

References

- Brower, A. E., 1952. Comments on the editorial "The components of an adequate paper describing a new species". *Lepid. News* 6: 37-40.
- Geldart, E. M., 1875. [on *Lycæna alexis* with ocelli replaced by streaks.] *Proc. Lit. Phil. Nat. Hist. Soc. Liverpool* 29: 1.
- Holmes, J. W. O., 1943. A breeding experiment with *Lycæna phlæus* L. ab. "obsoleta". *Entomologist* 76: 204-205.
- Jacobs, Stanley N. A., 1920. Note on the blue-spotted form of *Chrysophanus phlæus*. *Entomologist* 53: 233.
- Klots, Alexander B., 1951. *A field guide to the butterflies of North America east of the Great Plains*: pp. 151 ff.. Houghton Mifflin Company, Boston.
- de Laussure, Raymond, 1914. De quelques aberrations. *Bull. Soc. Léop. Genève* 3: 77-84.
- Leech, John Henry, 1893. *Butterflies from China, Japan, and Corea*: pp. 399-401. R. J. H. Porter, London.
- Merrifield, Frederic, 1893a. The effect of temperature in the pupal stage on the colouring of *Pieris napi*, *Vanessa atalanta*, *Chrysophanus phlæus*, and *Ephyra punctaria*. *Trans. Ent. Soc. London* 1893: 62-65, pl. IV, figs. 1, 1a, 2, 2a.
-, 1893b. The colouring of *Chrysophanus phlæus* as affected by temperature. *Entomologist* 26: 333-337.
- Sabine, E., 1893. Varieties of *Chrysophanus* (*Polyommatus*) *phlæus*. *Entomologist* 26: 295.
- Scudder, Samuel Hubbard, 1889. *The butterflies of the eastern United States and Canada*, Vol. II: pp. 998-1009, 1351. Published by the author, Cambridge, Mass.
- Seitz, Adalbert, 1909. *The Macrolepidoptera of the World*, Vol. I, *The Palearctic butterflies* (translated by K. Jordan): p. 299. Alfred Kern, Stuttgart.
- Smith, P. Siviter, 1946. Reflections on "spot" aberrations in *Lycænidae*. *Ent. Rec. Journ. Var.* 58: 108-110, pl. XV.
- South, Richard, 1893. Variation of *Chrysophanus phlæus* in Britain. *Entomologist* 26: 305-306.
- Strecker, Herman, 1878. *Butterflies and moths of North America*: p. 101. Published by the author, Reading, Pa.
- Verity, Ruggiero, 1943. *Le farfalle diurne d'Italia*, Vol. II: pp. 50-58, pls. 6, 8. Casa Editrice Marzocco, S. A. Firenze.
- Weismann, August, 1895. Neue versuche zum Saison-Dimorphismus der Schmetterlinge. *Zool. Jahrb., Systemat. Abt.* 8: 614-627.

Osborn Zoological Lab., Yale University, New Haven 11, Conn., U. S. A.

AN APPARENT HYBRID *LIMENITIS* FROM ARIZONA

by DAVID L. BAUER

The year 1952 was a very good one for the three species of *Limenitis* found in the Verde Valley of central Arizona. The three species occupy for the most part separate habitats. *L. archippus obsoleta* Edwards is found at the lowest elevations, 3,000 ft. and less, among the Cottonwoods and Willows along the Verde River, and is never found far from this habitat. *L. astyanax arizonensis* Edwards is also found along the Verde River, but its chief habitat

is in the mountain canyons from 4000 to 5000 ft. and higher. *L. weidemeyerii angustifascia* Barnes & McDunnough is the high altitude species, usually being found from 6000 to 7000 ft. and up to 9000 and 10,000 ft. This distribution in elevation seems to be quite constant, although there are always exceptions. 1952 was one of these exceptional years in which there was a great deal of overlapping, particularly between *L. astyanax arizonensis* and *L. weidemeyerii angustifascia*.

Naturally I tried to lay in a good store of specimens. On August 18, 1952, while collecting *L. astyanax arizonensis*, I sighted a large black butterfly and did my best to catch it. After several attempts it was finally netted. Upon close examination it was apparent that in markings and color it was a mixture of *L. astyanax arizonensis* and *L. weidemeyerii angustifascia*. This is the only such specimen so far recorded, so a brief description follows. It is a male.

Upperside: predominantly rich blue-black with increasing bluish sheen on the secondaries. The submarginal row of white spots that are found in both species is present on all wings. The dark marginal and submarginal markings of *L. astyanax arizonensis* are present, but only barely perceptible against the blue-black ground. The white subapical spots of *L. weidemeyerii angustifascia* are present but reduced. The median row of white spots is entirely lacking, as is also the bright blue of the secondaries of typical *L. astyanax arizonensis*.

Underside: this side shows more of the *L. weidemeyerii angustifascia* characters. The marginal and submarginal markings of all wings are half way between the two species, as is also the general appearance and coloring. The white subapical spots of the primaries are the same as those of typical *L. weidemeyerii angustifascia*. The median row of white spots is present on the primaries between veins M_2 and M_3 , and M_3 and Cu_1 , and very faintly between Cu_1 and Cu_2 . On the secondaries it is replaced by chestnut colored areas, which gradually diminish, become blackish, and disappear toward the anal angle. The marking of the basal half of all wings are as in *L. weidemeyerii angustifascia*, but the coloring of the spots is reddish orange as in *L. astyanax*. The ground color of the basal half of the secondaries is powdered with light whitish-blue.

It is possible that this specimen is close to what EDWARDS named *sinefascia*. However, I am not in a position to know.

Another interesting discovery was made when a number of *Limenitis* larvæ were collected on a narrow-leaved willow (*Salix*) and reared. When the butterflies emerged from August 8-26, at least five were *L. astyanax arizonensis*. The other two were *L. weidemeyerii angustifascia*. These larvæ were collected in July and emerged in late August. Thus *L. weidemeyerii angustifascia* is at least partially double brooded in some years. It was not realized at the time that the larvæ of both species had been collected, so no comparisons were made.

1103 Ballew Ave., Everett, Wash., U.S.A.