

so-called active and passive states of the contractile action. Hence it results, from the comparison of the morphological properties and motory phenomena of muscular fibre and the contractile cortical layer of the Polythalamia, that the contractile substance during its action appears in two forms—the elongated (under certain circumstances cylindrical) form, in which the contractile particles are arranged with regard to a long axis, perhaps that of a cylinder; and the form of a plate or disk, in which the arrangement of the contractile particles has regard to the axis lying in the section of the cylinder. The contractile action itself is exhibited in the displacement of the contractile particles from one fundamental form to the other, and *vice versâ*. Each of the two principal or fundamental forms of the contractile substance in the animal organisms may be realized as the so-called active state, or as that of rest. In the muscular fibre the arrangement of the contractile particles with relation to the longitudinal axis of the cylinder is conceived as the state of rest, the discoidal form as the active form; while the reverse occurs in the Polythalamia.

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XLI.—*On a new Species of Astacus.*

By Dr. E. VON MARTENS.

THE Zoological Museum in Berlin has recently received from Dr. Richard Schomburgk a species of crayfish, almost equal in size to a lobster, from the Murray River, Australia. Dr. J. E. Gray, in a paper on the Australian Crayfishes, embodied in Eyre's 'Journal of Expeditions of Discovery in Australia,' vol. i. 1845, p. 409, mentions a large species living in the said river, weighing about two pounds, and possessing the same flavour as the European lobster. This may be the same; but, as I could not find elsewhere a zoological description of it, I venture to regard and to describe it as new.

*Astacus armatus.*

Rostrum of the cephalothorax as long as the peduncles of the outer antennæ, pointed, furnished on each side with four teeth, the posterior ones smaller; its lateral edges continued backwards on a short extent of the cephalothorax in the form of a raised ridge. A single spine behind the middle of the orbit, somewhat behind the orbital edge, and continued backwards in a similar very short ridge. The sides of the cephalothorax, the hepatic as well as the branchial region, furnished with scattered conical spines, each enlarged at its basis, as if placed on a cushion. The lateral lamina of the outer antennæ of the same spiniform shape as in *Homarus vulgaris*, but somewhat longer. Two strong spines on the interior edge of the carpus, the foremost much stronger.



The hands are exactly similar in size and in the shape of the teeth situated on the cutting-edges, both lateral edges of the hand serrated by blunt, short, conical spines, bent forwards and forming a double row on the external edge, and a single one on the internal. The femur of the four other thoracic feet furnished on its upper edge with two, three, or four spines. The upper face of the abdomen armed with strong conical spines disposed on each segment in a transverse row of six, the outer ones stronger; only on the second segment, the lateral part of which is enlarged forwards as well as backwards, there are two outermost spines, one behind the other, so that this segment possesses eight instead of six of them. The laminæ of the abdominal feet membranaceous, with calcareous edges. The hinder half of all the laminæ of the caudal fin soft and flexible; the lateral edges of the median one (the last abdominal segment) with a single tooth, further removed from its extremity than in the lobster, and corresponding in situation to the deep notch in this segment in the Crayfish. The two lateral pairs of caudal plates with the same transverse and denticulated suture as in the lobster.

Length from the extremity of the rostrum to that of the caudal fin 330 millims.; length of the hand 130 millims., breadth of the same 60 millims.

*Astacoides nobilis*, Dana, from New South Wales, comes very near to this species in several respects, but is at once distinguished by its blunt, almost toothless, rostrum; its abdominal spines are much more feeble. The formation of the rostrum and the want of a deep notch in the caudal fin bring this new species nearer to *Homarus* than any other known species; but the hands being equal, and the last thoracic segment being moveable independently of the cephalothorax, distinguish it from the lobsters. As I could examine one specimen only, which I did not wish to injure, the number of the gills could not be ascertained; and, as it is a female, there were no means of determining whether any appendages exist in the male. These are the two characters on which is based the division *Astacoides*, adopted by Dana as a genus. Judging from some other characters, which are peculiar to *Astacoides Madagascariensis* and the new species, as the prickles on the sides of the thorax and the membranaceous texture of the abdominal feet, I think it probable that also in the above characters *Astacus armatus* will resemble *Astacoides*. Whoever may consider the teeth of the rostrum and the notches of the caudal fin to be generic characters will be under the necessity of establishing a new genus for our species. I prefer, however, to regard it as evidence against the generic value of those subordinate characters, the different combinations of which would not fail to require more and more new genera.