AGRICULTURE

Pest Killers Pose Problems

ABOUT a hundred different insect pests throughout the world have now developed resistance to various modern insecticides. New pests have appeared, some beneficial species have been decimated, and many biologists are beginning to believe that chemical methods of pest control are raising almost as many problems as they solve.

Many of the modern insecticides are extremely poisonous to man, scientists were told at the Institute of Biology, London, England. Dr. J. T. Martin of the Plant Nutrition Research Station at Long Ashton, near Bristol, told of some of the precautions that had to be taken to protect farmers and the public. But his account was not a very soothing or encouraging one.

The distribution and use of these poisons in England is not legally controlled and depends entirely on voluntary cooperation. The amounts of insecticide residue which may be left in foodstuffs are not laid down —the only insurance is the code of "safe spraying practice" which the farmer is asked to observe.

The question of laying down legal "tolerances" for insecticide residues is being studied, but techniques for detecting and measuring such residues in food are very difficult, Dr. Martin said. Such experiments take a long time and often a new insecticide is put on the market before the long-term tests were completed.

A. H. Strickland of the Plant Pathology Laboratory, Harpenden, said that in the eastern United States, 22 different sprays were being used to control one serious pest, the codling moth, but the insect seemed to be acquiring resistance faster than scientists could invent new sprays.

Many pests might be effectively controlled by biological methods, by proper timing of cultivation, rotation of crops, drainage, soil conditions and plant nutrition, the scientists indicated.

To underline the warnings given at this conference, the British Ministry of Agriculture has issued instructions to farmers to take extra precautions when using sprays containing arsenic. Four hundred cattle have been poisoned, a woman died and six others were taken seriously ill after drinking water from a farmhouse drinking water supply believed to have been accidentally contaminated with arsenic.

Science News Letter, January 2, 1960

ROCKETS AND MISSILES

Balloon to Orbit

NEXT SPRING a big, bright "star" moving swiftly through the twilight sky is expected to be visible.

The "star" will be a 100-foot plastic balloon coated with aluminum and inflated in space with four pounds of water vapor.

Successful launching of this first of three balloons will signal the start of the National Aeronautics and Space Administration's "Project Echo." This experiment will be aimed at testing use of a satellite as a big reflector for radio and television waves on a global basis.

The balloon is to be launched at a 50-degree angle to the equator from Cape Canaveral, and NASA said it should be visible in all parts of the United States except Alaska.

However, there is some question as to how long the big balloon may stay in its planned 1,000-mile-high orbit. It is not known if the balloon will circle the earth for years, as is expected of some satellites, or if its size will make it so vulnerable to meteorites and atmospheric drag, even at that altitude, it may complete only a few 120-minute earth orbits.

In this case, NASA broke its own policy of keeping silent on up-coming shots so that communications scientists would have a chance to plan their own experiments using the balloon satellite. NASA itself hopes to establish a radio link between its Jet Propulsion Laboratory's Goldstone tracking station in California and a Bell Telephone Laboratory station at Holmdel, N. J., using the balloon to bounce radio signals between the two stations.

The balloon will pass over all countries lying between 50 degrees north and 50 degreens south latitude. In the Western Hemisphere the balloon thus will sweep as far north as the U.S.-Canadian border and dip as far south as Puerto Santa Cruz near the southern tip of Argentina. In the Eastern Hemisphere, the balloon will swing over Le Havre, France; Prague, Czechoslovakia; Kharkov, Russia (but not Moscow), and dip as far south as Tasmania, south of Australia.

The balloon will be similar to the one shot recently from Wallops Island, Va., in a test seen by hundreds of thousands along the East Coast.

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PHYSIOLOGY

Exact Fertile Period Found for 200 Women

WHEN WOMEN are fertile and how long this fertile period lasts have been pinpointed for some 200 women, a scientist has reported.

Using a standard test for determining the woman's day of ovulation, the individual control month was established, Dr. Edmond J. Farris of the Wistar Institute said. Once the normal ovulation time was known, each of 200 women was artificially inseminated.

The greatest number of conceptions, 80, occurred when insemination was performed two days before the average mid-cycle day, Dr. Farris reported. Altogether the range of dates for successful conceptions was from cycle days ten to 20 inclusive for menstrual cycles that varied from 20 to 43 days. Ninety-eight percent occurred on cycle days ten to 16.

In conclusion, Dr. Farris observed that the ovulation day is predicted at about two days before the mid-cycle days. The fertile period may extend from two days before to five days following this day, giving a total of eight fertile days.

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AERONAUTICS

Three Practical Fields Foreseen for New Science

PROPULSION devices for space vehicles is one of the three fields in which the new science of magnetofluidmechanics can be expected to have practical applications in the next ten years, one of the world's top scientists reported.

Dr. Theodore von Karman of NATO's Advisory Group on Aeronautical Research and Development, Paris, said the other two fields are containment, in the hope of controlling the energy of nuclear fusion, and flow modification.

Dr. von Karman's report was made at a symposium on the dynamics of conducting gases sponsored by the American Rocket Society and Northwestern University. He said the propulsion devices could take many forms, including:

1. Ion propulsion, based on the electrostatic acceleration of charged elementary particles.
2. Electrostatic acceleration of charged particles of colloid size.
3. Plasma acceleration.

He said that some of the methods suggested for the direct conversion of heat into electromagnetic energy can be considered as applications of magnetofluidmechanics.

Science News Letter, January 2, 1960

ENGINEERING

Radar-TV Unites to Give Air Traffic Controller

A UNION of television and radar has produced a way of keeping tabs on airplanes flying around airports.

At the Naval Air Station, Virginia Beach, Va., the new Spanrad system was installed to meet air traffic control problems of the jet age. The system has two elements: 1. a radar which scans the skies for spotting planes and 2. a television camera which photographs a map of the area. An attendant moves little plastic models over the map by hand to indicate plane positions.

The radar picture is superimposed over the television picture and the result is shown on a TV screen. Result: A picture showing a map of the area with markers showing where each plane is supposed to be, plus radar blips showing where each airplane actually is.

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