MEDICINE

Check Jaundice in Blood

Ultraviolet ray treatment of blood plasma will prevent this virus disease from being transmitted from the blood donor to the patient getting a transfusion.

➤ THE DANGER of getting jaundice from blood plasma or blood serum can be prevented by ultraviolet ray treatment of the plasma or serum, five medical researchers report in the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION (Oct. 2).

The five are Drs. Mercer C. Blanchard, Joseph Stokes, Jr., Bettylee Hampil, George R. Wade and John Spizizen of the University of Pennsylvania School of Medicine and the medical research division of Sharp and Dohme, Inc.

The jaundice they studied is not the kind that comes in epidemics such as attack school children, but the kind called homologous serum hepatitis which attacked many battle casualties some months after receiving blood or plasma transfusions or both. The disease is due to a virus.

There are no laboratory tests to detect this virus in plasma or serum so there is no way of knowing whether pooled plasma from many donors contains the virus.

The Philadelphia scientists gave to 15 human volunteers serum known to contain the virus, because it came from the blood of persons in the early stages of the disease. Of the 15, almost half, or 47%, developed the disease. Another 11 volunteers were given almost double the dose of serum from the same lot, but which had first been irradiated with ultraviolet. None of these showed the slightest sign of the disease during an observation period of five months.

Tests of irradiated serum and plasma show that it does not undergo chemical changes which could cause allergic reactions. The scientists therefore conclude that the method is "practical, safe and effective," and that their results strongly favor the routine use of ultraviolet treatment of serum and plasma under properly standardized conditions.

Science News Letter, October 9, 1948

PHYSICS

Food Sterilized by Rays

➤ BOTH X-RAYS and cathode rays offer new and effective means of producing sterilization of bacteria, changes in the structure of living tissue and chemical changes.

Rays of either kind produced at high voltages destroy strong concentrations of bacteria, yeasts and molds, it was discovered in experiments conducted by a group of Massachusetts Institute of Technology scientists. Drs. J. G. Trump, R. J. Van de Graaff, Cecil G. Dunn, William L. Campbell, Harvey Fram and Ardelia Hutchins report their findings in the JOURNAL OF APPLIED PHYSICS (July), a publication of the American Institute of Physics.

The sterilizing effect of these rays was very good in the cases of raw and pasteurized milks, soil and waters. But, strangely enough, sterilization of apple juice proved much more difficult.

The rays will destroy enzymes, chemicals in the body which will encourage other chemicals to react without being affected themselves. Butter and olive oil treated with X-rays and cathode rays became rancid more quickly. The orange-yellow color of the butter is gradually destroyed as the radiation is increased.

In one experiment grapefruit and orange juice were irradiated to see if the vitamin C they contain would be destroyed. The rays markedly reduced the vitamin C concentration.

The milk-sterilizing experiment which used cathode rays at 2,000,000 electron volts may result in a better, more efficient method for sterilizing milk than any found so far. Before the cathode rays were directed on the milk, it contained about 37,000,000 bacteria to a milliliter (approximately 61 thousandths of a cubic inch), afterwards only two bacteria were found in a milliliter.

The changes that the X-rays and cathode rays cause are due to the disturbance aroused in the atoms of the receiving substance when the particles in the rays hit it. In the X-rays the energy is carried by photons, or "light darts," little lumps of light energy whose existence was first suggested by Einstein. In cathode rays electrons do the same job.

Although X-rays are more penetrating than cathode rays the latter are several hundred times more efficient. These rays can be easily controlled so that scientists know exactly how many electrons are hitting the substance at which they are aimed. In addition, all the electrons aimed at the substance from a cathode ray source will hit it while with an X-ray source only a small fraction of the energy formed is actually delivered to the substance being irradiated.

One method commonly used for killing bacteria is heating them to high temperatures. By the use of X-rays and cathode rays sterilization is accomplished with a rise in temperature of only two degrees Centigrade (3.6 degrees Fahrenheit).

Science News Letter, October 9, 1948

ARCHAEOLOGY

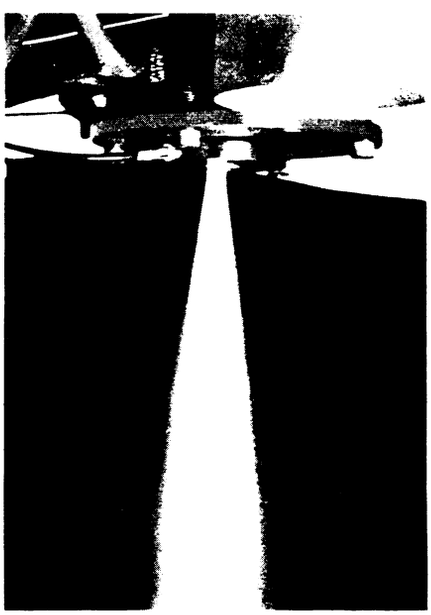
Famous "Norse" Tower Still Remains Mystery

➤ THE FAMOUS round stone tower at Newport, R. I., claimed to be of Viking origin by some and hotly disputed by others, has been given its first professional archaeological going-over—and it keeps its secret still. Another season's digging will be needed to come close to a settlement of the generations-old dispute, in the opinion of William Godfrey, Harvard archaeologist who carried on the work this year.

With funds provided by an anonymous donor to the Preservation Society of Newport County, Mr. Godfrey drove a trench from 78 feet outside the tower straight through one of its arches and out the other side. Digging was carried down to bedrock, or to a layer of heavy, blue-gray clay.

Nothing of significance was found in the ground outside the tower, because of heavy grading operations late in the nineteenth century.

The tower itself stands on a foundation



CATHODE RAY BEAM — High energy electrons in this beam are capable of killing bacteria and causing chemical changes in food. The beam is visible because some of this tremendous energy is given off in the form of light.