

MEDICINE

Chemical Fights Disease

War gas unused in World War II gives hopeful lead for attack on Hodgkin's disease and lymphosarcoma. 150 already treated with these agents.

► HOPE FOR a chemical conquest of cancer-like conditions such as Hodgkin's disease and lymphosarcoma appeared in a report by Maj. Alfred Gilman, of the medical division of the Chemical Warfare Service, Edgewood Arsenal, at the meeting of the Federation of American Societies for Experimental Biology in Atlantic City.

The chemical warfare agents which gives this hope are the nitrogen mustards. Some 150 patients, about half of them with Hodgkin's disease, have already been treated with these agents.

The nitrogen mustards produce the same effects as X-rays in Hodgkin's disease. Patients have, as they do with X-ray treatment, what doctors call remissions.

They get better, but they are not cured

Maj. Gilman stressed that Hodgkin's disease patients should not be disappointed because they cannot yet get this treatment. The nitrogen mustards do no more, except in a few rare cases, than good X-ray treatments. The exceptions are those rare cases that are X-ray-resistant but which are helped by the nitrogen mustards.

The hope is that new nitrogen mustards can be synthesized which will be even more effective.

Maj. Gilman does not think that even then a cure for Hodgkin's disease will be produced, but that the treatment may be so improved that patients' lives can be prolonged 15 or 20 years.

Any chemist with imagination could make literally 500 nitrogen mustards, Maj. Gilman said. About 50 to 100 are already available. By further trials of these compounds alone and in combination with X-rays the scientists of the Chemical Warfare Service and at hospitals where the compounds are being tried hope to find an effective remedy for Hodgkin's and for lymphosarcoma.

The nitrogen mustards are not effective in any other cancer-like disease. Trials in leukemia were very disappointing.

The compounds act on the cell nucleus and have a selective effect on cells of the body which multiply most rapidly.

Discovery of the remedial action of the nitrogen mustards was made long before the reported experience of shipwrecked men in Bari harbor whose body cells suffered changes after swimming in a sea into which was spilled nitrogen mustard gas. In the fall of 1942 Maj. Gilman, then at Yale University, and Dr. L. S. Goodman, now at the University of Utah, and Dr. G. E. Lindskog of Yale, began investigating their effects on the body. During the last war the skin-blistering, eye-burning effects of mustard gas were chiefly recognized. But Dr. C. Lushbaugh of the University of Chicago, among others, saw that mustards, especially nitrogen mustards which penetrate the skin very well, had other more general effects on the body and affected the bone marrow.

A year before the Bari incident, the Yale group were treating three lymphosarcoma patients with nitrogen mustard. These patients were dying. The X-rays no longer could help them. Nitrogen mustard treatment was given too late and not in proper dosage to save them, but it did prolong their lives for three months. The results were sufficiently encouraging, however, to continue the work of nitrogen mustards as a remedy.

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CHEMISTRY

Rapid Method of Making Rubber in Germany

► A NEW, rapid method of making rubber and a new formula for synthetic rubber were two of the finds made in Germany by an American committee of six chemists and rubber experts who visited Europe in the fall in 1945, sent by the Federal Office of Rubber Reserve. These scientists recommend these two findings to the American rubber industry.

The new rapid method of making rubber, the Redox method, is a process that can be completed, they state, in two to three hours instead of the 12 to 14 hours usually needed. It may prove, they claim, a step toward a continuous process of making rubber.

The new formula for synthetic rubber, labeled "Buna S4," gives a material that requires less heat-softening than other German synthetic rubbers because it uses chemicals in a manner similar to American rubber, though developed by a different approach.

The committee was headed by Prof. Carl S. Marvel of the University of Illinois. Other members included Ensign Edward R. Weidlein Jr., Albert M. Clifford of the Goodyear Company, John N. Street of Firestone, Harlan L. Trumbull of Goodrich, and George R. Vila of United States Rubber.

One major difference between American and German synthetic rubbers, they said, is that American plants making rubber use a chemical which makes the product both softer and easier to handle. The Germans do not use this chemical, but depend upon heat to soften the rubber for processing. German chemists told the committee that they use the heat method because it was the first method developed and because they had the equipment with which to carry it out. Also, they said, they wanted to make one synthetic usable for various purposes.

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