

hoppers, generally at the base of the wings. These have only six legs, and it has been found out that they are merely the larval stage of what was taken to be quite another insect, *Trombidium locust-arum*, which has eight legs and was known also to be a redoubtable enemy of the locust tribe, feeding on their eggs. In addition to the above, good service was done by one of the Tachina flies, the very active females of which, having found a locust, dash down and, hardly resting a second, lay an egg on some part of its body, from which in time a maggot emerges which eats its way into the grasshopper's body, living there at the expense of its host and only leaving its temporary lodging when it has completed its growth. It then forces its way out between two of the rings of the abdomen and enters the earth a short way, where it finishes its transformations, emerging as a two-winged fly either the same autumn or the following spring. Other parasites which helped to a marked degree in reducing the numbers of grasshoppers this season were a fungus known as *Entomophthora calopteni* and the curious hair worms *Gordius* and *Mermis*. The above fungus is the active agent of an infectious and epidemic disease, which when prevalent destroys vast numbers of these marauders, leaving the mummified and stiffened remains of its victims hanging for some time after they are dead on stems of grains and other plants. The hair worms are curious creatures, varying from six inches to a foot in length and about one twenty-fifth of an inch in diameter at the widest part. These creatures are usually spoken of as "hair snakes," although they have no relation whatever with the true snakes, which belong to the Vertebrata, or animals with a backbone. They are intestinal worms, classed among the Articulata, or ringed animals. There are two kinds of these parasites: dark brown ones belonging to the genus *Gordius*, and white ones of another genus called *Mermis*. They have a curious life history. The eggs are laid in or near water, and, after hatching, the young worms attach themselves to insects, into the bodies of which they penetrate and live as parasites. They are particularly abundant in some seasons, as during the past one, inside different kinds of grasshoppers, where they are coiled up in a surprisingly small space, for there are sometimes four or five hair worms, some a foot in length, in a single insect. They may frequently be seen when a grasshopper has been trodden upon or after they leave the bodies of their hosts. Both on the ground and swimming in water they have very much the action of a snake. They are perfectly harmless, and indeed have no true mouths with which they could bite. They are sometimes supposed by ignorant people to be horse hairs which have come to life. This, of course, is nonsense, but it is generally believed by people who have not studied natural history.

The gray blister beetles (*Epicauta cinerea*), which have been troublesome in potatoes in some districts are also parasites during their larval stage on the eggs of grasshoppers, and this may be remembered to their credit when they are eating up a farmer's potatoes and beans.

The army worm has occurred in injurious numbers in almost every part of Ontario, and although no complaint of serious injury has been received from Manitoba, Mr. H. W. O. Boger, of Brandon, found the moths in large numbers when collecting other insects "at sugar" in the autumn. This pest was fully treated of by Prof. Pantan in the FARMER'S ADVOCATE for August the 1st, and it is unnecessary to add anything further now.

ROOT CROPS.—The clover cutworm (*Mamestra trifolii*) is the only unusual pest which has this year committed serious ravages on root crops. The moth is a common insect in collections, but it is rarely that the caterpillars are sufficiently abundant to be noticed by farmers. The favorite food of this species is probably peas, clover, and other members of the pea family, but it feeds upon a variety of plants, and this year, as well as in 1888, the year of the last recorded outbreak, did much harm in mangel and turnip fields, particularly those near pea fields. During August it was reported from localities near Rice Lake, Ontario, and several fields of peas and turnips were badly affected. The only remedy which was effective was dusting the crop with a very strong mixture of Paris green and plaster (1 pound in 50 of the diluent.)

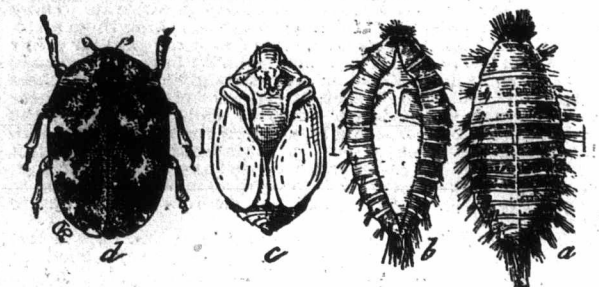
Far less abundant, but much more widely distributed over the Dominion and frequently complained of, was the zebra caterpillar (*Mamestra picta*), a showy, velvety black insect lined with golden-yellow and wavy white lines. This species is a very general feeder, but is most often destructive to cabbages, peas, potatoes, and clover. The eggs are laid in large masses, and for a long time the young caterpillars cluster together when not actually feeding. On many crops hand picking is a practical remedy at this period, but later the strongest poisons must be used, as they are very difficult to destroy. The perfect insect is a rather handsome purplish-brown moth with white underwings, expanding about an inch and a half.

FRUITS.—The fruit crop of Canada, particularly of apples, has this year been enormous, and there has been little complaint of insect injuries, compared with other years. Those who have sprayed systematically have, even this season, obtained marked results, which would of course be much more noticeable in a year of less abundant fruitage. Two very interesting analogous injuries to apples have been studied: one in British Columbia by the caterpillar of a small moth, the apple fruit miner, which burrows small tunnels all through

the fleshy part of the apple, entirely spoiling it for the market; the other attack is that of the true apple maggot (*Trypeta pomonella*), which has been very abundant and destructive for some years in the Northeastern States, but has never previously been recorded in Canada as attacking fruit crops. This, too, is rather remarkable, because the fly is by no means uncommon here and is the perfect state of the maggots so well known to boys who eat the haws from the different kinds of our native hawthorns. These two injuries are almost identical in appearance, although caused by quite different insects. Not enough is yet known about the habits of the moth of the apple fruit miner, as, for instance, when and where the eggs are laid, for us to make any definite recommendation as to a remedy; but for the apple maggot, the prompt feeding to stock or destruction of all infested fruit, and penning up poultry beneath the trees so that the maggots may be eaten by the hens as soon as they leave the apples to enter the ground, where they pass the winter, are the measures most relied upon.

The Carpet Beetle or Buffalo Moth.

Housekeepers who have had any experience with the carpet beetle (*Anthrenus scrophulariae*) will understand it to be one of the most destructive and pernicious household insect pests. All the year round in well-heated houses, but more frequently in summer and fall, an active brown larva, a quarter of an inch or less in length and clothed with stiff brown hairs, feeds upon carpets or woolen goods, working in a hidden manner from the under surface, sometimes making irregular holes, but more frequently following the lines of a floor crack and cutting long slits in the carpet.



Anthrenus scrophulariae: a—larva, dorsal view; b—pupa within larval skin; c—pupa, ventral view; d—adult. All enlarged.

The adult insect is a small broad-oval beetle about three-sixteenths of an inch long; black in color, but is covered with exceedingly minute scales, which give it a marbled black and white appearance. It also has a red stripe down the middle of the back, widening into projections at three intervals. When disturbed it feigns death by folding up its legs and antennae. As a general thing the beetles begin to appear in the fall and continue to issue in heated houses throughout the winter and following spring. Soon after issuing they pair, and the females lay their eggs in convenient spots. The eggs hatch, under favorable conditions, in a few days, and the larvae, with plenty of food, develop quite rapidly. When the larva reaches full growth the yellowish pupa is formed within the last larval skin, which eventually splits down the back and reveals the pupa, from which the beetle emerges later. The beetles are day fliers, and when not engaged in egg-laying are attracted to the light, and may often be found upon the window sills or panes.

Remedies.—There is no easy way to keep the carpet beetle in check. When once it has taken possession of a house nothing but the most thorough and long-continued measures will eradicate it. The annual or semiannual housecleaning, as it is usually performed, has little or no effect in eradicating it. The best time to undertake housecleaning with a view to the extermination of the carpet beetle is in midsummer. The rooms should be attended to, one or two at a time. The carpets should be taken up, thoroughly beaten, and sprayed out of doors with benzine and allowed to air several hours. The rooms themselves should be thoroughly swept and dusted, the floors washed down with hot water, the cracks carefully cleaned out, and kerosene or benzine poured into the cracks and sprayed under the base boards. The extreme inflammability of benzine, or even its vapor when confined, should be remembered and fire carefully guarded against. Before re-laying the carpets, tarred roofing paper should be laid upon the floor, at least around the edges, but preferably over the entire surface; and when the carpet is re-laid, it is well to tack it down rather lightly so that it can be occasionally lifted at the edges and examined for the presence of the insect. Later in the season, if such an examination shows the insect to have made its appearance, a good remedy consists in laying a damp cloth smoothly over the suspected spot of the carpet and ironing it with a hot iron. The steam thus generated will pass through the carpet and kill the insects immediately beneath it. The above is recommended by L. O. Howard in a treatise on household insects issued by the U. S. Department of Agriculture. A treatment found satisfactory by a friend of ours, after many failures with various recommended remedies, was to spray or rub a mixture of turpentine and corrosive sublimate about the edges of the floor or other suspected locations. A more general adoption of the rug or of the square of carpet, which may at all times be readily examined and treated if found necessary, is suggested.



THE HOUSE ON THE MARSH.

A Romance.

BY FLORENCE WARDEN.

(Continued from page 537.)

"You like Mr. Rayner, you say! Then I suppose our sympathies must be as far apart as the poles. For he seems to me the most intolerable snob that ever existed, and so selfish and heartless as to be almost outside the pale of humanity."

"You surely cannot judge him so well as I, a member of his household," said I coolly. "Whether he is a snob or not I cannot tell, because I don't quite know what it means. But I do know that he is kind to his wife and his children and servants and dependents, and—"

"Kind to his wife, do you say? I should not call it kindness to shut up my wife in the darkest, dampest corner of a dark, damp house, until she is as spiritless and silent as a specter, and then invent absurd lies to account for the very natural change in her looks and spirits."

"What do you mean? What lies?"

"The stories he told you about her when you first came. He would never have tried them on any one but an unsuspecting girl, and of course he never thought you would repeat them to me."

"I wish I hadn't!" said I indignantly. "But you cannot judge a man fairly until you have seen him continually in his own home. I have seen Mr. Rayner among his family; I have played for him, walked with him, had long talks with him; and I must surely know him better than you, who have only an ordinary outside acquaintance with him."

Mr. Reade drew himself up very stiffly, and the color rushed to his forehead. He was getting really angry.

"No doubt, Miss Christie, you know him a great deal better than I do. I have never played for him, and I have not found either talks or walks with him particularly delightful. But then I dare say he did not try so hard to be agreeable to me as he did to you."

He said this in a sneering tone, which brought the hot blood to my face. I tried to answer, but my voice would not come. I turned away sharply, and left him with an agony of anger and pain at my heart which would have made him remorseful indeed if he could have guessed what his words had inflicted. As it was, he followed me a few steps down the drive with apologies to which I was too angry and too much hurt to listen.

"Don't speak to me now," I said—"I can't hear it," and, turning off rapidly into a side-path, I left him, and fled away through the alleys into the house.

Luckily I managed to keep back tears, so that I could return to the drawing-room with the flowers I had gathered before they began to wonder why I had been so long. Mrs. Rayner told me that the note from Mrs. Mannors which Mr. Reade had brought was to ask that the articles we were preparing for the "sale"—a sort of bazaar on a small scale which was one of the attractions of the annual school treat—should be sent in to her within a week, as they had to be ticketed and arranged before the sale-day arrived, and whether Miss Christie would be so kind as to give her services at the stall; and, if so, whether she would call upon Mrs. Mannors within the next few days to settle what should be her share of the work. I was delighted at the thought of this little excitement, and, although Mr. Rayner warned me that I should have nothing nicer to do than to see the pretty trifles I had worked fingered by dirty old women who would not buy them, and to have hot tea poured over me by clumsy children if I helped at the feast, I would not be frightened by the prospect.

That evening I debated with myself whether it was not too damp and swampy still for me to go and peep at my nest and see if the water had subsided and left the top of the bricks dry. I chose afterward to think that it was some supernatural instinct which led me to decide that I would put on my goloshes and go.

When I got there, I found on the bough which formed my seat a basket of Gloire de Dijon roses, and the stalk of the uppermost one was stuck through a little note. I never doubted those roses were for me; I only wondered who had put them there. I looked searchingly around me in all directions before I took up the rose which carried the note and carefully slipped it off. It contained these words—

"For Miss Christie, with the sincere apologies of some one who would not willingly have offended her for the whole world."

I did not know the writing but I knew whom it was from. I think, if I had been quite sure that no one could have seen me, I should have raised the note to my lips, I was so happy. But, though I could see no one, the fact of the basket arriving so surely at my secret haunt seemed to argue the existence of a supernatural agency in dealing with which one could not be too discreet; so I only put the note into my pocket and returned to the house with my flowers. I put them in water as soon as I had sneaked up-stairs to my room with them.

The supernatural agency could not follow me there, so I slept that night with the note under my pillow.

CHAPTER VIII.

"You are getting pale again, my dear child," said Mr. Rayner to me the very next morning—he met me, at the foot of the stairs, dressed for my walk with Haidee. "We must find some means of bringing those most becoming roses back to your cheeks again. You work too hard at those self-imposed evening tasks, I am afraid."

"Oh, no, indeed I don't, Mr. Rayner!"

"Ah, then you want change of air! You will think me a magician if I procure you a change of air without leaving this house, won't you, Miss Christie? Yet I think I can manage it. You must give me a few days to look about for my wand, and then, hey, presto, the thing will be done!"

I laughed at these promises, looking upon them as the lightest of jests; but the very next day I met a workman upon the staircase, and Mr. Rayner asked me mysteriously at dinner whether I had seen his familiar spirit about, adding that the spirit wore a paper cap and a dirty artisan's suit, and smelt of beer. That spirit pervaded the house for two days. I met him in the garden holding very unspirited converse with Jane; I met him in my room taking the measure of my bedstead; I met him in the passage carrying what looked like thin sheets of tin and rolls of wall-paper, and I heard sounds of heavy boots in the turret above my room. Then I saw no more of him; but still there were unaccustomed sounds over my head, and I met sometimes Jane and sometimes Sarah coming out of a door which I had never known unlocked before, but which I now discovered led to a narrow staircase that I guessed was the way to the turret.

On the fourth day, when I went to my room to dress for tea, I found it all dismantled, the bed and most of the furniture gone, and little Jane pulling down my books from their shelf and enjoying my discomfiture with delighted giggles.

"What does this mean, Jane? I can't sleep on the floor; and what are you doing with my books?" I cried in one breath.