

grand divisions, lead off apparently in geological time the Insects of the globe—the Neuropters the pteroprosthentic, and the Orthopters the pterometasthentic, Insects.

In view of this fact, we should naturally expect to find among the early representatives of these tribes foreshadowings of the higher tribes of Insects, that is, comprehensive (or synthetic) types embracing some of the characteristics of those higher tribes. Now two of the subdivisions of both Neuropters and Orthopters, in the classification proposed, consist mainly of such comprehensive types, and these were the forms which were apparently most characteristic of the Carboniferous Insect-fauna: namely, Termitideans or the Hymenopteroids and Planipennians or the Lepidopteroids, among Neuropters; and Cursors or the Coleopteroids and Ambulators, among Orthopters. With these there were also the typical Orthopters or Saltators, (Crickets being among Carboniferous species,) and possibly also Coleopters. Nothing is yet known of ancient Thysanures, although it is probable they were in existence at the same time.

We should expect also from the association of the Neuropters and Orthopters in the same Carboniferous fauna that there would be examples of intermediate types between these tribes, that is, those which, while related fundamentally to one of the two tribes, presents some characteristics of the other; for in this way the striking harmony in the flora or fauna of an age in geological history was often produced,—as, for example, in the land-vegetation of the Carboniferous era, which embraced common Acrogens (Ferns) and Gymnosperms; and besides these, the intermediate or comprehensive types of the *Lepidodendra* and *Calamites* of the former, and that of the *Sigillariæ* of the latter. And thus it was in fact. The Insect from the Carboniferous rocks of Illinois, figured and described in the following article, is one example of a comprehensive type of this kind. While Neuropterous in wings, closely approaching the *Semblids*, it has broad costate femurs, and even a large spinous joint to the anterior legs, peculiarities which seem to be almost inconsistent with the Neuropterous type, although in part characterizing the *Mantispids*, and which are in complete harmony with the Orthopterous type.\*

We here see that the interlinkings between Orthopters and Neuropters began in the Paleozoic. It is probable that such comprehensive or intermediate forms were more numerous in the past than they now are.

\* The Orthopterous features among Neuropters appear to be modifications of form under the types in this group which have been already mentioned, especially the Lepidopteroid, and not indications of a distinct type of *Orthopteroid* Neuropters. The fossil species referred to, and also the modern *Mantispids*, are true *Planipennians* in their wings and in their other characteristics of special importance. They properly constitute an *Orthopteroid* group in this subtribe.