

XIX. *Notes on the Natural History of Aphides, translated from Ratzeburg's Forstinsecten, Vol. iii. 1844. By Dr. H. SCHAUM.*

[Read 6th September, 1847.]

SEXES.—The sexes of the *Aphides* cannot be completely described, the males being so scarce that they were never seen by Reaumur. Ratzeburg saw those of one species only; Degeer, Kaltenbach, and Bouché, have observed them oftener.

Generally the very lively *males* are *winged*, but there are also *apterous* males. In almost all cases they are much *smaller* than the females; the apterous ones so much so, that the only time when Kaltenbach saw them, he took at first the males, which were in copulation, for young specimens on the back of their mothers. They measured scarcely one-eighth of the size of the females. Also the winged males are generally much smaller. A constant character of this sex is, according to Kaltenbach, the deeply emarginated semilunar shape of the first anal lobe.

METAMORPHOSIS.—It is incomplete, but differs in several points from that of the other *Ametabola*. It does *not always* begin with the *eggs*, but often with the *larva* state. Besides we find in the *same species*, *Pteromatabola* and *Apterometabola*; this is proved to be the case in the *females*, although not quite so well ascertained in the males. The *larvæ* are less perfectly articulated, the joints of the antennæ fewer, the ocelli wanting, &c. It is surprising that the *apterous female parents*, consequently *imagines*, have fewer joints of the antennæ than the winged females and larvæ. It is generally stated, that they cast their skin four times.

HABITS.—These soft and tender insects require a mild temperature, a closed place, and a luxurious vegetation. Consequently they are more common in the southern countries and in gardens. They prefer the underside of the leaves, and are more frequent on wood than on grasses and herbs. No indigenous tree is free from them; on the birch and willow from eight to ten species are found. The same species is generally confined to one particular place on the tree. They are, as both Linné and Schrank knew well, generally strictly *monophagous*. The puncture of their beak very often causes no injury whatever; in other cases, however, diseases and disfigurations are produced by it, which are always the *same*

in the same species. The most striking monstrosities are often produced only by the minute female parent.

DEVELOPMENT.—It is well known that the *Aphides* are propagated through many generations in a year; that all those generations are born *alive* at one period by apterous and at another by winged females; that the presence of a male is not required, and that the males appear only when, at the end of that enormous multiplication, eggs are deposited by *unwinged* females. Not all of them, however, have *many* generations, nor are all both oviparous and viviparous; most likely some genera are only viviparous, some others only oviparous. Kaltenbach has based on this difference a division into *vivi-oviparous*, *viviparous*, and *oviparous*. Of the two latter we know at present very little. The *vivi-oviparous* bear during the summer only living young, and infinitely often; in the autumn at the same time with the appearance of the males, eggs are deposited, from which the female parents of the next year are produced. This sometimes happens during the winter, oftener in the next spring. The action of bearing in the summer, as well as the deposition of the eggs in the autumn, can easily and often be observed. They bear often fourteen or fifteen times a day; after the lapse of from four to ten days, the young specimens begin to bear. In June we find often grandmothers and grandchildren together; the latter are then already often winged. In the same brood there often occur winged and apterous specimens; the apterous are always sooner fertile. The deposition of the eggs, which always causes the death of the specimen, takes place in autumn, and always from *apterous* females.

COPULATION.—The act of it is seldom observed, the males being so scarce and so small, and observation being seldom made at the exact time it takes place. Bouché saw that the same male copulated with from four to six females, one after another.

HIBERNATION.—The *Aphides* hibernate generally in the state of eggs; sometimes the female parents survive the winter; those of the viviparous species always. Bouché saw whole colonies hibernate, even males, which had not copulated.

Importance in economy to fields, gardens, and forests.—The *Aphides* are in this respect very important; they often cause monstrosities and distortions of leaves, and are often very pernicious to the crops. The mildew of the grain crops and upon peas, is said by several authors to be the product of *Aphides*; this is, however, not likely. The number of *Aphides* is sometimes

enormous. Kirby and Spence state that they are in England, amongst the greatest enemies of vegetation. Their augmentation is favoured by warm weather, sultry air, &c. Means of destruction are hardly applicable. The advice given is to strew powdery substances on low herbs, and this proves generally to be efficacious; gypsum, powder of lime, salt, &c. The larvæ of *Coccinellidæ*, *Hemerobii*, and some *Syrphi*, are their enemies, and these are to be spared.

A few additional Observations from an Article by Kaltentbach, in the Entomol. Zeitung of Stettin, 1844.

1. Several genera have no apterous females besides the female parent, but only winged females and nymphæ.

2. In some years no winged females appear of some species, which, however, are observed in a more favourable year. For instance, Kaltentbach could not see any winged females of *Lachnus quercus* in 1844; it was only in 1845 that he found one.

Copy to come
for this

