large plywood form.

When the masts and searchlights are retracted the barge, built by the Englander Company, Plastics Division, Baltimore, Md., will pass under bridges having a minimum clearance of eight feet.

The barge is designed for the Army Transportation Corps as a light craft to ship supplies to troops over shallow and restricted waterways.

Science News Letter, February 5, 1955