

MEDICINE

War Gases Aid Transfusion

Nitrogen mustard may be used in the future to sterilize blood so that patients will not be exposed to the danger of jaundice from the blood of diseased donors.

►NITROGEN mustard war gases may in future be used to make blood plasma transfusions safer. They will do it because of their power to destroy the virus which causes jaundice in from four to 10 of every 100 persons getting transfusions of pooled plasma.

The possibility of using nitrogen mustards for this purpose was discovered by Drs. Frank W. Hartman, George H. Mangun, Norma Freeley and Edna Jackson of the Henry Ford Hospital in Detroit.

Pooled plasma is the plasma that comes from the blood of many donors. During the war it was used extensively for the wounded. When methods of preserving whole blood were developed so that this could be transported overseas, this was used in many cases instead of plasma. But civilian hospital blood banks still kept and used the plasma after the whole blood became too old for transfusion. If some of the donors contributing blood to the banks had the jaundice virus in their blood, without knowing it, the virus would get into the blood and plasma in the banks. This happened

often enough to become a serious problem in the use of the pooled plasma.

Irradiating the blood with ultraviolet light, X-rays or high speed electrons has offered promise of solution of this problem. But the techniques require highly specialized equipment which means the plasma can be sterilized this way only at specially equipped plants.

The Detroit scientists therefore undertook a search for a chemical that would sterilize the blood without damaging it and without itself causing damage to humans who would get the blood or plasma. They have apparently found such a chemical in the nitrogen mustard known as HN2.

This chemical kills both viruses and bacteria in whole blood, blood plasma and blood serum, they reported in the PROCEEDINGS OF THE SOCIETY FOR EXPERIMENTAL BIOLOGY AND MEDICINE (Feb.) It does not cause any major change in either the plasma or the red blood cells, so these will still be effective in transfusions.

Plasma sterilized with the nitrogen mustard has been given to two humans and

two dogs. No sign of poisoning or of sensitization was seen in any of them.

If the acidity of the citrated blood is adjusted by adding calcium chloride, the poisonous effect of the nitrogen mustard is destroyed.

Science News Letter, May 7, 1949

BIOLOGY

Genes First, Cells Second, Sex Third in Evolution

►FREE-LIVING genes, able to propagate themselves and subject to mutational change, were first living things to undergo evolution. Later, genes became aggregated into cells, with chromosomal structures. Finally, cells combined or mated, originating sex.

This was the picture of the probable first events in the development of life on this planet presented before the meeting of the American Philosophical Society in Philadelphia by Prof. Sewall Wright of the University of Chicago.

Most important of the three steps, in terms of rapidity of evolutionary change, was the development of sex, with the splitting of sets of genes on chromosomes and their re-combination with other chromosomes bearing genes which often had different mutational histories. By this step, "the interbreeding population becomes the major entity that evolves," the speaker explained. "The field of variability is vastly amplified by recombination. The origin of multicellular beings may be considered a fourth major step because of the greater material scope which it offers but the system of evolutionary factors is not increased."

Science News Letter, May 7, 1949

NUCLEAR PHYSICS

New Type Atom-Smashing Synchrotron Being Built

►A NEW kind of atom-smashing synchrotron which is under construction in Schenectady, N. Y., may be able to produce billion-volt X-rays.

The non-ferro-magnetic synchrotron is being built at the General Electric Research Laboratory where it will be used for nuclear studies. Dr. James L. Lawson is in charge of the design and construction of the machine which is being built under a contract with the Office of Naval Research.

Listed as a 300,000,000-electron-volt instrument, the new atom smasher may ultimately produce 1,000,000,000 electron volts, GE officials said.

Instead of using a laminated steel electromagnet, the new non-ferro-magnetic synchrotron will produce magnetic fields with several sets of coils through which current will flow.

Science News Letter, May 7, 1949



CHAMBER FOR ATOM-SMASHING—This steel tank houses the accelerating chamber of the 300,000,000-electron volt synchrotron being built in the General Electric Research laboratory.