

and the victors licking the sap greedily. They seemed disturbed when the breath touched them, and the slightest noise, as the breaking of a twig, immediately affected the whole company. They would all raise themselves quickly and appear to listen. A similar thing would happen if one of the beetles that had fallen to the ground ascended the tree again and approached the others. In this case the males would move toward them with wide open mandibles eager to engage in combat with them. Toward evening the greater part of the beetles buzzed away, and the crackling sound was much diminished when the observer left the garden at eight o'clock. The struggles of a male over a female are of a more serious and determined nature, as the deep impressions and perforations in the wing covers show.

At the end of June or the first days of July the short swarming time is past. The pairing takes place in the night, the females lay their eggs in the decayed wood of an old oak tree, and the hard remains of the dead bodies of the males lie strewn around. It may even occur, and has frequently been observed, that after the pairing the feeble males, while still alive, are eaten by the rapacious ants, the hard front of the body being robbed of the soft back part, and they drag themselves painfully along on their long legs, a singular habitation for solitary ants. The bodies of the females are seldom found, because few of them come forth from their brooding places, and because the females are much more seldom met with than the males, who are about six times as numerous.

The larvæ grow very slowly, and are nourished by the decayed wood of the oak tree. It requires four or five years for them to attain their growth of about four and one quarter inches and the thickness of a finger.

Their appearance is similar to that of others of their family. They have four-jointed antennæ on the horn-like head; the last joint is very short. The anterior of the three rings around the body is imperfectly defined on account of the cross folds, and has six strong legs which are yellow like the body; the horny parts about the mouth are black.

These larvæ were without doubt known to the ancients, for Pliny says: "The large wood worms which are found in hollow oaks and called 'cossis' are regarded as a choice morsel, and are even fattened with meal." They must have long been in use as a means of nourishment, for Hieronymus says: "In Pontus and Phryia large, fat, white worms with black heads, which are generated in decayed wood, afford a considerable source of revenue and are valued as very dainty food." The full grown larva prepares a firm case, as large as the fist, from the decayed splinters of wood, and smooths it out well inside. Three months sometimes pass before the larva assumes a chrysalis state and afterward becomes a beetle. From the hatching of the egg to the development of the perfect beetle requires about five years, some say six, and they enjoy for scarcely four weeks their winged existence. They may be kept in confinement by nourishing them with sweetened water or sweet beer.

Bültner mentions a swarm of stag beetles which were drowned in the Baltic and washed ashore. Cornelius gives an account of the great number of beetles which appeared in a limited locality at Elberfeld, in 1867, and thinks that every five years they will return again, and that the supposed developing time must be five instead of six years. Haaber mentions this and thinks this supposition is confirmed, as he observed a large number of beetles in 1862, and again in 1867 in the region of Prague.

Here, at Elberfeld, they flourished in old oak stumps, which appear especially favorable to their propagation. It would be of interest for other regions to note the flying year of the stag beetles. These beetles extend over the whole of the middle and northern Europe, and are only wanting in regions where they are no oaks.

The champion beetle (*Cerambyx heros*) may be seen on an oak stem with the stag beetle in our engraving. It is a magnificent insect, of a glittering black. The head is long, the eleven jointed antennæ swell out in the third to fifth joint into a club-shape, and end in a long slender joint, which appears to be separated, and in the male is considerably longer than the body. The neck shield is grooved or wrinkled, and has in the middle a thorny point at the broadest place. The wing covers have a blunt three-cornered shield in front. The under part of the body is covered with silky hairs, and is silvery white.

The larva has a granulated horny shield on the back of most of the joints, and lives three or four years in the inside of decayed oak trees. The broad flat passageways in the decayed wood which they bore out, wind in various directions next to the bark. A trunk which is already perforated seems to possess a particular attraction for the female, and the work accomplished by these colossal larvæ is enormous. The beetle emerges from the chry-

salis in July, and is not seen by day; it only projects the points of its antennæ out of its retreat and speedily draws them back again if it is not approached very cautiously. The antennæ must project a long distance to enable one to bring the sly fellows to light. In most cases they will allow the points to be torn off before they can be drawn out of their retreat. After the sun has set they come out voluntarily and fly swiftly around, but not very high, in search of others of their family. The pairing ensues during the night, and the swarming time is, as with the stag beetle, a limited one.—*Bremm's Animal Life.*

#### CURIOUS HABIT OF A DRAGON-FLY.

One day this summer, when I was looking at some tadpoles in a dish of water, I was struck in the face by a jet of water. On searching for the cause, I found that the larva of a dragon-fly (*Æschna*) was my assailant. When disturbed it sent out a fine stream of water from the bronchial apparatus in the caudal end of its body to the distance of two or three feet, and not content with one volley, it would wheel and discharge, like a small gun, at all points of the compass. I put it in a tumbler of water, and it lowered the front of the body, and shot the water far over the edge of the glass. I cannot say it ever took deliberate aim, but I know I got sprinkled many times when I inadvertently touched the glass.

Prof. Packard, in writing of the larval dragon-fly, says: "By a syringe-like apparatus lodged in the end of the body, it discharges a stream of water for a distance of two or three inches behind it, thus propelling the insect forward. The apparatus combines the functions of locomotion and respiration." ("Guide to the Study of Insects," p. 601.)

If all *Æschnæ* have the same habits as the one I caught, we must add that the apparatus is also a means of defence.—*Sarah P. Monks.*

#### ANIMAL REASONING.

A correspondent of *Nature*, writing from Cambridge, Mass., says: A lady, a friend of mine, was at one time matron of a hospital for poor women and children which was maintained by subscription. One of the inmates was a blind girl who was there not as a patient, but temporarily till a home could be found for her. She had learned to feed herself, and at meal times a tray containing her dinner was placed on her knees as she sat in a comfortable chair for her special convenience in feeding herself. One day, while she was eating, the pet cat of the establishment placed herself before the girl looked long and earnestly at her, so earnestly that the matron fearing the animal meditated some mischief to the girl, took her out of the room. Again the next day, at the same hour, the cat entered the room, but this time walked quietly to the girl's side, reared herself on her hind legs, and noiselessly, stealthily reached out her paw to the plate, selected and seized a morsel that pleased her, and, silently as she came, departed to enjoy her stolen meal. The girl never noticed her loss, and when told of it by her companions laughed very heartily.

It is evident that the cat from observation had entirely satisfied herself that the girl could not see, and by a process of reasoning decided she could steal a good dinner by this practical use of her knowledge.

A gentleman who had recently occasion to visit certain old and deserted Mexican and Ophir mines, says that in these mines, undisturbed for years, a remarkable fungus has occurred. This is favoured by the warmth of the old levels, and the moisture present. Some of the fungi are several feet in height, and, being snow white, resemble sheeted ghosts. In places are what at a little distance appear to be white owls, and there are representations of goats with long beards, all as white as though carved in purest marble. The rank growth has almost closed some of the drifts. Some kinds of fungus hang down from the timbers like large bunches of snow white hair, and others are great pulpy masses. The latter generally rise from the rocks forming the floor of the drifts, and seem to have been grown from something dropped or spilled on the ground when the work was in progress years ago. These growths have in several places raised from the ground rocks weighing from 10 to 50 and even 100 lb. Some of the rocks have thus been lifted more than 3ft. In the higher levels, where the air is comparatively dry, the fungi are less massive, and much firmer in texture. They present grotesque appearances like rams' horns, snakes, blossoming stems, &c. Nothing in the nature of toadstools or mushrooms was found.