A TROPICAL STAG BEETLE.

There is scarcely any one who does not know that large Coleopter called the stag beetle. The head of the male of this insect is provided with large mandibles that recall the antlers of a stag, and which oblige it to fly with its body nearly vertical, when it makes its appearance on warm June evenings among the oaks, whose trunks afford food for its larva. The use of these large appendages, which are wanting in the female, is unknown. By the Romans, they were suspended from the necks of their children, in order to preserve the latter from the diseases incident to youth. In certain parts of Germany, the belief obtains that these insects seize glowing coals with their pincers and go about spreading fire. In reality, despite this formidable appearance, stag beetles are perfectly harmless, and, with their tufted jaws, take delight in sucking the liquids that ooze out from the crevices in oaks. Swammerdam had one which he fed with honey, and which it is said followed him about like a dog.

We find the same exaggeration of mandibles diverted from their normal masticatory function, but in the adults and larvæ of some Central American Coleoptera belonging to quite a different type. Some species belonging to the family Prionidæ, of the order Coleoptera, with long antennæ and four articulations in the tarsi, have been known for a long time, and for these, by reason of their very large mandibles, Audinet Serville established the genus *Macrodontia*—a word meaning "long tooth." In these the mandibles are straight, larger than the head, toothed on the inside and curved at the extremity, yet of variable form. The head is as long as wide, plano-bicarinate beneath, and broadly hollowed out in front. The antennæ, as in all the Prionidæ, are short for a Longicorn, and, when bent back, scarcely reach the middle of the elytra. The first articulation is like a triquetrous club, the next ones are filiform, and, starting from the third, are provided with very close, reticulated pores. The eyes are very large and prominent, and strongly convex above, thus showing the insects to be crepuscular. The thorax is transverse, with six projecting spines, three on each side, the four anterior subequal, and the posterior shorter. This laterally tri-spinous thorax is an essential character of the Prionidæ. The scutellum is heart-shaped, and sharp behind. The elytra are very ample, either middlingly convex and subparallel, or oblong-oval, rounded or truncate at the end, with their sutural angle briefly spiny, and are a little wider than the prothorax at their base. The feet are long, with short and very wide tarsi, which gradually enlarge, articulations 1 and 2 being subequal. The last abdominal segment is rounded behind, with a narrow indentation in the middle.

The body is broad, depressed, glabrous, and winged. The antennæ of the female are like those of the male, the mandibles are also similar, but shorter, and the last abdominal segment is broadly truncated behind. The typical species of the genus *Macrodontia*, and the one that we find quite frequently in the cases of dealers in insects, is the old *Prionus cervicornis*, L. (Fig. 1), of Cayenne, Colombia, and Brazil. The mandibles, head, and prothorax are of a reddish brown, with a few vague, lighter blotches upon the prothorax. The antennæ and feet are of a reddish brown. The elytra are of a dark ocherous color, with longitudinal black or very dark brown blotches. A Cayenne male in the Museum collection is, inclusive of the mandibles, five and a half inches long. The genus includes six species at present, all belonging to tropical South America. After the manner of our European Prionidæ and Capricornia, the larvæ and nymphs of *Macrodontia* pass their existence in the interior of tree trunks, where the larvæ feed upon the ligneous tissue. They remain of a yellowish white, and are very thick set. The larvæ are either without feet or have but vestiges thereof, and have no strength except in their [illegible] and powerful mandibles, which serve for gnawing the hardest kinds of wood.

In Fig. represent, from nature, the nymph of *Macrodontia cervicornis*. In the development of the large antennæ of the adult from the small recurved ones of the nymph, considerable organic work has to be accomplished. In the nymphal state, the legs are

Fig. 2.—NYMPH OF MACRODONTIA. (½ Nat. Size.)

Fig. 3.—LARVA OF ACANTHOPHORA. (½ Nat. Size.)

folded beneath the breast, and the wing and elytra cases are pressed close to the sides.

We were not able to procure any larvæ of *Macrodontia* for our skillful artist, as these remain deeply concealed in the tree trunk. We figure a larva of very similar aspect of an allied genus, that of *Acanthophora serraticornis* (Fig. 3). The adults of these large Coleoptera, which fly in the evening, are captured by the natives on account of their singular form and the brilliancy of their colors. They are brought to the cities and sold to European merchant naturalists. The larvæ of the large Prionidæ are in demand on another account. Aside from their majestic proportions, they have a very appetizing appearance, their soft and transparent skin revealing the presence underneath of delicate tissues that put one in mind, through their yellowish white color, of the exterior of a well-fed fowl. Seeing that these larvæ do not live exposed to view, and are never very abundant, such qualities ought to cause them to be considered as an excellent prize by the Indians who chance to meet with them. In Jamaica and the Mauritius Islands, the Europeans, as well as the aborigines, eat the larvæ of Prionidæ known by the names of *moutac* and *macanco*. It is very probable that the larvæ of the large Capricorn that live in the interior of oaks, where they pierce galleries that injure the tree, were the worms called *cossus* by the Romans. These were said to be filled with a delicate cream, and figured with honor upon the table of Lucullus. The best worms to eat, says Pliny, are the large ones of the oak. Ladies used this substantial food in order to obtain a plumpness that prolonged their beauty.—*La Nature.*

Fig. 1.—A TROPICAL STAG BEETLE. (*Macrodontia cervicornis.* Natural Size.)

Bacteria in the Air.

At the commencement of June, 1884, Dr. Miquel, of Paris, who was then in London, made some observations on the number of bacteria contained in the air of Ryder Street, St. James'. A cubic meter of this air was found to contain only 240 organisms, but this low result was probably due to the wet weather which prevailed on four out of the five days on which the experiments were conducted—the air being remarkably free from dust. In Paris at the same time the air of the Rue de Rivoli contained 360 organisms per cubic meter. Dr. Miquel would not, however, be surprised to find that the air of London was habitually fairly pure and free from organisms, owing to the proximity of the sea and the fact that the houses of London being generally of no great height—unlike Paris—the streets are continually being swept by currents of air. The air of sleeping apartments is very impure as regards the number of contained micro-organisms. One such room in Paris was found to contain on the average, in the winter and spring of 1882, 73,540 bacteria per cubic meter, and the air of the Hopital de la Pitie has been observed to contain 79,000 bacteria per cubic meter. In contradistinction to these large numbers, the air over the Atlantic Ocean (Moreau and Miquel) has been found to contain from 0 to 6 bacteria per cubic meter, and the air of the higher mountains an average of only 1 bacterium per cubic meter (Freudenreich).

M. Moreau has investigated the number of organisms present in sea air. These investigations — undertaken under circumstances of considerable difficulty on board ship, and conducted on an elaborate scale—are of much interest as bearing on the treatment of phthisis by high mountain altitudes or by sea voyages, in both cases the special object desired being to place the patient in an atmosphere free from all impurities. We will quote a few of M. Moreau's conclusions on this subject: 1. Air taken on the coast, when the wind is blowing off the sea from a direction in which land is at a great distance, is in a state of almost perfect purity. 2. In the neighborhood of continents, winds blowing from the land always bring an impure atmosphere; at 100 kilometers from the coast this impurity has disappeared. 3. During moderate weather the sea does not yield to the air any of its contained bacteria; during rough and stormy weather sea air is charged with a minute quantity of bacteria. 4. The air of ships' cabins is also charged with a number of microbes incomparably greater than that of the open air at sea, but the purity of the air of these cabins increases rapidly during the first days of the voyage. Later on, an equilibrium appears to be established, depending on the amount of purification of the air by ventilation and the number of occupants. 5. The air of ships' cabins is relatively very poor in bacteria; these probably are one hundred times less in number than the air of an occupied room in Paris.

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