

Page.
78-80
78, 79
79, 80
80-82
80, 81
81, 82
82-84
82, 83
83, 84
84-88
84-86
86-88
88, 89
88
88, 89
89-91
89, 90
90
90, 91
91-109
91-94
94, 95
95-109
109, 110
109
109, 110
110-112
110, 111
111-112
112-118
112-114
114
114-118
119, 120
121-126
127-129

CONTRIBUTIONS TOWARD A MONOGRAPH OF THE INSECTS OF THE LEPIDOPTEROUS FAMILY NOCTUIDÆ OF BOREAL NORTH AMERICA.

A REVISION OF THE DELTOID MOTHS.

By JOHN R. SMITH, Sc. D.,

Professor of Entomology in Rutgers College.

Under the general term "Deltoids" there are usually grouped in lists, catalogues, and collections the moths of a series of species and genera which have a somewhat distinctive appearance and habitus, but for which we have as yet no exclusive characters.

This series has been elevated to family rank, has been associated with the Pyralids, and has been most recently recognized as indistinguishable in structural characters from the Noctuidæ. It is possible that sub-family rank at least should be accorded the series as here restricted; but this is not proposed at present, since within the limits of the series there are two if not three very distinct types or tribes, of which *Helia*, *Herminia*, and *Hypena* are, respectively, typical.

In a general way the species are characterized by unusually long palpi, which are either slender, closely scaled and curved upward and backward, sickle-like, often far exceeding the head, or they are directed forward obliquely or straight, clothed with upright scales, the second joint longest, the third always set into the second so as to point upward. In the latter case the palpi with the pointed frontal tuft form a beak or snout similar to that in the Crambidae among the Pyralids. These elongated palpi are not peculiar to this family among the Noctuids; but there are very few genera so constructed in other series, and these may be, in most cases, differentiated without trouble. Among the species in which the palpi form a snout, being oblique or straight, with elongated second joint, none are Deltoids that have the terminal joint drooping or set in at a downward angle with the second joint. Nor do I include any species in which the second joint is closely scaled above, the long vestiture directed downward, so that the apparent enlargement of the joint is formed by scales directed and extending below the joint. This at first seems a slight character; but it will assume importance when the character of the palpi is closely studied, and when we consider that it is really reversing the position of a joint. Of the forms