SCIENCE NEWS

Science Service, Washington, D. C.

THE SYNTHESIS OF QUININE

FOR the first time in history quinine, important malaria remedy found in the bark of the cinchona tree, has been put together in the laboratory. This total synthesis of quinine has been accomplished by Dr. Robert B. Woodward, of Harvard University, and Dr. William E. Doering, of Columbia University, working for the Polaroid Corporation. The details of the method are published in the *Journal of the American Chemical Society*.

This chemical feat may point the way to another important achievement, the development of a better anti-malarial than quinine itself or the synthetic chemical, atabrine, now also widely used in malaria treatment. Although both quinine and atabrine are effective in treating malaria, neither of them is a true prophylactic. This is because neither attacks the malaria germ in its earliest, pre-infective stage as injected by the mosquito. Nor is either of them very effective in preventing relapses. The Woodward-Doering process for synthesizing quinine has already led to synthesis of another entirely new substance, an optical isomer of quinine. The structure of this substance looks like the reflection in a mirror of the quinine molecule. Tests to determine whether it has value as a remedy are planned.

The synthesis started with a coal-tar derivative, 7-hydroxyisoquinoline, and proceeded through nearly a score of chemical processes until success was attained. This chemical had originally been produced from quinine by Pasteur and in 1918 a German chemist, Rabe, had reconverted it into quinine.

Whether the laboratory synthesis can be made commercially practicable has not yet been determined. The Polaroid Corporation does not intend, according to Edwin H. Land, president and director of research, to manufacture the products involved, but to license the process after consultation with government authorities to such organizations as are best fitted to assure the broadest usefulness for the discovery.

Commercial production of synthetic quinine might be pushed if we did not have enough atabrine and totaquine for military and essential civilian needs. Totaquine is a mixture of chemicals from cinchona bark and contains quinine.

When the Japanese seized Java in March, 1942, they also gained almost the entire world's supply of quinine. Cinchona trees, however, are native to South America, where the anti-malarial action of their bark was first discovered. Since the war steps have been taken to reestablish these cinchona plantations. Our supplies of totaquine are coming now from Latin American countries.

ITEMS

VIRUSES, the cause of many diseases including the common cold and infantile paralysis, are not living organisms like other disease germs but complicated protein chemicals, inanimate in nature, in the opinion of Professor Roger J. Williams, director of the Biochemical Institute of the University of Texas. The reason for his opinion is based on findings at the Clayton Foundation, showing that viruses apparently do not contain any B vitamins. Professor Williams states in a report for the *Journal of the American Chemical Society* that appreciable amounts of the various B vitamins have, however, been found in all forms of living matter which have been investigated. The presence or absence of these vitamins, he suggests, may be used as a criterion of the living or non-living nature or origin of a material in question.

PROTECTION of our fighting men against diseases, in past wars even deadlier than enemy bullets and shellfire, has been greatly improved since World War I, was stated by Dr. R. E. Dyer, director of the National Institute of Health at the recent meeting of the American Philosophical Society. Especially great advances in the field of immunization have been made against typhoid, tetanus, typhus and yellow fever. There was an effective vaccine against typhoid in the last war, but the one we have now has far higher potency. A new method of developing active immunity against tetanus has been discovered and is used for the protection of all troops. Typhus and yellow fever are not universal perils, but menaces in particular zones. Troops being sent to duty in such areas are being given protection against these diseases.

NO airplane engine suitable for the post-war private market is now available, according to J. H. Geisse, of the U. S. Civil Aeronautics Administration, who spoke at the meeting in Detroit of the Institute of Aeronautical Sciences. It is necessary that either engine design be so simplified that engines can be produced cheaply in relatively small quantities or they must be produced in quantities exceeding any probable demand for personal airplane use. Research work is needed in the development of a suitable power plant and he emphasized that it should certainly include work on two-cycle engines because of their simplicity. It would be a boon to private flying, he added, if such research developed an engine that would have increased power without greater fuel consumption.

TEXAS cantaloupes, due to reach the market very soon, should become more abundant from now on, because a new variety has been developed that is resistant to both aphids and downy mildew, the worst insect enemy and the worst fungus pest of cantaloupe vines everywhere. Breeding work on the new variety was carried out by Dr. S. S. Ivanoff, of the Texas Agricultural Experiment Station, who discusses it in detail in the *Journal of Heredity*. Breeding stocks were selected from four varieties of West Indian origin, all of which had shown resistance to aphids and mildew under South Texas conditions. Good size and shape for market requirements, ability to stand up under shipping conditions, and desirable qualities of sweetness and flavor were developed during the breeding program.