

MEDICINE

Atomic Attack on Disease

Radioactive chemicals may tell much about how diseases spread. Many medical advances have already been made with isotopes in a year.

Report of the peacetime accomplishments of atomic energy continues on the next page, telling the results of research in agriculture.

➤ MANY of the great disease killers of mankind, from heart disease and cancer to still unconquered germ diseases, may yield to atomic attack.

Radioactive chemicals, produced in the same chain-reacting pile at the Clinton Laboratories which produced the atom bomb just two years ago, are the weapons for medicine's atomic attack on disease.

Such unsolved medical mysteries as how infantile paralysis spreads might be solved with these peaceful atomic weapons. The solution would come by tagging the virus cause of the disease with a radioactive chemical from the pile. Its now hidden invasion route and progress through the body could then be followed by the tell-tale radioactivity with which it had been endowed. Sure knowledge of whether the virus gets into the body by being swallowed with food or water or whether it comes in on breaths of air, like the common cold virus, would give scientists a much better chance of stopping its spread.

First steps toward such knowledge may already have been taken. Scientists at the U. S. Public Health Service's National Institute of Health have found a way to tag bacteria with radioactive chemicals. They want to learn more about immune processes by which the body fights germ invasion.

Tagging viruses might be an even more difficult feat, but it has been accomplished in the case of at least one virus, that of tobacco mosaic, which is a plant disease.

In the single year since the first shipment of radioactive isotope chemicals produced in the Clinton Laboratories at Oak Ridge was made to the Barnard Free Skin and Cancer Hospital in St. Louis the following atomic advances in medicine have been made:

1. Discovery of a better treatment for congestive heart failure. This resulted from the finding, by Dr. George E. Burch of Tulane University School of Medicine, that in patients with this heart

condition sodium as well as water escapes from the blood vessels into the tissues. Because sodium is a "thirsty" element, water follows the sodium out of the blood vessels. This results in the dropsy of congestive heart failure. As a result of these studies with tagged atoms of sodium, patients are now given medicines to eliminate the excess sodium as well as the excess water in their tissues.

2. Treatment of chronic forms of leukemia, lymphoma and Hodgkin's disease with radiogold, which has turned out to be "exceedingly useful" in these conditions.

3. Development of methods for learning more about how cancers are produced through the use of a cancer-producing chemical, methylcholanthrene, tagged with radioactive carbon 14.

4. Quantitative measurements of blood circulation with red blood cells tagged with radiophosphorus which showed conclusively that in heart disease when heart arteries are clogged (coronary thrombosis) other blood vessels take over the job of the blocked ones.

5. Successful treatment of patients with overactive thyroid glands, too sick for surgical removal of the gland, with ra-

dioactive iodine which has also been used to attack cancer of the thyroid.

6. Discovery of new knowledge for fighting anemia through use of radioiron which appears in the red blood cells and shows the rate at which these cells are made and how iron is absorbed and utilized in the body.

7. Tagging of penicillin and other drugs to learn more of how they stop or kill germs in the body and, perhaps, how to develop more effective drugs.

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CHEMISTRY

Powerful Anti-Malarial Found in Chinese Plant

➤ EXTRACTION of two anti-malarial chemicals, one of them 100 times as powerful as quinine, is announced by J. B. Koepfli, J. F. Mead and John A. Brockman, Jr., California Institute of Technology chemists, in a report to the *Journal of the American Chemical Society*.

The chemicals were obtained from the leaves and roots of a plant long known to the Chinese as having anti-malarial properties. In China, its roots are called Ch'ang Shan. Botanical name for the plant is *Dichroa febrifuga*.

Febrifugine and isofebrifugine are the names the chemists give the new anti-malarials. The names, as well as the last name of the plant, come from two Latin words meaning fever-reducing. Febrifuge is an old medical term for any fever-reducing remedy.

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CHECKING RADIATION—Fission product materials emitting high levels of radiation are processed inside a thick walled concrete cell. This shows apparatus on the outside wall where all operations are performed by remote control. Radiation emitted through an opening is being checked with an instrument called a "cutie pie."