



ATOM SMASHER FOR CANCER—Electrons ride radar waves down the 16-foot wave guide of this new, 50,000,000-volt microwave linear accelerator for cancer research. Built by the High Voltage Engineering Corporation, it will be installed at the Argonne Cancer Research Hospital in Chicago.

PUBLIC SAFETY

Civil Defense Worries

Threat of bacteriological warfare and of gas attack as well as of A-bombs and H-bombs are among worries of Civil Defense Administration authorities, it is revealed.

► **WORRY OVER** chemical gas and disease germ attack in addition to atomic and hydrogen bomb attacks is evident in civil defense circles.

The need for better means of detecting and identifying the chemicals, such as nerve gases, and disease germs was stressed by two authorities at the joint session of the Council on National Emergency Medical Service and the Fourteenth Annual Congress on Industrial Health meeting in Louisville, Ky.

The speakers were Col. James H. Defandorf of the Federal Civil Defense Administration and Dr. John J. Phair, professor of preventive medicine at the University of Cincinnati College of Medicine.

Advance warning of a gas attack will probably not be possible, Col. Defandorf declared. Procedures for detecting gas attacks while in progress and for identifying the specific chemicals have been devised or are under development. However, these have such a high security classification that they are not now available at State and local civil defense levels. They "probably would become so if the necessity arose," Col. Defandorf said.

Also not yet ready pending further tests is a small, collapsible plastic box to protect infants too small to be fitted with a gas mask.

The capabilities of present tests for germs in air, water or foodstuffs "do not warrant any great hope for their application in the civil defense program in the immediate future," Dr. Phair stated.

"Until detection procedures are available, efforts can be directed only at minimizing rather than preventing casualties," he said. Discussing further our germ warfare defense, he said:

"Even though many glaring deficiencies exist, it should be recognized, but not complacently, that the United States is far better equipped to meet this threat than many other countries."

Some key civil defense workers may this year get an unclassified one week's course, with field exercises, in chemical warfare defense. A request for the Army Chemical Corps to give this has been made, Col. Defandorf reported, and it "appears probable" it will be approved by the Department of Defense.

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BIOCHEMISTRY

Tell Chimpanzee Blood From Human

► **USING ULTRAVIOLET** analysis and the standard blood serum reaction, Dr. A. M. Schechtman and Patricia Knight of the University of California at Los Angeles have found a way to distinguish between the blood and other materials of closely related animals.

The standard serological method involves injecting blood serum from a particular species of animal into rabbits which then make an antibody. The antibody reacts with the serum. Thus, if human serum is injected, the antibody reacts with the human serum, to a lesser degree with monkey serum, and little or not at all with sheep, pig or other serums.

The new technique depends upon the amount of ultraviolet light absorbed by reacting chemicals and can detect the slightest difference in the reactions.

Using this technique, it has been possible to distinguish not only chimpanzee from human blood, but also rat from mouse serum and closely related chemicals present in the lens of the eye in various animals.

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CYTOLOGY

Cold and Infrared Step Up X-Ray Effect

► **PRE-TREATMENT** WITH infrared rays and cold increases several fold the effects of X-rays, Drs. C. P. Swanson, John Strong, Claud S. Rupert and Henry T. Yost have discovered in studies at Johns Hopkins University, Baltimore. Dr. Yost is now at Amherst College.

"There is no prospect of immediate application" of the findings to the treatment of human cancer, states the American Cancer Society in announcing the discovery from the research it aided in part.

Dr. Swanson and colleagues worked with cells in the anthers of the buds of *Tradescantia*, the old-fashioned spiderwort used extensively in X-ray studies because of its large chromosomes.

They found that temperatures below 20 degrees Centigrade and a narrow band of sun's infrared spectrum somehow make the cells more vulnerable to X-rays, which change the cell's chromosomes and genes. The changes either kill the cell or alter its hereditary characteristics.

Summer warmth probably prevents the infrared from summer sunlight from doing similar damage to growing plants.

Infrared rays do not penetrate plant or animal tissues very far. In these experiments the effects were registered only through three or four cell layers. Consequently, it is doubtful whether infrared would increase the effectiveness of X-rays to any extent the most superficial tissues, unless someone devises a way of getting the light waves into deeper areas.

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