

suchungen beruhen, scheinen die Schlüsse, zu welchen mich meine nur nebenher gemachten Beobachtungen geführt haben, als irrig zu erweisen.

Ich habe trotzdem vorgezogen, meinen Artikel nicht zurückzunehmen, weil man daraus ersähen kann, daß, wenn auch alle vier von mir aufgeführten Arten nur Varietäten einer und derselben Species sind, dieselben doch eine bedeutende Constanz aufzuweisen scheinen. Die Übergangsformen zwischen den verschiedenen Kiefern müssen doch wohl in verschwindender Anzahl vorhanden sein gegenüber denen, die von allen bisherigen Beobachtern übereinstimmend als Art-character aufgestellt worden sind. Ich selbst glaube solche auch einige seltene Male gesehen und für Abnormitäten erklärt zu haben. Wenn auch die *B. pentadonta* nichts weiter als eine unselbständige Varietät sein mag, so kann ich mich doch noch nicht entschließen, dasselbe für die *B. parasita*, *astaci* und *hexadonta* anzunehmen. Wenigstens habe ich — obgleich ich selbst eine Zeit lang der von Voigt ausgesprochenen Ansicht zuneigte — die *Parasita* und *Astaci* sowohl was Lebensweise als auch Gestalt und Farbe betrifft, als bestimmt getrennt ansehen müssen. Die Unterschiede finden sich ja schon in der Größe und Gestalt der Eier und schon an den Embryonen ist die Verschiedenheit in dem Bau der Kiefer zu erkennen. Es wäre interessant genug, wenn sich mit Bestimmtheit angeben ließe, daß die verschiedenen Formen der *Branchiobdella* wenn auch nicht scharf getrennte Arten, so doch sehr constante Varietäten mit spärlichen Übergängen — also mit anderen Worten entstehende Arten wären. Man würde dadurch ein Beispiel für die Bildung neuer Arten auf einem winzigen Wohngebiete erhalten und den besten Beweis dafür, daß der Entstehung einer Species nicht nothwendig eine Wanderung und räumliche Isolirung vorangehen muß, wie dies M. Wagner's Migrations-theorie es verlangt.

Genua, April 1883.

2. Note on the Life History of *Fasciola hepatica*.

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An explanatory paragraph appears p. 104 No. 132 of the »Zoologischer Anzeiger« (Febr. 19, 1883), to which my attention has been drawn. It relates to the paper published in the number for January last of the Quarterly Journal of Microscopical Science on the Life History of the Liver Fluke by Prof. Thomas. As an intimate friend and colleague for some years of this gentleman, and an eye witness

from beginning to end of his research detailed in that paper, I must beg permission to offer on his behalf two remarks on the explanatory paragraph in question.

1) Priority of discovery according to the established rule dates from the day of publication of a paper. As Prof. Leuckart's account of his completed research was given to the world on Oct. 9th 1882 in the *Zoologische Anzeiger* and Prof. Thomas' on the following Oct. 19th in *Nature*, ten days priority in publication must be conceded to Prof. Leuckart. But it must not be forgotten that a peculiar *Cercaria* was discovered in *Limnaeus truncatulus* on Dec. 22nd 1880, described in April 1881, in the *Journal of the Royal Agricultural Society*, and ascribed explicitly to *Fasciola hepatica* by Prof. Thomas on grounds that were absolutely convincing to him and (I may add) to myself who were both personally acquainted with the whole evidence available on the subject. The crucial test of experimental breeding was only required to convince the world: and this proof would have been forth-coming in 1881, had not every endeavour to procure *L. truncatulus* failed in a manner most unfortunate. In 1882, however, the additional evidence desired was furnished independently, by Prof. Thomas in England and Prof. Leuckart in Germany, within a ten days interval. Priority in discovery of the *Cercaria* dating from April 1881 must certainly be conceded to Prof. Thomas and I must protest in the strongest possible manner against any idea that it was merely a happy suggestion on his part to couple that special *Cercaria* with *Fasciola hepatica*. It was a sound logical conclusion based on a thorough pains-taking investigation of a singularly limited area where an outbreak of Sheep-Rot had occurred at the village of Wytham within easy walk of Oxford. It was in the strength of his conviction that Prof. Thomas applied to the Royal Agricultural Society for an additional grant when he found his funds exhausted early in 1882; and his friends supported his application from a conviction on their part of his assured ultimate success. The additional sum thus obtained, I need hardly say, enabled him to conduct his experiments to a triumphant conclusion at the end of August in the same year.

2) To say that Prof. Thomas' paper published in January 1883 is «essentially a confirmation only of Prof. Leuckart's facts already published at earlier dates» appears to me and to other friends of Prof. Thomas not a little misleading. The paper on the contrary while it incidentally confirms Prof. Leuckart's results, is also essentially confirmatory of Prof. Thomas' own facts previously published in 1881 and 1882. It is an illustrated expansion of the article in *Nature* before mentioned enriched with stores taken from earlier papers. Mo-

reover it contains, as I think any unbiassed person must admit, many a detail both as to the life-history and anatomical structure of the parasite and the habits of its host, which may be sought in vain in Prof. Leuckart's paper of Oct. 9th 1882. Paper, I say advisedly, for up to Oct. 11th the date at which the results of this Prof. Leuckart's last work became accessible to us in Oxford, we had no reason to believe that he had advanced further on the right track than to suspect *L. truncatulus* of being one of the intermediate hosts. Indeed in the first number of the Archiv für Naturgeschichte 1882 he had selected as the result of his researches in the year 1881 a tail-less *Cercaria* out of three forms occurring in *L. truncatulus* as the probable *Fasciola hepatica*. By an unlucky fate, of the other two remaining forms one which was rejected by him as having no possible connection with the Liver-Fluke was the very *Cercaria* which we were already convinced was the true object of his search. It was abundantly clear to us that unless Prof. Leuckart obtained specimens of *L. truncatulus* for infection experiments, and unless his experiments proved successful, he was not likely to solve the problem at once.

In conclusion Prof. Thomas desires me to state that by mentioning the date at which his own research was completed, he meant only to claim for himself, as he has a most unquestionable right to do, the position of an independent discoverer of the Life History of the Liver Fluke. So renowned a helminthologist as Prof. Leuckart can hardly grudge at least this honour to a younger worker in the same difficult field in which he has himself laboured so long and to such purpose.

3. Die Wasseraufnahme bei den Mollusken.

Von Justus Carrière.

Da ich mir schmeichle, daß die Untersuchung Griesbach's¹ hauptsächlich gegen mich gerichtet ist, möchte ich mir hier einige Bemerkungen dazu erlauben. Zunächst bedaure ich, daß Griesbach's Arbeit schon so frühe abgeschlossen wurde, daß er meinen im vorigen Herbste erschienenen Untersuchungen über die Fußdrüsen der Cephalophoren keine Aufmerksamkeit mehr schenken konnte; es hätte dies vielleicht einigen Einfluß auf seine Darstellung gehabt. Deshalb will ich aber ebenfalls nur meine frühere Mittheilung² zur Vergleichung heranziehen. Dann möchte ich zuerst auf einen Satz Griesbach's

¹ Über das Gefäßsystem und die Wasseraufnahme bei den Najaden und Mytiliden von Hermann Griesbach. Zeitschr. f. wiss. Zool. 38. Bd. 1. Heft. 1883.

² Die Drüsen im Fuße der Lamellibranchiaten. Arbeiten aus dem zool.-zoot. Institut Würzburg. 5. Bd.

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