

Aber das wird »leider«<sup>5</sup> nicht möglich sein, denn Herr Repiachoff hat über die »Organisation« seines Untersuchungsobjectes nicht viel mehr verrathen, als daß »das Thierchen« verschiedene »Zellenarten« habe. Und so bleibt ihm für alle Zeiten der Ruhm gesichert, eine acoele Turbellarie mit Leibeshöhle und Mitteldarm beobachtet zu haben — den anderen Zoologen allerdings dafür auch das Recht, nach dieser Probe von wissenschaftlicher Gründlichkeit des Herrn Repiachoff zu behaupten: sein Object habe diese Organe gar nicht besessen oder aber, er habe gar keine Acoele, ja vielleicht überhaupt gar keine Turbellarie vor sich gehabt.

Von der nachlässigen Art, mit der Repiachoff seine Publication zusammengeschrieben hat (es handelt sich da nicht um Dinge, die etwa mit Unkenntnis der deutschen Sprache entschuldigt werden können!), will ich gar nicht weiter sprechen, sondern schließe diese unerquickliche Nothwehr mit einem Antrage, der gewiß die Zustimmung aller ernstesten Forscher finden wird. Derselbe lautet: Einer Publication, die sich gar nicht darum kümmert, ob das, was sie bringt, neu ist oder nicht und die sogar die Mühe scheut das Thier, mit welcher sie sich beschäftigt, zu bestimmen oder doch so zu beschreiben, daß es wiedererkannt werden kann — einer solchen Stilübung versage man in Zukunft die Aufnahme in eine wissenschaftliche Zeitschrift und ignoriere sie, wenn sie sonst irgendwo das Licht der Welt erblicken sollte.

### 3. On the classification of the Tracheate Arthropoda.

By R. J. Pocock of the British (Nat. Hist.) Museum.

eingeg. 7. Mai 1893.

A few years ago it was customary to divide the Arthropoda into two main sections — the Branchiata or water-breathers, including the Crustacea, with *Limulus* and the *Trilobites*, and the Tracheata or air-breathers, including the Arachnida, Myriopoda and Hexopoda or Insecta.

But there is no great mass of evidence in favour of the view that the Arachnida are closely allied to the remaining groups of the Tracheata.

On the contrary there are many who maintain that their affinities are rather with the Merostomatous Crustaceans. It is therefore perfectly permissible to acquiesce in their removal from the position they previously occupied in the same category as the Myriopoda and

<sup>5</sup> Man vergleiche den Schlußabsatz der Repiachoff'schen Publication (p. 136).

Hexopoda, and to regard the Tracheata as composed exclusively of the forms that are referred to these last named classes.

The next question that presents itself for elucidation is naturally this: — Is the group, the Tracheata, as thus limited, a natural one? Provisionally at all events an affirmative answer may be given to this question. For the animals known commonly as Millipedes, Centipedes and Insects present a number of characters in common, which are sufficient to justify the belief that they are tolerably closely related to each other. Thus the anterior pair of appendages in the adult are preoral in position and, performing the function of feelers, are known as the antennae, while behind the mouth not less than two pairs of appendages and sometimes as many as four pairs abandon all share in locomotion and become modified so as to act as jaws.

Moreover the dorsal elements of the anterior two or three or perhaps even four somites, which bear the antennae and the two or three or four pairs of gnathopods, are represented by a single plate, frequently provided with eyes which is known as the head. The body behind the head is composed of a series of segments, varying in number from about 10 to over 100, and the tracheae when developed almost always communicate with the exterior by means of apertures called stigmata situated above the bases of the limbs. There is never more than a single stigma for each segment or primitive segment and a study of adult forms and of the embryology of certain members of the groups points to the conclusion that in the ancestral form each body-segment was provided with a single pair of appendages.

The classification of the Tracheata into Myriopoda and Hexopoda is based principally upon the external form. In the Myriopoda the region behind the head is not differentiated into separate regions, the individual segments being similar to each other, each being provided with a single pair of appendages which generally speaking are also similar to each other. In the Hexopoda on the contrary the segments which succeed the head are not in the adult all alike, the three anterior only being provided with appendages. Thus this region is divisible into two portions, the anterior of which, bearing the three pairs of locomotor appendages, is known as the thorax, while the posterior, the apodous region, is called the abdomen.

Until closely examined it would seem that this classification is a perfectly natural one. But when the so-called orders of the Myriopoda are compared with each other on the one hand and with the Hexopoda on the other, the conviction that such is not the case is irresistibly forced upon one. For it will be found that the so-called group of Myriopoda is sharply divisible into two sections upon a

character which must be counted as of the greatest importance, inasmuch as it admits of no exceptions. This character is the position of the apertures of the generative organs. In the Pauropoda and Diplopoda (Millipedes) these apertures are situated near the anterior end of the body between the second and third pairs of ambulatory legs. In the Chilopoda (Centipedes) and Symphyla (*Scolopendrella*) on the contrary they are placed at the posterior end of the body in close proximity to the anus. Now in the Hexopoda the generative organs open exactly as in the two last-named sections of the Myriopoda, a fact which at once suggests the idea that these three groups are nearly allied to each other. And this idea is fully borne out by the circumstance already frequently pointed out by Menge, Haase, Grassi and others, that *Scolopendrella* is closely related to those less specialised apterous Hexopods that are known as *Thysanura*<sup>1</sup>. No one in fact who compares a *Scolopendrella* with a Chilopod on the one hand and with a Thysanurous Hexopod on the other can avoid being struck by the fact that the differential characters between the Insects and the Centipedes are to a large extent bridged over, and that *Scolopendrella* must consequently be regarded as the living form that comes nearest to the hypothetical ancestor of these two great divisions of the Tracheate Arthropoda.

On the whole, however, it would seem that its affinities are rather with the Chilopoda than the Hexopoda, for the reason that the latter have obviously departed more from the primitive ancestral type than the former have.

This conclusion, however, is not a new one as has been stated above. But previous authors, with the exception of Mr. J. S. Kingsley, when discussing the phylogeny of Insects and Myriopods have mostly spoken of the latter as a natural group, equal in value to and to be contrasted with the Hexopoda. The adoption of such a classification in works bearing upon a subject like phylogeny, implies seemingly a belief on the part of those who employ it, that the component orders of the Myriopoda are more nearly related to each other than any of them are to the Hexopoda. That such, however, is in reality the case, I find it impossible to believe, in the face of the singular difference afforded by the situation of the genital orifices. This character it seems to me is of far greater importance as a sign of distinction than the points of resemblance, which Mr. Wood-Mason<sup>2</sup> has attempted to trace between *Scolopendrella* and the *Chilognatha*, are as signs of relationship.

If this opinion is well founded and the conclusions that follow

<sup>1</sup> Packard goes so far as to associate this genus with the *Thysanura*. (Am. Nat. XV. p. 698. 1881.)

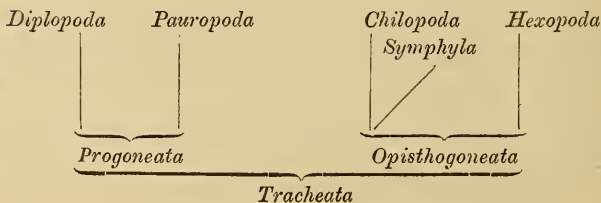
<sup>2</sup> Ann. Mag. Nat. Hist. XII. p. 53 etc. (1883.)

from it are adopted, the Tracheate Arthropoda must for the future be divided into two sections, the first to contain the Pauropoda and Diplopoda and the second the Chilopoda, Symphyla and Hexopoda. For the former I propose the name Progoneata and for the latter Opisthogoneata. Furthermore if it be admitted that the affinities between the Symphyla and Chilopoda are greater than these between the Symphyla and the Hexopoda, the Symphyla and Chilopoda may be united as a group for which the name Homopoda is suggested.

The characters of these divisions of the Tracheata may be briefly set forth as follows:

- A. The generative organs open in the anterior part of the body, apparently on the third metacephalic somite . . . . . PROGONEATA.
  - a. Antennae branched; the segments of the body in the adult are not formed by the fusion of two embryonic somites etc.  
Class. Pauropoda, Lubbock.
  - b. Antennae simple; some of the segments of the body in the adults result from the fusion of two embryonic somites etc.  
Class. Diplopoda, Blainville.
- B. The generative organs open at the posterior end of the body close to the anus . . . . . OPISTHOGONEATA.
  - a. The metacephalic region of the body not divisible into distinct regions, being composed of a series of similar or approximately similar somites, each of which bears a single pair of ambulatory appendages . . . . . Homopoda.
    - α. Two (perhaps three) pairs of gnathites; feet biunguiculate etc.  
Class. *Symphyla*, Ryder.
    - β. Four pairs of gnathites; feet tipped with one claw etc.  
Class. *Chilopoda*.
  - b. The metacephalic region of the body divisible into two distinct regions, the anterior of which, composed of three somites, bears three pairs of legs, while the posterior is never in the adult furnished with ambulatory appendages. . . . . Hexopoda.  
Class. *Hexopoda*.

As a phylogenetic tree this classification may be represented as follows:



Note. The view that the so-called group of Myriopoda is an unnatural assemblage of beings and that the *Chilopoda* and *Hexopoda* are more nearly allied than the *Chilopoda* and *Diplopoda* was put forward by myself as long ago as Oct. 1887 in Vol. XX of the Ann. Mag. Nat. Hist. In the American Naturalist for Dec. 1888, Mr. J. S. Kingsley came independently to exactly the same opinion.

## II. Mittheilungen aus Museen, Instituten etc.

### 1. Hausordnung der Biologischen Station zu Plön.

Die am Großen Plöner See errichtete Süßwasser-Station ist während der ganzen Dauer der academischen Sommerferien benutzbar und eignet sich in besonderem Grade zur Vornahme von eingehenden Studien über das Linnoplankton, dessen Zusammensetzung in den Monaten Mai, Juni und Juli eine sehr mannigfaltige ist. Es besteht zur Zeit aus etwa 50 Arten von mikroskopischen Pflanzen und Thieren. Ein ausführliches Verzeichnis der gesammten Fauna des Großen Plöner Sees findet man im ersten Jahresbericht der Station, welcher vor einigen Monaten im Verlage von R. Friedländer & Sohn zu Berlin erschienen ist<sup>1</sup>.

Die Bedingungen, unter denen zu Plön wissenschaftlich gearbeitet werden kann, sind die folgenden:

1) Der Inhaber eines Arbeitsplatzes hat für die Benutzung desselben wöchentlich 6 Mark pränumerando zu entrichten. Hierfür werden Alcohol und die gebräuchlichen Reagentien gratis geliefert.

2) Für Inländer ist das Mitbringen des eigenen Mikroskops und Praeparierbestecks Bedingung.

3) Für die selbständige Ausführung von Excursionen auf dem See steht den hier arbeitenden Herren jederzeit ein gutes Segelboot (Jolle) und ein kleineres Fahrzeug (Dingy) zur Verfügung; ebenso die erforderlichen Netze und sonstigen Fanggeräthschaften.

4) Als Arbeitszeit gelten die Vormittagsstunden von 8—12 und die Nachmittagsstunden von 2—4 Uhr.

5) An den Sonntagen bleibt die Station geschlossen.

6) Die Bücher der Stationsbibliothek dürfen nur innerhalb des Instituts selbst in Gebrauch genommen werden; ein Mitnehmen derselben in die Privatwohnung ist unstatthaft.

7) Bei Veröffentlichung von Ergebnissen, die unter Benutzung der in der Station vorfindlichen Einrichtungen gewonnen worden sind, ist in die betreffende Druckschrift ein hierauf bezüglicher Vermerk aufzunehmen.

8) Bei hinlänglicher Betheiligung werden vom unterzeichneten Stationsleiter Feriencurse veranstaltet, welche eine allgemeine Orientierung über die Süßwasserfauna bezwecken. Für diese Curse ist ein (nach der Theilnehmer-Anzahl sich bemessendes) Honorar zu zahlen.

9) Die Benutzung der Arbeitsplätze ist zu jeder Jahreszeit zugänglich. Das reichlichste Untersuchungsmaterial bietet sich aber in den Monaten April bis Juli dar.

<sup>1</sup> Derselbe trägt den Titel: Faunistische und biologische Beobachtungen am Großen Plöner See. 1893.