

reason, that, within the different Sub-orders, there is great variation in this respect. For instance, in the *Pyralidæ* we have forms almost identical, such as *Chryseudenton* and *Cataglyphis*, which differ by the absence or presence of simple eyes. I do not wish to follow out the argument at length; the environment seems to effect comparatively easily the sense organs; Cave-insects are frequently blind. Again the Challenger Expedition brought up from the depths an eyeless Crustacean—*Willemoesia*, named for the distinguished naturalist, Dr. Willemoes-Suhm, who, unfortunately for science, died before the "Challenger" returned to her English dock. But insects are now "arranged" by their physiological characters, though certainly with very different results from those attained by Mr. A. H. Swinton. The whole structure and proportionate parts are taken into consideration, and little can be said against the observations, partly original, brought together by Dr. Packard in his "Guide." And Mr. Swinton himself speaks of Dr. Scudder's observations of rank in the Butterflies, not based on "sense organs," and which seems to us so full and satisfactory. The observations on the "Ghost-moth" are an echo of Dr. Packard's remarkable paper, in which the resemblance of *Hepialus* to the Neuropterous genus *Polystichoetes* was fully discussed. That the *Bombycidæ* afford instances of synthesis has been shown by this distinguished pupil of the elder Agassiz, who had so remarkable an ability for perceiving and weighing analogies and affinities in animals. The question of rank in insects goes hand in hand with that of the origin of the diverse forms. We fear that Mr. Swinton has but very partially examined the subject and that his suggestions as to sense-organs are not based on proper physiological studies. Not without a certain shudder can we read the author's glib disposal of the question of rank in *Hexapoda*. And his use of sense organs to determine rank is open to the objection that it is not thorough; that some members of his highest groups will fall into the lowest, and thus utterly forsake their "physiological associates" by reason of a sudden failing of ears and eyes. "As far as I can learn" is hardly to be expected as the basis of observations seriously advanced; yet with these words our author disposes of "the species of Hymenoptera, Neuroptera and Diptera." There is only one way to accumulate facts upon this subject, and that is to trace the changes in related forms, to take the dissecting needle in hand and to take down the numerous memoirs already extant upon the subject and thoroughly master their contents.