

Packard. The former, in his ninth Missouri report, adds to our previous knowledge of the history of *Caloptenus* an account of the method by which the young escape from the egg, reports additional parasites, and gives the result of some valuable experiments upon the vitality of the eggs. He subjected the eggs to alternate freezing and thawing, to different degrees of moisture, to the open air, and to burial at various depths. By his experiments it appears that neither moisture nor sudden alternations of freezing and thawing have much injurious effect upon the eggs, that simple frost is actually beneficial, but that exposure to the free air is decidedly injurious; so that thorough harrowing will prove an effectual means of destruction. Mr. Riley also gives a very full history of the locust in 1876.

Dr. Packard gives a similar history for 1876 and general histories of the ravages of the locust in Colorado and Utah. In connection with the theory of their enfeeblement in moist regions, he gives some curious experiments, made by Prof. Samuel Aughey, on the comparative strength of the hind legs of individuals from Nebraska and Utah, clearly to the advantage of the natives of the latter State. He also discusses the relation of their migrations to meteorological phenomena, and publishes some interesting tables furnished for the purpose by the Weather Bureau. He adds interesting notes on the habits of the locust, and describes the insects from life, at every stage, and shows that it has three larval and two pupal stages.

#### A FATHERLESS AND MOTHERLESS RACE.

A STRANGE INSECT—THE BASKET CARRIER, OR HOUSE-BUILDER CATERPILLAR.

By WILLIAM H. GIBSON, New York.

ABOUT twelve years ago I discovered hanging from the branches of some larch or bald cypress trees in front of my house in Brooklyn some queer little drooping cases or cocoons. It was in the winter time and the trees were thinly clothed with foliage, disclosing immense numbers of the cocoons which had previously escaped my eye. I am an enthusiast on all subjects of natural history, and at that time, although only a boy of fifteen years, I was a continual student of the subject of insects, and these little cocoons exciting my curiosity and being easily accessible, I eagerly gathered a large number of them. I placed them in a box and began anxiously to look forward to the coming spring, when the little moths would appear from the cases and furnish another addition to my collection. The cocoons were about an inch and a half or two inches long, of a gray color, and were covered with little sticks or stiff leaves of the larch, arranged lengthwise up and down. Each was suspended to a small branch of the tree by a silken loop possessing considerable strength. My first impulse was to open one of the cocoons to see the "chrysalis." I took a pair of scissors and cut up the entire length of the side of one of the cocoons. It disclosed a quantity of loose floss silk and a cavity, but no chrysalis! and the only indication of the existence of its former inhabitant was a little speck of dried up skin, with the shell of a caterpillar's head attached. This struck me as very strange, and led me to make another trial. The second resulted like the first, the third ditto, and my countenance fell. I know it did, for I felt a keen disappointment after all my enthusiasm over the pretty moths I was going to get from them. With a determination to "go through the whole pile," I proceeded to open the fourth, and during the process I felt something hard in the interior. There was a sense of relief that I shall never forget as I carefully pulled open the fissure and beheld a shiny brown chrysalis within. It was easily coaxed out with a little shaking, and then came a second disappointment.

I remember how I was puzzled at the appearance of this queer chrysalis. On close examination it appeared more like a hard shelled caterpillar than a pupa. The usual formations observable in ordinary chrysalids, of semblances of legs, wings, etc., folded about the body, were utterly wanting in the object before me, and it appeared merely like segment after segment of body from one end to the other, and what I supposed was the head extremity seemed furnished with about six little dried up prolegs like those of a caterpillar. On touching this extremity it seemed to crackle, and on breaking off a little piece of the shell I observed some yellow fuzz in the interior. Ah! perhaps the moth is inside, I thought, and with great care I made a larger opening—fuzz! more fuzz!! and fuzz!!! was all that rewarded my investigations, and I came to the conclusion that the moth must have escaped and left all of his feathers behind. Determined to empty the case and see, I blew sharply into the opening. The air was filled with the powdery feathers which were thus expelled, and a still further examination of the shell disclosed—what next? There certainly was something in there! It evidently was not a moth. I eagerly broke the case. Another surprise! Two-thirds of the entire length of the shell was packed full of—nothing but eggs! in a solid mass. I remember cherishing a sense of pity for such an outlandish kind of creature as this seemed to be. "Some of the caterpillars stayed in their warm homes in the hot summer weather and left them empty for some mysterious reason in the winter; while others concluded to remain and content themselves with the ignominious fate of turning into a mass of eggs and fuzz!" Thus I soliloquized; and after satisfying myself that the entire lot of cocoons were either utterly "bankrupt" or else mere "egg baskets," I put them away with the thought that scientific investigation in this branch at all events was a "dismal failure."

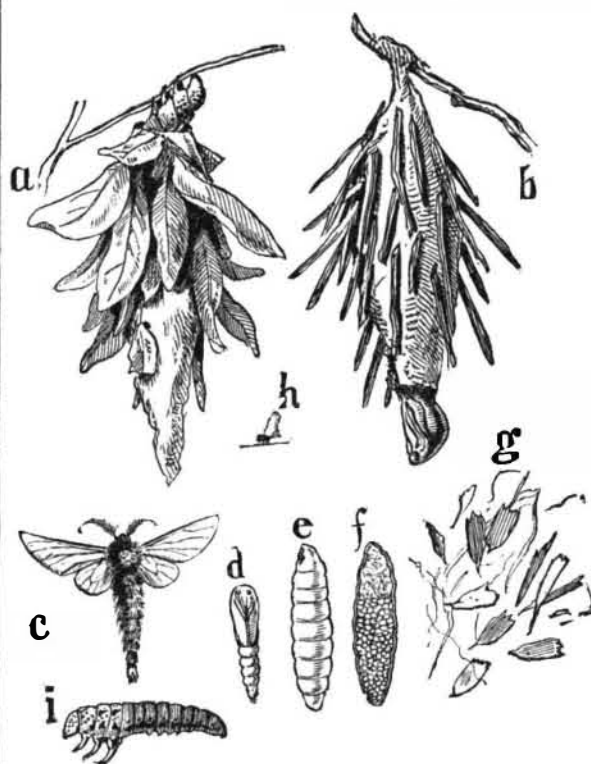
On turning the matter over in my mind I concluded to study the thing further. I procured more of the cocoons and placed them in a box. The question now was, will those miserable eggs hatch? and if so, what manner of beast will come out of them? I was prepared for anything. If they had taken root and sprouted into larch trees I don't know as I would have been much surprised. I kept them, and in the following June, on paying a visit to the box, I was confronted with a most singular and laughable spectacle. This, then, was the progeny of these egg-chrysalids! All over the cover and sides of the box, the mantelpiece on which it rested, the walls and ceiling, dangling in festoons from different parts of the same, were thousands and thousands of little party-colored animated specks—now rolling over on the cover of the box, now standing upright, and again twisting and dangling from a microscopic web, wriggling and turning all sorts of queer antics in utter confusion. It was the strangest sight I ever beheld, and as quick as my surprise was over I essayed a closer acquaintance. The small specks consisted of little cases or baskets the eighth part of an inch in length, each of which was occupied by a lively little tenant, which on being pulled out of his house showed himself to be a tiny black caterpillar, with a very intellectual head, this portion being about a third of the size of the entire creature. The interior of the box was

literally alive with the little fellows, and as I examined more closely I noticed a marked difference in the color of their various diminutive cases. Some were pure white, others were buff colored; some were party-colored, and one was red, white, and blue. This little individual appealed to my patriotic sentiment, and I took him to the window to get a closer look at his domicile.

Until this moment it had not occurred to me to examine into the material of their tiny baskets. I went back to the box. I had previously noticed a mottled appearance in its interior, but it had not particularly interested me. It now became a matter of more significance. The box was made of common straw board covered with white paper, and at its upper edge, inside, there were attached two loose pieces of blue paper, which formerly covered the articles packed in the interior. The white paper had been worn through by the myriad pairs of little teeth, and with the fiber thus obtained, and by the aid of the silk web of which the caterpillars seemed to have an inexhaustible supply, the countless numbers of baskets had been made. The mottled effect in the interior of the box was caused by the yellow straw board appearing in spots where the outer paper had been gnawed away.

This yellow board had again been utilized by several of the caterpillars who preferred more highly colored houses, and the blue paper was riddled with holes by the immense demand made upon it for building material. Near by, on the mantel, there was a pile of books; notable among them was an old leather covered volume long since past its better days. It was an old account book, and from its worn pages there protruded the end of an aged red blotter. The soft yielding nature of the paper made it very popular among the little architects, and many of them sported conspicuously gaudy apartments. It was from this blotting paper that the patriotic specimen above alluded to obtained the red material, the white and the blue portion having been built in the interior of the box. The buff color of the leather had been also largely employed, as well as some green worsted from a little mat on which the books were resting. Altogether it made a most amusing spectacle, and it is one which I have since enjoyed many times.

My next course was to transport the tiny creatures to the larch tree, where they could obtain their food. I did so with a determination to watch them in progress of growth.



THE BASKET CARRIER CATERPILLAR.

And my observation was rewarded. As the caterpillar increased in size, he widened the open end of his case, and ornamented its exterior with bits of sticks. At first it was light in proportion to his strength, and he traveled around with it in an upright position, using his six prolegs only in locomotion. As he increased in size he was satisfied to drag it along after him, and when alarmed he would draw the opening firmly up against the branch upon which he was crawling, and thus completely close the case.

I watched the caterpillars closely until the autumn, at which time they were full grown. They were brownish in color, an inch in length, smooth, and were provided with minute hooks at the extremity of the body, which afforded a firm grasp of the silky lining of the case. The caterpillar never leaves the case, and will often submit to being pulled asunder before loosening its hold on the interior.

As the full growth of the caterpillars approached I became enthusiastic.

There was a problem to solve, and I had set my heart on solving it. These insects were true caterpillars, unless I was woefully misled by my authorities on the subject. And if they were caterpillars, there must be a transformation into some species of perfect lepidopterous insect.

I remembered the empty cases of the winter previous, and in order to solve that mystery I watched the cocoons until the caterpillars were full grown, and then captured a hundred or more, each with its occupant. I placed them in a box. They crawled about for a few days, and finally closed up the opening of the cocoons and all was quiet. Occasionally I would open one of the cases, only to find the caterpillar in a hunched up state of indolence, till at length I discovered a chrysalis, a true chrysalis, with all the markings of the wings and legs, etc. It was long and slender, and very lively. I put it back in its case, closed the box and waited for developments. In about three weeks' time, more or less, I went to the box one morning, and was greeted with a buzzing noise; no sooner was the cover lifted than out flew—a beautiful butterfly! Oh no!—a miserable little black thing, that went buzzing around, seeming to have no greater ambition in life than to go bumping his head against everything in his reach. I remember the sense of disgust which crept over me at the result of all my careful research. I had looked for a butterfly glowing with all the colors of the rainbow. It was to have a grand central point in my

collection, and I had lain awake nights thinking about it. And now the chrysalis from which I had such exalted hopes had given birth to a miserable little "fly bug." I struck the "buzzing bumper" with a towel, and took a look at him—yes, he really was a moth after all, but he looked more like a fly or fuzzy bee. His body was remarkably long and slender, and he was wonderfully lively with his tail. His wings were perfectly transparent, like those of a fly, and his head was decorated with two pretty feathered antennae. I pinched him "under the fifth rib" and stuck a pin through his thorax, and went back to the box. Here I found one or two more of the moths clinging to the paper inside, and my attention was attracted to many of the cocoons by the appearance of a chrysalis protruding from the opening. This then explained the "empty cases" of the year previous. Just before the moth escapes this chrysalis works its way through the lower end of the cocoon, and afterward falls out altogether.

I had collected them in this condition. Several of the moths appeared afterward, all alike, and all males. In vain did I watch for a female, and in vain have I watched for a female specimen of this moth in the many years which have since elapsed.

For twelve successive years I have carefully studied this curious insect. I have collected hundreds of the caterpillars and cocoons. I have watched the caterpillars from the egg to the full growth, and have kept the cocoons winter after winter with the above result. I have ransacked libraries in the hope of finding some information on the subject from a reliable authority, but to no purpose, those accounts which are given seem utterly to ignore the singular features of the reproduction of the insects and fertilization of the eggs.

Harris' "Insects Injurious to Vegetation," of a copy of which I was the happy recipient about the time of my discovery of these cocoons, thus speaks of an insect which is closely allied to the foregoing:

"The moths, of which there are several kinds produced by the sack-bearing caterpillar, differ very much from each other, but as they all agree in their habits and general appearance while in the caterpillar form, they are brought together in one family called *Psychadae*, the Psychians, from *Psyche*, a genus belonging to it. The Germans give these insects a more characteristic name, that of *Sackträger*, that is, sack bearer, and Hübner called them *Canephora*, or basket carriers, because the cases of some of them are made of little sticks somewhat like a wicker basket.

"The cases of the insects belonging to the European genus *Psyche* are covered with small leaves, bits of grass or of sticks placed lengthwise on them. The chrysalis of the male *Psyche* pushes itself half way out of the case when about to set for the moth; the female never leaves its cocoon, is not provided with wings, and its antennae and legs are very short.

"\* \* \* The cases of *Oiketicus*, another and much larger kind of sack bearer, inhabiting the West Indies and South America, are covered with pieces of leaves and of sticks, arranged either longitudinally or transversely. The cases of some of the females measure four or five inches in length. Some which I received from Cuba were covered with little bits of sticks about a quarter of an inch long, arranged transversely, and the cases were hung by a thick silken loop or ring to a twig; the lower end of these cases was filled with a large quantity of loose and very soft brownish floss silk, which completely closed the orifice within. \* \* \* The female has neither wings, antennae nor legs, and is said to remain always within its cocoon. Some years ago a case or cocoon of an *Oiketicus*, which was found on Long Island, was presented to me. It was smaller than the West Indian specimens, measuring only an inch and a half without its loop, and was covered with a few little sticks longitudinally arranged. It contained a female chrysalis, with the remains of a caterpillar. In Philadelphia and the vicinity cases of a similar kind are very common on many of the trees, particularly on the arbor vitae, larch and hemlock, which are often very much injured by the insects inhabiting them. These are there popularly called drop worms and basket worms."

This last mentioned variety is evidently the identical species which was the subject of my investigations, and I would call the reader's attention to the phrase, "It contained a female chrysalis." Doubtless Mr. Harris broke open the shell and found the eggs, which I have described. He describes no female moth. In the instance of the European species he describes a female that "never leaves its cocoon," and in the *Oiketicus* of the West Indies "the female has neither wings, antennae nor legs, and is said to remain always within its cocoon."

This West Indian species is further described in "Wood's Natural History."

"As soon as the larva is hatched from the egg it sets to work building its habitation, and even before it begins to feed, this industrious insect begins to work. When the creature is small and the house of no great weight, it is carried nearly upright, but when it attains size and consequent weight it lies flat and is dragged along in that attitude. The entrance to this curious habitation is so made that the sides can be drawn together, and whenever the creature feels alarmed it pulls its cords and so secures itself from foes.

"In this domicile the transformations take place and from its aperture the male insect emerges when it has assumed its perfect form, and takes to flight. But the female behaves in a very different manner. According to the ancient maxim she stays at home and takes care of her house, from which she never emerges, nor indeed can she emerge, as she has no external vestige of wings, and looks more like a grub than a moth, the head, thorax and abdomen being hardly distinguishable from each other. Love and courtship with this insect are carried on quite in an oriental fashion, pushed to extremes; for whereas the Oriental in many cases never sees the face of his veiled bride until after the nuptial ceremony is completed, the house-builder moth never sees his mate either before or after marriage, and so is obliged to love blindly or not at all."

Thus Mr. Wood, in his usual charming manner, describes an insect closely allied to the American variety, but he generalizes on the one topic of interest to such an extent as to render his remarks of little value from a scientific point of view, even in this species.

A. S. Packard's "Guide to Insects" is more specific, but nevertheless unsatisfactory. In speaking of the American species, he says:

"The male of the basket worm is stout-bodied, with broad pectinated antennae and a long abdomen, the anal forceps being capable of unusual extension in order to reach the oviduct of the female, which is wingless, cylindrical, and in general form closely resembles its larva, and does not leave its case. On being hatched from the eggs, which are, so far as known by us, not extruded from its case by the parent, the young larvae immediately build little elongated basket-like cones

of bits of twigs of the cedar on which they feed, and may then be seen walking about, tail in the air—this tail, or abdomen, covered by the incipient case and presenting a comical sight. The case of the full grown larva is elongated, oval, cylindrical, and the fleshy larva transforms within it, while it shelters the female through life."

The reader will remember my allusion to the extenuated flexible tail of this moth. It attracted my attention, but never in any way has it tended to settle the problem of the fertilization of the eggs, and from the standpoint of my own observations I should pronounce the assertion above from Packard's work, as a mere mental deduction on the author's part, and not the result of actual notice. He admits that the "eggs are not extruded from the case," and must know, if he has carefully studied the insect, that the case is quite tightly closed.

In bringing my remarks to a close, after giving the various authorities, I am now prepared to assert, as the result of my own personal investigations through a period of twelve years, that the male moth not only "never sees his mate either before or after marriage," as Mr. Wood remarks, in relation to the other species, but that in the *American species* the marriage never takes place at all; that the male never knows of the existence of his mate, and, in conclusion, that there is no mate, unless an inanimate bundle of eggs can be so considered.

These eggs of course fulfill the office of the female in the reproduction of the species, and in regard to the manner of their fertilization it is a mystery explainable only on two theories. The male moth I leave out of the question altogether. I am satisfied that his intervention is not necessary.

Firstly. Either the fecundation is passed down through several generations after the manner of the Aphides, or—

Secondly. It takes place during the caterpillar state.

The latter is not probable, as there is no similar case known, and, indeed, is refuted by my own experiments, at least so far as the last half of the caterpillar's life is concerned.

I have tried every conceivable test before coming to the above conclusions, but I am now satisfied with the result.

I have taken one cocoon in the caterpillar state, and placed it by itself in a box. The caterpillar has there transformed to a female chrysalis, and the eggs of the same have hatched in the following spring. The nearest semblance to a female moth that I have ever discovered has been the "fuzz" which is contained in the end of the chrysalis shell, which under the microscope reveals forms of wing scales similar to those on ordinary moths.

The description of the female given by Packard—"Wingless, cylindrical, and in general form closely resembling its larva"—is all presumptive from my point of view, and is not written from a fullness of knowledge.

I would add that I am already aware of the existence of one species of "Psyche," building a spiral case similar to the Helix, which has been known and is, I believe, acknowledged by naturalists, to have produced caterpillars from eggs which have never been fertilized by the male.

The same phenomenon has never been admitted with reference to the species which forms the subject of this communication. A fatherless and motherless race so far as I can discover.

I have for some time been intending to make public the result of my investigations on this curious insect. I have now done so, and any further information on the subject will be thankfully received.

### THE ENEMIES OF BOOKS.

THEIR NATURAL HISTORY—THEIR RAVAGES—THE METHODS OF DESTROYING THEM.

We remember the case of a negro who, during the days of slavery, having escaped to the North, obstinately refused all offers that were made to teach him to read, basing his objections to such an acquirement on a circumstance that had come under his observation during the period of his servitude. It appears that a fellow slave, who was a most excellent and industrious tailor, having by stealth learned the forbidden art of reading, found his newly acquired accomplishment so fascinating that he thereafter eagerly devoured the contents of every book or paper that fell in his way, neglected his trade, and hence became, of course, a "poor, miserable, shiftless fellow!" The opinion of our freedman,

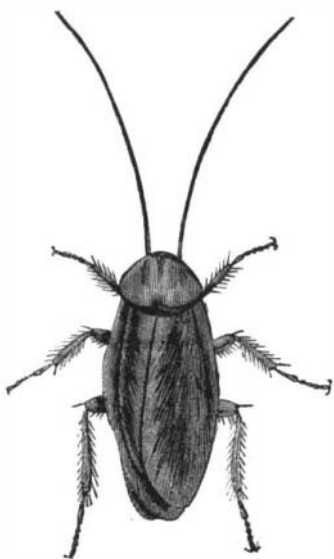


FIG. 1. COCKROACH.  
(*Blatta Americana*.)

therefore, having been determined by this striking example of the evil effects of educating the masses, he very properly, in his own estimation, refused to allow himself to be made a party to the further spread of knowledge, "book-learning," from his standpoint, being the prime cause of all the poverty and wretchedness in the world. Now this man was but the type of an immense army of book-enemies, which has existed from the earliest periods of history, and which will probably never be exterminated. It is to hordes of such men, urged on by the ignorance or caprices of unscrupulous leaders, that we owe the destruction of some of the largest and most valuable libraries of antiquity. But it is not our intention in this article to discuss the natural history of this species of "book-enemies," but rather that of a host of other animals, which although physiologically inferior to the human book-enemy, are nevertheless fully his equal in the

fearful depredations that they commit when they once obtain access to our books or manuscripts.

It is a popular notion that rats and mice are the chief culprits in book destruction. Their case is certainly a bad one, and we would scarcely know how to outline a defense in their behalf. What share these inveterate gnawers had in the destruction of the parchment rolls that contained the now lost works of Varro, Terence, Livy, and other writers of antiquity, or how many valuable missals they have disposed of by eating the parchment for the sake of the animal matter it contained, will never be known.

But certain it is that the art of printing has provided these destructive rodents with a field of operations of an extent that was never known in antiquity, nor in those ages when the use of paper was almost ignored; and, with a complete



FIG. 2. PERTINACIOUS DEATH-WATCH.  
(*Anobium Pertinax*.)

change of materials in book-making, has come an entire change in the motives of rats and mice for destroying them. It is not the case now, as it was formerly, that these animals cause such irreparable damages to our most valued literary works for the sake of food, since a diet of paper would scarcely prove very fattening; but they gnaw away the leaves and covers of our choicest volumes, and convert our most beautiful manuscripts (by nibbling at them with their sharp chisel-shaped teeth) into a soft flocculent mass, solely for the purpose of providing a downy couch for their expected offspring. It is an easy matter, comparatively, to guard against the incursions of this species of enemy, their very size offering us one means of protection; we will therefore turn our attention to a class of book-enemies very much more to be dreaded, not only on account of their infinitely smaller size, but the facility with which they are enabled to hide in unexpected places, and quietly go on with their work of destruction. We find these minute pests in the extensive domain of entomology.

To begin, we will direct attention to the extensive ravages

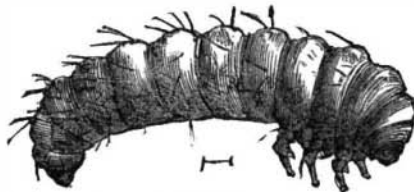


FIG. 3. LARVA OF P. RETINACIOUS DEATH-WATCH.  
(Very highly magnified.)

committed by the family of *Blattarians*, or cockroaches, on the libraries of Africa and the New World. How many precious archives in the Colonies of France and England, and how many books of inestimable price in Brazil, Peru, and in the old empire of Montezuma, have been devoured by that disgusting insect known as the "American Cockroach" (*Blatta Americana*, Fig. 1) it is impossible to estimate. D'Orbigny, who was so well acquainted with this detestable family of insects, after having enumerated the almost incredible number of cockroaches that infest the world, expresses himself thus: "The cockroaches are in general nocturnal insects of great agility and run with great swiftness. They exhale an odor of the most disgusting nature, which sticks to any object with which they have come in contact. They attack all animal and vegetable substances, in whatever state these may be found. It is principally in warm countries that they commit the worst ravages. It is

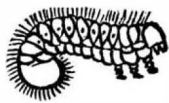


FIG. 4. LARVA OF STRIPED DEATH-WATCH.  
(*Anobium Striatum*) (Magnified.)

said that they are able to pierce through a trunk or a chest; and, besides, their flat shape permits them to introduce themselves through all sorts of chinks and crevices. \* \* \* Entire barrels of edible substances often fall a prey to their voracity, and in a short time are found swarming with these insects." Now as far as "barrels of edibles" are concerned, their contents may be replaced; but not so with the precious contents of books which once destroyed are often lost forever—especially if, as often happens, the volumes be unique. Even the work of the ablest binder counts for nothing in the presence of this loathsome insect. That charming old traveler of the sixteenth century, Jean de Léry, recounts, in his picturesque style, how one fine day his boots, as black as they were, became entirely white through the gnawing of these vermin. Indeed, the most valuable volumes, embel-

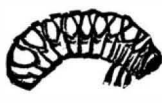


FIG. 5. LARVA OF PTINUS MOLLIS.  
(Magnified.)

lished with the richest products of art, would be just as likely to meet the fate that Jean de Léry's boots did, were no precaution taken to put them out of the reach of the omnivorous cockroach. We have seen very handsome book-bindings greatly disfigured by a single night's depredations of this insect.

There is a French aphorism which says that "a book with a puncture is a book dishonored;" and certainly no real

lover of books will deny the truth of it. How disheartening it must be, then, for a genuine bibliophile to take down a choice edition of some old author from the shelves of his library, where it has lain undisturbed for some time, only to find its pages disfigured by the ravages of an insect larva. It is true that the novelist, Charles Nodier, has said that "the library of an industrious scholar is never attacked by worms;" but then it must be remembered that even the hardest working student will have in his collection some books, at least, that scarcely ever demand consultation. Among the insects that prey upon books there is none more dreaded by the librarian than the little beetle whose mis-

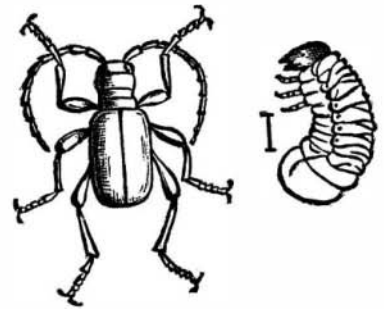


FIG. 6. PTINUS FUR AND LARVA.  
(Magnified.)

deeds we shall chronicle through a quotation from a celebrated entomologist, who has been a faithful observer of its habits. "Have you never," says he, "remarked in libraries where books are allowed to slumber, in archives where old registers are looked over only at rare intervals, have you never remarked, I say, those deep sinuous erosions which usually involve a large number of leaves, and sometimes put an entire volume, or a bundle of papers, in a state of mere shreds? Have you never carefully examined these furrows, and perceived in them a short, thick grub, bent like a hook? Well, that grub is the first stage of a little beetle called the 'Death Watch' (*Anobium*), which, if it were allowed to do so, would destroy a whole library as surely as Julius Cæsar destroyed that at Alexandria; only, of course, it would take it a longer time."

There are many species of these very small beetles, and they all work terrible havoc among furniture, which, when filled with the holes made by their larvæ, are popularly termed "worm-eaten." They are not in the least particular about their diet, and will devour anything of a vegetable



FIG. 7. WEEVIL.  
(*Bruchus*) (Magnified.)

nature. Of the species represented at Fig. 2, Linnæus said, "it bored into and destroyed my chairs" ("terebravit et destruxit sedilia mea"). The larvæ are called "book-worms" when they attack books. Old books and those seldom used are often found bored through by them. The larvæ of several species (*Anobium pertinax*, Figs. 2 and 3; *A. hirtum*; *A. striatum*, Fig. 4, and *A. paniceum*) are known to ruin books. Kirby and Spence mention a case where twenty-seven folio volumes were eaten through, in a straight line, by a larva of one of the species (probably *A. pertinax*, Fig. 3), in such a manner that by passing a string through the perfectly round hole the twenty-seven volumes could be raised at once. One species (*A. paniceum*) has done great damage in the Cambridge Library to the valuable Arabic MSS. brought from Cairo by Burckhardt. These beetles ob-



FIG. 8. COMMON TABBY MOTH.  
(*Aglossa Pinguinalis*.) (Natural Size.)

tain their common name of "death watches" from their habit of striking their head against the wood on which they are standing at the pairing season, thus producing a ticking noise, which is regarded with great dread by the superstitious, and is supposed by them to forebode a death in the household.

Allied to *Anobium* are certain small beetles, belonging to the genus *Ptinus*, two species of which (*P. molle* and *P. fur*) prove like the former quite destructive to books. Nothing, however, of a vegetable nature comes amiss to them—planks, rafters, beams, chairs, and tables, as well as books, all fall a prey to the hungry industry of their larvæ; and they bore through all such articles holes as sharply cut as if



FIG. 9. COPPERY TABBY MOTH.  
(*Aglossa Cuprealis*.) (Natural size.)

they had been drilled with the finest instruments. *Ptinus fur* is the most widely diffused species, and is often found in our museums destroying collections of insects, etc. It is about one-sixth of an inch long, and of a uniform chestnut-brown color. In Fig. 6 it is represented in outline, enlarged, as well as the figure of its larva.

After the *Ptinidæ*, the *Bruchians*, or "Weevils," are said to be among the most industrious of book-enemies. These insects in their winged state are hard shelled, and distin-