AN APPARENTLY NEW PROTOBLATTID FAMILY FROM THE LOWER CRETACEOUS

By EVELYN GROESBEECK MITCHELL

The following description is based on a single nearly perfect wing found in association with numerous species of plants in the Kootanie beds (Lower Cretaceous) of the Great Falls coal field, Montana. It is noteworthy that all other Protoblattids appear to be from the Carboniferous, the American forms coming from the Alleghany stage. It was detected by Dr. F. H. Knowlton while studying the plants, and by him placed in my hands for investigation. It has been carefully compared with such specimens of the Protoblattoidea as are contained in the collection of the United States National Museum, as well as with the available literature on the subject, especially the recent work of Handlirsch, with the result that it appears to represent not only a new genus and species, but a new family. It may be named and characterized as follows:

Superfamily PROTOBLATTOIDEA Handlirsch

Family LYGOBIDÆ, new family

This family seems intermediate between Oryctoblattinidæ Handlirsch and Eucænidæ Handlirsch of the Carboniferous. The main venation would seem to place Lygobius among the Eucænidæ, but the latter entirely lacks intercalary and cross-venation, which are prominent characteristics of the former. This last venation much resembles that of some of the Oryctoblattinidæ, but the strongly compound radial sector of the latter family is in distinct contrast to the almost simple radius of the new family.

The Lygobidæ is also characterized by the extension of the cubital area, which comprises nearly half the width of the wing; the comparatively few-branched medius; almost complete intercalary venation and numerous cross-veins, especially regular in the distal half of the wing, and a costal area apparently broad, especially at the base.

LYGOBIUS, new genus

Cubitus strongly compound, with branches directed obliquely backward and presenting a typical forking, with strong intercalary

venation and regular cross-veins; medius free and with three main branches; radius once forked distad of the middle. Cross-veins irregular in areas proximad of intercalary veins and in costal area,

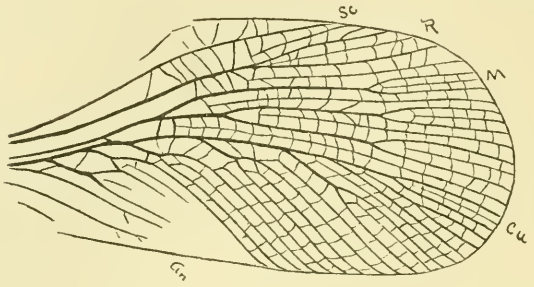

FIG. 25.—*Lygobius knowltoni*

otherwise fairly regular and closer spaced. Apex of wing bluntly rounded. Costal margin nearly straight, and, in distal half of wing, almost parallel to the posterior margin.

LYGOBIUS KNOWLTONI, new species

LOCALITY.—Meriditt mine, 6 miles southwest of Geyser, Cascade County, Montana. Kootanie formation (Lower Cretaceous).

LENGTH OF WING.—6.5 mm.

GREATEST WIDTH.—3.3 mm.

Subcosta reaching decidedly beyond middle of wing, rather sinuous, originating caudad of middle of base of wing. The two simple branches of the radius extend to the costal margin, near to the beginning of the apical border. Medius forking somewhat proximad of middle of wing, lower branch forking again at about the middle of wing, all three branches forking again at about distal fourth of wing. Cubitus ending in a fork beyond distal fourth of wing; proximad of this are a fork, a simple branch, and five forked branches. At least three slightly sinuous anal veins. Anal area defective.[1]

Type, U. S. N. M., Cat. No. 50,461.

[1] The drawing was made by the author with camera lucida. No restoration was attempted, save in the case of the cubital cross-veins, which are somewhat obliterated and difficult to see.