

Marvels of Insect Life.

Most of the family¹ to which the book-louse belongs are small out-door Insects which, if seen at all by others than entomologists, are confused with the plant-louse, which they superficially resemble in size and general appearance. Most of these have wings, and there is, therefore, a slight metamorphosis in their development; but the Insects are active throughout life. They live upon dry refuse matter, both animal and vegetable, and various small forms of fungi found on decaying wood, bark, etc. The family is a small one, but we have about thirty representatives in this country, though none except the book-louse can boast of an English name. A number of species have been found preserved in amber. The females of this out-door group deposit their eggs in clusters of about ten on the under sides of leaves and, strange to say, cover them with a slight web. How this web is contrived by the winged Insect is not clear. It will be seen in our photograph on page 478, and it will be found, no doubt, to have some protective value.



Photo by W. West.

THE BOOK-LOUSE.

A minute Insect, here shown on a scale of twenty-two times the actual size, that may frequently be found among old books, old papers, and neglected stores of various kinds, upon which it feeds. Its destructive powers are only noticeable when it obtains access to the store-rooms of the entomologist. In spite of its misleading name, it is not a parasite.

Mason-Bees.

The natural order of Insects² to which the bees belong stands pre-eminent for the cleverness displayed by great numbers of its members as workers in wax, wood, clay, paper, etc. In another article we have referred to the wasps who design pots and vases of artistic forms, and to the mud-dauber wasps that conceal their cells under massive knobs of mud of their own accumulation. The work of the mason-bee³ is much akin to that of the mud-dauber, except that the bee uses grains of sand instead of mud, and fits and cements these together with her own saliva cement. These Insects occur in the South of Europe, and Réaumur told their story many years ago. More recently, Fabre has paid much attention to them, making experiments that help to an understanding of the order of intelligence displayed. Réaumur told how the mason-bee, having decided upon the site of her nursery, carefully selects sand, grain by grain, for her building materials. These she glues together by means of a viscid secretion from her mouth, until they form masses the size of small shot, and transports them in her jaws to the building site. With a number of these, cemented by the same means, she constructs her foundations. Upon the latter she runs up the walls of a thimble-shaped cell, an inch long and half an inch in breadth. Before it is roofed in she becomes a gatherer of pollen and honey, with which she stocks the cell, and lays an egg in with it. On her return from one of these collecting journeys, she puts her head into the cell and discharges her gathering of honey. The pollen has been collected on the hairs of her lower surface, and to discharge this she gets into the cell backwards and cleans off the pollen in such manner that it falls to the bottom. When the requisite quantity of each of the two ingredients has been stored, she gets her head well into the cell and with her jaws works up the honey and pollen into a homogeneous paste; then lays her egg and seals up the top of the cell. The construction of a single cell takes the labour of two

¹ Psocidae.

² Hymenoptera.

³ *Chalcidodoma muraria*.