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Prof. C. Claus

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XLIII.—*Reply to Prof. E. Ray Lankester's "Rejoinder."*
By Prof. C. CLAUS.

THE "Rejoinder" with which Prof. Ray Lankester thinks he can get over my contradiction of the accusations brought by him against me (Ann. & Mag. Nat. Hist. September 1886, p. 179) unfortunately renders it necessary for me to furnish a reply, as that author, instead of the revocation called for by me, has answered with fresh charges. Being unable to refute the proofs which I brought forward as citations, he does not hesitate to resort to the contemptible expedient of insinuations, by a reference to some past discussions between myself and other authors, in order that, being to some extent screened by suspicions deduced from them, he may commence his retreat behind the shield of "certain discussions"—a retreat in which, by misrepresentation and falsification of the state of the case, and by new charges, the revocation is evaded. Or is it not a misrepresentation and falsification of the points at issue, counting upon want of knowledge in the reader, that Ray Lankester (sub 1) recognizes, in the circumstance that in my 'Grundzüge' of 1880 I have enunciated the genetic relation of *Limulus* to the Arachnoidea, only my acquaintance with the "general views of Huxley" and others, although, as he must know very well, I had already, in my 'Untersuchungen über das Crustaceensystem' (1876), in agreement with Strauss-Dürckheim and Huxley, thoroughly and independently discussed the genetic relations of the Gigantostraca, including *Limulus*, to the air-breathing Arachnoidea, and

* As I cannot suppose that the reader is familiar with the nature of the "certain discussions" referred to, I may state, as a brief exposition of them, that ten years ago I was reproached by Weismann with having made and published researches upon the Daphnidæ and Polyphemidæ, although I was aware that he was also engaged upon the same subjects. The articles in question are:—Weismann's memoir "Ueber Eibildung der Daphniden" (preface), in Zeitschr. f. wiss. Zool. Bd. xxxiii.; Claus, "Berichtigung und Abwehr," *ibid.*; Weismann's "Rechtfertigung," *op. cit.* Bd. xxx.; and Claus, "Anlass und Entstehung meiner Untersuchungen auf dem Daphnidengebiete," in Sitzungsber. der k.-k. zool.-bot. Gesellsch. in Wien, Bd. xxviii.

With regard to *Seison*, Edouard van Beneden stated, four years after the publication of my paper on *Seison*, that I had not mentioned his name in it, although he had told me in conversation in a coffee-house in Trieste that he had also examined *Seison*, and regarded it as a Rotifer. The articles relating to this are as follows:—E. van Beneden, "De l'existence d'un appareil vasculaire à sang rouge dans quelques Crustacées," in Zool. Anzeiger, 1880; Claus, "Erklärung in Betreff der Prioritätsreclame des Herrn Ed. van Beneden," *ibid.*; Dr. Karl Heider, "Abwehr," *ibid.*

expressed the opinion (p. 112) that the latter had been developed out of the former? If I previously ascribed the complete ignoring of this work in Lankester's article on *Limulus* to his want of acquaintance with it, I must now, after my reference to it in my reply (July 1886, p. 56), recognize in the fact of its being again ignored a determination to suppress it, which can have no other purpose than to make it appear plausible to the reader that the above-mentioned passage in my text-book demonstrates only an acquaintance with Huxley's views, but not agreement with them. And in proof of my being of the opposite opinion it is added by a truly sophistical trick :—"The fact remains that he classified the Gigantostaca under the Crustacea, and in his description * of that group said nothing of their affinities with the Arachnida." Here, no doubt intentionally, nothing is said to remind the reader that I adopted the idea of Crustacea in the broader sense as equivalent to gill-breathing Arthropoda, and within the group placed the Gigantostaca in contrast with the Crustacea *sens. str.* with Nauplius-development, the Eucrustacea. Even now I would maintain this grouping as not in the least contradictory to the opinions recently expressed; for while the Gigantostaca and *Limulus* belong genetically to the same series as the Scorpions and Spiders, they have not therefore ceased to be branchiferous Arthropoda or *Branchiata* any more than their Arachnoid nature is proved by this relationship. In Ray Lankester's opinion, indeed, *Limulus* is an Arachnid, but not in mine; and upon this, as I have already shown, rests one of the numerous differences which separate my views and Ray Lankester's. If the English author will not or cannot understand this, I have nothing further to add, and can only appeal to the sound common sense of those who are capable of judging.

Upon all other points I may be very brief, as they are quite of secondary importance in comparison with the main question which has just been discussed. In order to lessen the value of my criticism all sorts of blunders are ascribed to me—in the first place, in connexion with Packard's criticism, which requires no refutation, the erroneous notion that Ray Lankester had wished to demonstrate twelve segments in the abdominal shield of *Limulus*, and further the opinion that he had supposed the formation of a new mouth in the Arthropoda in comparison with the Chaetopoda. Upon all this I shall

* It can hardly be necessary to explain that a single statement of this relationship in the general section is sufficient, especially in a condensed compendium, and that a second reference to it in the descriptive part must have seemed superfluous.

waste no more words; but the charge which is cast upon me by the ingenious author of the hypothesis "of the change of position of the buccal aperture in the Arthropoda," of having designedly ignored his memoir "On the Primitive Cell-layers &c." of the year 1873, in order to cite as my own (in my memoir on the Daphnidæ, 1876) his discovery that the Arthropod-antennæ are appendages of the trunk, is one to which I cannot avoid offering the full tribute of my admiration, and I am only in doubt whether I should wonder more at the acuteness of its logic or at the delicacy of its sentiment. Does Ray Lankester seriously believe that by this hypothesis of his, viz. the displacement of the mouth * in the Arthropoda from the false analogy of *Amphioxus*, he can establish in the mind of the judicious reader even the shadow of a claim to the interpretation and demonstration of the second antenna of the Crustacea as a trunk-appendage? Does the "adaptational shifting of the oral aperture," by which the two anterior pairs

* I here cite the whole passage relating to the hypothesis of the displacement of the mouth, in order that I may in no respect lessen Ray Lankester's services in the eyes of the reader of my reply (see Ann. & Mag. Nat. Hist. ser. 4, vol. xi. p. 335):—"The prostomium in Triploblastica is liable to be suppressed altogether in the course of individual development, the mouth becoming terminal or other modifications arising; but where it does appear it constantly carries the chief organ of sight, whilst the auditory sac is prostomial in Turbellarians, but metastomial in Tunicates, Vertebrates, and Mollusca.

"The production of individuals of an increased complexity of organization among Triploblastica, by the linear aggregation of zooids, produced by budding in the posterior or metastomial axis of growth (tertiary aggregates of Herbert Spencer) among Annulosa, and probably (though not according to Spencer) among Vertebrata, and even some Mollusca—the process occurring at a very early period and its results being *obscured*, or even *entirely resolved*, by later 'integrating' development in the two latter cases—does not affect the prostomium, which always has an axis of *anterior* growth. When a zooid-segment of a linear tertiary aggregate develops a prostomium or axis of anterior growth, the chain necessarily breaks at that point (*Microstomum*, *Tenia*, Naididæ, Syllidæ). The segmentation of the prostomial axis in Arthropoda and some Annelids, which has an appearance of being a zooid-segmentation comparable to that of the metastomial axis, on account of the identity in the character of the appendages with those of the metastomial axis, has yet to be explained. It may be suggested that it is due to a distinct breaking up of this axis like the posterior one into zooid-segments or zoonites: there is much against this supposition (see Trans. Linn. Soc. 1869, 'On *Chaetogaster* and *Æolosoma*'). Much more likely, it seems, is the explanation that the oral aperture shifts position, and that the ophthalmic segment alone in Arthropoda represents the prostomium, the antennary and antennular segments being aboriginally metastomial and only prostomial by later *adaptational shifting of the oral aperture*." And then follows, for the complete confirmation of this "adaptational shifting," the passage as to the mouth of *Amphioxus*, already cited in my previous article (July 1886, p. 62).

of trunk-appendages become the first and second pairs of antennæ, really seem to him to be "precisely the same thing" as the upward movement of the first trunk-appendages, converted into the second pair of antennæ, such as is rendered probable by the origin of the nerves upon the subœsophageal ganglion and their change of position in the higher Crustacea? And it is upon such a fantastic argument as this that Ray Lankester ventures to bring against me the calumnious charge:—"Prof. Claus further has given expression to the remarkable conception that he is justified in ignoring the work of other zoologists, and treating their results as his own, provided that he does so not more than three years after they have published those results;" and in connexion therewith he feels himself justified in adopting a magisterial tone, and finally in posing as a moralizing judge,—Ray Lankester, who himself in so many controversies has had to submit to be set right, and has just furnished so fine an example of his proficiency in the noble art of sophistical falsification!

It only remains for me, with reference to my previous article (July 1886, p. 55), to point out that Ray Lankester has not given the revocation called for in its concluding passage, and therefore has himself pronounced judgment—a judgment which is strengthened and confirmed by the method adopted in his "Rejoinder."

XLIV.—*Preliminary Report on the Monaxonida collected by H.M.S. 'Challenger.'* By STUART O. RIDLEY, M.A., F.L.S., of the British Museum, and ARTHUR DENDY, B.Sc., Associate of the Owens College, Manchester.

[Concluded from p. 351.]

PART II.

Family 3. Desmacidonidæ (*continued*).

Subfamily ii. ECTYONINÆ.

Fibre normally echinated by laterally projecting spicules.

Genus MYXILLA (Schmidt).

Skeleton-spicules:—(1) main, acuminate, usually spined;