

THE "EYE-SPOTS" OF *ALAUUS OCULATUS*.

BY F. ALEX. MCDERMOTT, WASHINGTON, D. C.

The large elater, *Alauus oculatus*, whose pronotum bears the two large black-and-white eye-spots which give the insect its species name, is a prominent specimen in practically every large collection of Coleoptera in this country; and if not the *oculatus*, then some of its near relatives, similarly marked, will surely be there. Usually, also, one will find in these collections, the cucuyo, *Pyrophorus noctilucus*, or some of its allies, whose thoracic portions bear two spots very similarly situated, but this time of a yellow colour and smaller, and during the life of the insect emitting that remarkable light, which was the basis of the researches of Langley and Very, "On the Cheapest Form of Light."* Those who observe these insects, either alive or dead, would naturally wonder whether the *oculatus* might not be luminous, or at least have beneath its chitin some structure indicating that the eye-spots were a degradation of the photogenic organs of the cucuyo. In the matter of classification, the insects are not particularly closely related; both are elaters, to be sure, but in different subfamilies, and not very strikingly similar in their mode of life.

The extremely hard chitin of the *oculatus* renders it a difficult subject for histologic work. However, the idea above mentioned, that there might be some sub-chitinous structure, occurred to the writer some time ago, and in pursuance thereof, he has attempted to gain some knowledge of the structure of these eye-spots. A number of sections have been made by hand, the sub-tissues being stained with acid carmine, and the mounting being in paraffin. While the general statement may be made that there is no special organic structure beneath these eye-spots, the observations upon them seem to justify publication, as a matter of interest, inasmuch as no previous paper appears to have been published on this point, so far as I have been able to ascertain, though to my knowledge, others have been interested in this same subject.

Each spot consists of an elliptical, convex area, whose edge is depressed below the surrounding thoracic chitin. Under a low-power lens they appear to be covered with a dense, black pile, like black velvet, while the edge of the spots bears short, coarse white hairs. With higher powers the velvety pile resolves itself a mass of flat, scale-like chitinous hairs, showing a few longitudinal ribs, and slightly concavo-convex. Their general shape under the lens resembles the chaff from grain. The white hairs of the edge are similar, but coarser. Both are hard to remove, and

* Smithsonian Misc. Coll., No. 1258, Washington, 1901,
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