

tion of many alkaloids may be appreciably influenced by the presence of certain types of salts such as alkali carbonates.

Who knows but that the toxicity of caffeine may be influenced by the mineral matter of the diet and by the quantity of water the animal drinks?

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Catalogue of the Lepidoptera Phalaenæ in the British Museum; Catalogue of the Noctuidæ in the Collection of the British Museum. By SIR GEORGE F. HAMPSON, Bart. Volume X., 1910, Volume XI., 1912. London (England).

The two volumes comprise 2,140 species, in the subfamilies *Erastriniæ*, *Euteliinæ*, *Stictopteriniæ*, *Sarrothripinæ* and *Acontiinæ*. They are illustrated by two volumes of colored plates, Nos. CXLVIII. to CXIX., inclusive. There are also many cuts in the text illustrating typical species in each genus, giving both the general appearance and structural characters. Keys to the genera in each subfamily and to the species in each genus are given. There are also genealogical trees for each subfamily, showing the author's ideas of the evolution of the genera. The treatment is the same as in previous volumes of this work, which we have had occasion to notice. The genera are arranged upon adult structural characters, selected by the author. Resort has been had to many minor characters, such as modifications of the tuftings of the vestiture, tubercles on the front of the head, spines on the legs, etc. These characters are in many cases of little phylogenetic importance, so that the classification is to a large degree arbitrary and artificial. This appears distinctly in the arrangement of species within the genus also, where primary groups are made on modifications of antennal structure in one sex and other secondary sexual characters, so that really closely allied species are often widely separated. It would be rather difficult, however, to have avoided this and still keep the keys in a workable condition, especially where the vast majority of the early

stages and life histories are unknown, as is the case with these insects. The nomenclature of the North American species included in the book is greatly changed from that familiar to us. This appears to be unavoidable, as the classifications of different authors based on restricted faunal regions are here combined. The names here established will probably tend to be permanent, as it will be long before any one attempts to treat the Noctuidæ of the world on new lines with material equal to that afforded by the British Museum.

The British Museum collection, rich as it is, does not make a practise of retaining long series of specimens of common species. Consequently the author of these catalogues occasionally suffers from lack of sufficient material. We notice in the genus *Iscadia* (vol. XI., p. 362) some errors due to this cause. The subfamily *Sarrothripinæ*, to which *Iscadia* is assigned, is defined by the presence of a bar-shaped retinaculum on the fore wing of the male. In *Iscadia aperta* Walker and *I. duckinfieldia* Schaus this is absent. Sir George notes its absence in *I. aperta*, but having only one male he supposes it may have been broken off. Furthermore, *I. aperta* has simple flattened antennæ in the male, not bipectinate, as given in the table. *I. duckinfieldia* is abundantly distinct from *I. aperta*, not possibly an aberration, as suggested, for it has pectinated antennæ in the male and differs in markings, the double black line above the reniform-mark being absent. The separation of *I. duckinfieldia* on the brown costal shade is ineffective, as this shade is as often absent as present. These imperfections would have been obviated by larger series of specimens of these rather common species.

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SPECIAL ARTICLES

THE NATURE OF THE FERTILIZATION MEMBRANE
OF THE EGG OF THE SEA URCHIN
(*ARBACIA PUNCTULATA*)

MANY widely held hypotheses, *e. g.*, on the dynamics of cell division, etc., are based on