

NOTES ON THE AMERICAN FORMS OF *EUCHLOE*. HÜBN.

BY A. G. BUTLER, PH. D., BRITISH MUSEUM, LONDON, ENGLAND.

Dr. Beutenmüller, in his recent revision of the species of *Euchloe*, notes the fact that the neuration of this genus is variable, but he appears not to have been aware that the variation is so frequent that no division of the genus based thereupon has any value. In his three groups, *Euchloe*, *Midea* and *Anthozharis*, there are not only species differing in the number of veins in the primaries, but individuals of the same species differ in the same way.

Another point in Dr. Beutenmüller's definition of his groups requires consideration: he speaks of vein 9 as being present or absent, whereas a careful examination of the position of the veins must make it evident that vein 9 is never absent, but that veins 7 and 8 frequently coalesce or are conterminous. This is quite certain, from the fact that in all species which normally possess 11 veins only in the primaries, the twelfth vein occurs abnormally as a furcation of vein 7: thus, in *Midea lanceolata*, which usually has only eleven veins, vein 7 is sometimes forked near the distal extremity, though with a shorter fork than is usually seen in *Euchloe Sara*; nevertheless, some examples of the latter, and particularly in the smaller varieties, *E. Reakirtii* and *Julia*, have only 11 veins.

Dr. Beutenmüller places *E. pima* and *E. methura* under *Midea*, although, excepting in the absence of the fork to vein 7 (or, in other words, in the absence of vein 8), they agree far more closely with the species of *Zegris*.

Some of the white species of *Euchloe* have 11 and others have 12 veins to the primaries, whilst the second subcostal branch (vein 10) varies considerably in its position in the same species, being emitted before, at or after the end of the discoidal cell.

As regards *E. creusa*, I believe it to vary seasonally as much as its very close ally, *E. ausonia*; the attempt to distinguish between *E. ausonides* and *E. hyantis* looks to me like a failure, not that they cannot be readily distinguished by size, form of secondaries, depth of ground-tint, and size of white spots on under surface, but because these differences are also to be seen in undoubted seasonal variations of the European form, *E. ausonia*, and because if *E. ausonides* is distinct from *E. hyantis*, the Vancouver form, which differs in the pattern of the under surface, has an equal claim to separation. As regards typical *E. creusa*, which Dr. Beutenmüller considers to be *E. hyantis*, I can definitely assure him that the type (which we possess) agrees with his *var. elsa*.

My idea of this species is that it can be arbitrarily sorted out into seven graded forms: *E. ausonides*, *E. var.* from Vancouver, *E. hyantis*, *E. lotta*, *E. coloradensis*, *E. creusa* = *elsa*.

*Euchloe olympia* is undoubtedly a species of *Zegris*.