

BIOLOGY-MEDICINE

Biological Warfare

Preparations made by U. S. in top secret research. Japanese also developed germs for offense, but disease weapons were not used in World War II.

By **WATSON DAVIS**

► **ADD GERMS** to the atomic bomb, rockets and other new weapons that can be expected to be used in any future wars.

The War Department released a report on America's extensive preparations to combat and undertake biological warfare. These researches undertaken by nearly 4,000 scientists, Army and Navy personnel, in four war laboratories in Maryland, Mississippi, Utah and Indiana, were "top secret" even after V-J day until the announcement.

Biological warfare was not used by the United States. While intelligence reports after the Japanese occupation showed that the Japanese army fostered offensive developments in this kind of warfare from 1936 into 1945, the report states there is no evidence that the enemy ever resorted to this means of warfare.

The biological warfare report, made to the Secretary of War by George W. Merck, special consultant for biological warfare, is notable in not mentioning any specific disease by name.

But it does define biological warfare as "the use of bacteria, fungi, viruses, rickettsiae and toxic agents from living organisms to produce death or disease in men, animals, or plants." These agents are distinguished from synthetic chemicals used as gases or poisons, or what is usually called chemical warfare. Biological warfare thus has a very wide scope.

Used in World War I

The report declares that biological warfare was used in World War I, and that "there is incontrovertible evidence that in 1915 German agents inoculated horses and cattle leaving the United States ports for shipment to the Allies with disease-producing bacteria."

The possible use of biological warfare was brought to the attention of the War Department in the fall of 1941 and Secretary Stimson requested a National Academy of Sciences committee to survey the situation and future possibilities.

A supersecret committee called the War Research Service was organized in the summer of 1942 to take charge of biological warfare investigations. Work-

ing with the Army, Navy, U. S. Public Health Service, the National Academy of Sciences, the National Research Council, OSS, FBI and other agencies, this organization asked the Chemical Warfare Service of the Army to take over a large-scale development and research program in November, 1942. The first laboratories and pilot plants were begun in April, 1943, at Camp Detrick, Frederick, Md. Subsequently, field testing stations were established in Mississippi and Utah and large scale production was investigated at a plant in Indiana.

Only 60 Infections

Only 60 cases of proven infection caused by accidental exposure to virulent biological warfare agents are reported during the researches and all recovered completely or are recovering. There were also 159 accidental exposures which received prompt treatment and did not develop infection, except one case in

which the exposure was not reported, the disease developed and the person recovered after treatment.

The biological warfare program was undertaken, the report states, "under the goad of necessity and aimed primarily toward securing for this nation and its troops in the field adequate protection against the possible use by our enemies of biological warfare agents. Adequate defenses were devised and the possibility of surprise from this quarter was forestalled."

Of Lasting Value

Much information of great and lasting value for human welfare was obtained, the report claims. Unique facilities were established for research and experimentation on pathogenic agents on a scale never before possible.

Important accomplishments of the biological warfare program listed in the report are:

1. Development of methods and facilities for the mass production of microorganisms and their products.
2. Development of methods for the rapid and accurate detection of minute quantities of disease-producing agents.
3. Significant contributions to knowledge of the control of airborne disease-producing agents.
4. Production and isolation, for the



PEACETIME HEALTH AIDS—While investigating possible enemy use of infectious disease as a weapon, Naval Medical Research Unit No. 1 also assimilated information for control of communicable airborne diseases. Here an autopsy is held on one of the animals infected during the course of studies at the University of California. Official U. S. Navy photograph.

first time, of a crystalline bacterial toxin, which has opened the way for the preparation of a more highly purified immunizing toxoid.

5. Development and production of an effective toxoid in sufficient quantities to protect large scale operations should this be necessary.

6. Significant contributions to knowledge concerning the development of immunity in human beings and animals against certain infectious diseases.

7. Important advances in the treatment of certain infectious diseases of human beings and animals, and in the development of effective protective clothing and equipment.

8. Development of laboratory animal propagation and maintenance facilities to supply the tremendous number of approved strains of experimental animals required for investigations.

9. Applications of special photographic techniques to the study of airborne microorganisms and the safety of laboratory procedures.

10. Information on the effects of more than 1,000 different chemical agents on living plants.

11. Studies of the production and control of certain diseases of plants.

Still more is to be learned about biological warfare, the report warns, and the research "must be continued on a sufficient scale to provide an adequate defense."

In organizing the world for peace, the report declares, "the potentialities of biological warfare cannot be safely ignored.

"Unlike the development of the atomic bomb and other secret weapons during the war," the report warns, "the development of agents for biological warfare is possible in many countries, large and small, without vast expenditures of money or the construction of huge production facilities. It is clear that the development of biological warfare could very well proceed in many countries, perhaps under the guise of legitimate medical or bacteriological research."

Science News Letter, January 12, 1946

suppressive drug, SN 7618, better than both atabrin and quinine. This is a most constructive war research, useful in peace.

Probably a half-dozen similarly great medical achievements are hidden by the present biological warfare secrecy. If they are announced promptly they might immunize the public against some of the horror of the idea of protecting ourselves against the use of diseases as weapons.

Undoubtedly far more good than harm will come out of America's biological warfare researches. It would have been

SCIENCE NEWS LETTER

Vol. 49 JANUARY 12, 1946 No. 2

The weekly summary of Current Science, published every Saturday by SCIENCE SERVICE, Inc., 1719 N St. N. W., Washington 6, D. C. North 2255. Edited by WATSON DAVIS.

Subscriptions—\$5.00 a year; two years, \$8.00; 15 cents a copy. Back numbers more than six months old, if still available, 25 cents. Monthly Overseas Edition: By first class mail to members of the U. S. Armed forces, \$1.25 a year. To others outside continental U. S. and Canada by first class mail where letter postage is 3 cents, \$1.25; where letter postage is 5 cents \$1.50; by airmail, \$1.00 plus 12 times the half-ounce airmail rates from U. S. to destination.

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Entered as second class matter at the post office at Washington, D. C., under the Act of March 3, 1879. Established in mimeographed form March 18, 1922. Title registered as trademark, U. S. and Canadian Patent Offices. Indexed in Readers' Guide to Periodical Literature, Abridged Guide, and the Engineering Index.

The New York Museum of Science and Industry has elected SCIENCE NEWS LETTER as its official publication to be received by its members.

Member Audit Bureau of Circulation. Advertising Representatives: Howland and Howland, Inc., 393 7th Ave., N.Y.C., Pennsylvania 6-5566 and 360 N. Michigan Ave., Chicago, STate 4439.

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International Effects

Germ warfare is bound to have widespread effects. Medical discoveries useful in peacetime are likely to justify war researches.

By WATSON DAVIS

► WE KNOW THAT Pandora's box of germ warfare actually exists. Although the lid was not opened in war, it is potentially as frightening as the atomic bomb. The scientists are not yet permitted by the War Department to tell what they found in their supersecret medical and biological war researches.

Until there are scientific reports naming diseases, telling about counter measures and giving hints for peacetime usefulness, we can neither assay fully the dangers nor tell definitely whether biological warfare researches will bring more good than evil.

The Merck report released by the War Department, giving no credit to either the disease organisms studied or the scientists who studied them, is an obviously abbreviated document. In all probability it was strenuously edited and bluepencilled in what Army officers conceived to be the interests of military security. It tells far less about biological warfare than the Smyth report does about atomic warfare.

Conflicts are bound to rise and be aired in public between the scientists who want their traditional freedom of scientific publication and the military who wish to hold on to "secrets." Biological warfare scientists may find themselves joining the atomic bomb scientists in fighting for their scientific liberties.

The biological warfare research was one of the most extensive coordinated medico-biological investigational programs in history. Probably it cost somewhat less than a twentieth as much as the atomic bomb researches. The cost was certainly in the scores of millions of dollars.

If there had been a relatively full revelation of what has been done, the whole undertaking might have a different public reception.

At the same time the U. S. preparation for and against biological warfare—fighting with bacteria, fungi, viruses, rickettsiae, and toxic agents from living organisms—was announced, there was also made known by another agency the triumph of American chemistry over malaria through the development of a