

PSYCHE.

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The Aborted Wings of *Boreus*.

These curiously modified organs have been considered by the writer as altogether useless appendages. In *B. brumalis*, the anterior pair are long and narrow and slightly tapering from base to tip; the tips are curved downward and nearly reach the end of the abdomen. The inferior pair are narrow and ribbon-shaped; are slightly longer than the superior pair, and have a transverse fold near the end, by which, probably, the tip is folded on the main portion. The upper pair are corneous in texture, the inferior subcorneous. But the characteristic which calls for particular attention is found in two series of rather long stoutish acute spines, a series to either edge of the inferior surface of the upper pair of wings (?). On the basal fourth of these organs the spines are absent. Where they are found they form a rather close series, stand at right angles to the surface to which they are attached and gradually increase in length to the final one at the tip, which is much longer than any of the others. These spines, in conjunction with the wings, I have reason to think, are used to support the female in the act of copulation. In this act the female is borne upon the back of the male, assuming, while in this position, that attitude which it assumes when alarmed and feigning death — the limbs are contracted against the body, the head drawn toward the breast and the antennæ laid along the ventral surface — thus apparently doing nothing to hold itself secure, yet maintaining itself when the male is leaping actively. When we consider the convex surface of the abdomen of the male, the support received from the connection of the sexual organs would seem hardly enough to account for the firm position of

the female; that the modified wings of the male contribute to this support would therefore be a plausible theory. But for the theory to hold good it must be proved that the wings are available for such a purpose, that is, capable of being raised and opened. I have supposed them to be incapable of any motion. An examination of a specimen which I have had in my possession for several years threw no light upon the matter, all its limbs having become rigid from immersion in alcohol, but a specimen rendered transparent and properly prepared for the microscope revealed the fact that the superior pair of wings were articulated at the outer two-thirds of their base, the inner third being free.

The wings of *B. Californicus* are furnished with similar series of spines. *B. nivoriundus* I have never seen.

Henry L. Moody.

Synoptical Tables for Determining N. A. Insects.

Observations upon the habits and other peculiarities of insects often fail of record merely because the names of the insects are not known to the observer. Beginners in the study of systematic Entomology find it of great advantage to start with a named collection, and can rarely get such, at least without difficulty. Collectors are encouraged by finding that it is easy to name their specimens, and from collectors are led to become students. For these reasons and others, any device is desirable which will render these names discoverable, with the least possible preliminary study; the experience of naturalists has shown that artificial keys, or dichotomic synopses, are most adapted to supply the demand.

A series of synoptical tables for determining the names of North American insects will appear in *PSYCHE*, as occasion favors. The first of the series will be a table for determining the families of Orthoptera. This will be followed by a table for determining the genera and species of the family Forficulariae, found in the United States. Other families of Orthoptera or other orders of insects will afterwards be treated in a similar manner. When one or a few of the members of any group are of such character that the insertion of those members into



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