

THE PERIPATUS AND ITS REMARKABLE METHOD OF CAPTURING PREY.

BY C. F. HOLDER.

Among the many interesting creatures that have been unearthed by scientific investigation during the past few years, the peripatus deservedly stands foremost in the rank, not alone for its peculiar individuality, but for certain habits shown when obtaining food and defending itself from attack. According to late classification, it forms the single insect of the sub-class Malacopoda, and is only represented by a single genus—Peripatus. It is considered an extremely ancient form, from its wide and peculiar distribution, being found at Cape of Good Hope, St. Thomas, Australia, New Zealand, Chili, and Isthmus of Panama, and thought the nearest extant representative of the ancestors of our air-breathing arthropods, spiders, etc.

In appearance the *Peripatus capensis* is exceedingly disagreeable, resembling a large black caterpillar, three inches or more in length. From the head protrude a pair of curious jointed horns like antennæ that incline forward, seemingly used as feelers, though the head bears a small pair of simple eyes. Beneath is the mouth, with its singular turned lips and double pair of horny jaws, well adapted for crunching the larger game it affects. The seventeen pairs of feet are short, fleshy, and provided with two short claws adapted for clinging upon rocks or trees. The body is cylindrical and soft, the integument not chitinized, and head not separate from the body, its great difference from other arthropods being in its "two widely separated minutely ganglionated nervous cords sent backward from the brain; also in the minute numerous tracheal twigs arising from the many minute oval openings situated irregularly along the median line of the ventral surface of the body." It calls to mind features of Linguululina and Tardigrada by its curious soft clawed feet, and, according to Packard, is not a worm, but an intermediate between them and the sucking myriopods. Its method of breathing is peculiar in the extreme. Instead of the tracheal tubes opening to the exterior by small stigmata arranged along the body in regular order, as in other animals that have tracheæ, their tracheæ are scattered here and there over the entire body. It appears, says Moseley, that we have existing in *Peripatus* almost the earliest stage in the evolution of tracheæ, and that these air tubes were developed in the first tracheate animal out of skin glands scattered all over the body. In higher tracheate animals the tracheal openings have become restricted to certain definite positions by the action of natural selection.

The sexes are distinct, and the males much smaller and rarer than the females. Out of fifty specimens found only two were males. The females are viviparous, and, according to the above mentioned distinguished author, a standard-bearer of the lamented Darwin, the process of development of the young shows that the horny jaws of the animal are the slightly modified claws of a pair of limbs turned inward over the mouth as development proceeds; in fact, "foot jaws," as in other arthropods.

To Moseley is due all the present knowledge concerning this curious insect, and previous to his elaborate examinations at the Cape of Good Hope nothing was known as to its method of breathing air by means of tracheæ, scientists believing it to be an annelid.

In the accompanying cut the great peculiarity of the animal is shown. Being slow, cumbersome, and utterly unable to pursue game, it seems to have been provided by nature with ample compensation. We see it lying upon the ground almost invisible, so similar is it in color to its surroundings; a fly or some larger insect approaches; the two horns dilate, move to and fro, as if in excitement, and the approaching fly, when within several inches, suddenly stops, as if paralyzed and unable to move, but remains suspended in the air. We draw nearer and see the cause of this phenomenon. At the approach of the victim the *Peripatus* has ejected from its mouth curious thread-like jets of some glutinous irritating fluid that forms instantaneously, as if by magic, a complete network of gleaming, glistening web, that resembles the maze of the spider with its quivering drops of dew. Myriads of these glistening darts or threads encompass the victim, holding it in a close embrace until the unwieldy *Peripatus* approaches, breaking through the sheeny prison and releasing the victim to a worse fate.

This remarkable web is found to proceed from large glands that secrete a clear viscid fluid that seems to crystallize when ejected from the papilla, one of which is found at each side of the mouth. If the *Peripatus* is attacked suddenly the web appears in front of it instantly, the jets forming a perfect protection from many enemies, as it is almost as tenacious as birdlime. It is not an irritant when tasted, but when taken from the glands and placed upon a glass slide, forms a trap for the largest insects, holding them securely.

The food of the *Peripatus* is, however, to a great extent, vegetable, and in the stomachs of nearly all the specimens

examined by Professor Moseley at Good Hope, vegetable matter was found. In their habits they are similar to the common centipedes, living under logs, stones, and dead wood. They are nocturnal insects, moving about in a slow, hesitating manner in the day-time. When at rest the body is perhaps two inches long, but in motion they stretch out in a surprising manner to nearly twice that length. Most of the specimens found by Professor Moseley were in old willows that were highly luminous, and in the weird light the insects were seen coiled up ready for transportation to

is found among the dead wood near Wellington. Here also the females predominate. It much resembles the *Capensis*, having, however, thirty feet instead of thirty-four.

Equally remarkable as a web constructor are the larvæ of a lepidopterous insect, the *Hyphantidium sericarium*, found in Australia. Myriads of the creatures join forces and produce a silken web, in some cases measuring nearly three hundred square feet. Mrs. Thos. Wiseman, of Australia, has successfully raised numbers of them and sent specimens to Europe. Mr. Helenus Scott, of the Wollombi, thus refers to her work in a communication sent to an English naturalist with some specimens:

"Mrs. Wiseman had placed a quantity of shelled maize in a veranda room, 8 feet 6 inches long, 6 feet wide, and 9 feet 3 inches high, the stone walls being plastered. At a subsequent period, this room being required for a bedroom, the walls were found to be entirely and uniformly covered by a beautiful white-colored web, fastened at the ceiling, floor, and corners by a stouter and coarser fabric, and occasionally to portions of the wall itself; so that in this instance an unbroken sheet of cloth, containing some 72 square feet, might with care have been obtained; while the web measured at least some 252 square feet. The specimens of this cloth sent to me, rudely torn from the walls, were of the size of a large handkerchief. The remaining portions of the original construction had been ruthlessly destroyed by the servants. The larva, when full-grown, is about five-twelfths of an inch in length, with the head and first annulation depressed, somewhat horny, and of a blackish-brown. It possesses sixteen feet.

"It is of a pale yellowish-white color, with whorls of six small black spots on each annulation, each emitting a tiny hair. The caudal segment is spotted with brown.

"In confinement these caterpillars were found to be active, with a dislike to the light; so that, when exposed, they immediately commenced spinning their web, connecting together several grains of the maize, upon which they subsisted. They likewise lined the top and sides of the box with their silken tissue.

"At the latter end of August they assumed the pupa state, each larva forming a separate cocoon for itself among the maize, consisting of a flimsy web somewhat tightly enveloping the chrysalis, which was of a light yellowish-brown, with the wing cases largely developed and one-third of an inch in length.

"The perfect insect took wing in October, and is three-fourths of an inch in expanse, and active in its movements. The superior wings were elongated, the costal margin arched, and apices rounded. General color grayish-brown, of a silvery hue, with stigmata and strigæ of a darker color. Inferior wings of a light semi-transparent silvery hue, with a deep marginal fringe. Thorax similar in color to the anterior wings, and not crested. Abdomen yellowish; the whole of the under side light silvery-gray. The wings are slightly convoluted in repose."

THE DOVE FLOWER.

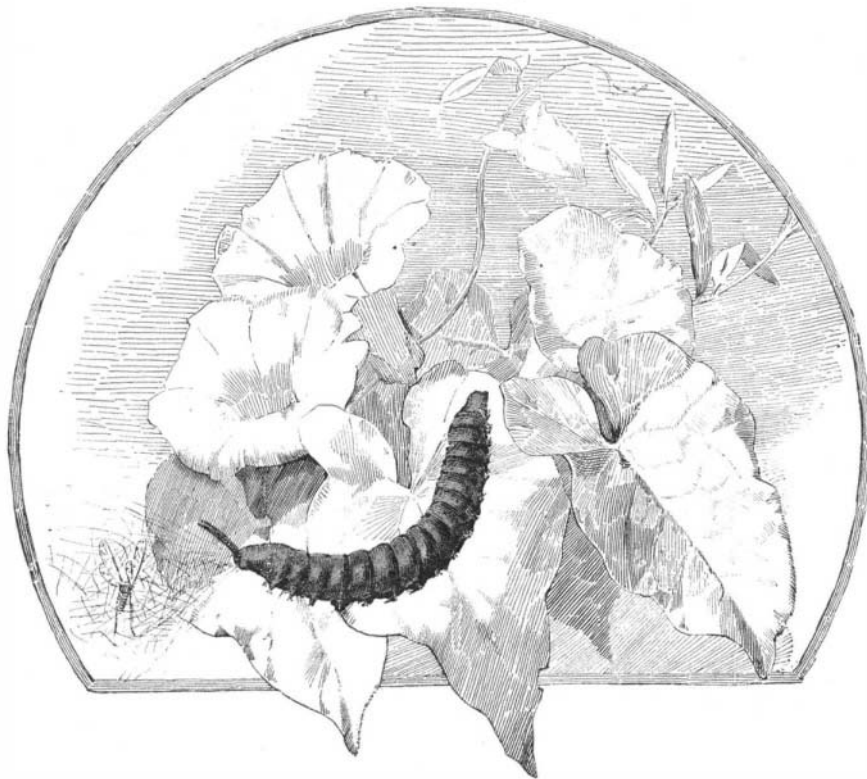
The dove flower, or *Peristeria alata*, is very rare with us, as its home is Central America. The leaves of the flower are white and spotted, and give the flower the appearance of a white bird with extended wings. The inhabitants of Central America adore this flower, believing that it represents the Holy Ghost on account of the resemblance to a white dove, the symbol of the Holy Ghost. For that reason the flower is also known in that country as "Flora el Spirito Santo." The flower represented in our cut was in bloom in the garden of Mr. L. M. Stone, 482 Franklin avenue, Brooklyn, a short time ago.

Zinc in Boilers.

The author finds that a battery is formed by the iron and the zinc, which occasions a continuous decomposition of water. The oxygen combines with the zinc, and the zinc oxide combines with the fatty acids present in the feed water, forming a zinc soap, which prevents the adhesion of saline matter to the sides and plates of the boiler. The hydrogen prevents the danger of explosion from the absence of gaseous matter, and consequent superheating. When a boiler has been kept for a considerable time with its fire banked up, the hot water is totally deprived of air, and on then raising the heat an explosion is possible. In such cases he recommends that a part of the water should be run off and fresh water containing air introduced in its stead.—*M. Trève.*

A Hint for the Treatment of Phthisis.

Mr. H. Osborn Bayfield suggests (*British Medical Journal*) that the use of inhalations of volatilized palm oil may be useful in the treatment of phthisis. He bases his opinion upon the fact that workmen engaged in tinning where palm oil is used as a flux inhale the volatilized oil and get fat. Those previously emaciated or weak rapidly improve. The idea is worth a trial.—*Medical Record.*



THE PERIPATUS.

the collecting case. Professor Moseley thus describes the search for this *rara insecta*:

"My colleague, the late Von Willemoes Subm, and I both searched hard for *Peripatus*. He was unsuccessful, but I was lucky enough to find a fine specimen first under an old cart wheel at Wynberg. Immediately that I opened this one I saw its tracheæ and the fully-formed young within it. Had my colleague lighted on the specimen he would no doubt have made the discovery instead."

In New Zealand, the species known as *P. Nova Zealandæ*,



THE DOVE FLOWER.