

BACTERIOLOGY

Antibiotic Preserves Food

The miracle drug, subtilin, kills the microorganisms which contaminate food. It cuts canning time and leaves the food with the garden-fresh flavor.

► TOMORROW'S canned goods will come off grocers' shelves tasting as fresh as food from your own garden. Their secret, now being realized in laboratories of the Department of Agriculture, will be tiny amounts of a gray-green powder named subtilin. Subtilin is an antibiotic.

Thus is being uncovered a whole new field in which these new miracle drugs called antibiotics will work their wonders. Without freezing, and without the flavor-draining high temperatures necessary in present-day canning methods, a revolutionary new method of preserving foods with these drugs is being tested by government scientists.

Drs. Ariel A. Anderson and H. D. Michener, bacteriologists at the Department of Agriculture's Western Regional Research Laboratory at Albany, Calif., reported some of the results to members of the Society of American Bacteriologists in Baltimore.

Subtilin, discovered at the Western Regional Lab, has proved extremely effective against some of the micro-organisms which contaminate food and which, if left in the can, quickly spoil it.

By using minute amounts of the drug dissolved in a salt solution and put in the cans, the researchers have preserved a wide variety of vegetables and other foods for nine months—ever since they went into storage—without a trace of spoilage.

The test foods include peas, asparagus, corn, green beans, peeled potatoes, tomato juice, milk, cauliflower, Brussels sprouts, broccoli, wax beans and mushrooms.

A vital part of the new process is still heat—but for a much shorter time and at much lower temperatures than conventional canning methods require.

It has been found that subtilin kills the food-spoiling organisms which survive moderate amounts of heat. In turn, the mild heat treatment destroys those which are unaffected by subtilin.

Other antibiotics—aureomycin, chloromycetin and lupulon, the latter isolated at the government laboratory from hops—have shown definite promise. But the work so far has been confined largely to subtilin.

The substance is being produced on pilot-plant scale in a fermentation process employing a strain of *Bacillus subtilis*. This organism occurs widely in nature and is found in many foods.

Yet the experimenters are treading with care before they announce they have a revolutionary new canning method. They want to be absolutely sure the antibiotic will have no ill effects on the consumer.

The amounts used in each can are so tiny as to be undetectable by taste or sight. Ten parts per million, based on the weight of the food treated, produces complete sterilization. The cans stay in boiling water 20 minutes at the maximum time.

In other terms, the canner would need 18 grams of the antibiotic, little more than half an ounce, to treat a ton of food. The cost would be about a tenth of a cent per can, the scientists have estimated.

Tested with rats and rabbits, massive doses of subtilin have produced no ill effect. All tests indicate that it is non-toxic in the human stomach.

Nevertheless, several years of work will probably be needed before the new process can be turned to general use, Dr. G. E. Hilbert, chief of the Bureau of Agricultural and Industrial Chemistry, indicated.

"A good beginning has been made, and the results so far look promising," he said.

By eliminating the long cooking time now required, often in expensive pressure equipment, the most notable result may one day be canned foods with farm-fresh flavor, competing on even terms with the frozen foods in the grocer's refrigerator.

Science News Letter, May 27, 1950

ENGINEERING

Reflector Keeps Waves Coming Around a Mountain

► BOUNCING radio waves around mountains solves a communication problem for the Pennsylvania Electric Company, it was revealed in Johnstown, Pa.

The problem was communication between a generating plant at Seward, Pa., and a sub-station near Johnstown. Rugged mountains between the two sites would make the installation of a telephone line difficult. Microwave communication is the answer. Its success depends upon a unique reflector which makes it possible to send the high frequency radio waves up one valley and down another so that the mountains do not interfere with the trip.

Microwaves, unlike ordinary radio waves, travel in straight lines. They will not pass through a mountain. The reflector used in this installation is on a mountain top in "line-of-sight" with both the generating plant and the sub-station.

Westinghouse engineers, together with engineers of the Pennsylvania Electric Company, are responsible for the "bouncing" technique adopted. The reflector is a 20-

foot square sheet of aluminum, standing nearly vertical, supported on a 50-foot tower.

The aluminum sheet is perforated with many one-inch holes. These make it much less resistant to the wind, and do not interfere with efficiency. Because the holes are relatively small, the waves do not pass through them but are reflected.

Science News Letter, May 27, 1950

INVENTION

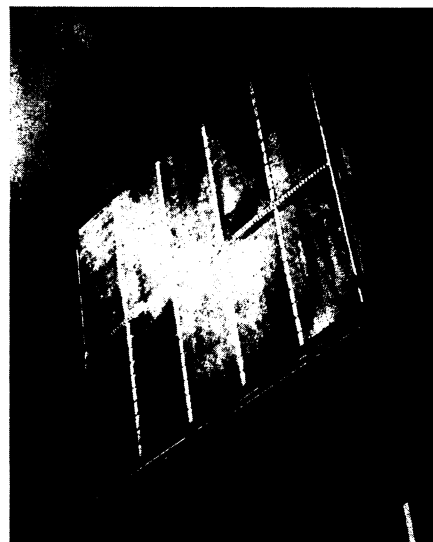
Window Washing Is Inside Job with New Device

► NO need to stretch an arm outside the window to clean the outer surface, thanks to an American inventor. Just rub a special cleaning pad over the inside of the pane of glass and a similar pad on the outside moves along with it.

Magnetism is the secret. Both pads have within them permanent magnets. The magnetic field extending through the glass between them is strong enough to hold the pads in position opposite each other, even causing the outer one to follow the movements of the other.

The inventor is Rocco D'Andrea of Long Island City, N.Y. A patent was awarded him, number 2,507,559. The use of permanent magnets is the feature of his device. Somewhat similar window cleaners developed before used electromagnets but were not satisfactory, he claims.

Science News Letter, May 27, 1950



PLENTY OF BOUNCE—High-frequency radio waves or micro-waves strike this perforated aluminum reflector and bounce off at just the right angle to strike a receiving tower 12 miles distant. The sheet, which measures 20 feet square, is supported by a 50-foot tower erected on a mountain top.