

found, only when he has the approval and support of farmers in his community. The farmer and his neighbors must be convinced that the new ideas will actually work.

Pioneer projects would consist of drainage basins of suitable size and with features that careful surveys show would be likely to produce successful results. Staffs of experts, an able director, and a consulting board would operate the project. The area to be included would not be large or too small but limited to a size that its inhabitants can know firsthand.

There would be three objectives:

1. Improvements in the method of agriculture that would result in greater production per crop, per unit area farmed and per man.

2. As manpower is released by this more productive agriculture, suitable decentralized industries would be created to take up this extra manpower.

3. Emphasis upon improvements in the villages and better transportation which would make life more pleasant and more efficient. Medical facilities, better water supply, better sanitation and better schools would follow along with the improved agriculture and decentralized industries.

If this kind of development can be gotten underway, Dr. Lowdermilk feels sure that there will be a renaissance in the agricultural civilization necessary to support the people of the earth.

He has an abiding confidence in the ability of peoples even in what are considered backward countries. He is fond

of telling how he found that in a West Africa country teachers from a well-developed European country assumed that native Negro children knew nothing.

Dr. Lowdermilk found, however, that practically every child by the age of 12 knew all the plants in his village by name. They did not know the botanical classification, of course. But each child could identify and tell whether the plants were poisonous or good to eat. This keenness of observation and this knowledge that came down from their surroundings and their families were impressive.

With such native ability, and with the newer knowledge simply and practically taught and integrated, Dr. Lowdermilk believes that these areas will be well on their way toward social and economic self-sufficiency.

Practical measures that work are of great importance in land and water conservation, utilization and reclamation. But for their continuous application, Dr. Lowdermilk observes that people of each nation must accept a moral responsibility for the good earth that not only feeds the present population but must feed the generations which are to come.

Land, in his view, is not just an economic commodity. It is a part of a nation even as its people are. Dr. Lowdermilk's conviction is that the food supply and the condition of land determines whether a nation rises, maintains itself or falls.

• Science News Letter, 79:26 January 14, 1961

MEDICINE

Mushroom Drug for Cancer

► AN ANTITUMOR agent, calvacin, has been found active against 14 various types of cancer and is now being prepared for clinical trial, probably within six months.

Calvacin, extracted from the fruiting bodies, or sporophores, of the giant puffball mushroom, *Calvatia gigantea*, is a "non-diffusible, basic mucoprotein." This type of drug is not now available for treating malignant tumors.

The first clue to the tumor-stopping ability of calvacin was discovered several years ago by a Michigan State University team headed by the late Dr. E. H. Lucas.

Since that time, MSU workers have screened hundreds of *C. gigantea* strains to find those that produce the most calvacin in the shortest time.

Scientists at Armour and Company, Chicago, isolated the calvacin from the sporophores and developed the fermentation process.

A third group at Sloan-Kettering Institute for Cancer Research, New York, tested the drug against 24 types of mouse, rat and hamster tumors. In 10 types of tumors, the drug prevented growth beyond a size one-fourth to three-fourths that of the control animals not given the drug. In four types of tumors, calvacin stopped the growth at one-fourth the size of the controls. In one type of cancer, the drug was toxic to the animal.

Dr. C. Chester Stock of Sloan-Kettering's team said calvacin was scheduled to be on

clinical trial by now, but difficulties in the fermentation process indicate that the drug will have to be extracted from the fruiting bodies instead. If all goes well, calvacin will go on clinical trial in New York by mid-1961.

The research was reported in *Science*, 132:1897, 1960, official journal of the American Association for the Advancement of Science, by Drs. J. F. Roland, Z. F. Chmielewicz, B. A. Weiner, A. M. Gross, O. J. Boening, J. V. Luck, all of Armour and Company, and Dr. T. J. Bardos, formerly with Armour, now at the University of Buffalo, N. Y., also Drs. H. Christine Reilly, K. Sugiura and Dr. Stock of Sloan-Kettering; and Dr. Lucas, R. U. Byerrum and J. A. Stevens, all of MSU in East Lansing, Mich.

• Science News Letter, 79:27 January 14, 1961

Do You Know

The first traces of navigation ever discovered, wooden oars found on the coast of Denmark, date back to about 7000 B.C.

There are about 26 trillion cells in a human body.

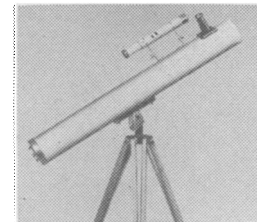
In the world as a whole, three babies are born every second.

• Science News Letter, 79:27 January 14, 1961

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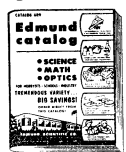


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