PLANT PATHOLOGY

Bread Basket Endangered

Nature's biological warfare has struck viciously at the nation's wheat crop in the form of wheat stem rust which ruined fourth of crop in North Dakota and Minnesota.

➤ NATURE'S biological warfare has struck viciously at the nation's bread basket and the American wheat crop is endangered. This was learned from Dr. Elvin C. Stakman, world authority on plant diseases known for his wheat breeding research at the University of Minnesota, who retired as president of the American Association for the Advancement of Science, meeting in Cleveland.

A severe epidemic of wheat stem rust menaces the whole wheat crop of this year. This fungus can cause a wheat field to have an almost complete crop failure. Known as race 15 B stem rust, this disease exploded in North Dakota and northwest Minnesota in Durham wheat never before affected. It ruined 25% of the crop there the past year. Then it invaded vast fields farther south, getting into Texas and probably invading Mexico. In these southern climates it can winter successfully and the winds of next year will be able to spread it aerially to the great wheat areas northward where it will race through the green fields like devastating biological fire.

The extreme seriousness of the new wheat rust invasion lies in the fact that it affects all kinds of bread and macaroni wheats, used for our cake, cracker and all other breadstuffs.

Through years of laborious wheat breeding and selection, Dr. Stakman and other agricultural scientists had been able to give American agriculture wheats that were wonderfully resistant to the kinds of rust diseases that have been most prevalent in the past.

They knew that potentially dangerous kinds of fungus diseases lurked undercover, likely to flame disastrously at any time. One of these previously unimportant rusts is the present sabateur, whose full scientific name is *Puccinia Graministritici* physiological race 15 B. Recognized first in 1918, it has never before become widespread. The late spring of 1950 gave it its chance to invade wheats that had never rusted before.

Plant disease fighters of the U. S. Department of Agriculture and the state agricultural experiment stations are alerted to the danger and the fight is underway, although money so far available for defense is inadequate. At present Uncle Sam spends little more than $50,000 on this phase of protection of our bread supply. Undoubtedly Congress will be asked for emergency funds at once.

Foreseeing the danger of just such an epidemic, the scientists have been breeding new kinds of wheats to meet such an emergency. It may take years to get a variety resistant to the new 15 B rust, even with the head start that past research gives them.

Dr. Stakman explained that there are about 13,500 kinds of wheat in the world, each of which should be tested under various conditions of light and temperature to see how they grow when attacked by about 250 parasitic diseases. The task is gigantic. Yet it must be tackled if America is to continue to feed itself and help keep the world from hunger. It takes 12 years to breed a new wheat.

Nature is continually plotting such disease warfare against our crops and only continual scientific defense will save us from food shortages in the future.

The last great wheat rust epidemic was in 1935 when the fungus known as number 56 became dangerous, but it was not as serious as the present epidemic.

Oats, too, has been attacked in 1950 seriously by a stem rust closely related to the new wheat rust. Known as race number 7, this disease menaces a crop that is important in animal feeding.

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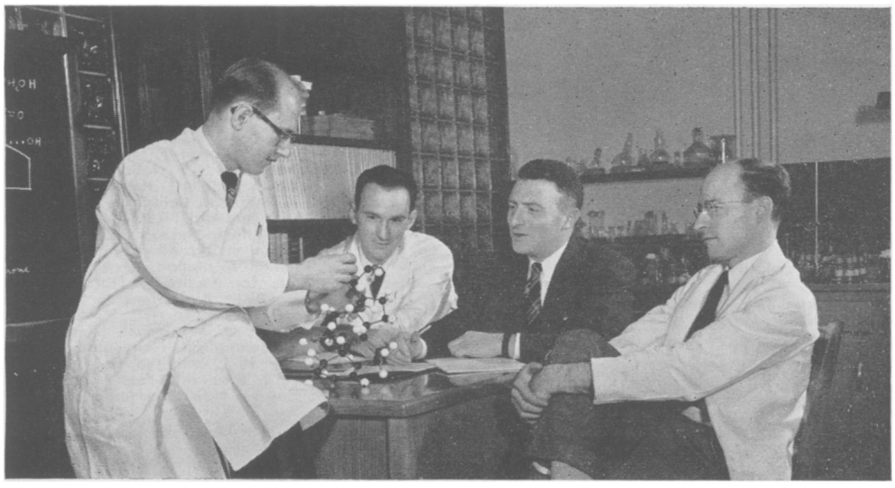

NEW DRUG—Synthesis of Kendall's Compound F was achieved by these four Merck & Co. chemists. From left to right, Drs. Robert P. Graber, Robert E. Jones, Max Tishler, and Normal L. Wendler. Dr. Graber is holding a model of the Compound F molecule.

PHARMACY

Third Anti-Arthritis Drug, Compound F, Synthesized

➤ A THIRD hormone drug to fight the pain and disability of arthritis has been successfully synthesized by four Merck chemists. It is Kendall's Compound F, a substance that was first isolated in 1930 from the adrenal cortical gland.

The synthesis of this Compound F is expected to add to the volume of the drugs that can be used to treat a variety of disorders which now respond to cortisone and ACTH, which have produced dramatic effects in treatment of rheumatoid arthritis, rheumatic fever, bronchial asthma, allergic disorders, inflammatory eye diseases and skin disorders.

Dr. Max Tishler, developmental research director of Merck and Company, reported the new synthesis to the American Association for the Advancement of Science on behalf of a team consisting of Drs. Norman L. Wendler, Robert P. Graber, Robert E. Jones and himself.

The importance of Compound F lies in the hope that it will have fewer harmful side effects than cortisone when used on human patients. If it proves to be better, it might replace cortisone. Compound F chemically is 17-hydroxycorticosterone and it is the only known substance comparable to cortisone and ACTH.

Compound F has had preliminary medical trials which hold out the hope that it will team with the other steroid compounds in disease treatment. Its synthesis starts with desoxycholic acid, a substance obtained from animal bile and the procedure requires two more chemical steps than the cortisone synthesis.

Once the medical world is convinced that Compound F will be useful in the treatment of human disease substantial supplies of it can be made available in a few months.

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