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## **Trichoptera Britannica**

**McLachlan, Robert**

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TRANSACTIONS  
OF THE  
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LONDON.

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I. Trichoptera Britannica; a *Monograph of the British Species of Caddis-flies.* By ROBERT M'LACHLAN, F.L.S.

[Read 6th March, 5th June, and 2nd Oct., 1865.]

It is now five years since I resolved to take up the study of that heterogeneous mass of insects forming the Linnæan order *Neuroptera*, my attention having been directed thereto by the publication of Dr. Hagen's papers on the British species in the "Entomologist's Annual;" and above all others the Caddis-flies appeared to stand in need of diligent examination. I had often, when in pursuit of *Lepidoptera*, captured these insects, either by accident or design, and always looked upon them with interest, and then formed the idea of working out a Monograph of the British Species, which I now beg to bring before this Society. The completion of it has been retarded by various circumstances, not the least of which has been the difficulty of the subject. But I have had to work nearly alone in this country, and with the exception of the assistance kindly rendered by friends who have forwarded to me any specimens they may have captured, I have had to rely almost entirely upon my own exertions. Had it not been, therefore, for the friendship and co-operation of Dr. Hagen, *the authority par excellence* on these insects, it is probable that the publication of this Monograph might have been postponed indefinitely. But from the moment that I first announced my intention of under-

taking a work of this kind to Dr. Hagen, he has at all times taken the warmest interest in it, and his assistance has been invaluable owing to his power of discriminating the often minute structural characters, so subtle yet so decisive, to be found in the *Trichoptera*, and to the opportunities he has had of investigating the types of the species described by previous authors; it is to be regretted that most of these have ignored the existence of structural specific characters, more difficult to investigate than mere differences of coloration, but far more certain.

With respect to the synonymy,\* I have endeavoured to make it as complete as possible, and have indicated by an asterisk in brackets—thus, (\*)—all citations that I have been able to verify by an actual examination of type-specimens, a plan that it would be desirable to adopt more frequently in similar works. The types of many of Pictet's species are now lodged in the British Museum, and have been carefully examined both by Dr. Hagen and myself. I have also a considerable number of species named by Dr. Brauer, contained in the Collection of European *Neuroptera* formed by Professor Zeller, which is now in my possession. The Collection of Curtis was inspected by me several times before it was sent to Australia, and that of Stephens has been constantly consulted. The papers by Dr. Hagen, revising the species of Pictet (published in the Stettin "Entomologische Zeitung"), and of Rambur (published in the "Transactions de la Société Entomologique Belge"), have been carefully studied, and I have had at all times the benefit of a constant correspondence with the author on difficult points. Still much remains to be done, and it is possible that many of the citations here given may prove erroneous, when they can be tested by an examination of typical specimens. Many of the species described in the works of Zetterstedt and Kolenati stand greatly in need of identification in this manner.

I will now proceed to compare the number of species described in this Monograph with those noticed by previous authors as occurring in this country. Passing over Stephens' "Catalogue" and Curtis' "Guide" as being mere lists of names, I come to

\* Since this was written I have received a copy of Dr. Hagen's "Phryganidarum Synopsis synonymica," just published in the "Verhandlungen der k. k. zoologisch-botanischen Gesellschaft in Wien." This work is a laboriously compiled list of the described *Trichoptera* of the whole world. It will be found that the synonymy of our species agrees very nearly with that given in this Monograph. Some few discrepancies occur, which time and further knowledge will perhaps clear up. Many of the citations from the old authors will always remain uncertain.

Stephens' "Illustrations of British Entomology," as the first work professing to give descriptions of all known native species. In this work, in the sixth volume of the *Mandibulata*, published in 1836—7, I find (excluding two species of *Lepidoptera*, erroneously described as *Trichoptera*) descriptions of 183 so-called species. This has a very pleasing appearance so far as our apparent richness is concerned, and is probably somewhat near the number that really inhabit this country, when all shall have been discovered, but concerning those then known it is altogether illusory, some species being described under as many as six different names, and the two sexes sometimes placed in different genera or in different sections. Moreover, in some cases, Stephens had displaced names used in his Catalogue to give preference to those employed by Curtis in his paper in the *Philosophical Magazine*, applying these latter to the wrong insects, and thus creating additional confusion.

After Stephens, nothing whatever was done for many years, until, in 1857, Dr. Hagen made a short visit to this country, and jotted down notes on the species in our Collections. After his return home he drew up from these notes a Synopsis of the British Species, which was published in the "Entomologist's Annual" for 1859—61. In this work, which may be looked upon as a masterpiece, considering that the descriptions were drawn up from notes only, made during a hurried visit, the number of species was reduced to 108, which included several not previously recorded. This number I have found it necessary to still further diminish, so far as relates to our knowledge at that period, but there were also some few species then known which were accidentally omitted or misunderstood by Dr. Hagen; the true number known at that time being probably under 100. In the present Monograph I give descriptions of about 126 species (a few being rather doubtful), arranged in 43 genera, thus showing a considerable addition to our Trichopterous Fauna during the past four or five years, and this too the work of very few Entomologists.

I sincerely hope that the publication of this work will induce some of our Entomologists to devote their attention to these much-neglected insects. Most of us in our first essays at ensnaring the finny inhabitants of our lakes and streams, have made personal acquaintance with the larvæ of the Caddis-flies, the "Caddis-worms" as they are commonly called. I would beg then that some of those with entomological proclivities should also turn their attention to the insects produced from these larvæ. I

can promise them that the delights to be derived from the study will amply repay them for the labour bestowed upon it; and I feel assured that those who seriously occupy themselves in the study of the *Trichoptera*, will be the most ready to excuse the omissions and imperfections of this Monograph.

#### *Characters of the Order.*

Antennæ setaceous, multiarticulate. Ocelli three or none. Mandibles rudimentary (or absent?). Maxillary palpi with the number of the joints varying in the males; always five-jointed in the females. Labial palpi three-jointed. Prothorax very short, forming a collar. Wings four, membranous, deflexed in repose, more or less pilose, with few transverse veins. Legs long; coxæ elongated; tibiæ usually furnished with long spurs; tarsi five-jointed.

Eggs enclosed in a jelly-like substance.

Larvæ generally aquatic\* and furnished with external respiratory filaments. Legs six, and two anal crotchets; the first abdominal segment with lateral and median processes. Residing in cases which are either free or fixed.

Pupæ remaining in the cases until shortly before the metamorphosis. Antennæ and legs free. Mandibles strong and often dentate; only used for the purpose of breaking through the case.

It is not my intention to enter into a lengthened examination of the reasons that have induced Entomologists to consider these insects either as forming a distinct Order, or as a part of the *Neuroptera*. Among modern authors, on the one hand rank the names of Kirby, Leach, Curtis, Stephens, Westwood and Kolenati; on the other, Pictet, Rambur, Brauer, Hagen, &c. It is with no disrespect to the opinions of the latter gentlemen that I elect to follow the example of most of my countrymen, and to consider the *Trichoptera* as forming a distinct Order. It appears to me that amongst the *Neuroptera* (in the Linnæan sense) are included two or three Orders, each of co-ordinate value with those that have been universally received as such, and which cannot be retained in such close relationship without outraging the laws of classification both metamorphic and cibarian.

If the claims of the *Trichoptera* to be considered a separate Order be admitted, the families still remaining in the *Neuroptera* will be scarcely less discordant than before, and it follows that the

\* The only well-authenticated exception is *Encicyla pusilla*, Burm., which is not a British species.