

MEDICINE

Find Polio Virus in Glands

Tonsils and Peyer's patches indicted as primary site of polio infection. Antibodies thus have chance to stop polio virus before it enters the central nervous system.

► TONSILS, long under suspicion, have at last been pin-pointed as the primary site of polio infection, along with similar lymph glands in the small intestine.

The discovery, made by Dr. David Bodian of the department of epidemiology, Johns Hopkins University, Baltimore, Md., is believed to be the first record of polio virus found in the body before it appears in the blood stream.

Polio antibodies in the blood, whether natural or from artificial immunization, build up their response to polio while the virus is still multiplying in the tonsils and the Peyer's patches of the small intestine, Dr. Bodian told SCIENCE SERVICE. Thus the antibodies, even at low levels, have a chance to stop the polio virus before it enters the central nervous system through the blood stream.

Speculating on the significance of his findings for a mass immunization program, Dr. Bodian said it seemed conceivable that if a large enough section of the population, both youngsters and adults, were given polio vaccine, the virus might disappear from large communities on a continental scale.

Asked if the current plan to inoculate all first and second graders with polio vaccine would seriously cut the virus' chances of survival, Dr. Bodian said it might have a slight effect.

If all school children were inoculated, however, he said, it might well knock the bottom out of polio.

Children are the principal carriers of polio and if enough children are immunized, it would probably not be necessary to vaccinate the adults in order to stamp out the disease. Some of the principal ways of spreading polio, Dr. Bodian said, are from hand to hand and mouth to mouth.

Dr. Bodian reported details of his experiment in *Science* (July 15).

In the experiment, three chimpanzees were fed polio virus through the mouth. Before the virus appeared in the blood stream, the animals were killed, and the separate organs were removed and tested for presence of the virus.

Dr. Bodian found relatively high concentrations of the virus in the tonsils and the Peyer's patches, before the virus could be detected in most internal organs. High concentrations of the virus were also found in the lymph nodes that drain the tonsillar and Peyer's patches areas.

From his discovery, Dr. Bodian concluded:

1. There is now a logical explanation for the source of virus found in the secre-

tions of the tonsil-pharynx region of the throat.

2. Invasion of the blood stream by polio virus probably stems from tonsil and Peyer's patches infection by way of the lymphatic pathways and structures that drain these glands.

While his work was done on chimpanzees, Dr. Bodian said it seems likely that this pattern should fit human infection, since isolation of the virus from fatal human cases fits in most particulars with the events seen in the test animals.

Science News Letter, July 23, 1955

BIOPHYSICS

West Coast to Have Medical Nuclear Reactor

► A NUCLEAR reactor specifically designed for medical research and treatment will be built at the University of California at Los Angeles, the U. S. Atomic Energy Commission has announced.

The reactor will be the first source of slow and fast neutrons, atomic particles

with no electric charge, sufficient for experimental work on animals and treatment of human beings on the West Coast, the AEC reported.

For treatment of deep-seated cancers, both neutrons and gamma rays will be provided by the reactor.

The AEC will contribute \$75,000 toward building the atomic pile, and will supply enriched uranium as fuel.

The medical reactor will be a low-power water boiler design, for operation at a power level of about five kilowatts of heat, with a maximum power of 50 kilowatts. It will provide a neutron flow of up to a billion neutrons per square centimeter per second.

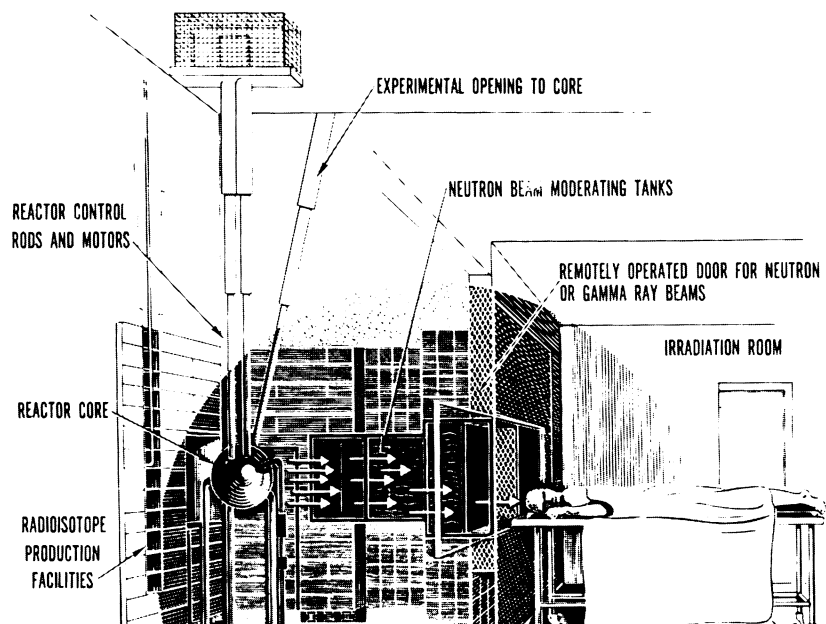
Fissioning of uranium 235 atoms in solution provides the gamma rays and neutrons for medical treatment and other research.

The core will be located inside a 5 x 5 x 8 foot stack of graphite bars, shielded by five feet of high density concrete. Radiation ports will lead from the core to a patient treatment room, laboratory and another room where research on animals can be performed.

An access port will permit materials to be irradiated in a channel leading inside the core itself where radiation will be the strongest.

Although radioisotopes are available from reactors located in various parts of the country, the radioactive strength of these materials is often dissipated by the time they have traveled to the point where they are needed. The U.C.L.A. reactor could provide these materials at near full strength for West Coast requirements.

Science News Letter, July 23, 1955



MEDICAL REACTOR—An artist's sketch of the first atomic reactor specifically designed for medical therapy and research is shown here. It will be built for the Medical Center at the University of California at Los Angeles by North American Aviation. The 50-kilowatt reactor will produce neutrons and gamma rays from fuel loaned by the Atomic Energy Commission.