

**Connecticut Agricultural Experiment Station**  
New Haven, Connecticut

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**Control of Ant Invasions\***

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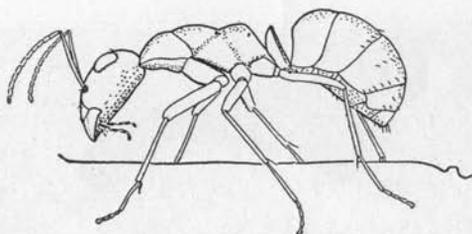


FIG. 18. Side view of a worker ant, greatly enlarged.

During every summer season a large number of inquiries are received at the Station regarding ants and how to exterminate them. Each year ant colonies are reported from some localities as making ant hills on the lawn, injuring plants, entering houses, or perhaps tunneling in trees or timbers.

Ants belong to the Order Hymenoptera and are social insects living in colonies containing queens, males and workers. In general ants are considered as beneficial rather than injurious as they work over the soil much like angle worms, and they devour particles of animal and vegetable matter, thus destroying many dead, and some living, insects. Certain species are distinctly injurious and are mentioned in the following pages.

The object of this bulletin is to give brief information about the habits of ants and to indicate how ants may best be controlled.

#### NESTING PLACES OF ANTS

Most of our common species of ants nest in the ground where they form ant hills, or reside under stones and pieces of wood. Certain species have large colonies and bring to the surface of the ground particles of sand and gravel, bits of wood and other materials, forming large ant hills. These ants cut off the roots of plants which happen to be where they make their galleries. Certain small species like the Argentine ant now present in our Southern States and the little red house ant or Pharaoh's ant, occasionally found in Connecticut, may nest in houses. The large black ant or carpenter

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ant makes its nest inside the trunks of trees, old logs, stumps, fence posts, and in the structural timbers of buildings and bridges, often honeycombing and weakening the wood. The so-called white ants, or termites, have nesting habits similar to those of the large black ants, and often do considerable damage to structural timbers.

#### ANTS ON PEONIES

Ants nearly always crawl about on peonies, though I have never known them to cause any injury. Peony buds are said to have nectar glands which attract ants, and this seems to be the most reasonable explanation of their presence on the plants, for as a rule peonies are not infested with aphids. Control measures are therefore not necessary, though in some



FIG. 19. Characteristic ant hill of *Formica exsectoides* Forel.

cases it may be possible to keep them away from the plants by mulching the latter with air-slaked lime, fine sifted coal ashes, or by wrapping the stems with sticky fly paper.

#### ANTS AND PINE TREES

In young white pine plantations, it has been noticed that the trees always die near the large ant hills,<sup>1</sup> as shown in Fig. 19, and recent studies by Mr. H. B. Pierson<sup>2</sup> show that the ants kill the trees which are in danger

<sup>1</sup> *Formica exsectoides* Forel.

<sup>2</sup> Mound Building Ants in Forest Plantations, Journal of Forestry, Vol. 20, page 325 April, 1922.

of shading their nests. This is true not only of the pines planted, but also of native seedlings and sprouts of hardwood trees which spring up near the nests. Consequently in young forest plantations, the ants in such nests should be killed by fumigating with carbon disulphide, or "cyanogas".

#### ANTS AND APHIDS ON TREES AND PLANTS

Except certain species of ants which nest in trees, those crawling about on the leaves and up and down the stems and branches are in search of food. An important article of ant food is the substance called honey dew exuded by certain insects, particularly aphids, psyllids, aleyrodids, tree hoppers and scale insects. Aphids are called the "milch cows" of the ants and the latter are known to take care of certain species of aphids to the extent of carrying them in fall to the roots and in spring back to the foliage. The ants are present, therefore, not to injure the plants but to obtain foods from the aphids or scale insects which may be sucking sap from the plants. On account of the distinctly injurious nature of these insects which are fostered by the ants, the latter are considered enemies of mankind.

In such cases, probably the best treatment is to spray the trees or plants thoroughly with a contact insecticide like nicotine solution and soap to kill the insects.

#### ANTS IN GARDENS AND LAWNS

Ants often make small ant hills on lawns, especially in sandy soil, by bringing sand and fine gravel from their burrows to the surface of the ground. These are unsightly and interfere with the work of cutting the grass, especially with the edge on the knives of the lawn mower. They are also a nuisance by bringing particles of sand to the surface in cracks of walks and drives.

Where ants emerge through small cracks, carbon disulphide may be injected through the nose of an oil can and the hole stopped with soil. For nests in lawns, a hole should be made fifteen to eighteen inches deep with a crowbar, iron rod or stake, and the carbon disulphide poured into the hole. A half teacupful will be enough for the larger nests and the smaller ones may be given two large spoonfuls. As some of the ants will be out of the nest at the time of treatment, it may be necessary to repeat as soon as the ant colony resumes activity. The fumes of this ill-smelling liquid are volatile and will permeate the galleries and kill the ants in them. As carbon disulphide is inflammable, it should not be used near any form of fire, particularly in or around buildings or wooden structures. It comes in pound bottles or cans and may be purchased from druggists and dealers in insecticides. "Cyanogas" may be used for the same purpose, but it usually kills the grass around the hole, and hence is not so desirable for use in lawns.

#### ANTS IN HOUSEHOLDS

Most of the ant invasions in dwelling houses come from the colonies established in the garden or soil outside, and the destruction of these colonies will bring relief. The ants are after food and usually visit the

kitchen and the pantry, where they gather crumbs of bread, cake, meat and particles of sugar to carry away to their young. Usually they enter the house or cellar at a certain place, and all of the individuals travel along this path or runway. Many methods of getting rid of ants in houses have been recommended. Most of them fall into the classes of repellents, traps and poisons.

**REPELLENTS:** Borax, naphthalene, paradichlorobenzene, camphor, oil of cedar, tobacco, sulphur, powdered cloves, mustard and insect powder. It is said that ants can be poisoned by feeding them on borax and sugar. Extracts of insect powder are also used to kill ants in some of the proprietary liquid insecticides on the market, such as "Flit", "Verm-o-Spray", etc. However, most of the substances mentioned above are repellents, and may be scattered along the runways and on the shelves, floors, and points of entrance will often drive away the ants within a few hours. A free use of naphthalene flakes in such places will usually drive away most species.

**TRAPS:** Ants may be trapped by plates greased with lard: the ants will congregate there in great numbers, and may be killed with hot water. Ants are also attracted by sugar and bits of ham. A favorite trap consists of a coarse sponge saturated with sugar and water; after permitting the ants to crawl into it, they may be killed by immersing the sponge in hot water.

**POISONED BAIT:** Sometimes there are cases where the ants nest in houses, as do the Argentine ant<sup>1</sup> which is now present in the Gulf States, and the little red house ant or Pharaoh's ant<sup>2</sup> which occurs in Connecticut when the foregoing described methods of control are not effective, and it may be necessary to use a poisoned bait to exterminate the colonies. The object of the bait is not only to kill the ants which collect and carry the sirup back to the nests, but also the young and the queens in the nest which feed upon it.

Tarter emetic mixed with about twice its bulk of sugar and enough water to make a thick syrup, placed on a piece of cardboard, is an excellent poison for certain kinds of ants.

The following formula was recommended by the U. S. Bureau of Entomology in Farmers' Bulletin No. 740, and has proved satisfactory against Pharaoh's ant<sup>3</sup> in a dwelling house in Hartford:

#### POISONED BAIT FOR ANTS

Sugar.....	1 pound
Arsenate of Soda.....	.125 grains
Water.....	1 quart
Honey.....	1 tablespoonful

Dissolve the sugar in the water, and add the arsenate of soda: boil until both are well dissolved, then add the honey which is said to attract the

<sup>1</sup> *Iridomyrmex humilis* Mayr.

<sup>2</sup> *Monomorium pharaonis* Linn.

<sup>3</sup> Report of the Connecticut Agricultural Experiment Station for 1917, page 314.

ants. When cool, use with bits of sponge in small shallow dishes, or on pieces of cardboard, and place two or three in each room.

The baits have been used successfully against various kinds of ants both in the house and out of doors. The poison should be put in protected places where young children, domestic animals and birds cannot reach it but where the ants will have access to it.

## ANTS TUNNELLING IN WOOD

### BLACK ANTS

The large black ants commonly known as carpenter ants<sup>1</sup> nest in galleries which they eat in old logs, stumps, fence posts, rails, props and trees, and they occasionally eat away the timbers of houses to make their nests. They also gather sweets from kitchen and pantry. They both enter the house from outside, and in some cases nest in the structural timbers which soon may be considerably weakened.

Perhaps the best way to kill this species is to bore holes from the outside into the galleries and by means of a funnel, and rubber tube if necessary, pour in enough carbon disulphide to kill all ants inside the burrows. The hole should then be plugged to prevent the fumes from escaping. These large ants can also be trapped in sweetened sponges and can be fed with the poisoned bait if desired.

### WHITE ANTS

There is in Connecticut another wood-eating species called the white ant or termite,<sup>2</sup> which is white in its immature stages but brown in the adult stage. These white ants are only remotely related to the true ants and belong to a different order (Isoptera). They are social and nest in wood and swarm at a certain time in early summer. They do not visit the pantry and kitchen in search of food like the true ants, and so far as I know are not attracted by sweets. They often breed in stumps, fence posts, board edges of tar walks, old trees and sometimes in the timbers of houses and bridges. Other species in the tropics do a tremendous amount of damage by destroying buildings and there are records of large structures collapsing because weakened by the feeding of these termites. There are many records in the United States and some in Connecticut of buildings having been injured by termites. In 1909, an old house in South Norwalk,<sup>3</sup> and in 1915 a house in Ridgefield,<sup>4</sup> had the timbers and finish boards eaten by them. Trees and herbaceous plants in the field and greenhouse are occasionally attacked and injured. In 1914,<sup>5</sup> the author received geranium plants from New Rochelle, N. Y., where more than two hundred plants had been ruined by these insects which tunneled out the inside of the stems. In 1916, shot gun cartridges were received at the Station which had been eaten by white ants in a store in Wichita, Kans. In 1921,<sup>6</sup> a colony of these

<sup>1</sup> *Camponotus herculeanus pennsylvanicus* De Geer.

<sup>2</sup> *Reculitermes flavipes* Kollar.

<sup>3</sup> Report of the Connecticut Agricultural Experiment Station for 1909, page 373.

<sup>4</sup> *Ibid.*, 1915, page 187.

<sup>5</sup> *Ibid.*, 1914, page 196.

<sup>6</sup> *Ibid.*, 1921, page 199.

insects chewed off the insulation from the telephone wires in the basement of a large office building in New Haven.

There are also records of injury to food stuffs and other stored material, to fruit, nut, shade and forest trees, to field crops, garden vegetables, vineyards, nursery stock, shrubs, flowers and greenhouse plants. Where white ants are tunneling in structural timbers, a free use of carbon disulphide as advised for the carpenter ant, is the best remedy. Probably creosote poured into the galleries afterward may have a tendency to prevent reinfestation. Some of the timbers near the ground may need replacing with cement concrete which is proof against injury.

#### WINGED ANTS AND WINGLESS ANTS

In most of our species of true ants the workers are wingless, and the males and queens have wings.

The queen breaks off her wings (or the workers do it for her) soon after mating and after the swarming flight is over. It is the workers without wings which invade our houses, run over our trees and plants, make ant hills in the lawn, and tunnel in wood. Sometimes winged ants are seen at swarming time flying in the air or resting or crawling upon objects, but by far the most striking cases occur with our common white ant.<sup>1</sup> Often late in May, brown winged males and females may be seen emerging in large numbers from a fence post, old stump or log, side of an old building or board along the edge of a tar walk. They fly through the air in swarms, mate, and migrate to new localities in this manner. A swarm will alight, the wings are broken off, and a new colony is started. We have all seen these wings upon the ground and supposed that birds or other animals had devoured the ants in a swarm, leaving only the wings, but such is not the case. The wings are broken off at a point near the body, and it is done by the ants themselves.

#### SUMMARY OF CONTROL MEASURES

Kill ants in their nests by fumigating with carbon disulphide, or with "cyanogas".

Drive them out of houses by scattering naphthalene flakes or some other repellent on shelves and floors, particularly along the runways; trap them with lard, ham, sugar, or in sponges moistened with sweetened water. If these measures are not successful, use one of the poisoned baits described on page xxviii.

On trees and plants destroy the aphids or other insects which attract ants.

<sup>1</sup> *Reculitermes flavipes* Kollar.