

As a result, this tuberculin developed by Dr. Corper is said for the first time to eliminate all danger that a patient's reaction to foreign elements in the tuberculin might mistakenly be diagnosed as indicating tuberculosis. Danger of the patient suffering any local or general reaction to the tuberculin is also removed.

The test, Dr. Corper points out, should not be considered an exclusive test for the disease, but an inclusive one to verify medical findings. He believes it ranks among the best biologic diagnostic tests developed. It has been used successfully for the past several years at the Fitzsimmons General Hospital, Denver, and the University of Colorado School of Medicine, as well as at the National Jewish Hospital.

*Science News Letter, February 12, 1944*

#### BIOCHEMISTRY

### Germ-Killing Substances Found in Onion Oils

➤ APPARENT support for an old folk-belief that onions, garlic and their strong-scented kin-vegetables are "good for what ails you" is offered by the reported discovery, by Prof. B. P. Tokin of the University of Tomsk, USSR, that their essential oils contain substances that kill bacteria, protozoa and even larger organisms like yeast cells and the eggs of certain lower animals. The report is contained in a bulletin of the USSR Society for Cultural Relations with Foreign Countries, which has just been received in the United States.

Prof. Tokin has given the name "phytoncides" to the substances he has isolated. Experimental use in hospitals is now being made of these compounds, particularly in the treatment of suppurative wounds.

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Hidden Furrows

➤ PLOWING in the traditional pattern, with long, straight furrows of cleanly-turned soil lying dark in the sun, is under challenge. Newer methods of preparing the soil, that loosen it enough for seeding but leave stubble and litter on the surface, are being strongly advocated as better for water conservation and for erosion prevention.

Critical tests of these new methods are being made at the Iowa Experiment Station at Ames, Iowa, and at the demonstration area of the U. S. Soil Conservation Service near Clarinda. These tests measure values in terms of costs per bushel in man-hours and horsepower-hours put in by the farmer and his tractor, as well as the conventional bushels-per-acre reckoning commonly used. First results are summarized, in some detail, in the professional journal, *Agricultural Engineering* (January), by a three-man research team: Prof. E. V. Collins of Iowa Agricultural Experiment Station, and R. A. Norton and G. M. Browning of the U. S. Soil Conservation Service. They also summarize earlier investigations by themselves and other workers. (See SNL, Nov. 7, 1942)

Three principal types of tillage implements have been used by experimental-minded farmers who are trying to get away from the moldboard plow. One is the disk harrow, advocated especially by Edward J. Faulkner in his recent book, *Plowman's Folly*. This is already familiar, although its use as an exclusive means of tilling the soil seems radical to most farmers.

A second implement is the subsoil lister, which is a type of plow that lifts and loosens the soil, but lets it drop into place again without turning it com-

pletely over as a moldboard plow does. The third implement, called sometimes a subsoil tiller, sometimes a sweep, is a widely V-shaped blade that is drawn along entirely below the surface. It stirs the soil underneath but disturbs the surface, with its cover of stubble and litter, even less than the lister does.

Tests of all three of these implements, on three different soil types, have been run, principally with corn, though soybeans and other field crops were also tried to some extent. In general, fields prepared for planting by the new methods yielded as much, or nearly as much, per acre as comparable fields plowed in the conventional way. Differences were greatest in heavier soil, especially when wet. In lighter, drier soil the difference was sometimes in favor of the newer tillage method, especially where contour rather than straight-row cultivation was carried out.

In all cases, the newer methods required materially lower costs in man-hours and tractor power (and hence fuel and oil), so that lower yields per acre were at least partly offset. Moreover, the usually unreckoned but nevertheless serious costs in water loss through runoff and soil loss through erosion were far less, especially on rolling land where contouring or terracing was used, in the case of the newer tillage methods.

Objection has been raised to tillage methods that leave the surface relatively undisturbed, on the score that it would encourage weediness. The three researchers feel that further evidence on this point is needed before a positive verdict can be rendered. In at least one instance, plots that had been subsurface-tilled for corn the previous year and then plowed and planted to soybeans in 1943 were less weedy than similar plots that had been prepared for both crops by plowing. This, however, was an accidental discovery, and further investigation of this problem is considered necessary.

Akin to the weed problem is the insect pest problem. The area of European corn-borer infestation has now reached central Iowa. Corn-borer larvae live through the winter largely in corn stubble. Other insect pests also shelter in surface litter. Clean plowing in the spring has been considered the best method of control. If clean plowing is to be given up in favor of any of the newer tillage methods, this also is something that calls for further research.

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