

MEDICINE

Mass Polio Vaccinations

At least half a million children in second grade will receive polio vaccinations. First and third graders in the same schools, not yet selected, will serve as controls.

► AT LEAST half a million second grade school children throughout the nation will be vaccinated against poliomyelitis next year, Basil O'Connor, president of the National Foundation for Infantile Paralysis, stated in the first detailed announcement of plans for the world's biggest trial of vaccination to stop this crippling and sometimes killing disease.

Vaccinating will start in the southern states in the second week of February and will continue moving north until June.

The vaccine to be used is the one developed and tested by Dr. Jonas E. Salk of the University of Pittsburgh. It is made from polio viruses grown on monkey kidney tissue and killed with formalin. It is effective against all three known strains of polio virus. Because the viruses have been killed, it is considered perfectly safe to use.

The second graders will get three "shots" of the vaccine. The first two will be given one week apart. The third is a booster and will be given four weeks after the second "shot."

First and third grade children in the same schools will not get any of the vaccine and will serve as unvaccinated controls. After the 1954 epidemic season is over, there will be a scientific nose count to see how many children in each of the three grades got paralytic polio.

The 1954 vaccinating is to prevent the disease, if possible, by causing development of polio-fighting antibodies in the child's blood. It goes farther, therefore, in the way of protection than gamma globulin "shots." These "shots" gave the child antibodies against polio from pooled blood from many, many grown-ups who had developed the antibodies. The effect of the gamma globulin "shots" could only be temporary and at best only warded off the crippling or paralyzing effects of polio.

Children who will be vaccinated will get the vaccine "shots" if their parents volunteer to have them vaccinated. The schools in which the vaccination trials are to be run will be selected in counties that statisticians pick because of their past history of having a lot of polio. Selection of these counties and schools has not yet been finally made.

The time, February to June, and the start in the southern states were set to get the vaccinating done before the polio season gets underway. This is both to give the children greatest protection and to avoid spoiling the results by too many children having had a chance to develop immunity from contact with polio cases.

The vaccine will be made both by Dr. Salk and by several pharmaceutical firms.

Science News Letter, November 28, 1953

The X-3 was designed and built by the Douglas Aircraft Company's Santa Monica Division under joint sponsorship of the Air Force, NACA and the Navy. Previous research aircraft were the Air Force's Bell X-1, X-2, X-5 and the Northrop X-4, and the Navy's Douglas D-558-I and D-558-II.

Science News Letter, November 28, 1953

AGRICULTURE

Clay Particles Have Huge Surface Area

► ONE POUND of a common clay has a total surface area equal to 100 acres of land, M. L. Jackson and R. C. Vanden Heuvel, soil scientists at the University of Wisconsin, told the American Society of Agronomy and the Soil Science Association of America at a meeting in Dallas, Texas.

They reported on a new method for measuring the total surface area of particles in clay soils. This knowledge is important in the study of soils because nutrient elements and water are held on the flat surfaces of the particles. Clay samples are mixed with glycerol, the excess glycerol is removed and the amount remaining determines the surface area of the particles.

Using this method, they have found that an acre of land at plow depth with five percent montmorillonite clay has 10,000,000 acres of surface. This clay is found in many sections of the country.

Science News Letter, November 28, 1953

PHYSICS

New Method for Probing Stellar Reactions on Earth

► A NEW method for figuring here on earth what goes on at the extremely high temperatures found in the sun and other stars was revealed to members of the National Academy of Sciences meeting in Cambridge, Mass., by Dr. I. Amdur of the Massachusetts Institute of Technology.

His method consists, not in trying to duplicate in the laboratory temperatures of the order of thousands of degrees, but in obtaining basic information concerning the properties of gases by scattering beams of neutral particles with energies of 200 to 2,000 volts. The neutral-particle beam is scattered in a gas in much the same way that a flashlight beam is dispersed when it is shined into a murky solution. From the way the neutral particle beam is scattered, Dr. Amdur can calculate the desired gas properties.

Information on these properties can aid astronomers who are trying to find out if the universe is in a state of continual "creation," that is, with new stars being born out of cosmic dust all the time, since such cosmic dust is composed of gas particles. Dr. Amdur's data can also be used in calculating the rate at which the sun and other stars radiate energy into surrounding space.

Science News Letter, November 28, 1953

AERONAUTICS

"Supersonic Stiletto"

See Front Cover

► THE SLEEK, needle-nosed Air Force plane shown on the cover of this week's SCIENCE NEWS LETTER is a flying laboratory loaded with 1,200 pounds of research instruments.

The stiletto-shaped plane was designed to jab its way through the stratosphere at supersonic speeds and at secret altitudes.

To be used by the National Advisory Committee for Aeronautics, the Douglas X-3, as it is called, was created to test design features of an aircraft suitable for sustained flights at extremely high speeds.

Titanium, a strong, lightweight, heat-resisting metal, was used liberally throughout the X-3 to fortify it against the thermal barrier—heat created by air friction when a plane cuts through the sky at supersonic speeds.

In addition, the plane is artificially refrigerated. Insulation protects pilot, instru-

ments and internal equipment from the scorching heat generated at the plane's research speeds.

The little craft is riddled with 850 pin holes through which readings are taken of air pressures around the plane's surfaces. Temperatures are logged at 150 points, while 185 electric strain gages keep tabs on stresses and air loads.

Physically the plane measures 66 feet, nine inches. Its stubby wings span a mere 22 feet, eight inches—less than the tail span on the DC-3 commercial transport plane.

It has been piloted by Douglas test pilot Bill Bridgeman, who pushed the D-558-II research plane to a record-shattering speed of 1,238 miles an hour Aug. 15, 1951. (Mr. Bridgeman's record was topped Nov. 14 of this year by NACA test pilot Scott Crossfield who flew the D-558-II at 1,272 miles an hour.) Performance of the new research plane, however, has not yet been revealed.