

secretions of flowers having been so directed and controlled by man as to obtain the best results for himself. The habits of many ants, wasps, ichneumon-flies and other hymenoptera have been also studied, but there remain vast numbers of which little or nothing is known, and which afford scope for the observations of all who seek to add to our knowledge of insect life.

Hymenoptera are divided into two sub-orders, named respectively *Aculeata*, or stingers, and *Terebrantia*, or borers. The first contains the bees, wasps, ants and other insects which have the abdomen (in the females) furnished with a sting to which an irritating poison is applied by special glands. The second contains forms in which the abdominal instrument is so constructed as to be used in sawing slits or boring holes in which the insect may deposit its eggs. It may be conveniently divided into three sections, namely: *Entomophaga*, or insect-eaters, such as the ichneumon-flies; *Gallicola*, or gallformers, consisting of a single family called *Cynipidae*; and *Phytophaga*, or plant-eaters, containing the saw-flies and horn-tails.

The *Phytophaga*, being plant-eaters and consequently destructive and obnoxious insects, are of more immediate interest to agriculturists than the other sections. They are divided into two families, *Uroceridae* and *Tenthredinidae*. The former contains a limited number of species, usually of large size, of which the females are provided with a long augur-like borer for inserting their eggs deeply into the wood of the trees in which the larvæ feed when hatched.

The *Tenthredinidae*, or second family, is that of which the remainder of this paper will treat. It includes the insects popularly known as saw-flies, of which certain species are well-known to every one who has attempted agriculture on even the smallest scale.

Saw-flies have none of the interesting social, or architectural habits of bees, wasps and ants, and, although highly organized in many points of structure, rank as the lowest of the hymenoptera. They are most obnoxious insects from the gardener's point of view, because they are all, as larvæ, strictly vegetarians, and what the farmer must perforce admire in his customers is, as regards insects, a most undesirable habit. In size they vary from the formidable *cimbex*, an inch in length, and with a wing expanse of more than two inches, to species no larger than a grain of rice.

The perfect, or winged, insect differs from the honey-bee in form, chiefly through having the abdomen sessile, or joined solidly to the thorax, instead of having the waist constricted so as to almost cut the insect in two. The head is of medium size, generally broad in front so that the large eyes are widely separated. On the top of the head are three ocelli, or single eyes, arranged in a triangle. The mouth is furnished with toothed mandibles, or jaws, which, in the larger species are quite dangerous looking instruments, although in reality they are quite harmless. The thorax is generally wider than the head, and bears, as in all insects, the organs of locomotion. It is formed of a large number of chitinous or horny plates, all of which have special names, and are of value in technical descriptions, but which need not be here enumerated. The legs are of moderate length, and slender in the majority of species. The wings, four in number, are large and membranous, having comparatively few veins, and being generally transparent. The venation, or arrangement, of the ribs or skeleton, which supports the membranes of the wings, especially the front ones, is of importance as being principally used in the division of the species into genera. The anterior margin (of the front wing) is strengthened by a vein, which expands towards the tip into what is known as the stigma. Behind this are from one to three marginal cells, and behind these three or four sub-marginal ones. The abdomen is sub-cylindrical in form, and, as above stated, is not constricted at its junction with the thorax. It is composed of several distinct segments, the last of which in the female carry in a groove beneath them the characteristic ovipositor. This instrument consists of several pieces, but may be briefly described as a pair of horny saw-like plates enclosed in a pair of outer sheaths.

It is from the possession of these minute saws that the insects have received the popular and, as is frequently not the case in popular nomenclature, appropriate name of "Saw-flies." With this complex ovipositor the female saws slits in the stems or leaves of plants, in order that she may deposit therein her eggs. In some species, however, as in the imported currant saw-fly, the apparatus is so feeble, or aborted, that the insect has to

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