DEFENDING GARDENS FROM INVASION

About the blossoming time of roses a long legged beetle of yellowish brown color, called the rose chafer, or "rose bug," makes its appearance and strips bushes and vines of bossoms and foliage. The beetle is about one-third of an inch in length and may be recognized by comparison with the accompanying illustration (Fig. 1a).

These insects appear toward the middle of June in the Northern States and somewhat earlier in the South, overrunning gardens, vineyards, orchards and nurseries. The beetles disappear in about six weeks after doing a vast amount of damage.

The insects occur from Canada and Maine southward to Virginia and Tennessee and westward to Oklahoma and Colorado. It is particularly injurious in Massachusetts, Vermont, Rhode Island, New Jersey, Delaware and Ohio, and has been reported as very destructive in New York, Maryland, Pennsylvania, Virginia, West Virginia, Illinois, Indiana, Kansas, Nebraska and southern Michigan. Light sandy regions are greatly preferred by the insects as breeding grounds, and clay lands, unless near sandy soil, are seldom troubled with them.

Fig. 1. Rose chafer: (a) adult; (b) larva; (c, d) mouth parts of larva; (e) pupa; (f) injury to leaves and blossoms of grape; (a, b, c) much enlarged; (c, d) more enlarged; (b) reduced.

Food Plants and Injury.

Originally the rose chafer confined its ravages to the blossoms of the rose. Record of the destruction to grapes dates back as early as 1810. Now it is nearly omnivorous. The rose and grapevine especially suffer from its depredations, but it is almost equally destructive to fruit, shade and other trees and shrubs. In times of great abundance these insects completely destroy flowers and other ornamental plants of many sorts, even attacking berries, peas, beans, garden fruits, vegetables, corn, wheat and grasses. Blossoms, leaves and fruit are alike consumed.

In their attack upon the grape the blossoms are first devoured, then the leaves, which are completely stripped, leaving only a thin network, and later the young berries are eaten. (Figs. 2 and 3.) Whole vineyards and orchards are often devastated and the fruit crop destroyed. It is no uncommon sight to see every young apple tree covered by a sprawling, struggling mass of beetles. (Fig. 4.)

Rose Chafer Poisonous to Chickens.

F. J. Chittenden and A. L. Quaintance of the Department of Agriculture have made a careful investigation and find that the rose chafer is poisonous to chickens. Fifteen to twenty insects were sufficient to cause the death of a chick 1 week old. In the case of a 10 weeks old chicken ninety-six undigested rose chafers were counted in a post mortem examination. An extract made from 40 grams of rose chafers was injected into rabbits, which died in six minutes, and they give it as their opinion that the bodies of rose chafers contain neurotoxin, which affects the hearts of small animals.

Methods of Control.

Heavy applications of arsenate of lead, say 5 pounds to 50 gallons of either water or Bordeaux mixture, will largely protect ornamental plants that are hardy. Very thorough applications should be made on the first signs of the insects' presence, repeated as found necessary. The poison preferably should be used in Bordeaux mixture, the application of which is essential for the control of fungous diseases.

The first application of spray should be given just before the blossoms open, and if the beetles continue destructive the treatment should be repeated as soon as the blossoms have fallen.

In spraying peaches and other stone fruits the arsenical should be used in the self-boiled lime sulphur wash, or in water to which has been added lime wash made from slaking three or four pounds of good stone lime.

The beetles may also be jarred from trees and bushes over sheets saturated with kerosene, but this method is tedious and must be practised daily in the early morning or toward sundown to be effective.

Choice plants may be securely protected by a covering of netting, and when the process of bagging may profitably be employed this method should be followed. Bagging, as is well known, prevents fungous or bacterial infection, and, in addition, flowers so protected are of superior appearance and quality.

Fig. 2. Grape foliage showing injury by rose chafer.

Lure Plants.

Small gardens may be protected from the first arriving hordes of the chafers by planting about them early flowering plants that particularly attract the beetles. Spiræas, deutzias, andromeda, magnolias, blackberries and white roses are especially useful as counter attractives. The beetles swarm on the flowers of these plants in preference to other flowers and small fruits, and when thus massed in great numbers their destruction by the use of collectors or other mechanical means is greatly facilitated.

The pupal stage appears to furnish the most vulnerable period of attack and large numbers of the pupæ may be destroyed by stirring the breeding grounds at the appropriate time to a depth of three or more inches. In the latitudes of northern Ohio the most favorable time for the application of this remedy is from about May 25 to June 10. In more southern latitudes operations should be commenced earlier.

All ground which might serve as a breeding place and which it is possible so to treat should be ploughed and harrowed at the proper time in the spring. The least possible area of light sandy soil should be left in sod, only the heaviest land being used for grass.

Many weeds and wild plants, notably the oxeye daisy and sumac, are favorites of this species on which the beetles should be destroyed to prevent their spreading to cultivated land.

EUONYMOUS NOT EVONYMOUS.

Euonymous is the name given, it is recorded, by Theophrastus to a group of the staff tree family, celastraceæ. It seems now that an effort has been made to rob this celebrated Greek philosopher, a disciple of Plato and Aristotle, credited with being the parent of botany, of the honor of the name euonymous, from eu, good, and onoma, a name literally of good repute. The reason given for this name is stated in "The Gardeners and Botanists' Dictionary," by Philip Miller, edited and revised by Thomas Martyn, professor of botany in the University of Cambridge, London, 1807. "This shrub having a bad reputation as a poison."

The *National Nurseryman* accuses Prof. L. H. Bailey with attempting to make the change of name. In the last edition of Bailey's "Cyclopedia of Horticulture" the name is given as Evonymous, stating that it is often spelled Euonymous. This edition of Bailey went to press in 1914.

We find that Gray's "New Manual of Botany," edition of 1908, "rearranged and extensively revised," by Prof. Benjamin L. Robinson, professor of systematic botany, Harvard University, and Prof. Lyndon Fernald, assistant, gives evonymous instead of euonymous in the earlier editions of the same work, but we are unable to find any reason for the change.

Other recent botanies, including Andrews's, with Prof. Geddes's "Flora of the United States" still retain euonymous.

The name of a group of plants that has been in use more than 2200 years should not be changed without some very good reason. If there is any reason why euonymous should be evonymous gardeners and florists would like to know what it is.

POTS ON WINDOW SILLS.

Window boxes and pots on window sills should be secured with wires or slats nailed across the window frame so they cannot fall off. A pot plant falling only one story and hitting a person on the head may result fatally. People who are careless in keeping pots or boxes on window sills, not properly secured, are responsible in case of accident.

BAKED PUMPKIN AND PUMPKIN SOUP.

The only table use now made of pumpkins is for pumpkin pie. When properly cooked pumpkins make a very palatable dish.

The best varieties for the home garden are Small Sugar, Sugar Pie or Quaker Pie. It is not too late to sow pumpkins now—if sown at once.

One way to cook is to cut a pumpkin of medium size into large slices, peel them and remove the spongy portion. Boil for five minutes and strain. Butter a baking dish and place the boiled pieces in this, one overlapping the other; place in the oven, with pepper and salt and a layer of grated Parmesan and Swiss cheese mixed. Serve in the same dish.

Pumpkin soup is made with four or five slices of pumpkin. Remove the spongy part and cut the slices in pieces and boil for five minutes. Strain and throw into a saucepan with a lump of butter the size of an egg, a tablespoonful of sugar and salt to taste. Turn this mixture with a wooden spoon on a quick fire. In the meantime boil a quart of milk and add it slowly to the pumpkin in the saucepan. When cooked, cut several small slices of stale bread, put them in the soup tureen and pour in the soup. An extra lump of butter and a little cream will improve the soup.

SPRAYING SUGGESTIONS.

By Prof. S. P. HOLLISTER, Connecticut Agricultural College.

Fruit trees should not be sprayed when in full bloom, because the spray materials cause injury to the tender parts of the flower. In addition to this the bees and insects which aid in fertilization may be injured. Disregarding these considerations, the fruits at the time of full bloom are too small to receive much benefit from spraying.

Apples are sprayed after the petals fall for two purposes. First, to control insects, such as coddling moth, tent caterpillar and canker worm. Secondly, to control fungous diseases. For the eating insects arsenate of lead is most commonly used as a poison. From two to three pounds of the paste or from one to one and one-half pounds of the powder should be mixed with fifty gallons of water. For the control of the fungous troubles we may use either dilute lime sulphur solution, Bordeaux mixture or other commercial fungicides. The price of copper sulphate is so high as to almost prohibit the use of Bordeaux mixture this year.

By combining the arsenate of lead with the lime sulphur we have a spray material which will control both the insects and the fungous diseases. To make this mixture mix from one gallon to a gallon and a half of the lime sulphur with the water in a fifty gallon barrel. Mix the proper amount of arsenate of lead thoroughly with a little water. Add this to the liquid in the barrel. If the trees are affected by aphis, "Black Leaf 40" should be added to this mixture.

About ten days or two weeks afterward the trees should be sprayed with the same materials for the same troubles.

Great care should be taken when applying the spray to force it into the blossom end of the apples and to cover the entire surface of the small fruit as well as the foliage of the tree. Thorough work at this time should produce fruit 90 per cent. free from coddling moth at harvest time.

The pear and quince should receive the same spraying as the apple.

Spring Spraying of Peaches and Small Fruits.

There are three troubles of the peach which can be controlled by spraying:

1. Curculio, an insect which punctures the fruit and causes wormy peaches and plums.

2. Peach scab or spot. This is a fungous disease which causes dark spots, black blotches or even causes the fruit to crack open.

3. Brown rot.

The two diseases may be controlled by lime sulphur spray. Either use a very dilute commercial lime sulphur, one quart to fifty gallons of water or Scott's formula of uncooked lime sulphur. Scott's formula is prepared as follows:

Use eight pounds of sulphur and eight pounds of lime. Slake the lime and add the sulphur sifted. Allow it to slake and boil for five minutes and then cool by adding cold water. Strain this into a fifty gallon spray barrel and add water to make fifty gallons of spray material.

For the insect enemies two pounds of arsenate of lead should be added to the lime sulphur solution.

Spray just after the shucks or calyxes fall. Spray again in ten days or two weeks and once or twice more at intervals of ten days, using the poison only in the first two sprayings.

Plums and cherries may be sprayed with the same materials that are used on the peach but care should be taken not to use the unboiled lime sulphur spray when the fruit is nearly grown or it will be stained.

Do not neglect to spray the gooseberries with dilute lime sulphur and arsenate of lead for mildew and currant worm.

Forget-me-not, myosotis, should be sown now in the garden, the seedlings being transplanted to a partly shaded border, and in autumn set out where they are to flower next spring. Myosotis robusta grandiflora is a large spring flowering variety, with intense blue flowers, growing nearly ten inches high. Sempervivums is an ever blooming variety of clear blue flowers, flowering from May until autumn. This variety is good for forcing for cut flowers in winter. Dissitiflora is a dwarf variety especially desirable for planting among spring flowering bulbs. Palustris is the true forget-me-not, strong growing plants with beautiful clear blue flowers.

Fig. 4. Young apple showing injury by rose chafer.

Montbretias are bright summer flowering bulbs. They are not generally known or would be more largely planted. Set in clumps about three inches apart and protect during winter with a heavy covering of leaves, and a permanent bed will result. They are comparatively cheap, about 30 cents a dozen.

Fig. 3. Grape cluster showing destruction of young berries through feeding of rose chafer.

Montbretias resemble gladioli, but are more slender and graceful in habit, the flower stems being arched and branching. The bulbs, too, are similar to gladioli, but smaller.

Where the soil dries out quickly and bakes hard it is a pretty sure indication of shallow tillage. Many gardeners do not understand the value of deep tillage. Soil thoroughly worked a foot deep is considered very deep by many and this is far better than gardens worked only eight inches deep. Probably the average depth of the soil in gardens in the United States is less than twelve inches. Very few gardens have soil well enriched and worked to a depth of two feet, but the best results, wet seasons and dry, will be had from good deep, rich soil and two feet is none too deep for the particular gardener.

Soil for the final potting of chrysanthemums should be prepared long in advance and stored in a dry place until wanted. Old sod turned upside down with layers of manure between the sod, when rotted, makes an ideal soil. Mix a little sand with this at potting time, to make the soil open and porous.

Nine inch pots are right for most varieties. Use a liberal supply of broken crocks at the bottom for drainage. Commence potting before the plants become too pot bound. Pot firmly and remove to summer quarters.

Pick off all flowers from strawberry plants planted this spring.

Endive seed sown in the open ground now will produce plants for autumn, although it is a little late.

Commercial humus is excellent for sweet peas. Two rows planted side by side, one with manure mixed in the trench, and the other with manure and a liberal supply of humus, shows a decided improvement in the plants where the humus was used, the plants making a much more vigorous growth.

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POULTRY DIRECTORY

INCUBATION HAS MANY ADVANTAGES

Loss of Hen's Time From Laying House Means Several Dozen Eggs.

EFFICIENT MACHINES

By ROBERT ARMSTRONG.

The hen will continue to be the means of hatching and rearing chickens for a large number of poultry keepers, especially those who have small flocks or those who have not the time or inclination to adopt artificial brooding methods, despite the fact that the natural way has several disadvantages, mainly the difficulty of securing broody hens early enough to produce fall layers, especially if the winter is severe, and the loss of the hen's time from the laying house, wherein she would probably have laid a couple of dozen eggs. To offset this loss, however, there is no gainsaying that the natural method has its advantages.

All things considered, the hen is a better brooder than man has yet invented, which is to be expected, and the same may be said of her as an incubator, although the relative merits of artificial and natural incubation do not seem to be as important as the brooding. In other words, incubators have reached a state of perfection whereby their efficiency compares very favorably with the best efforts of Mistress Biddy. We are better able to imitate hatching, perhaps, than brooding, because in the first process we are better able to control our "charge." The egg is incapable of voluntary motion; it cannot stray from the conditions best suited to its development, neither has it a propensity for immoderateness. The chick, on the contrary, is guilty of many indiscretions and sometimes he is incorrigible. Frequently our greatest efforts are unable to frustrate an evil, and, what is more hopeless, we have not the gift of being able to divine the strange convolutions of the chick's mind.

Strong, vigorous chicks are not always obtained from properly incubated eggs, whether the hatching is done artificially or naturally. A successful hatch depends on more than the methods of incubation; it goes further back, to the selection of strong, fully matured breeding stock, well mated and properly fed and housed. The novice therefore is often ready to condemn his incubator when a few unhatched eggs are found on the trays after a hatch is completed, when in reality the quality of the eggs is entirely at fault. Moreover, the eggs usually set in a machine are a collection from an entire flock and on a much larger scale than those set under a hen. The hen very often steals her nest and sits on none but her own eggs. We do not bother at finding two or three unhatched eggs under a hen, whereas the same percentage of unhatched eggs in an incubator seems unsatisfactory and wasteful.

Assuming then that the poultry keeper wishes to have his chicks brooded by hens, he would do well to consider combining the virtues of the incubator as a time saver. Briefly the scheme is this: Place the eggs in a machine for the first two weeks and after they have been tested for fertility and dead germs (are the known to be fertile eggs to the hens for the remaining week of incubation. In many cases they will hatch every egg. This method not only saves two weeks of the hen's time, an item of vital importance on the egg farm, but it also enables the poultry keeper to commence his hatching two weeks earlier than if he first waited for the hens to become broody. Furthermore, it saves the loss of time incurred by the hens sitting on infertile eggs or those which are too weak to develop.

When the eggs have been kept in the incubator until the eighteenth and nineteenth day the results in chicks hatched under hens by this plan have been very satisfactory. Generally the hatches secured from three hens make comfortable broods for two hens, whereupon the remaining broody hen is made to sit over again on another lot of "fertiles" from the incubator.

It is not necessary to start with the incubator filled with eggs. They may be placed in the machine in units of about twenty, or whatever number is thought will produce the correct units for the hens after the infertile eggs and dead germs have been removed. Each unit, of course, should be marked to distinguish it from the others. This practice offers an advantage to the poultryman having a small flock, inasmuch as he can incubate a large number of eggs, starting them when they are fresh, without holding them until he has enough to fill up the machine.

Still another advantage of this method: It is conceded that the greatest losses in artificial incubation are attributed to chicks which are almost fully developed dying in the shell. The correct amount of moisture, evaporation and ventilation are all essential to successful incubation, and they are all very closely allied. A circulation of fresh air is necessary or the embryo would be without sufficient oxygen. On the other hand excessive ventilation will cause undue evaporation unless the moisture is restored in some way. These elements are important at the beginning of a hatch, but they seem to take care of themselves more or less automatically for the first week or ten days; in the last week, and especially the last few days, they should receive very careful attention.

In the natural process of incubation the hen's body provides the correct conditions. Air circulates about the eggs through the hen's feathers, yet the heat from her body throws off sufficient moisture to prevent excessive evaporation. Moreover, this moisture is charged with carbon dioxide, which causes the shell of the egg to disintegrate. Oxygen is needed in abundance, but the value of carbonic acid must not be overlooked. When chicks fully formed are found dead in the shell, it is pretty safe to assume they were unable to break through because the shell had not been sufficiently disintegrated, and in consequence they died from exhaustion. Thus, it will be seen, a combination of the virtues of artificial and natural incubation is worthy of one's consideration.

It is customary to set hens in out of the way corners, sometimes in the hen house, or in boxes or barrels scattered about the outbuildings and barnyard, paying little heed to the hen's ideas in the matter or to the safety of her brood. This practice is wrong for many reasons. The sitting hen is entitled to just as much consideration as the brood mare or cow, and it is the only way to obtain the full benefit of her efficiency.

It is a mistake to set hens in the regular poultry house, for they are certain to be annoyed by the other layers. The laying hens regard sitters with contempt; they will lay in the sitting hen's nest, fight and crowd her off the nest, very often breaking her eggs and seriously endangering the safety of the hatch. Moreover, the nests in the poultry house are very apt to be troubled with vermin, than which nothing is a greater handicap to a young brood of chicks. The sitting hen should be thoroughly dusted with a lice expelling powder and given a clean fresh nest to herself.

Remote corners in the barn and under sheds are unsuitable for the sitting hen. Such places frequently abound in rats, which are a constant menace, and they are apt to be visited by an inquisitive cat or dog. Then, too, in having the nests scattered in this way, the hens are troublesome to feed and water; they may be overlooked and neglected, in which case they will neglect their nests. Furthermore, when the hatch comes off the hen and her brood will have to be removed to an outdoor coop, and this changing her quarters is seldom accomplished without difficulties.

Under natural conditions the hen builds her nest on the ground, where the moisture from the soil will assist in hatching; she selects a secluded spot, protected from storms and other annoyances, whence she can go to and fro for exercise, feed and water without fear of having her nest molested. The poultry raiser will do well to imitate these conditions, not alone for the comfort and security of the fowls, but for the convenience of the attendant as well.

A special coop for the accommodation of the sitting hens may be built at very little expense or trouble. It need be but a shed-like structure, 24 inches high in front, 36 inches deep and about 6 feet long. The interior is divided into five nests or pens, the partitions running the narrow way of the coop, and having a small door at the front of each pen. No bottom is required to the coop, unless desired, for it may rest on a well-drained spot of ground and the nests built upon the earth. The rear of the pen is the nest proper, while the front portion may be used for placing feed and water before the hen. The roof of the coop should be hinged, which will greatly facilitate the attendant's work. A wire covered run, about 10 feet long, and divided into five narrow yards the same width as the nests, is made in a separate section from the coop. These are for use when the broods are newly hatched, when they should be confined more or less, after which the yard may be removed and the hens given greater freedom.

A coop of this kind may be built from odds and ends of lumber about the place, or from packing box material, and the roof is the only part that need be made absolutely waterlight. This may be covered with tar paper or, for a permanent job, patent roofing should be used.

The advantages of the coop are numerous—better hatches, less mortality among the chicks, freedom from vermin and the minimum amount of labor in caring for the hens—everything is centralized.

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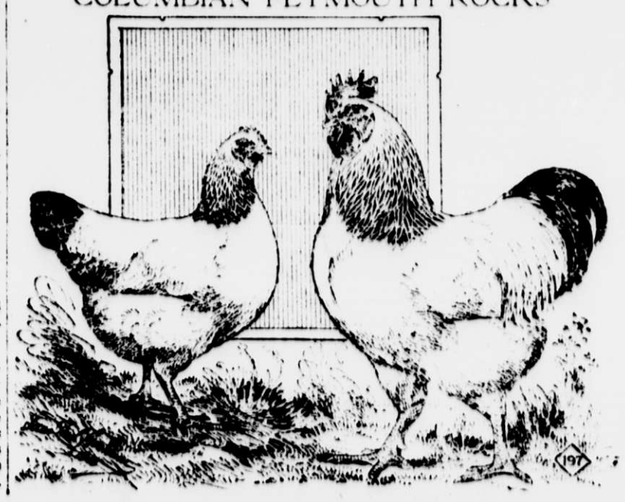
In color these fowls are marked like the Light Brahma, the cock having the male being striped with an intense black. The light feathers are black also the tail, and the female has the same coloration. The mark of beauty for which the fanciers strive is to have the back white and the small feathers covering the base of the comb a rich black, finely edged with silvery white.

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