

Schicht, während die den Farbstoff enthaltenden eine recht mächtige, indes continuierlich in die Pigment führende übergehende Schicht, ausmachen. Wenn wir einen Medianschnitt durch die Iris des Schwarzspechtes machen, welcher so gewählt ist, daß er den dunklen Fleck trifft, werden wir dort ein ganz ähnliches Verhalten finden. Der schwarze Fleck wird aus einer oberflächlichen Schicht Pigment führender Zellen gebildet, welche Schicht in die erheblich mächtigere gefärbte Lage übergeht, die den größeren Theil der Irisoberfläche bildet. Hieraus scheint hervorzugehen, daß der betreffende Pigmentfleck dem vorderen Theil jener dunkleren Zone entspricht, welche die Pupille der Vögel im Allgemeinen umgiebt; er dürfte demnach in der Weise entstanden sein, daß diese Zone rings um die Pupille reduciert wurde, außer vorn, wo sie im Gegentheil sich vergrößerte. Den Beweis dafür, daß diese Ansicht das Richtige trifft, glaube ich bei dem Grünspecht gefunden zu haben. Bei ihm ist die Iris röthlichweiß, mit einer dunkelbraunen Zone um die Pupille herum. Bei näherem Betrachten ersieht man, daß diese Zone nicht, wie bei anderen Vögeln, ringsum gleich breit ist, sondern vorn eine deutliche Ausbuchtung bildet. Hier finden wir also den Beginn einer solchen Concentrierung des Pigmentes, wie sie bei dem Schwarzspecht bereits ganz ausgebildet vorliegt.

## 5. Some biological and anatomical facts concerning *Parastacus*.

By Dr. Emar Lönnberg, Upsala Sweden.

eingeg. 23. April 1898.

The genus *Parastacus* has long been a puzzle to zoologists. Already in 1870 von Martens mentioned the curious fact that male specimens of *Parastacus pilimanus* and *Parastacus brasiliensis* had genital orifices also on the basal segment of the third pair of legs. In the publications from the »Congrès international de Zoologie à Moscou« Aug. 1892. H. von Ihering has given a memoir on *Parastacus* in which he states that »les deux ouvertures (that is both on third and fifth pairs of legs) coëxistent chez tous les exemplaires« which he has examined. In the latest paper<sup>1</sup> which I have received concerning these crayfishes Faxon relates that he has found the same »to be the normal condition in the burrowing species of *Parastacus*« and he mentions 4, by him described, species which all show the same feature, a fifth however does not. Faxon does not give any description of the anatomical structure of the genital organs of his forms. The knowledge about these things is

<sup>1</sup> Observations on the Astacidae in the U. S. Nat. Mus. and in the Mus. of Comp. Zool. with descriptions of new species. Proc. of U. S. Nat. Mus. Vol. XX. Washington 1898.

thus confined to what is contained in von Ihering's notes upon this subject, because, so far as I have been able to find out from the recording papers, nothing more is written since 1892 concerning this question. The specimens which the last mentioned author has dissected were males, and he says (p. 44) »tous les exemplaires, plusieurs douzaines, que j'ai vus jusqu'à présent, étaient des mâles«. But he seems to be doubtful whether *Parastacus* is hermaphrodite or not. In the collection of animals recently brought home from Chil  by Mr. Dus n was a number of *Parastacus*. It is natural that I, when receiving them, was much interested to learn the structure of the reproductive organs of these animals, if possibly an examination of them would be able to throw some more light on this question. I found then at once the co-existence of genital »orifices« on the basal joints of both third and fifth pairs of legs. The supposition expressed by Dr. von Ihering seemed then at first, at least, possible. A closer examination revealed however in the next instance that even exteriorly male and female specimens could be discerned. The abdomen of the female *Parastacus* is namely a little broader and its pleura more laterally directed than in the male. This can be made out by a comparative measurement in the following way. In the female the greatest width of the third abdominal somite is about as great as the distance from the posterior margin of the ocular emargination of the carapace to the cervical groove measured in a straight line and in the horizontal plane from the former point.

In the male again the greatest width of the same abdominal somite is always less, and sometimes considerably less than the length of a horizontal line drawn from the posterior margin of the ocular emargination to the cervical groove. The chela of the female is comparatively shorter and broader than in the male. Thus in the former the greatest width of the palma usually equals half the length of the whole chelae with the fingers, and sometimes exceeds that measurement. In the male the chelae are larger and the fingers longer so that the width of the palma never reaches half of the total length. I will mention however that one of the females which I have examined has rather masculine looking chelae. I think though that this can easily be explained by assuming that these have been reproduced so recently that they have not yet attained their full size and normal shape<sup>2</sup>.

(Schlu  folgt.)

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<sup>2</sup> They have also been pinched in some fight when their shell was soft so that they show wounds which have not yet healed.

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Autor(en)/Author(s): Lönnberg Einar Axel Johan

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