

As for the larvae themselves. They are most mystifying things. Their appearance, which has attracted the curiosity of every collector, is usually likened to that of a very minute tortoise. They sit motionless on the rocks, and even when disturbed their only reaction is to lift their "tails." When they do move about the motion is so slow as to be almost imperceptible. They are strongly thigmotactic and they seem not to be finally content unless their backs are touching something.

While the mouthparts are of a character which indicates a prelaceous habit, their slow movements would seem to handicap them most seriously. Nevertheless, I saw one with a very small spider in its jaws and another with a minute Hymenopteron. In both cases the prey was held up in the air much after the manner of an ant lion.

There were present larvae in many stages, ranging from some that were but little more than a millimeter long to others which were eleven millimeters over all. In all the stages the appearance is much the same, except that the smallest are pale yellow while the larger specimens are dark brown.

Many shed skins were present and a few live specimens were found singly within a rough net that partially enclosed them. I am not entirely convinced that this net is made by these insects, although Mr. Meyers was satisfied that they are responsible for it. It might have been made by some other insect and the occurrence of these larvae within it might be entirely fortuitous. If not accidental, the net probably represents a vestigial molting cocoon. It is composed of a single layer of coarse threads, crossing each other to form a net work and fused at the points of intersections.

Beyond this an extended examination of the locality revealed no further information. Nearly a hundred of the larvae were collected alive with a view to an attempt to rear them to maturity. With the information available that they seem to feed on almost any sort of small insect and that they require a certain amount of moisture it may be possible to get some results.

And so I have devised a breeding cage of a simple type that may possibly meet the necessary conditions. Within this the insects sit—motionless. Unless they do something more than that they are likely still to remain an enigma.

---

#### NEW TRANSITION FORMS (LEPID., RHOPALOPTERA).

BY J. D. GUNDER,

Pasadena, Calif.

(Plates A & B)

The half-tone illustrations of the butterfly transition forms, herein described, vary somewhat in size from the actual specimens; therefore, a reference to their wing expanse, as given in the text is advisable. The classification of these specimens follows that outlined in the November, 1927, Entom. News (Philadelphia) and which was first suggested in that publication.

##### 1. *Plebeius melissa* (Edw.), tr. f. *inyoensis* f. tr. nov.

Upper side: unchanged. Under side: submarginal rows of black spots on both wings joined through their interspaces forming bar-shaped maculations; basal area spotting slightly elongated. Fig. 2a illustrates typical under side-*melissa*.

*Classification*: transition form; melanifusism—a well developed phase.

*Data*: Holotype ♂, expanse 24 mm.; Olancho, Inyo Co., Calif. (G. A. Malcolm). July 2, 1925. In Author's coll.

2. ***Glaucopsyche xerces* (Bdv.), form *mertila* (Edw.), tr. f. *barnesi* f. tr. nov.**

Male. Upper side: unchanged. Under side: lacking all black centered spots on both wings, except for remains of 3 or 4 whitish spots on center primaries; discal cell spots same size, but all white, lacking centre bar: brown ground color and bluish bases as usual. Female (Fig. 2a). Same as male, except the immaculation of this specimen is not so far advanced, i.e. row of remaining spots somewhat black centered and cell spots retain the black bar. Fig. 2b shows a typical under side *mertila*.

*Classification*: transition form; immaculism—nearly final stage.

*Data*: Holotype ♂ (fig. 2), expanse 28 mm.; San Francisco, Calif., April, 1923. In the Barnes coll. Allotype ♀ (fig. 2a), expanse 29 mm.; San Francisco, no date. Also in Barnes coll.

3. ***Plebeius saepiolus* (Bdv.), tr. f. *leussleri* f. tr. nov.**

Upper side: unchanged. Under side: row of round, white circled, black spots elongated pointedly inward, more noticeably on secondaries. Fig. 3a shows a typical female *saepiolus*.

*Classification*: transition form; melanifusism—a prime phase only, but interesting as showing the tendencies of this rather constant species.

*Data*: Holotype ♀, expanse 27 mm.; Cassell's, Park Co., Neb., Alt. 8500, Aug. 23, '18. Named after Mr. R. A. Leussler of Omaha, Neb. in whose collection it remains.

4. ***Glaucopsyche lygdamus* (Dbldy.), race *couperi* Grt. tr. f. *mcDunnoughi* f. tr. nov.**

Male (fig. 4). Upper side unchanged as shown by fig. 4a. Under side: immaculate of all usual spotting; bar shaped cell spots as usual. Fig. 4b shows the under side of a typical Barnes coll. specimen from same data & locality, but the ground color of this specimen has photographed darker than fig. 4, however in reality they are the same shade. Female (fig. 4c). Immaculate as the male. Fig. 4d shows the upper side of this female.

*Classification*: transition form; immaculism—a final degree.

*Data*: Holotype ♂ (fig. 4 & 4a), expanse 31 mm.; Sask., Can. (Crocker), no date. In Barnes coll. Allotype ♀ (fig. 4c & 4d), expanse 29 mm.; Calgary, Can. (Willing). June 26, 1864. In Canadian Nat. Coll. at Ottawa. I take pleasure in naming these deserving specimens after Dr. J. McDunnough of Ottawa, Canada.

*Note*: *Couperi* Grt. was described from Anticosti material. Should Saskatchewan specimens eventually prove to be a different species or race thereof, then the name *afra* Edw. is available for them and the above described tr. f. can be used under this Edwards name because of this notation.

5. ***Philotes glaucon* (Edw.), race *intermedia* B. & McD., tr. f. *malcolmi* f. tr. nov.**

Upper side: typical. Under side: secondaries—lacking all round black

spots through discal and basal areas with inner row of marginal lunate spots emphasized; primaries—nearly immaculate as secondaries except for several remaining spots opposite cell which itself is as usual. Fig. 5a shows under side of a typical *intermedia* Barnes & McDunnough.

*Classification*: transition form; immaculism—nearly a final grade.

*Data*: Holotype ♂, expanse 26 mm.; Amer. River, Placer Co., Calif. (Malcolm), July 19, 1921. In Author's coll. Named after Mr. G. A. Malcolm, Jr. of Los Angeles.

6. **Satyrium fuliginosa** (Edw.), tr. f. **immaculata** f. tr. nov.

Upper side: as usual. Under side: lacking all spotting except for traces near all outer margins. Fig. 6a illustrates a typical well marked ♀. Most illustrations heretofore have shown rubbed or poorly conditioned specimens, so that it has been difficult to tell just what markings there were. In Northern Calif. specimens, the spots are blurred or indefinite, they are hardly worthy of a racial name however. I have examined types of *fuliginosa* Edw. at Pittsburg and types of synonym *suasa* Bdv. now in the Barnes coll.; they are all well marked though worn.

*Classification*: transition form; immaculism—about final phase.

*Data*: Holotype ♀, expanse 29 mm.; McGee's Creek on highway, nr. Mammoth, Mono Co., Calif., June 20, 1926. In Author's coll.

7. **Everes amyntula** (Bdv.), tr. f. **dodgei** f. tr. nov.

Upper side: as usual. Under side: inner row of conspicuous black spots elongated inwardly losing all trace of their white circling, those on secondaries near costal margin having longest extension, especially that of interspace below subcostal vein. Fig. 7a shows a typical Santa Cruz specimen. The illustrations of both these specimens on the plate are entirely too much enlarged however.

*Classification*: transition form; melanifusism—probably more nearly a final phase than is suspected.

*Data*: Holotype ♂, expanse 30 mm.; Santa Cruz, Calif. (Dodge), Apr. 20, 1918. In Author's coll. Named after friend E. A. Dodge of Santa Cruz.

8. **Glaucopsyche lygdamus** (Dblly.), race **oro** (Seud.), tr. f. **leussleri** f. tr. nov.

Upper side: unchanged. Under side: lacking all spotting of secondaries, with those on primaries slightly reduced in size, especially those nearer costal margin being very small or absent. Fig. 8a shows a typical ♂ *oro* from same place and date.

*Classification*: transition form; immaculism—semi-final phase

*Data*: Holotype ♂, expanse 29 mm.; Harrisburg, Banner Co., Neb. (Leussler), Aug. 23, 1918. In the Leussler coll. and named after that gentleman.

9. **Strymon melinus** Hbn., tr. f. **meinersi** f. tr. nov.

Similar to all typical specimens except that all red color here becomes a perfect yellow. This color change is noticeable near the tail spots on both upper and under sides of the secondaries. The sex of this specimen is correctly determined. Fig. 9a shows its under side.

*Classification*: transition form; chromatism—red to yellow color change.

*Data*: Holotype ♀, expanse 27 mm.; Table Rock, North Carolina (Mein-

ers), Aug. 18, 1922. In Author's coll. Named after Dr. E. P. Meiners of St. Louis, Mo.

10. **Everes comyntas** (Golt.), race **herrii** (Grin.), tr. f. **arizonensis** f. tr. nov.

Upper side: unchanged. Under side: inner lunate edge of marginal row of spots joined through their interspace with the submarginal row of black centered spots forming a row of black bars across the wings on both primaries and secondaries; basal area of secondaries also has the spots slightly elongated. Half-fig. 10 shows the under side of a ♂ *herrii* labelled—Cochala Co., Ariz., July, 1899, which is in the Herr Collection at the Los Angeles Museum. Mr. C. W. Herr tells me it is one of the types. I consider this Arizona & New Mexico race of *comyntas*, a worthy one and correctly placed under the Eastern species.

*Classification*: transition form; melanifusism—final degree.

*Data*: Holotype ♂, expanse 23 mm.; Santa Rita Mts., Ariz. (Clemence), Apr. 18, '10. In Los Angeles Museum Coll.

11. **Everes comyntas** (Golt.), race **herrii** (Grin.), tr. f. **jemezensis** f. tr. nov.

Upper side: typical. Under side: lacking row of black centered spots on both wings, however, a trace of these remains on the primaries which is hardly distinguishable; the inner lunate edge of the marginal spots is greatly emphasized with the design of the spots themselves suppressed. For comparison with a typical under side *herrii*, see half. fig. 10.

*Classification*: transition form; immaculism—nearly final.

*Data*: Holotype ♀, expanse 25 mm.; Jemez Spr., N. Mex. (Woodgate), May 13, 1913. In Coll. of the Acad. of Sciences, Philadelphia and placed there through the courtesy of Mr. R. C. Williams, Jr.

12. **Lycaena** (Hoodès) **snowi** (Edw.), tr. f. **mcdunnoughi** f. tr. nov.

Similar to tr. f. *maculinita* Gun. of *Lyc. cupreus* Edw. in having the black spots fused inwardly through their interspaces and more noticeably on the primaries; the under sides remain unchanged. Fig. 12a shows one of the Edwards types of *snowi*.

*Classification*: transition form; melanifusism—fairly well marked.

*Data*: Holotype ♀, expanse 32 mm.; Laggan, Alta, Can. (F. H. W. Dod), July 20, '04. In Canadian Nat. Coll. at Ottawa. Two ♀ paratypes (fairly well marked) also in same collection labelled—July 20, 1904 (Dod) and the other taken by Mr. T. E. Bean.

13. **Lycaena** (Hoodès) **dione** (Scud.), tr. f. **gibboni** f. tr. nov.

Upper side: typical. Under side. Primaries: minute outer row of spots at margin absent; next inner row joined heavily through the interspaces with the principal row of round black spots forming a thick black series of bars across the wing; discal & basal area spotting as usual. Secondaries: only spots adjacent entire costal margin affected. Fig. 13a is typical and shown for comparison.

*Classification*: transition form; melanifusism—primaries final, secondaries undeveloped.

*Data*: Holotype ♂, expanse 38 mm.; Miniota, Man., Can. (Gibbon), July 4th. To be deposited in the Canadian Nat. Coll. at Ottawa. I am pleased to name this interesting tr. f. after Mr. Hugh A. Gibbon of Miniota.

14. *Lycaena* (Heodes) *helooides* (Bdv.), tr. f. *williamsi* f. tr. nov.

*Male*. Upperside (fig. 14); lacking usual partial row of spots through discal area on primaries; corresponding row on secondaries fused inward toward cell forming series of dark streaks. Fig. 14a shows a typical ♂ upperside. Under side (Fig. 14b); all submarginal rows of spots joined through their interspaces forming a row of streaks on both wings varying in size and thickness according to the spots they represented. Fig. 14c represents a typical ♂ under side. Female (fig. 14d). Upper side; submarginal row of spots pointedly streaked inward. Fig. 14e shows an upper side ♀ for comparison. The under side of the ♀ is as usual.

*Classification*: transition form; melanifusism—probably final phase.

*Data*: Holotype ♂, expanse 27 mm.; Hall's Valley, Park Co., Colo. August. Placed through the courtesy of Mr. R. C. Williams in the Academy Coll. at Philadelphia. Allotype ♀, expanse 28 mm.; Chicago, Ill., May 30, 1897. Placed through the courtesy of Mr. Alex Wyatt of Chicago in the Academy Coll. at Phil. I am pleased to give Mr. R. C. Williams, Jr's name to this fine tr. form.

15. *Lycaena* (Heodes) *thoe* (Guer.), tr. f. *sternitzkyi* f. tr. nov.

Entirely like typical Calif. specimen except that all red color here becomes a distinct yellow. This is very noticeable on the secondaries. Compare fig. 15 with fig. 14a.

*Classification*: transition form; chromatism—color change red to yellow.

*Data*: Holotype ♂, expanse 27 mm.; Petaluma, Calif. (Sternitzky), Aug. 1, 1927. In Author's Coll. Named for our Entomological artist—Mr. R. F. Sternitzky of San Francisco.

16. *Lycaena* (Heodes) *thoe* (Guer.), tr. f. *wyatti* f. tr. nov.

*Male*. Upper side (fig. 16); submarginal row of spots fused inward through their interspaces to cell on secondaries with primaries as usual. Fig. 16a shows a regular ♂ upper side. Under side; minute outer row of spots at margin of primaries absent; next inner row on both wings joined through interspaces with the principle round row of black spots forming a complete series of bars across both wings, those along costal margin of secondaries being longest; all other inner-half spotting as usual as show by fig. 16b. Fig. 16c shows a typical ♂ under side. Female (fig. 16d). Under side; as usual. Upper side; as shown, has the inner spotting fused pointedly inward, more so on the primaries and similar to *helooides* ♀ (fig. 14d).

*Classification*: transition form; melanifusism—final phase, especially ♂.

*Data*: Holotype ♂, expanse 33 mm.; Colorado? no date. In Strecker Coll., Field Museum, Chicago. Allotype ♀, expanse 36 mm.; Chicago, Ill. (Wyatt), Sept. 15, 1907. To be deposited by Mr. Wyatt in the Field Museum Coll. 1 ♂ paratype in Leussler Coll. at Omaha, Neb. labelled—June 9, 1918, Omaha. 1 ♀ paratype in A. Herz Coll., Chicago, labelled—June 20, 1918, Chicago. I take a good deal of pleasure in naming these fine specimens after my old Chicago friend, Mr. Alex Wyatt.

17. *Oeneis uhleri* (Reak.), race *varuna* (Edw.), tr. f. *dennisi* f. tr. nov.

Mr. W. H. Edwards in his text regarding *varuna* refers at length to the number of spots or eyelets occurring on various specimens coming under his ob-

ervation. None of his types or others referred to are entirely without spots on both primaries and secondaries and on both surfaces as is this specimen which is illustrated by fig. 17 upper side and fig. 17b under side. Figures 17a and 17c show typical *varuna* type ♂ photographed from his book.

*Classification*: transition form; immaculism—final degree.

*Data*: Holotype ♂, expanse 40 mm.; Beulah, Man., Can. (Dennis), May 17, 1904. Named after Mr. A. J. Dennis of Beulah who, I hope, will deposit this type with the National Coll. at Ottawa.

18. ***Aglais milberti*** Godt., tr. f. ***rothkei*** f. tr. nov.

This interesting tr. f. shows the same general tendencies of those occurring in neighboring genera such as *Poly. satyrus marsyas*, tr. f. *hollandi* or *Van. cardui*, tr. f. *ate* and others, in which, on the upper side of the primaries, there is black design radiation outward from the cell towards the apex along the costal margin and also white streaking of such spots as occur in the apical areas. The upper side secondaries of this specimen has the black of the basal and discal areas extending out over the colored band and nearly obliterating it, especially nearer the costal margin. The bluish spots at the outer margin are blurred and slightly elongated. Fig. 18 is rather poor as the red color does not photograph well. Fig. 18b shows the under side in which the bands and lines are indistinct or lacking. Figs. 18a & 18c illustrates a typical ♂ for comparison.

*Classification*: transition form; (for the time being, I place this under melanifusism—with probably final degree).

*Data*: Holotype ♂, expanse 40 mm.; Scranton, Pa. (Rothke), July 21, 1915. In Author's coll. Named after Mr. Max Rothke of Scranton, Pa.

19. ***Argynnis montivaga*** (Behr.), race ***malcolmi*** Comst., tr. f. ***sineargentatus*** f. tr. nov.

Entirely similar in design to typical *malcolmi*, but lacking all silvering of spots, in place of which there is a lighter shade of ground color. This specimen also has less red shading which causes it to be lighter when compared with a typical specimen, as shown by fig. 29a.

*Classification*: transition form, pellucidism—lacking silvering or iridescence.

*Data*: Holotype ♂, expanse 59 mm.; Mammoth, Mono Co., Calif., Aug. 7, 1922. In Author's coll.

20. ***Argynnis idalia*** Dru., tr. f. ***dolli*** f. tr. nov.

The ground color of both surfaces of this specimen on both wings is cream-white instead of usual reddish as shown by figs. 20 & 20b as compared to a typical specimen such as figured by No. 20a. This specimen is not faded or de-colored.

*Classification*: transition form; chromatism—color change red to yellow.

*Data*: Holotype ♀, expanse 94 mm.; Richmond Hill, Long Island, N.Y. (Doll), July 15, 1886. In Coll. Brooklyn Museum, Brooklyn, N.Y. Named for Mr. Jacob Doll.

21. *Argynnis lais* Edw., tr. f. *dennisi* f. tr. nov.

This specimen is only a moderately developed phase. The upper side as shown by fig. 21 is typical. Its under side (fig. 21a) has a concentration of the silver spots of the basal area into three drop-shaped marks fitting into the extreme base, which may be compared with typical *lais*, fig. 21b.

*Classification*: transition form; melanifusism—(streaking of hind wing silver spots at base of secondaries usually forecasts melanifusism in *Argynnis*, so I place this under that classification).

*Data*: Holotype ♂, expanse 45 mm.; Beulah, Man., Can. (Dennis), June 28, 1910. To be placed in the National Coll. at Ottawa by Mr. A. J. Dennis of Beulah for whom it is named.

22. *Argynnis mormonia* Bdv., tr. f. *benjamini* f. tr. nov.

Upper side of both primaries & secondaries largely fused over with black obliterating the usual rows of spots, lines & streaks. This darkness is more dense through the interspaces of the discal & basal areas. The innermost cell mark on the primaries retains its shape and color. The under side of the primaries are like their upper sides, while the secondaries are not so much fused over with blackness except the outer half, the inner half being fairly typical, with the usual silvering in evidence. Figs 22 and 22a illustrate this tr. f., while fig. 22b shows a regular *mormonia* according to Benjamin who had access to the type.

*Classification*: transition form; melanifusism—practically final.

*Data*: Holotype ♂, expanse 50 mm.; Arangie, Idaho, no date. In Barnes Coll. and named after our well known entomological worker, Mr. F. H. Benjamin.

23. *Argynnis eurynome* Edw., tr. f. *brucei* f. tr. nov.

Both primaries and secondaries on the upper sides well clouded over with dark fusion, except in the regions of the cells which retain spots of the original ground color. The under side primaries are well fused, while the secondaries are fairly typical, only the veins on the outer half showing black fusion, and silver much in evidence. Figs. 23 & 23a show this specimen, while fig. 23b shows species *eurynome*.

*Classification*: transition form; melanifusism—nearly final.

*Data*: Holotype ♀, expanse 50 mm.; Colorado (D. Bruce), 1890. In Strecker Coll., Field Museum, Chicago and named after that energetic collector, Mr. Bruce.

24. *Argynnis nevadensis* Edw., race *meadii* Edw., tr. f. *gerhardi* f. tr. nov.

The entire upper surface of this specimen is mottled over by black design fusion, but allowing enough of the former designs to peek through to show their general outlines. The under side primaries show black fusion of discal area spots, while the secondaries are about as usual, the spots of silver being slightly elongated. The usual green of *meadii* is well preserved. Fig. 24b illustrates Edwards type ♂.

*Classification*: transition form; melanifusism: well developed.

*Data*: Holotype ♂, expanse 51 mm.; Colorado (D. Bruce), no date. In the Strecker Coll., Field Museum, Chicago and named after Mr. Wm. J. Gerhard of that City.