

## ENTOMOLOGY

**Successful 1954 War on Crickets, Grasshoppers**

► THE 1954 war against grasshoppers and Mormon crickets carried out by the Federal and State governments in nine Western states saved an estimated \$3,486,000 of livestock forage alone.

Claiming success in their annual battle against these two pests, U. S. Department of Agriculture entomologists stated that 788,000 acres of rangeland were treated for the 'hoppers, and 122,000 for the Mormon crickets.

The control program returned nine dollars for every dollar spent to combat the grasshoppers, and an estimated six dollars for every dollar spent to fight the crickets. Total savings of all the crops from these pests, which are normally estimated by each state, are not yet available.

However, estimates from the nine western states of Colorado, Idaho, New Mexico, Oregon, Texas, Utah, Wyoming, Montana and Nevada, covering the years 1935 through 1953 show that grasshopper control alone has saved American agriculture more than \$1,000,000,000.

The control program was carried out by conventional spray and bait-spreading airplanes with many of the new organic insecticides. Thousands of acres of untreated crops and adjoining range were thus protected from invading grasshoppers and crickets.

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## PHYSICS

**Unusual Material Made As Single Crystal****See Front Cover**

► BARIUM TITANATE, a material with an exceptional electrical behavior, is being extensively studied in laboratories around the country.

Reason for the heavy interest in this unusual material is that the sensitive atoms of barium titanate show a remarkably quick response to the slightest changes in pressure, temperature or electrical field. Even light, shining on a crystal of it, will cause the atoms to rearrange themselves.

The photograph on the cover of this week's SCIENCE NEWS LETTER shows an "interesting and typical pattern of ferroelectric domains" of a single barium titanate crystal, Dr. Walter J. Merz of Bell Telephone Laboratories, New York, has stated.

Similar to the ferromagnetic domains of iron, he explained, the electric polarization of the material can be along one of six directions.

The sharp 45 degree lines on the photograph are 90 degree walls, that is, boundaries between domains polarized at 90 degrees to each other.

The 180 degree walls, which are boundaries between antiparallel polarized domains, cannot be seen very easily. However,

by applying an external electric field or stress to the crystal, the optical extinction position for parallel and antiparallel domains can be changed in opposite directions, thus making the two types of domains distinguishable in polarized light.

The dark and bright horizontal and vertical bands on the photograph are the antiparallel domains, and the 180 degree walls themselves cannot be seen.

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## METEOROLOGY

**Electronic Computers For Hurricane Forecasts**

► BETTER PREDICTION of hurricane paths should result from using electronic computers to keep track of what is going on high in the atmosphere over the middle latitudes, Dr. Charles L. Jordan of the U. S. Air Force's Air Weather Service in Washington told the American Meteorological Society meeting in Miami Beach, Fla.

The hurricane itself may be too small to be tracked directly by the computer, Dr. Jordan said. Tremendous as the energies involved are, the tropical storms are nevertheless relatively small-scale atmospheric disturbances.

The presently used system, still experimental, is to put into the computing machine weather data for points 300 miles apart. Winds of hurricane force usually swirl only within 200 miles or less of the "eye."

The wind pattern high in the atmosphere seems to steer the hurricane. Computing machines should aid in understanding large-scale motions of the atmosphere.

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## BIOCHEMISTRY

**Chemical Cuts Down Growth of 'Flu Virus**

► A CHEMICAL that cuts down markedly the growth of mumps and influenza virus in living tissue is described in *Science* (Nov. 19).

Known as TRB for short, the chemical was tailor-made because a very similar compound, called DRB, had previously been found to inhibit growth of 'flu and mumps virus.

Dr. Igor Tamm of the Hospital of the Rockefeller Institute for Medical Research reports the tests with the two chemicals.

Chemically, TRB is 4,5,6-trichloro-1-beta-D-ribofuranosyl-benzimidazole.

"It should be emphasized," Dr. Tamm stated, "that TRB is 760 times more active" than the control compound with which it was compared.

When the chemical was injected into eggs previously inoculated with mumps virus, it stopped further growth of the mumps virus almost completely. There was no other effect apparent in the egg tissue.

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**IN SCIENCE**

## TECHNOLOGY

**Electronic Device Spots And Discards Bad Eggs**

► AN ELECTRONIC device has been developed which spots the early stages of green rot in eggs and throws away the infected ones.

Green rot, which causes more spoilage in the egg industry than any other bacterial infection, gets its name because the albumen of infected eggs fluoresces green under ultraviolet or black light.

U. S. Department of Agriculture scientists used this color fact in the development of the machine. It automatically detects the disease by passing ultraviolet rays through the egg, and measuring the green color wavelength. Spoiled eggs are rejected as they come off the machine.

Up to the present, badly rotted eggs were visible to the human eye by ultraviolet candling, but low levels of infected eggs went undetected. These often spoiled in cold storage, or on the way from the farm to the store.

The machine is designed for use in large-scale operations, such as those conducted by packers, wholesalers and chain grocers.

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## ENTOMOLOGY

**Mosquitoes Down Under Found to Be Fussy Eaters**

► AUSTRALIAN MOSQUITOES are fussy about whose blood they take and where they do their feeding.

Some mosquitoes prefer rabbits to man, horses to rabbits and chickens to horses for their blood meals. Some mosquitoes like to feed under shelters, while others dine out-of-doors.

These facts were learned from the results of over 1,400 tests on the stomach contents of engorged mosquitoes to determine the source of their blood meals. The tests were made by D. J. Lee, K. J. Clinton and A. K. O'Gower of the School of Public Health and Tropical Medicine at the University of Sydney, Australia.

The Australian scientists also found that two species of mosquitoes that attack both poultry and man are likely suspects for the transmission to man of Murray Valley encephalitis.

One of these, together with two other species that attack rabbits, have an important role in myxomatosis transmission.

*Anopheles annulipes*, on the other hand, because it attacks man only casually, is unlikely to assume any importance as a vector of malaria in Australia, the study revealed.

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# CE FIELDS

## ENGINEERING

### "No Real Advantage" In Warming Car Motor

► THERE IS "no real advantage" in warming up your automobile engine on cold winter mornings, P. N. Ku of the National Bureau of Standards told SCIENCE SERVICE.

Although no one can tell for sure, most scientists who work with engines believe that little, if any damage is done by driving right off as soon as the car motor is turning over satisfactorily.

Waiting to drive off until the temperature gauge reaches a certain reading or normal operating level is not necessary, Mr. Ku said.

This is contrary to what most people are told about their car motors. They think that oil will not flow right away if a load is put on the engine too soon. They believe that some or all bearings might thus be starved for oil and that it is best to wait a few minutes before driving the automobile.

However, as long as the car has lubricating oil that is being forced through the engine, which it should be when the motor is turning over, delaying driving does not make any real difference.

Mr. Ku is acting chief of the engines and lubrication section of the National Bureau of Standards.

"The problem of driving right away when the car engine is cold," he said, "is not cut and dried. The best way to phrase advice is to say that there is no real advantage in warming up the motor."

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## VETERINARY MEDICINE

### Hog Farmers Warned This Is Flu Season

► FARMERS HAVE been warned that this is the season for one of America's most costly swine diseases, influenza.

Swine raisers should be alert for such symptoms as loss of appetite, severe coughing, labored breathing and a watery discharge from the eyes, the American Veterinary Medical Association in Chicago said.

Although the mortality rate from influenza itself is low, secondary infections and a retarding of the weight gain, as well as a loss of weight, are possible dangers to a herd.

The association reported that "influenza can be confused with several other serious hog diseases, so a diagnosis is of prime importance when symptoms resembling 'flu appear.'"

It recommended measures to counteract

an influenza epidemic in swine. Farmers should keep hog houses clean and well ventilated, free of drafts, and with plenty of good dry bedding.

Infected swine can transmit the influenza virus to humans who come into close contact with the animals, Dr. L. O. Mott, chief of the virus and rickettsial animal and parasite research branch at the U. S. Department of Agriculture's Experiment Station in Beltsville, Md., said.

Experiments conducted in the laboratory to show transmission from hogs to humans have not been successful, the scientist stated, but transmission has occurred often in natural surroundings.

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## ICHTHYOLOGY

### Among Some Fishes, Female Is Voiceless

► COMMUNICATION IS just as important to a fish as it is to a man.

Dr. C. M. Breder of the department of fishes and aquatic biology, American Museum of Natural History, reports this in *Research Reviews* (Nov.), publication of the U. S. Navy's Office of Naval Research.

Not all fish have voices, Dr. Breder says, but male croakers are among those that do. In the breeding season, they join in great choruses as do frogs. A female croaker is voiceless, however—she can listen to her suitor but cannot talk back.

Although fish do not have external ears, they can hear. Outer ears are not necessary in the water, because the greater density of the water in contact with the head of the fish carries sound to the inner ear. In fact, fish have organs of hearing completely lacking in land animals. These are a series of pores or canals just under the skin.

Dr. Breder suggests that this system, known to scientists as the "lateral line," is used by the fish as a sort of "sonar" or "micro-echo-ranging" to keep the fish from colliding with each other or other obstacles as they dart about under very crowded conditions.

Fish that swim along together in perfect formation in schools use vision to keep the group in line, Dr. Breder indicates. Although they can maintain schools on rather dark nights, they break up in absolute darkness, or when the fish are blinded, experiments have shown.

There is no leader for a fish school, Dr. Breder states. In fact, it sometimes happens that the first fish in a school are turned by some influence so that they catch sight of the trailing members of the same school. Then they follow around in a circular path and continue to go around and around in a manner that is silly even to the fish until something happens to break up the "mill."

Fish have taste buds as do men, Dr. Breder reports, but in fish these are not confined to the mouth. They are distributed over the surface of the head and sometimes as far back as the tail fin.

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## TECHNOLOGY

### "Airdock" Unloads Plane In Only Four Minutes

► AN AIRLINER can be emptied of its passengers, baggage, mail, express and freight loads in only four minutes in a newly developed "Airdock." The process ordinarily takes about 20 minutes.

Instead of being unloaded on the airfield by a fleet of trucks, carts and tractors, the plane is towed tail first into a special hangar where ramps, bridges, conveyor belts and hydraulic lifts do the work.

The revolutionary system was tried out in a full-scale mock-up experiment by United Airlines in Denver. A DC-6B Mainliner carrying a test load was used in the operation.

Passengers filed out on a bridge at the same level as the cabin door. Meanwhile, workers unloaded baggage and freight onto a 140-foot-long conveyor belt that moved swiftly to a large circular revolving table. As the passengers walked down from the overhead bridge, their baggage was sorted for claiming.

Loading for the next flight is also expected to be speeded up by this system.

The Airdock would eliminate 70% of the mobile equipment now used to service airplanes. Passengers would be under the shelter of the hangar to and from the cabin door.

The terminal is designed to handle DC-6's, DC-6B's, DC-7's and Mainliner Convairs.

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## MEDICINE

### Skin Grafts From Corpses Save Burn Patients

► SEVERELY BURNED persons can now be saved from death by skin grafts from a corpse.

The new technique, which has been tested on only a few patients, can carry a person through the emergency period when he would not survive grafting from his own sound skin.

Two St. Louis doctors report the procedure in the *Journal of the American Medical Association* (Nov. 20).

Drs. James Barrett Brown and Minot P. Fryer of the Washington University School of Medicine said that their success so far with the technique has led them to make their report without waiting for an impressive array of cases.

Many lives might be saved by such prompt reporting, they say.

These postmortem grafts will "take," even if only held in place by a wrapping of fine greased gauze, closing the wounds and protecting them from infection until the critical period is past.

"The procedure could be developed on a national basis, possibly saving many lives in the event of widespread disaster," the doctors said.

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