HERE USDA RESEARCHERS are administering radioactive ET-57, a phosphate insecticide to a test animal, using a drenching gun. A Geiger counter, held by the worker in the center, keeps a constant check on the radioactivity. Radioactive ET57 was given to cattle to determine residues remaining in the various tissues and in the milk, the rate at which the chemical is eliminated from the animal's body, how it travels within the animal and how it kills grubs (USDA Photo)

New Chemicals Kill Cattle Grubs While Inside Infected Animals

The search for a chemical that can be given to cattle orally or by spraying to destroy cattle grubs inside the animal body has turned up two insecticides that may be just what scientists have been looking for, U. S Department of Agriculture reports

Most promising of these finds is ET-57, a phosphate compound that is given to cattle by mouth as a drench or in a large cylindrical pill. It dissolves and passes through the walls of the digestive tract, quickly circulating in body fluids to all parts of the animal

The ability of the chemical to permeate the animal's body tissues distinguishes it as a "systemic" insecticide.

Cattle grubs — the larvae of heel flies — usually enter the bodies of cattle near the heel and burrow upward through the flesh. They are apprently killed when the animals are treated with ET-57. If this insecticide is administered before the grubs reach the animal's back, damage to the flesh is reduced and the grubs do not make holes in the hide.

The other systemic that has performed well against cattle grubs in preliminary tests is Bayer 21/199. This chemical, also a phosphate compound, is administered by spraying over the animal. The way this insecticide gets into the animal body to kill the grubs has not been fully determined, but at least some of the chemical is known to be absorbed through the skin.

USDA scientists know much less about 21/199 than they do about ET-57, but results to date are encouraging. An insecticide such as 21/199 that can be sprayed on is easier to use, especially on range cattle, than one that must be given by mouth.

Neither ET-57 nor 21/199 is available commercially. and these chemicals are not yet recommended for cattle-grub control. Additional research is needed — on their possible toxic effects on treated animals, on whether they leave any toxic residues in meat or milk, and on practical methods and timing of treatments.

Cattle grubs cost the U S livestock industry an estimated $100 million to $200 million every year. They damage both hides and flesh of beef animals. Packing losses due to these parasites sometimes run as high as $7 to $8 per carcass.

The only insecticide now being used to kill cattle grubs is rotenone, derived from the tropical derris plant. This chemical has no systemic action. Used as a spray, wash, dip, or dust, it kills a high percentage of the grubs once they have reached the backs of infested animals. But by that time the parasites have already damaged the flesh and hide of their hosts. Various other insecticides and the chemical phenothiazine. widely tested for use against cattle grubs, have proved ineffective.

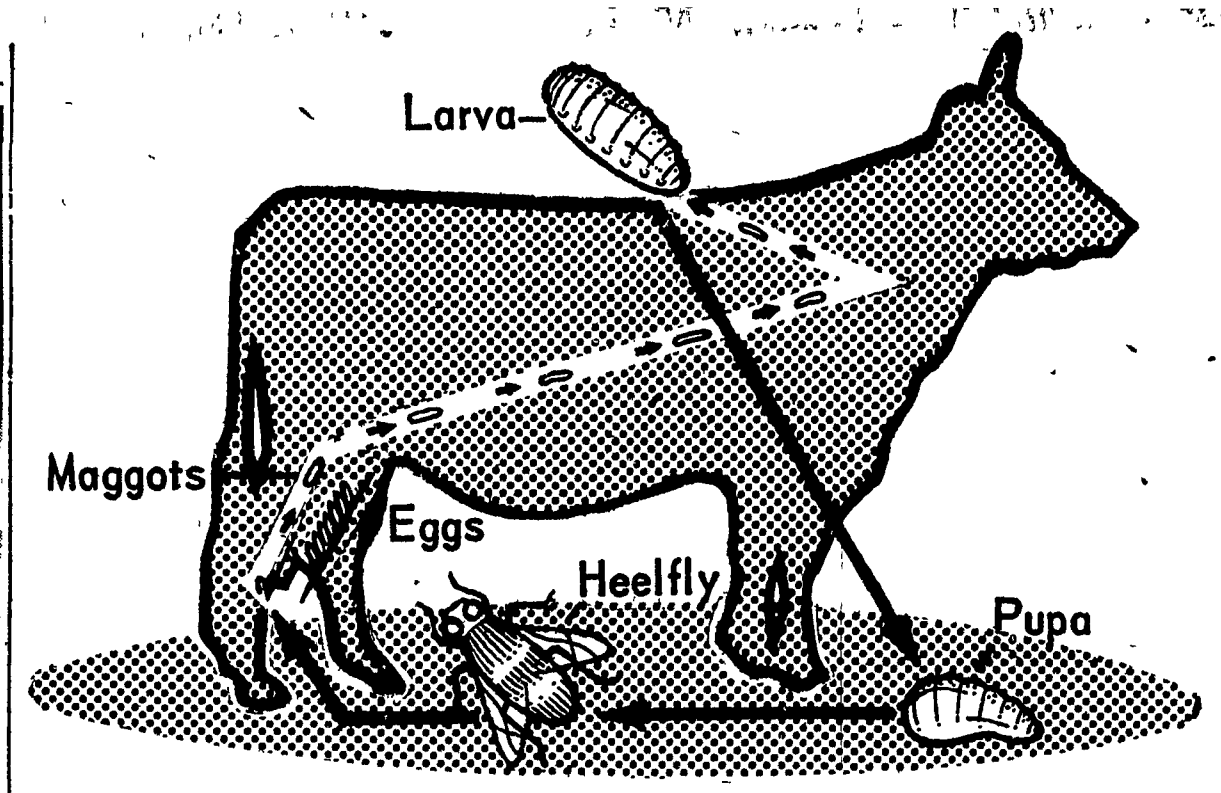
Experiments made early in 1955 by entomologists of USDA's Agricultural Research Service at Corvallis, Ore., first showed the systemic grub-killing powder of ET-57. Technical name for this chemical is 0,0-dimethyl 0-2,4,5-trichlorophnyl phosphorothioate.

The studies made so far indicate that a single dose at the rate of 100 milligrams of ET-57 for each kilogram of the treated animal's body weight will kill practically all cattle grubs present in the animal. This amounts to a dose of about 1.6 ounces for an animal weighing 1,000 pounds. Best time for treatment seems to be near the end of the heel-fly season in midsummer.

Administered at this rate, the chemical does not appear to be toxic to the animal and causes no off-flavors in the meat. USDA researchers believe, however, that on the basis of present evidence the insecticide should not be given to beef animals less than 30 days before slaughter, to prevent any possibility of traces of the chemical remaining in the meat. It appears unlikely at present that ET-57 can be recommended for dairy cattle if their milk is to be sold Rotenone can be used for effective control of cattle grubs in producing dairy animals.

The Oregon and Texas Agricultural Experiment Stations have cooperated with USDA in testing the meat of treated animals for off-flavors due to ET-57. Their results show no apparent flavor changes, even when the test animals were slaughted only 10 days after treatment. At that time an estimated two parts per million of the chemical was still present in the fat.

The effectiveness of ET-57 in killing cattle grubs has been tested in beef animals by USDA and several state agricultural experiment stations, notably that of Oklahoma. A number of other states have shown an active interest in the research on cattle-grub systemics.



LIFE CYCLE OF THE HEEL FLY. Heel flies begin to chase cattle during the first warm days of spring. The cattle run frantically to escape these insects, which cannot bite or sting. The female flies lay their eggs on the short hairs of the animal's heels. In a few days the eggs hatch and the larvae, or maggots — the cattle grubs — burrow through the various body organs and muscular tissue of the infested cattle. Finally they reach the underside of the skin on the animal's back, where they stay for 35 to 60 days, breathing through the holes they make in the hide. As the grubs mature they fall to the ground and burrow into the soil to pupate. About three to 11 weeks later, depending on the temperature, they emerge as heel flies. When the female flies lay their eggs, the cycle begins again. (USDA Photo)

Rhoads Sells Bull

Jerome H. Rhoads, Kirkwood, has sold the registered Guernsey bull, Rhoadsacres Actor's Merit, according to the American Guernsey Cattle Club.

This bull was sold to Robert F. Mendenhall, Avondale, Pennsylvania.