

Winged queens and winged males are rarely seen outside the mound, for they live inside until time to leave the mound for their mating flight. After mating, the fertilized queen finds a nesting site, sheds her wings, and digs a brood chamber one to four inches underground.

She lays her first cluster of eggs—10 to 15—usually the day after mating. The winged male, meanwhile, has become homeless and dies within a few days. By the time the first cluster of eggs hatches into larvae (in eight to 12 days), the queen has laid a hundred or more eggs.

The queen cares for the first brood, but workers feed later broods. The larval stage of the workers is six to 12 days. The larvae, helpless dirty-white grubs, then change to pupae that are pale, shiny white, and about the same size and shape as the adults. They gradually darken and adult workers emerge in nine to 12 days.

Workers care for the brood, forage for food, maintain and enlarge the colony and protect the nest from enemies. A mound is formed when workers from the queen's first brood enlarge the underground quarters. Workers of later broods help build a firm mound that is honeycombed with underground passages.

In 1957, Congress enacted legislation setting up a joint Federal-state imported fire ant eradication program. It authorizes the U.S. Department of Agriculture to help interested states, local governments and property owners fight the fire ant on more than 20,000,000 acres. The cost of this program is being shared by all parties involved.

Three coordinated steps are underway—surveys to find infested areas, treatment of infested areas with insecticides, and quarantines to prevent spread of the ant into uninfested areas.

The insecticide phase of the program is to rid infested areas of the ant and to keep these areas free of it. USDA claims every precaution is taken to apply insecticides in such a way that they will not harm people or animals. They are applied only where an immediate need exists and not on an area-wide basis.

A Federal quarantine restricts or prohibits the interstate transportation of the ant and regulates the interstate transportation of articles that may be carriers of the ant in Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, South Carolina and Texas. Similar state regulations control transportation of the fire ant and regulated articles from infested to uninfested locations in these states.

The Agricultural Research Service of USDA says individuals can help in controlling the imported fire ant by:

1. Reporting infestations suspected to be imported fire ants to the county agent or state entomologist.
2. Participating in community action designed to wipe out the fire ant.
3. Giving survey and eradication workers free access to property.
4. Following all precautions recommended when insecticides are applied.
5. Treating fire ant mounds in advance of the coordinated program.

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## BIOLOGY

## Animals Ape Each Other

HOW ANIMALS of different species mimic each other in their struggle for survival is being studied at Amherst College, Amherst, Mass., by Dr. Lincoln P. Brower.

Working under a grant from the National Science Foundation, Dr. Brower has furnished a converted greenhouse laboratory with eight bird cages and other equipment to conduct experiments to determine how, by imitating or resembling one species, individuals of another species increase their chances of survival.

Using evening grosbeaks and jays, for instance, he is trying to find some of the conditions that cause a bird to reject a palatable insect that resembles an unpalatable one. Flies that resemble noxious wasps, or butterflies that resemble distasteful butterflies of other species are called mimics. By their resemblance to dangerous or unpalatable species, the mimics tend to escape being eaten by predators such as birds.

Under laws of natural selection, mimicry is gradually perfected, with the better mimics of each generation tending to be those that survive to produce the next generation.

Dr. Brower is feeding his birds insects brought to varying degrees of unpalatability.

"In mimicry theory," he said, "the more distasteful a model is, the greater the number of mimics that will escape being eaten by predators."

To investigate this, one of Dr. Brower's assistants is feeding blue jays beetle larvae dipped in various concentrations of quinine. The concentrations are not dangerous, merely distasteful, to the birds. A definite correlation is being found between the degree of distastefulness of the artificial model and the number of artificial mimics, which taste good, rejected by the birds.

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## VETERINARY MEDICINE

## Farmers Not Veterinarians

FARMERS ARE WARNED against do-it-yourself treatment of animals in an editorial in the Journal of the American Veterinary Medical Association, 136:458, 1960.

The editorial blames pharmaceutical advertising for leading dairymen to attempt vein puncture and other techniques requiring veterinarian training.

The journal reports that indiscreet medication of animals headed for immediate slaughter will result in consumers eating unsafe and adulterated foods made impure

by drug residues in the flesh. Surveys by the Food and Drug Administration since 1957 have proved this danger.

For example, dangerous residues of penicillin found in milk were considered largely due to improper use of mastitis infusion preparations or failure to follow instructions on packaged products requiring that milk from treated cows be withheld from the market for 72 hours.

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## PUBLIC HEALTH

## Exhaust-Purification Tried

TWO ATTEMPTS at controlling and eliminating noxious, smog-producing exhaust fumes given off by motor vehicles have won patents.

One is an aluminum filtering attachment that fits on the end of an automobile's exhaust pipe. The other is a method of feeding into the exhaust pipe chemicals that will react with the gases and render them less objectionable.

The filter attachment, invented by Jose L. Villasenor and Raul H. Leon of San Diego, Calif., consists of four connected chambers. One circulates air taken in by the rapid forward motion of the car. A second chamber mixes this air with the gases coming from the exhaust pipe. In a third chamber the noxious fumes are absorbed and reduced by mixing with castor oil. The last chamber provides final purification and cleansing.

This purification attachment is claimed to be easily attached and removed, simply manufactured, effective and durable. The inventors received patent No. 2,932,157 and assigned one-third of the patent rights to

James B. Abbey, also of San Diego.

The method of mixing chemicals with the ejected fumes was invented by Frederick C. Binter of Moorestown, N. J. It is claimed to purify the exhaust from both diesel and gasoline internal combustion engines, and to drastically reduce objectionable odors and irritating substances.

Mr. Binter accomplishes this by injecting into the exhaust pipe, preferably as far from the outlet end as possible, chemical derivatives of ammonium salts, which may be either liquids or solids that are water soluble. If a continuous flow of such chemicals is intimately mixed with the exhaust fumes as both pass through the pipe, he says, they remove or convert the noxious substances in the exhaust gas and result in a product that is neither foul-smelling nor irritating to the eyes.

The chemicals added to the pipe may be held in a refillable container mounted at the rear of the vehicle and fed to the exhaust pipe by direct pipes. The invention earned patent No. 2,932,364.

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