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PRELIMINARY REVISION OF BUTTERFLIES  
OF THE GENUS CALYCOPIIS SCUDDER  
(LYCAENIDAE: THECLINAE)

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The genus of butterflies treated in this paper contains 21 species, of which 6 are here described as new. Nineteen of these species are neotropical in distribution; one species is entirely nearctic and one is both nearctic and neotropical.

In *Calycopis* the forewings of the males lack scent pads. Upper surfaces of hindwings have some blue or purplish scales and sometimes these wings are almost entirely blue or purplish. Hindwings with tails at end of veins  $Cu_1$  and  $Cu_2$ , the tail at end of  $Cu_2$  being much the longest. Undersurface of hindwing with a submarginal ocellate spot below vein  $Cu_1$  and sometimes with one or more of these spots above this vein. The area between the large blue lunule in interspace  $Cu_2$  and the postmedian line is always darker than the ground color and is usually some shade of red.

In the male genitalia the uncus is divided dorsally into two lateral elements, often completely separated. Aedeagus usually with a single terminal, spinelike cornutus, very rarely with a small second

terminal thornlike cornutus. The aedeagus lacks the ventral keel found in some Theclinae and is sometimes upturned distally. Harpes fused for more than one-half of their lengths from base and terminally truncate, or if bluntly pointed, with ends slightly upturned. Forearm of gnathos often with carina along inner surface, this carina sometimes laminate or dentate.

Female genitalia with ductus bursae a simple, lightly sclerotized tube, funnel-shaped at ostium bursae and with rounded or sharply pointed lobes above and posterior to ostium bursae. Bursa copulatrix with two large platelike signae, each ornamented with a centrally placed, rose-thorn shaped spine and with anterior margin deeply dentate.

On the basis of male genitalia characters the species of *Calycopis* are divided into five species groups. These groups are included in the key and are also separately treated in the body of this paper.

The figures were drawn by the author except figures 1, 4, 6, 9, 10, and 17, which were drawn by Mrs. Amy Awl. All photographs were made by Mr. Jack Scott, staff photographer, and are reproduced here (figs. 35-126) twice natural size.

### Key to the Species of *Calycopis*

(Unless otherwise stated, all comparisons in this key pertain to the male genitalia in lateral view and to the female genitalia in ventral view.)

#### MALES

1. Gnathos extending well beyond lower margin of lateral lobe of uncus; lower distal angle of this lobe not greatly expanded (figs. 1-9) . . . 2
- Gnathos not extending beyond lower margin of lateral lobe of uncus; lower distal angle of this lobe greatly expanded (figs. 10-19), *partunda* group) . . . . . 11
2. (1) Lateral lobe of uncus with distal margin concave or straight; ventral margin of uncus concave or straight in front of lower distal angle (figs. 1-8) . . . . . 3
- Lateral lobe of uncus with distal margin convex; ventral margin of uncus convex in front of lower distal angle (fig. 9), (*cecrops* group) . . . . . 10
3. (2) Fused harpes wide in ventral view, having a width that is more than two-thirds their length; distal end of aedeagus distinctly bent upward (figs. 7, 8) . . . . . 4
- Fused harpes more narrow in ventral view, having a width that is not more than two-thirds their length, usually much less; aedeagus straight or only slightly upcurved distally (figs. 1-6), (*janeirica* group) . . . . . 5
4. (3) Aedeagus in dorsal view sharply bent distally to the right and bifurcate; gnathos with dentate carina (fig. 7), (*torqueor* group).  
C. *torqueor*
Aedeagus in dorsal view not as above; carina laminate (fig. 8), (*xeneta* group) . . . . . C. *xeneta*

5. (3) Upper distal angle of lateral lobe of uncus greatly produced, forming a fingerlike process; basal end of aedeagus upturned (fig. 6) . *C. ierbela*  
 Upper distal angle of lateral lobe of uncus not so greatly produced, without fingerlike process; basal end of aedeagus slightly down-turned or straight, not upturned (figs. 1-5) . . . . . 6
6. (5) Harpes gradually tapered, forming long narrow apices; distal margin of lateral lobe of uncus straight or nearly so (fig. 1) . . . . . *C. bactra*  
 Harpes constricted before but expanded at apices; distal margin of lateral lobes of uncus concave (figs. 2-5) . . . . . 7
7. (6) Aedeagus with two terminal cornuti; harpes fused for more than three-fourths their length (figs. 4, 5) . . . . . 8  
 Aedeagus with a single terminal cornutus; harpes fused less than three-fourths their length (figs. 2, 3) . . . . . 9
8. (7) Upperside of hindwing with a large area of blue and a much more narrow fuscus border; upper distal angle of lateral lobe of uncus slightly produced (fig. 4c) . . . . . *C. janeirica*  
 Upperside of hindwing with a smaller area of blue and a broader border of fuscus; upper distal angle of lateral lobe of uncus more greatly produced (fig. 5c) . . . . . *C. chacona*
9. (7) Eighth tergite of male abdomen with posterior concavity broader and proportionately more shallow and not grooved mesially (fig. 20b); blue disc on upperside of hindwing large and lustrous (fig. 114).  
*C. nicolayi*  
 Eighth tergite of male abdomen with posterior concavity narrow and deep and distinctly grooved mesially (fig. 20c); blue disc on upperside of hindwing smaller and not so lustrous (fig. 115) . *C. caulonia*
10. (2) Hindwing beneath having marginal ocellate spot in interspace  $Cu_1$  with black center much larger than the red or gray lunule that partially surrounds it . . . . . *C. cecrops*  
 Hindwing beneath having marginal ocellate spot in interspace  $Cu_1$  with black center smaller than surrounding red lunule . *C. isobea*
11. (1) Harpes fused for three-fourths or less their lengths (figs. 10, 11, 14) . . . . . 12  
 Harpes fused for more than three-fourths their lengths (figs. 12, 13, 15-19) . . . . . 14
12. (10) Lower margin of lateral lobe of uncus nearly straight, slightly concave anteriorly; forearm of gnathos without carina (fig. 10) . *C. susanna*  
 Lower margin of lateral lobe of uncus undulate; forearm of gnathos with laminate carina (figs. 11, 14) . . . . . 13
13. (12) Saccus longer than harpes; aedeagus straight; harpes fused much less than three-fourths their length (fig. 11) . . . . . *C. drusilla*  
 Saccus not as long as harpes; aedeagus upcurved; harpes fused nearly three-fourths their length (fig. 4) . . . . . *C. bellera*
14. (11) Upper distal angle of lateral lobe of uncus greatly produced, forming an acute fingerlike process (figs. 16-19) . . . . . 17  
 Upper distal angle of lateral lobe of uncus slightly produced but not as an acute fingerlike process (figs. 12-15) . . . . . 15
15. (14) Forearm of gnathos without carina; dorsal surface of tegumen greatly uplifted; distal end of harpe bluntly rounded (fig. 15) . *C. partunda*  
 Forearm of gnathos with carina; dorsal surface of tegumen smoothly rounded; distal end of harpe slightly upturned (figs. 12, 13) . . . 16

16. (15) Forearm of gnathos with sharply pointed dentate carina near apex; aedeagus nearly straight; distal margin of lateral lobe of uncus straight or slightly convex (fig. 13) . . . . . *C. vitruvia*  
Forearm of gnathos with dentate carina not sharply pointed and near middle in position; aedeagus in dorsal view sharply bent to the right; distal margin of lateral lobe of uncus slightly concave (fig. 12) . . . . . *C. vibulena*
17. (14) Finger-like process at distal end of aedeagus directed upward (figs. 18, 19). . . . . 18  
Finger-like process at distal end of aedeagus straight (figs. 16, 17) . 19
18. (17) Lateral lobes of uncus connected dorsally; upper distal angle of lateral lobe of uncus greatly produced; forearm of gnathos without carina; aedeagus very long, more than four times the length of harpe (fig. 19) . . . . . *C. fractunda*  
Lateral lobes of uncus entirely separate; upper distal angle of lateral lobe of uncus produced less than one-half as much as above; forearm of gnathos with carina; aedeagus shorter than above, less than four times the length of harpe (fig. 18) . . . . . *C. anastasia*
19. (17) Lateral lobes of uncus narrowly connected dorsally; aedeagus with two cornuti, the larger one straight; dorsal margin of harpe greatly constricted before apex (fig. 17) . . . . . *C. anfracta*  
Lateral lobes of uncus entirely separate; aedeagus with a single large cornuti which is bent near middle; dorsal margin of harpe not as greatly constricted before apex as in species above (fig. 16) . *C. indigo*

## FEMALES

1. Length of ductus bursae plus bursa copulatrix less than  $3\frac{1}{2}$  times the width of ostium bursae (figs. 28, 31-33) . . . . . 2  
Length of ductus bursae plus bursa copulatrix 4 or more times the width of ostium bursae (figs. 22-27, 29, 30, 34) . . . . . 6
2. (1) Posterior ostium bursae lobes sharply pointed . . . . . 3  
Posterior ostium bursae lobes rounded . . . . . 5
3. (2) Posterior ostium bursae lobes large and spurlike; length of ductus bursae plus bursa copulatrix less than  $2\frac{1}{2}$  times the width of ostium bursae (fig. 33) . . . . . 4  
Posterior ostium bursae lobes small, not spurlike, forming two teeth; length of ductus bursae plus bursa copulatrix about 3 times the width of ostium bursae (fig. 32) . . . . . *C. amplia*
4. (3) Hindwings beneath with reddistinct, not obscured with fuscous, particularly in the area between the large blue lunule in interspace  $Cu_2$  and the postmedian line and with a submarginal red spot above vein  $Cu_1$  . . . . . *C. anfracta*  
Hindwings beneath with red indistinct; obscured with fuscous, particularly in the area between the large blue lunule in interspace  $Cu_2$  and the postmedian line and with a submarginal red spot lacking above vein  $Cu_1$  . . . . . *C. indigo*
5. (2) Ventral plate of ductus bursae at ostium bursae broadly rounded laterally (fig. 28) . . . . . *C. drusilla*  
Ventral plate of ductus bursae at ostium bursae sharply angled, not rounded laterally (fig. 31) . . . . . *C. partunda*
6. (1) Forewing above with large shining purplish blue spot below cell . . 7  
Forewing above without this spot, or if present it is pale blue in color, or forewing dark metallic blue over most of wing except outer margin . . . . . 8

- 7. (6) Hindwing beneath with postmedian black line above vein  $Cu_2$  bordered outwardly with white and inwardly with red; spurs of posterior ostium bursae lobes set close together (fig. 29) . . . . . **C. vitruvia**  
Hindwing beneath with postmedian black line lacking red inner border; spurs of posterior ostium bursae lobes set further apart than in *vitruvia* . . . . . **C. fractunda**
- 8. (6) Forewing dark metallic blue except along outer margin . . . **C. bellera**  
Forewing not as above, dark brown sometimes with bright blue below 2dA and sometimes pale blue over cell and base of wing . . . . . 9
- 9. (8) Total length of ductus bursae and bursa copulatrix 5 times the width of ostium bursae . . . . . 10  
Total length of ductus bursae and bursa copulatrix less than 5 times the width of ostium bursae . . . . . 11
- 10. (9) Hindwing above with a wide brown border and with blue area more restricted (fig. 49) . . . . . **C. chacona**  
Hindwing above with brown border more narrow and with blue area larger (fig. 45) . . . . . **C. janeirica**
- 11. (9) Total length of ductus bursae and bursa copulatrix  $4\frac{1}{2}$  mm. or slightly more . . . . . 12  
Total length of ductus bursae and bursa copulatrix  $3\frac{1}{4}$  mm. or less . 13
- 12. (11) Inner red element of postmedian line on hindwing beneath broad, nearly 1 mm. in width . . . . . **C. cecrops**  
Inner red element of postmedian line on hindwing beneath not nearly as broad, about  $\frac{1}{2}$  mm. in width . . . . . **C. isobeon, C. susanna**
- 13. (11) Posterior ostium bursae lobes sharply pointed . . . . . 14  
Posterior ostium bursae lobes rounded . . . . . **C. lerbela**
- 14. (13) Ductus bursae sharply bent ventrally just before attachment of ductus seminalis; area around the opening of ductus seminalis nonsclerotized . . . . . **C. bactra**  
Ductus bursae only gradually bent toward the left just before attachment of ductus seminalis; area around opening of ductus seminalis sclerotized . . . . . **C. caulonia**

The *janeirica* Group

In this group the lower angle of uncus in lateral view is only slightly produced and much less so than the upper angle of uncus, (the ventral margin is not nearly as long as the distal or caudal margin). The aedeagus is fairly straight, ending distally in a straight or upward projected point. The fused harpes in ventral view are not nearly as wide as long.

The species in this group are all very closely related and most of them are usually more easily distinguished upon wing habitus and color characters, than by genitalic characters. In the male sex, *C. bactra* is distinguished at once from all the others in having a wider postmedian band on the wings underneath and in having the cell bar closer to it, being separated from it by less than twice the width of the band. *C. lerbela* is the only species in this group that has two black pupillated lunular spots on the outer margin of hindwing below. Of the remaining four species, *C. nicolayi* is the most distinct in having the

blue color on the upperside of hindwing more lustrous and covering a larger area, and in having a dark gray ground color below. The remaining three species: *caulonia*, *janeirica*, and *chacona* are most closely related. They can be distinguished except for a few genital characters, only by color characters on the upper surfaces of the hindwings. *C. chacona* has a broad black outer border that completely obliterates the marginal black spots and consequently has a much smaller discal blue area; it has a marginal bluish white line in interspace  $Cu_2$  only. *C. janeirica* has the outer border narrower, containing two large marginal black spots, nearly confluent but outlined by a trace of blue. Because of the narrow border there is a larger blue disc in *janeirica*. This species also has a marginal bluish-white line extending above vein  $Cu_1$ . *C. caulonia* has the marginal spots much smaller and more isolated than in *janeirica*, with marginal bluish-white line as in *janeirica*.

***Calycopis bactra* (Hewitson), new combination**

FIGURES 1, 20a, 22, 35-42

*Thecla bactra* Hewitson, 1877, Illustrations of diurnal Lepidoptera: Lycaenidae, vol. 1, p. 194; vol. 2, pl. 77, figs. 619, 620.

*Thecla beon* (Cramer).—Godman and Salvin [not Cramer, a misidentification, in part], 1887, Biologia Centrali-Americana, Lepidoptera-Rhopalocera, vol. 2, pp. 74, 75.

MALE (figs. 35, 36).—Forewing above dark brown, nearly black, sometimes with a faint and dull bluish-purple iridescence over base; fringe paler brown. Hindwing above with costal and outer margin dark brown, nearly black; base and cell to outer dark border lustrous blue with a slight purplish tinge; abdominal margin below vein 2dA thickly covered in middle with pale grayish-purple scales; lobe of anal angle with a small orange-red spot, surrounded by the dark ground color; immediately above this on abdominal margin a small nearly triangular white spot; above anal angle along outer margin a pale bluish-white submarginal line between veins 2dA and  $M_3$ ; tips of tails white; fringe at base of tail  $Cu_2$  white. Undersides of both wings with ground color pale brown; with two very faint parallel bars slightly darker than ground color crossing the end of each discoidal cell, area between these bars dirty white and sometimes containing a few scattered red scales; fringe slightly darker than ground color and on hindwing containing a few bluish-white scales below vein  $Cu_1$ . Forewing above vein  $Cu_2$  and hindwing with a narrow tricolored postmedian line or band; this band white along outside, black in middle and orange red along its inner side. Below vein  $Cu_1$  this band has a W-shape; the V-shaped bar, present in some species of *Calycopis* in interspace  $M_3$  and on vein  $Cu_1$  is absent or only slightly



indicated in *C. bactra*. Forewing underneath with costal margin orange red; outer margin slightly darker than ground color; a faint double row of slightly darker submarginal bars along outer margin above vein  $Cu_2$ . Hindwing beneath with anal lobe black; immediately inward from this on abdominal margin an orange-red bar; a few white scales between bar and anal lobe; a black or brown line extending from anal lobe around outer margin, becoming lighter brown near costal margin; inward from and adjacent to this line a white line fading into pale brown above vein  $M_3$ ; interspace  $Cu_2$  with a submarginal orange-red lunular marking, partially enclosing a small black spot along its outer edge; between the lunular marking and the anal lobe a submarginal dark brown lunular spot suffused with bluish-white scales; inward from this lunular spot and between middle elements of W-shaped portion of postmedian band an orange-red lunule; a double row of very faint and irregularly-shaped dirty white submarginal spots above vein  $Cu_1$ .

Length of forewing 11–12.5 mm.

Male genitalia, as illustrated by figure 1, with aedeagus short, under 3 mm. in length, nearly straight, slightly upturned distally and with base slightly downturned; lateral lobe of uncus with distal margin nearly straight and lower distal angle not greatly expanded, lower margin of uncus concave; harpes fused ventrally nearly seven-eighths of their length, in lateral view gradually tapering and forming a long narrow apex. Eighth tergite (fig. 20a) with posterior concavity broad and shallow.

FEMALE (figs. 37–42).—Wings on both surfaces much like the male, but frequently with some pale blue in base of forewing above and with blue of hindwing above much less brilliant; differing on the hindwing underneath in usually having a little orange red above  $Cu_1$  next to the submarginal black pupillated lunule.

Length of forewing 11–12 mm.

Female genitalia, as illustrated by figure 22, with ductus bursae and bursa copulatrix relatively short, being about 3.5 mm. in length and just over 4 times the width of ostium bursae, posterior ostium bursae lobes sharply pointed.

TYPE-LOCALITY.—“Nicaragua.”

ADDITIONAL TYPE DATA.—*C. bactra* was originally described from a single female specimen, the holotype, from the collection of W. C. Hewitson, now in the collection of the British Museum (Natural History) and labeled type number Rh. 915 with female genitalia preparation no. R. 1948–14 (N.H.B.).

DISTRIBUTION.—Guatemala south through Central America, northern South America, Trinidad, northern Brazil and Peru.

GUATEMALA: Department of Quezaltenango, Volcán Santa María. HONDURAS: Department of Cortés, La Cumbre. NICARAGUA: no specific locality. PANAMA: Province of Panama, La Chorrera (May). CANAL ZONE: Culebra (Nov.); Ancón (May, June, October); New Culebra (February); Balboa (April, May); Taboga Island; La Boca (April); Barrow Colorado Island (March); La Cruces Trail, nr. Corozal (June). COLOMBIA: Department of Valle del Cauca, Cali District (3200 ft., February). PERU: no specific locality. VENEZUELA: State of Carabobo, Puerto Cabello. TRINIDAD: St. Andrew County, Matura (September), Oropuche (April); Coroni County, Gran Couva (April). SURINAM: District of Paramaribo, Paramaribo (March); District ?, Sint [sic] Barbara Plan [sic] (Surinam River, April). FRENCH GUIANA: Colonie de la Guyana, Cayenne, Mouth of Kourou River (July, December). BRAZIL: Territory of Rio Branco, Mt. Roraima (4200 ft., December).

MATERIAL STUDIED.—Eighteen males, 20 females, including their genitalia.

*Calycopis nicolayi*, new species

FIGURES 2, 20b, 113, 114

MALE (figs. 113, 114).—This species differs from all others in the *janeirica* group in having ground color of forewings and costal and outer borders of hindwings very much darker and purplish black in color. It is similar to *bactra* and thus differs from *caulonia*, *janeirica*, and *chacona* in having a very large blue disc on hindwing. This blue as in *bactra* is more lustrous than in the above-mentioned species and it lacks the purplish tinge found in *bactra*. The ground color underneath is very dark gray, not brown as in the other species. The markings below are as in *caulonia* and *janeirica* with postmedian red lunule of interspace  $Cu_2$  slightly suffused with black and sometimes almost entirely black.

Length of forewing 10–12 mm.

Male genitalia, as illustrated by figure 2, with aedeagus about the length and shape of that found in *bactra*, somewhat more slender and less upturned at distal end; lateral lobe of uncus as in *janeirica*; harpes fused ventrally about as much as in *caulonia*, in ventral view shaped about like that species and *bactra*, but in lateral view shaped like *caulonia* and *janeirica*. Eighth tergite (fig. 20b) with posterior concavity broader and proportionately more shallow than in any of the other species except *chacona*.

FEMALE.—Unknown.

TYPE-LOCALITY.—João Pessoa, State of Paraíba, Brazil.

ADDITIONAL TYPE DATA.—Described from the holotype, male (locality as given above; June 29, 1953; USNM type 34897; ex. S. S. Nicolay Collection; collected by Jorge Kesselring; male genitalia preparation WDF 5291, 1953), and two male paratypes from the same locality (taken June 21 and June 27, 1953).



LOCATION OF TYPES.—Holotype in United States National Museum, paratypes in the collection of Lt. Colonel Stanley S. Nicolay.

DISTRIBUTION.—Known only from the type-locality.

MATERIAL STUDIED.—Three males including their genitalia.

*Calycopis caulonia* (Hewitson), new combination

FIGURES 3, 20c, 23, 55, 56, 115, 116

*Thecla caulonia* Hewitson, 1877, Illustrations of diurnal Lepidoptera: Lycaenidae, vol. 1, p. 188; vol. 2, pl. 75, figs. (♀) 587, 588.

MALE (figs. 115, 116).—Very similar to *bactra* except that postmedian band on undersurfaces of wings contains less red along inner side and the bars at the end of the cell in both wings on this surface are separated by a greater distance from the postmedian bands. Very close to *janeirica* in this sex, hardly differing except in size.

Length of forewing 10–12 mm.

Male genitalia, as illustrated by figure 3, with aedeagus short as in *bactra*, being about 3 mm. in length, straight, not upturned distally and with distal end not prolonged as it is in *bactra* and not blunt as it is in *janeirica*; harpes and uncus about like *janeirica* but smaller. Eighth tergite (fig. 20c) similar to *janeirica* but with posterior concavity more narrow and proportionately deeper.

FEMALE.—Close to females of *bactra*, differing chiefly in having the blue on hindwing more restricted, being nearly absent in interspaces  $M_1$  and  $M_2$  opposite the end of cell. Wings below as in male with slightly less red along inner side of postmedian band and with cell bars further from this band than in *bactra*.

Length of forewing 10.5–11.5 mm.

Female genitalia, as illustrated by figure 23, with posterior ostium bursae lobes smaller and with spurs much closer together and nearer center of upper margin of ostium bursae than in *bactra*; with ductus bursae curving to left before entrance of ductus seminalis and with sclerotized area around opening of ductus seminalis (in *bactra* the area is nonsclerotized and the ductus bursae strongly and abruptly curved ventrally before nonsclerotized area).

TYPE-LOCALITY.—“Rio Janeiro” [Rio de Janeiro, Brazil].

ADDITIONAL TYPE DATA.—*Caulonia* was originally described from a single female specimen, the holotype, W. C. Hewitson collection, now in the collection of the British Museum (Natural History) and is labeled type number Rh. 916. According to Mr. D. S. Fletcher of the staff of that institution, this type lacks its abdomen. Another specimen, a topotype, was carefully compared with the holotype by Mr. Fletcher and upon being identified as that species was loaned to me for study. This specimen is the one illustrated in figures 23, 55, 56.

DISTRIBUTION.—This species is found along the central eastern coast of Brazil from the State of Rio de Janeiro north to the state of Paraíba.

BRAZIL: State of Rio de Janeiro, Rio de Janeiro; State of Pernambuco, Recife (January), Santa Cruz (July), Bonita (January); State of Paraíba, João Pessoa (December, January, February).

MATERIAL STUDIED.—Nine males and nine females including their genitalia.

*Calycopis janeirica* (C. Felder), new combination

FIGURES 4, 20*d*, 24, 43–46

"*Thecla beon* Cram. var. *janeirica*" C. Felder, 1862, Verh. Kais.-Königl. Zool.-bot. Ges. Wien, vol. 12, p. 474.

*Thecla vibulena* Hewitson [in part], 1877, Illustrations of diurnal Lepidoptera: Lycaenidae, vol. 2, figs. 599, 600 (only).

MALE (figs. 43, 44).—Similar to *bactra*, differing in being slightly larger and in having dark borders of hindwings wider on the upper surface, especially so near apex. Forewing below differing from *bactra* in lacking the red along inner side of postmedian band. Hindwing below with less red along innerside of this band and with elements of this band forming three distinct, connected V-shaped bars below vein  $M_3$ .

Length of forewing 11–14 mm.

Male genitalia, as illustrated by figure 4, with aedeagus longer than in *bactra* or *caulonia*, usually nearly 4 mm. in length and nearly straight, the distal end similar to *caulonia*, not upturned as in *bactra*; lateral lobe of uncus with distal margin concave and lower distal angle not greatly expanded but slightly more so than in *bactra* or *caulonia*; lower margin concave. Harpes fused ventrally just barely over three-fourths of their length; in lateral view with apices slightly expanded, not long and tapering. Eighth tergite (fig. 20*d*) with posterior concavity narrow and much deeper than in *bactra* but not as narrow as in *caulonia*.

FEMALE (figs. 45, 46).—Similar to the male, forewing above slightly bluish at the base. Hindwing above with border below vein  $Cu_1$  more broken, with dark spots more isolated and with blue over disc not quite as brilliant. Wings underneath not different from those of the male and differing from *bactra* in the same ways that the male does.

Length of forewing 11–13 mm.

Female genitalia, as illustrated by figure 24, with ductus bursae and bursa copulatrix long, being about 5 mm. in length and just over 5 times the width of ostium bursae, with the pair of sharply pointed ostium bursae lobes similar to those of *caulonia*, but slightly larger,

ductus bursae only slightly curved, or if greatly so, this curve near middle.

TYPE-LOCALITY.—“Rio” [Rio de Janeiro, Brazil].

ADDITIONAL TYPE DATA.—This species was described from the female sex and the number of specimens in the original series was not indicated. Although the C. Felder collection of Lepidoptera supposedly went to the British Museum (Natural History), the type of this species could not be located in that collection by Mr. D. S. Fletcher. I am not suggesting that a neotype be designated at present because of the possibility of the type being in some other European collection.

DISTRIBUTION.—Widely distributed in Brazil from Amazonas and Pernambuco south to Santa Catarina.

BRAZIL: State of Amazonas, Manaus; State of Pernambuco, Espirito Santo, Recife; State of Bahia, Tijuca; State of Rio de Janeiro, Petropolis, Rio de Janeiro, Nova Friburgo; State of Santa Catarina, Joinville (April, August, September).

MATERIAL STUDIED.—Twelve males and 10 females, including their genitalia.

#### *Calycopis chacona* (Jørgensen), new combination

FIGURES 5, 20e, 21, 21h-j, 25, 47-52

*Thecla poeas chacona* Jørgensen, 1932, Deutsche Ent. Zeit. (Iris), vol. 46, pp. 44, 45.

MALE (figs. 47-48, 51-52).—Closely allied to *janeirica*, differing in having the brilliant blue of hindwing covering a much smaller area and thus leaving a very much broader border on this wing. Differing from *janeirica* on the undersurfaces in having the ground color a warmer brown and with all red markings more of an orange red. The red of the postmedian band on the forewing below is frequently present but is very faint.

Length of forewing 11-14 mm.

Male genitalia (figs. 5, 21, 21h-j) with uncus, harpes and aedeagus in lateral view very much as in *janeirica*; lateral lobes of uncus in dorsal view further apart and more expanded, forming a deeper middle notch than in *janeirica* and harpes fused ventrally for a greater distance than in that species. Figures 21, 21h-j show variation of harpes in lateral view. Eighth tergite (fig. 20e) with posterior concavity as deep or deeper than in *janeirica* and much broader.

FEMALE (figs. 49, 50).—Most specimens differ from *janeirica* in the same way that the males differ, in having a wider brown border with a smaller blue disc on the upper surfaces of the hindwings and in having the red of the postmedian band on the forewing below present but very faint. In *janeirica* this red is usually absent. I am unable to distinguish some female specimens from the state of Parana, Brazil from *janeirica*; however, all males I have seen from Parana are typical *chacona*.

Length of forewing 11–13 mm.

Female genitalia, as illustrated by figure 25, not separable from *janeirica*. Ductus bursae usually sharply curved immediately before ductus seminalis. Figures 24 and 24a of *janeirica* and figure 25 of *chacóna* were not included to show differences between these two species. Both species have ductus bursae like figures 24a and 25 and, although I have not seen *chacóna* like that of figure 24, I do not doubt that it occurs.

TYPE-LOCALITY.—“Formosa, Argentina.”

ADDITIONAL TYPE DATA.—This species was originally described from a series of several specimens (=syntypes), the exact number not being stated. These syntypes are presumably in the Jörgensen collection in the Museo Argentino de Ciencias Naturales, Buenos Aires; however, a lectotype cannot be designated at the present time because I have been unable to obtain any information concerning these syntypes. My identification is based upon the original description, upon a topotype specimen and upon this being the southernmost species in the genus.

DISTRIBUTION.—This species is found in the state of Parana in Brazil west and south through Paraguay to the provinces of Salta, Cordoba and Buenos Aires in Argentina.

BRAZIL: State of Parana, Castro, Londrina (April, September). PARAGUAY: Villarica (September). ARGENTINA: Province of Misiones, Iguazu, Santa Maria; Province of Corrientes, Corona near Goya; Province of Entre Rios, La Soledad, Gualeguaychu (March), Isla Los Cisnes (Parana delta); Province of Buenos Aires, Islas, Punta Lara, Buenos Aires; Territory of Formosa, Formosa; Province of Salta, Salta; Province of Tucuman, Tucuman (May); Province of La Rioja, La Rioja; Province of Cordoba, Cordoba, Cosquin.

MATERIAL STUDIED.—Twenty-six males and 20 females, including their genitalia.

*Calycopis lerbela*, new species

FIGURES 6, 20f, 26, 57–60

MALE (figs. 57–58).—Differing from *bactra* and related species in having the brilliant blue on hindwings above restricted to lower half of wing below cell. Anal lobe without red spot or at most with only a few red scales. Forewing below similar to *janeirica*, differing from that species on the hindwing in having a second submarginal black pupillated red spot, this spot in interspace  $M_3$  and smaller than similar spot in interspace  $Cu_1$ .

Length of forewing 10.5–12.5 mm.

Male genitalia, as illustrated by figure 6, with lateral lobe of uncus having distal margin concave, with lower margin straight or nearly so and with upper distal angle produced, forming a short finger-like

process; aedeagus very distinctive, having basal end upturned; harpe somewhat similar to *bactra* but slightly more blunt at apex. Eighth tergite (fig. 20f) very much as in *chacona* and slightly smaller.

FEMALE (figs. 59, 60).—Differing from the male by having a more extensive blue area in the base of the hindwing on the upper surfaces and in having the brown border on lower half of this wing more broken into isolated black spots. Similar to *bactra* female with blue somewhat brighter and extending over much of base of forewing. Wings underneath not differing from those of the male.

Length of forewing 11.5 mm.

Female genitalia, as illustrated by figure 26, with posterior ostium bursae lobes only slightly produced, rounded and lacking the pair of spurs usually present and thus very similar to *cecrops* and some specimens of *susanna*. It differs from the latter species in having a shorter ductus bursae and bursa copulatrix.

TYPE-LOCALITY.—Obidos, State of Amazonas, Brazil.

ADDITIONAL TYPE DATA.—Described from the holotype, male (locality as given above; USNM type 34898; E. A. Smyth Collection; male genitalia preparation WDF 2725, 1948); allotype, female (same locality; Oct.–Nov.; M. de Mathan; Rothschild bequest; female genitalia preparation WDF 3468, 1951) and from ten male paratypes from Obidos and from other localities in the state of Amazonas, Brazil.

LOCATION OF TYPES.—Holotype and two male paratypes in the United States National Museum. Allotype and eight male paratypes in the British Museum (Natural History).

DISTRIBUTION.—State of Amazonas in Brazil north into French Guiana and Surinam. Note: Material from French Guiana and Surinam was not included in the type series because of the remoteness of those countries from the type locality.

BRAZIL: State of Amazonas, Obidos (October–November), Itutuba to Obidos (January to April), Juhuity (April), Manaus. FRENCH GUIANA: Colonie de la Guyane, Cayenne. SURINAM: District?, Sint [sic] Barbara Plan [sic] (Suriname River, April).

MATERIAL STUDIED.—Fifteen males and one female, including their genitalia.

#### The *torqueor* Group

In this group the lower angle of uncus is about as in the *janeirica* group. The aedeagus is sharply upturned distally and curved to the right (in dorsal view), the distal portion of the aedeagus bifurcate in dorsal view, and bluntly pointed in lateral view. The fused harpes in ventral view are not nearly as wide as long. One species is assigned here.



*Calycopis torqueor* (Druce), new combination

FIGURES 7, 20g, 111, 112

*Thecla torqueor* Druce, 1907, Proc. Zool. Soc. London, 1907, p. 608.

MALE (figs. 111, 112).—Wings above similar to *indigo* with border on hindwing about the same as in that species but with two long brilliant blue rays on hind margin of forewing, one above and one below vein 2dA. Wings below hardly distinguishable from *anfracta* and as in that species with red markings more distinct than in *indigo* and with red lunule adjacent to postmedian band in interspace  $Cu_2$  containing less fuscous than in *anfracta*.

Length of forewing 14 mm.

Male genitalia, as illustrated by figure 7, with aedeagus sharply bent upward and to the right at distal end; saccus as long as harpe; vinculum bent greatly to the rear; dorsal margin of tegumen (in lateral view) greatly produced in the middle; uncus with lateral elements similar to *bactra*; the lower margin short, with lower distal lobe small and distal margin nearly straight; harpes (in lateral view) of the common type, quite like *janeirica*, *partunda*, and several other species in the genus, with basal two-thirds fused (in ventral view), unusually broad near middle, narrowing rapidly toward apex and with free apical one-third widely separated; gnathos with a distinct tooth-like carina on inner surface of forearm.

FEMALE.—Unknown.

TYPE-LOCALITY.—“Carimang River [sic], British Guiana.”

ADDITIONAL TYPE DATA.—Described from a series of males all from the type-locality. Druce designated a holotype as is indicated in the original description with the statements: “Type Mus. Godman,” and “Whitely obtained a series of specimens which do not differ.” The holotype, now in the collection of the British Museum (Natural History) is labeled type no. Rh 903 and its genitalia preparation number is 1951-489. Note: One of the paratypes was dissected and compared with the holotype by Mr. D. S. Fletcher and upon being found identical was loaned to me for study. This compared specimen is the one illustrated (figs. 7, 20g, 111, 112).

DISTRIBUTION.—

BRITISH GUIANA: Province of Essequibo, Caramang River.

MATERIAL STUDIED.—The only specimen available to me.

The *xeneta* Group

Uncus as in the *janeirica* and *torqueor* groups. The aedeagus is gradually upcurved distally, ending with a downward directed apex. One species is assigned here.



*Calycopis xeneta* (Hewitson), new combinationFIGURES 8, 20*h*, 107, 108, 117, 118

*Thecla xeneta* Hewitson, 1877, Illustrations of diurnal Lepidoptera: Lycaenidae, vol. 1, p. 193; vol. 2, pl. 77, figs. (♂) 611, 612.

*Thecla devia* Möschler, Schaus [not Möschler, a misidentification], 1920, Ent. News, vol. 31, p. 176.

MALE (figs. 107, 108, 117, 118).—Both forewing and hindwing with outer margins more nearly straight than in the other species of the genus. Forewing more distinctly purplish blue than in any other species and this blue lighter and more brilliant in color. Hindwing with a very narrow black outer border. Wings underneath much darker, being a smoky brown and with red markings very faint or lacking and red color replaced by dark brown or black. I divide this species into two subspecies (see below).

Length of forewing 9–14 mm.

Male genitalia, as illustrated by figure 8, with aedeagus distinctly curved upward before apex and with apex directed downward; both saccus and harpe in lateral view very short but with saccus over one-half length of aedeagus; vinculum bent greatly to the rear; elements of uncus quite similar to *bactra* and *torqueor* in having lower margin short with lower distal angle small and with distal margin nearly straight; harpes in lateral view blunt at apices, in ventral view very broad near middle, being almost as broad as long; gnathos with a short ridgelike carina on inner surface well forward from distal end.

FEMALE.—Unknown in both subspecies described below.

DISTRIBUTION.—Guatemala south into Costa Rica and French Guiana, British Guiana, Brazil, Peru, and Paraguay.

*Calycopis xeneta xeneta* (Hewitson)FIGURES 8, 20*h*, 107, 108

MALE (figs. 107, 108).—This subspecies differs from *C. xeneta devia* (see below) in having the ground color a pale gray on the undersurfaces, with a dark cloudlike spot in the central area of both forewing and hindwing and a pale area above and below vein 2*da* on forewing.

Length of forewing 12–14 mm.

Male genitalia as described above in the description of the species.

TYPE-LOCALITY.—Department of Chontales, Nicaragua.

ADDITIONAL TYPE DATA.—Described from at least two males as Hewitson mentions Brazil and Nicaragua for the range of his *xeneta*. The male labeled type in the Hewitson collection in the British Museum (Natural History) is the specimen from Nicaragua. It bears the labels "BM Type No. Rh. 899," and genitalia preparation number "BM 1951-491." I designate this specimen as the lectotype of *xeneta*.

A second syntype from Brazil belongs to *C. xeneta devia*. A topotypic male specimen apparently from the type lot was dissected and compared with the lectotype by Mr. D. S. Fletcher and upon being found identical was sent to me for study. This specimen is the basis for my identification of *xeneta*.

DISTRIBUTION.—Guaala south into Costa Rica.

GUATEMALA: Department of Izabal, Cayuga (May). NICARAGUA: Department of Chontales. COSTA RICA: Province of Limón, La Florida (500 ft., March), Guápiles (800 ft., May).

MATERIAL STUDIED.—Fifteen males, including their genitalia.

*Calycopis xeneta devia* (Möschler)

FIGURES 117, 118

*Thecla devia* Möschler, 1883, Verh. Kais.-Königl. Zool.-bot. Ges. Wien, vol. 32, p. 311, pl. 17, fig. 7.

MALE (figs. 117, 118).—This subspecies differs from *C. xeneta xeneta* as described above. Specimens from Peru have the ground color of wings below slightly paler than specimens from other areas and have red markings faintly indicated on hindwings. These specimens are not here considered distinct enough to warrant separation.

Length of forewing 9–13 mm.

Male genitalia, not illustrated, not differing at all from some specimens of *C. xeneta xeneta* and differing from other specimens of that subspecies in having lateral elements of uncus in dorsal view slightly more produced and farther apart, forming a wider dorsal notch.

TYPE-LOCALITY.—“Surinam.”

ADDITIONAL TYPE DATA.—Described from a single male, the holotype, and according to the original description, in the collection of the “Museum Stuttgart.” I have no additional information on the type specimen; however, the original figure, original description, and type-locality indicate that *devia* is the subspecies of *xeneta* here described.

DISTRIBUTION.—The Guianas south and west through Brazil to Peru and Paraguay.

FRENCH GUIANA: Colony of Guyane, Cayene, Penintential Territory, St. Jean (Maroni River). BRITISH GUIANA: Province of Essequibo, Kamakusa (November). BRAZIL: State of Pará, Igarapé-Açu. PERU: Department of Loreto, Achinamiza (January). PARAGUAY: Villarica, Sapucaí.

MATERIAL STUDIED.—Twelve males, including their genitalia.

The *cecropis* Group

Uncus in lateral view undulate on ventral margin; aedeagus and harpes as in the *janeirica* group. Two species are assigned to this group.

*Calycopis cecrops* (Fabricius)FIGURES 9, 20*i*, 61-70

- Hesperia cecrops* Fabricius, 1793, *Entomologia systematica emendata et aucta* . . . , vol. 3, pt. 1, p. 270.
- Rusticus poeas* Hübner, 1811, *Sammlung exotischer Schmetterlinge*, vol. 1, pl. (101), figs. 1-4.—Scudder, 1876, *Bull. Buffalo Soc. Nat. Sci.*, vol. 3, p. 108.
- Strymon beon* (Cramer).—Hübner [not Cramer, a misidentification], 1816, *Verzeichniss bekannter Schmettlinge* [sic], p. 75.
- Polymnatus cecrops* (Fabricius).—Godart, 1819, in Latreille and Godart, vol 9 in *Encyclopedie methodique*, p. 636.
- Thecla poeas* (Hübner).—Boisduval and LeConte, 1833, *Histoire Générale et iconographie des Lepidoptères et des chenilles de l'Amérique Septentrionale*, pp. 111, 112, pl. 25, figs. 1-4.—Morris, 1860, *Catalogue of the described Lepidoptera of North America*, p. 103; 1862, *Synopsis of the described Lepidoptera of North America*, p. 103.—Kirby, 1871, *Synonymic catalogue of diurnal Lepidoptera*, p. 395.—Edwards, 1877, *Trans. American Ent. Soc.*, vol. 6, p. 41; 1884, *Trans. American Ent. Soc.*, vol. 11, p. 298.—French, 1886, *Butterflies of the eastern United States*, pp. 270, 271.
- Thecla cecrops* (Fabricius).—Westwood, 1857, in Doubleday and Westwood, *Genera of the diurnal Lepidoptera*, vol. 2, p. 485.—Kirby, 1871, *Synonymic catalogue of diurnal Lepidoptera*, p. 386.—Strecker, 1878, *Butterflies and moths of North America: Complete synonymical catalogue* . . . , pp. 86, 87, 185.—Skinner, 1898, *Synonymic catalogue of the North American Rhopalocera*, p. 48.—Holland, 1898, *Butterfly book*, pp. 246, 247, pl. 29, fig. 18, pl. 30, fig. 7.—Draudt, in Seitz, 1920, *Die Gross-Schmetterlinge der Erde*, vol. 5, p. 795, pl. 158, figs. b-1, b-2.—Holland, 1931, *Butterfly book*, rev., p. 239, pl. 30, fig. 7, pl. 29, fig. 18.
- Tmolus cecrops* (Fabricius).—Butler, 1869, *Catalogue of diurnal Lepidoptera described by Fabricius in the collection of the British Museum*, p. 189.
- Thecla beon* (Cramer).—Kirby [not Cramer, as a synonym of *T. cecrops*], 1871, *Synonymic catalogue of diurnal Lepidoptera*, p. 395.—Godman and Salvin [not Cramer], 1887, *Biologia Centrali-Americana, Lepidoptera-Rhopalocera*, vol. 2, p. 74.
- Calycopis cecrops* (Fabricius).—Scudder, 1876, *Bull. Buffalo Soc. Nat. Sci.*, vol. 3, p. 108; 1889, *Butterflies of the eastern United States and Canada with special reference to New England*, vol. 3, pp. 1821, 1823.—Dyar, 1903, *Bull. U.S. Nat. Mus.*, vol. 52, p. 38.—Comstock, J. H., and Comstock, A. B., 1917, *How to know the butterflies*, p. 231, pl. 34, figs. 10-12 [10=♀ not ♂, 11, 12=♂].—Field, 1940, *Bull. Univ. Kansas, Biol. Ser.*, vol. 39, no. 10, p. 142; 1940, *Bull. Brooklyn Ent. Soc.*, vol. 35, no. 4, pp. 134, 135; 1941, *Journ. Kansas Ent. Soc.*, vol. 14, no. 2, pp. 66-68.—Clench, in Ehrlich, P. R., and A. H. Ehrlich, 1961, *How to know the butterflies*, p. 199.
- Calycopis beon* (Cramer).—Scudder [not Cramer, as a synonym of *C. cecrops*], 1876, *Bull. Buffalo Soc. Nat. Sci.*, vol. 3, p. 108.
- Thecla hugon* (Godart).—Godman and Salvin [not Godart, a misidentification], 1887, *Biologia Centrali-Americana, Lepidoptera-Rhopalocera*, vol. 2, p. 75.
- Strymon cecrops* (Fabricius).—Barnes and McDunnough, 1917, *Check list of the Lepidoptera of Boreal America*, p. 14.—Barnes and Benjamin, 1926, *Bull. So. California Acad. Sci.*, vol. 25, pt. 1, p. 17.—Clark, A. H., 1932, *U.S. Nat. Mus. Bull.* 157, p. 249, pl. 23, figs. 3, 4.—McDunnough, 1938, *Check list of the Lepidoptera of Canada and the United States of America*, 1: *Macrolepidoptera*, p. 24.—Hessel, 1948, *Journ. New York Ent. Soc.*, vol. 56,

pp. 243-244.—Rawson and Hessel, 1951, Bull. Brooklyn Ent. Soc., vol. 46, pp. 79-84, 5 figs. [of eggs, larvae, pupae].—Klots, 1951, Field guide to butterflies of North America east of the Great Plains, pp. 133, 144, plate 15 fig. 12.—Clark, A. H., and L. F. Clark, 1951, Smithsonian Misc. Coll., vol. 116, no. 7, pp. 78, 79, pl. 12 h.—dos Passos, 1964, Synonymic list of Nearctic Rhopalocera, p. 56.

*Strymon cecrops* ab. *gottschalki* Clark, A. H., and Clark, L. F., 1938, Proc. Biol. Soc. Washington, vol. 51, p. 3 (new synonymy); 1951, Smithsonian Misc. Coll., vol. 116, no. 7, p. 78, frontispiece fig. 7.

MALE (figs. 61-64 [summer form], 67, 68 [spring form]).—Wings<sup>s</sup> above usually entirely dark brown, sometimes with a small suffusion of blue in interspace  $Cu_1$  and  $Cu_2$  on hindwing; a pale submarginal bluish-white line below vein  $Cu_2$  on hindwing, this line sometimes extending above through part of interspace  $Cu_1$ ; anal lobe with a few red scales and a minute white bar at indentation above this lobe on abdominal margin. Wings below drab or hairbrown in color with markings similar to the other species of *Calycopis*; base of costal margin of forewing orange red, and with two parallel bars slightly darker than ground color crossing the end of each discoidal cell, these bars frequently red in color, and with area between these bars dirty white. *C. cecrops* differs from the other species, particularly in having the orange red along inner side of postmedian band much broader on the under surfaces of hindwing; in having the black pupillated submarginal spots in interspaces  $M_3$  and  $Cu_1$  gray, only rarely orange red; in having the lunule adjacent to outside of W-shaped portion of postmedian band usually dark brownish gray, only rarely red or with a slight red suffusion and in having a larger black spot on the anal lobe.

Length of forewing 11-15 mm.

Male genitalia, as illustrated by figure 9, with distal margin of lateral lobe of uncus convex and with lower margin of lobe undulate, convex near base and concave before lower distal angle. Eighth tergite (figure 20*i*) very similar to that of *janeirica* and with posterior concavity slightly broader than in *isobeon*.

FEMALE (figs. 65, 66, 69 [spring form], 70 [summer form]).—Wings above sometimes entirely like the male but usually differing in having a great deal of blue over disc of hindwing. Wings below quite like those of the male.

Length of forewing 11-14 mm.

Female genitalia, not illustrated, and not different from *C. susanna*, and as in that species having the posterior ostium bursae lobes either rounded or armed with two spines.

VARIATION.—Spring specimens of both sexes differ from summer specimens in having more blue on the wings above with smaller fuscous submarginal spots on the hindwing. On the undersurfaces

the ground color in spring specimens is frequently darker and the black pupillated marginal lunules of the hindwing usually contain orange or red scales. One aberration has been described and named and is placed in the synonymy (ab. *gottschalki* Clark) as it is only an individual variant differing in having all red of undersurfaces replaced by yellow.

TYPE-LOCALITIES.—The type-localities for *cecrops* and *poeas* are unknown, although they undoubtedly are both from one of the states along the eastern coast of the United States between Virginia and Georgia, and probably the latter. Fabricius states that *cecrops* is found "in Indiis"; however, this is entirely false. The type-locality for the synonym *gottschalki* is Fort Lewis Mt., Roanoke Co., Virginia.

LOCATION OF TYPES.—I have been unable to locate either the types of *cecrops* or of *poeas*. The holotype of *C. cecrops* ab. *gottschalki* is in the United States National Museum, type 52256.

DISTRIBUTION.—Eastern United States from Long Island south to Florida and west to Kansas and Texas.

NEW YORK: Long Island, East Marion (August). NEW JERSEY: Cape May Co., Reeds Beach (August, September); Monmouth Co., Manasquan (June). MARYLAND: St. Mary Co., Pt. Lookout (August); Prince George Co., Beltsville (May). VIRGINIA: Norfolk Co., Dismal Swamp (April); Nansemond Co., Suffolk (October); Princess Anne Co., Virginia Beach; Roanoke Co., Salem (April); Montgomery Co. (May); Bedford Co., Apple Orchard Mt. (4,000 ft.), Mons; Nelson Co.; Accomac Co., Dahl Swamp (July); King and Queen Co., Aylett (July); Highland Co., Buckeye (July). NORTH CAROLINA: Henderson Co., Tucedo (August); Buncombe Co., Asheville (August); Bertie Co., Windsor (May, August). SOUTH CAROLINA: Charleston Co., Charleston (September); Clarendon Co. (September). GEORGIA: Okefenokee Swamp (July); White Co., Yonah Mt. FLORIDA: Dade Co., Miami (March, May, June, July); Broward Co., Hollywood (March); Lee Co., Ft. Myers (April); Palm Beach Co., Palm Beach; Polk Co., Ft. Meade; Pasco Co., Dade City, Hudson (July); Seminole Co., Sanford; Valusia Co., De Land (August); Glenwood; Levy Co., Cedar Keys (July); Colombia Co., Lake City. WEST VIRGINIA: Kanawha Co., Charleston (May). TENNESSEE: (no specific locality). MISSOURI: Barry Co., Roaring River (August). KANSAS: Crawford Co. ARKANSAS: Carroll Co. (August, September). LOUISIANA: Caddo Co., Caddo Park (August). TEXAS: Bowie Co., Maud (June); Dallas Co., Dallas (August, September); Cameron Co., Brownsville, Esperanza Ranch.

MATERIAL STUDIED.—Fifty-five males and 49 females, including the genitalia of 14 males and 14 females.

*Calycopis isobeon* (Butler and Druce), new combination

FIGURES 20j, 71-78

*Tmolus isobeon* Butler and Druce, 1872, *Cistula entomologica*, vol. 1, p. 108.—

Butler, 1873, *Lepidoptera exotica*, p. 161, pl. 57, fig. 2.

*Thecla beon* (Cramer).—Godman and Salvin [not Cramer, a misidentification], 1887, *Biologia Centrali-Americana*, *Lepidoptera-Rhopalocera*, vol. 2, p. 75; *ibid.*, vol. 3, pl. 57, figs. 4-6.—Draudt, 1920, *in* Seitz, *Die Gross-Schmetterlinge der Erde*, vol. 5, p. 795, pl. 158, figs. b3, b4.



*Calycopis beon* (Cramer).—Field [not Cramer, a misidentification], 1940, Bull. Univ. Kansas, Biol. Ser., vol. 39, no. 10, pp. 142-143; 1940, Bull. Brooklyn Ent. Soc., vol. 35, no. 4, pp. 134-135; 1941, Journ. Kansas Ent. Soc., vol. 14, no. 2, pp. 66, 68-69.—Clench, in Ehrlich, P.B., and Ehrlich, A. H., 1961, How to know the butterflies, p. 199.

*Strymon beon* (Cramer).—Klots [not Cramer, a misidentification], 1951, Field guide to butterflies of North America east of the Great Plains, p. 134.—dos Passos, 1964, Synonymic list of the Nearctic Rhopalocera, p. 56.

MALE (figs. 71-74).—Ground color of wings above dark brown, sometimes dark metallic blue; differing from the summer form of *C. cecrops* on the hindwing in having a considerable amount of blue in lower half of wing below cell, occasionally with some blue in the cell and thus similar to the spring form of *cecrops*. On the undersurfaces it differs from both forms of *cecrops* by having the postmedian tricolored band of the hindwing very much narrower at its broadest point, being less than a millimeter in width and becoming even more narrow toward the costal margin; in the forewing the red element of this band is no wider than the black and white elements; on this surface of the hindwing the middle section of the W-shaped mark is more sharply angled than in *cecrops*; the black spot on anal lobe is smaller than in *cecrops* and the red above this spot is more distinct; the lunule adjacent to the W-shaped mark is always red in *isobeon* not dark gray as in *cecrops*, and the black pupillated submarginal spots in interspaces  $M_3$  and  $Cu_1$  are usually orange red (only rarely gray) with smaller black pupils.

Length of forewing 10-14 mm.

Male genitalia, not illustrated, hardly differing from *cecrops*, except for a slightly shorter aedeagus. In *isobeon* the average length of the aedeagus is 3.24 mm. with the extremes of 2.33 and 3.75 mm., while in *cecrops* this average is 3.75 mm. with the extremes of 3.50 and 4 mm. In *isobeon* the aedeagus becomes progressively shorter toward the southern limit of its distribution so that in Texas the average length is 3.37 mm., in Mexico 3.19 mm., in Costa Rica 3 mm. and in Panama 2.66 mm. Eighth tergite (fig. 20j) with posterior concavity usually more narrow than in *cecrops*.

FEMALE (figs. 75-78).—Differing from the male in having more blue on wings above, the blue extending through discal cell of hindwing and on base of forewing. On the undersurfaces it differs from *cecrops* females in the same way that the males differ from that species.

Length of forewing 10-13 mm.

Female genitalia, not illustrated, not different from either *cecrops* or *susanna*.

TYPE-LOCALITY.—“Cartago, Costa Rica.”

ADDITIONAL TYPE DATA.—Originally described from both sexes, and although the number of specimens was not stated, only two specimens



in the collection of the British Museum (Natural History) can be positively identified as belonging to the original series. The male labeled BM type no. Rh. 913 with the abdomen lacking is hereby designated the lectotype. Mr. D. S. Fletcher of that institution kindly compared it with a male from Irazú, Costa Rica (near the type locality) and this male is the basis for the identification of *C. isobeaon* in the present work. The female type was dissected and studied by Mr. Fletcher and is the female of quite another species not belonging in the genus *Calycopis*.

DISTRIBUTION.—Texas south through Mexico and Central America into Panama.

UNITED STATES: TEXAS: Bowie Co., Maud; Dallas Co., Dallas (September); McLennon Co., Waco (March), Kerr Co., Kerrville; Uvalde Co., Concan; Neuces Co., (March); Guadalupe Co., Sequin; Bexar Co., San Antonio (March, April, June); Hidalgo Co., Donna (October), Progresso; Cameron Co., Brownsville (May, June, July, October), San Benito (May, June July), Esperanza Ranch. MEXICO: State of Nuevo Leon, Monterey (April, 1800 ft.); State of San Luis Potosi, Huichihuáyan (September), Tamazunchale (April); State of Vera Cruz, Jalapa, Presidio, Vera Cruz (June), Cordoba, Orizaba (June, 2000 ft.), Portin (June, 1600 ft.), Ojo de Agua (1600 ft.), Coatepec (May); State of Oaxaca, San Geronimo (June). GUATEMALA: Department of Retalhuleu, San Sebastian; Department of Guatemala, Guatemala City (October); Department of Zacapa, Zacapa (October). COSTA RICA: Province of Cartago, Cartago (5000 ft.), Volcán Irazú (6-7000 ft.). PANAMA: Province of Chiriqui, El Volcán Chiriqui (February).

MATERIAL STUDIED.—Sixty-four males and 51 females including the genitalia of 32 males and 29 females.

### The *partunda* Group

Uncus in lateral view with lower angle greatly produced and with ventral margin greater than, equaling, or nearly equaling length of distal margin. Aedeagus fairly straight, ending distally in a straight or upward projected point. One species (*C. vibulena*), with genitalia characters somewhat resembling *C. torqueor* (see the *torqueor* group), has the aedeagus sharply curved to the right (in dorsal view) but with the distal end of aedeagus not bifurcate and also with an uncus typical of the *partunda* group.

#### *Calycopis susanna*, new species

FIGURES 10, 20k, 21e-g, 27, 83-90

MALE (figs. 83-86).—Wings above indistinguishable from *C. isobeaon*. Undersurfaces of wings of some specimens indistinguishable from *C. isobeaon* but usually with red of tricolored postmedian band on forewing a little less distinct. Specimens found in the northern part of the range (Mexico to Costa Rica) tend to have a second submarginal black pupillated red spot on the hindwing below; however, this also occurs in some southern specimens.

Length of forewing 11–14 mm.

Male genitalia, as illustrated by figure 10, with upper distal angle of lateral lobe of uncus rounded, lower distal angle also rounded and somewhat produced (often greatly so), causing distal margin to be concave. Variation in the unci of a single species is unusual in *Calycopis* and at first two species were thought to be represented here. One showing a greatly extended lower distal angle (fig. 21*f*) is particularly common in Costa Rica but also occurs in Mexico, Guatemala, Honduras, British Honduras and Panama. The other with this angle not greatly extended (fig. 21*e*) is also common in Costa Rica and is found as well in Mexico, Honduras and French Guiana. Intermediates (fig. 10) have not been found in the northern part of its range but do occur in the Canal Zone, Panama, Colombia and Venezuela. Because of the presence of intermediates and because of the fact that there is no correlation between these differences in the unci and the slight habitus differences reported above, I treat these forms as variations of a single species. Eighth tergite (fig. 20*k*) with posterior concavity more narrow and deeper than in *C. isobea*.

FEMALE (figs. 87–90).—Not distinguishable from females of *isobea*. This sex can be identified only by association with males.

Length of forewing 9–13 mm.

Female genitalia, as illustrated by figures 27*a–d*, very variable and not differing from *isobea* or *cecrops*.

TYPE-LOCALITY.—Territory of Guyane, Cayenne, French Guiana.

ADDITIONAL TYPE DATA.—Described from the holotype, male (locality as given above; USNM type 34899; William Schaus Collection; male genitalia preparation WDF 2712, 1948), allotype, female (same data as the holotype; female genitalia preparation WDF 2707, 1948) and from five male and two female paratypes from Cayenne and from Maroni River, French Guiana. Note: Many additional specimens of both sexes were studied but not included in the paratype series because of the variation in the genitalia. The association of the allotype and two female paratypes with the French Guiana males is thought to be accurate because *isobea* is not known to occur in French Guiana.

LOCATION OF TYPES: Holotype, allotype, three male and one female paratypes in the United States National Museum. One male paratype and one female paratype in the British Museum (Natural History). One male paratype in the American Museum of Natural History.

DISTRIBUTION.—Mexico south through Central America to Ecuador, Colombia, Venezuela, and French Guiana.

MEXICO: State of San Luis Potosi, El Bonito (June), El Pujol (July); State of Vera Cruz, Jalapa, Santa Rosa (April), Presidio (April, June); State of Nayarit,

Compostela (October); State of Colima, Colima (February, March, April, December); State of Yucatan. GUATEMALA: Department of Retalhuleu, San Sebastian. BRITISH HONDURAS: District of Toledo, Rio Grande (June). HONDURAS: Department of Atlántida, La Ceiba (November). COSTA RICA: Province of Limón, La Florida (May), Guápiles (March), Puerto Limón (January, May), Santa Clara; Province of Cartago, Turrialba (May), Tuis; Province of San Jose, El Rodeo (June). CANAL ZONE: Ancon (June, August), Empire (September), Balboa (May, July), Barro Colorado Island (January), La Cruces Trail near Corozal (June), Corozal (February), La Boca (January), Culebra (December). COLOMBIA: Department of Cundinamarca, Bogotá; Department of Caldas; Department of Valle del Cauca, Cali District (February, 3260 ft.), Hormiguero (January, 3260 ft.). ECUADOR: Province of Bolivar, Balzapamba (700 meters, June). VENEZUELA: State of Carabobo, Puerto Cabello (April), San Esteban (September); State of Yaracuy, Aroa. FRENCH GUIANA: Territory of Guyane, Cayenne; Territory of L'Inini, 60 miles up Maroni River. Note: One specimen labeled "Ponce, Porto Rico" is probably mislabeled, as no member of *Calycopis* is known from the West Indies.

**MATERIAL STUDIED.**—One hundred five males and 98 females, including their genitalia.

*Calycopis drusilla*, new species

FIGURES 11, 20l, 28, 81, 82, 91, 92

**MALE** (figs. 81–82).—Wings above most similar to *C. janeirica* with forewing darker and with a dull metallic bluish-purple iridescence over base and remainder of wing except along outer margin. Hindwing above with bluish purple more brilliant and with outer border not or seldom breaking up into individual black spots below vein  $Cu_1$ . Wings underneath similar to *janeirica* but hindwing always with two (instead of one) submarginal black pupillated lunular-shaped red spots, one below vein  $Cu_1$  and the second, smaller, adjacent to this and below vein  $M_3$ .

Length of forewing 13–14 mm.

Male genitalia, as illustrated by figure 11, with saccus extremely long, longer than harpes, and with forward bend in vinculum extremely elevated, lateral lobe of uncus with distal margin concave, lower margin convex in the middle and with upper distal angle greatly produced; inner surface of gnathos arm with carina long and ridgelike. Eighth tergite (fig. 20l) with posterior concavity very shallow and broad.

**FEMALE** (figs. 91, 92).—Wings above dark brown with blue ray on hind margin of forewing and with hindwing blue in the cell and below vein  $M_3$ , the blue similar to *caulonia* in its placement but more brilliant in tone being nearly as much so as in *drusilla* males. Wings below quite like those of the male.

Length of forewing 11–12.5 mm.

Female genitalia, as illustrated by figure 28, with combined length

of ductus bursae and bursa copulatrix less than  $3\frac{1}{2}$  times the width of ostium bursae; posterior ostium bursae lobes rounded, without spurs.

TYPE-LOCALITY.—Province of Limón, La Florida, Costa Rica.

ADDITIONAL TYPE DATA.—Described from the holotype, male (locality as given above, elevation 500 feet; March; Collection William Schaus; USNM type 34900; male genitalia preparation WDF 2731, 1948), allotype, female (Cabima, Panama; May; August Busck, female genitalia preparation WDF 2820, 1948) and from five male and six female paratypes from various localities in Costa Rica, Mexico, and the Panama Canal Zone.

LOCATION OF TYPES.—Holotype, allotype and three male paratypes in the United States National Museum, two male and six female paratypes in the American Museum of Natural History, New York City.

DISTRIBUTION.—Mexico south through Central America into the Panama Canal Zone.

MEXICO: State of Vera Cruz, Santa Rosa (August), Misantla (June, September); State of Durango, Presidio (April). COSTA RICA: Province of Limón, La Florida (500 feet, March); Guápiles (December). CANAL ZONE: Barro Colorado Island (March), Ancon Hill (February), Empire (June), Cabima (May).

MATERIAL STUDIED.—Six males and seven females, including their genitalia.

*Calycopis vibulena* (Hewitson), new combination

FIGURES 12, 20m, 93, 94

*Thecla vibulena* Hewitson, 1877, Illustrations of diurnal Lepidoptera: Lycaenidae, vol. 1, p. 190; vol. 2, pl. 76, figs. (♂) 601, 603.

MALE (figs. 93, 94).—Similar to *C. drusilla* with entire forewing, except for a narrow black border, dull and dark metallic bluish purple and with hindwing having costal and outer borders very dark and wider than in *C. drusilla*. In *C. vibulena* the brilliant bluish purple is restricted to a smaller area in base of wing. Hindwings underneath darker smoky brown than in *C. drusilla* and lacking the red along innerside of postmedian band, lunule adjacent to outside of W-shaped portion of postmedian band in interspace  $Cu_2$ , fuscous not red in color but sometimes with a few scattered red scales. A second submarginal, black pupillated, lunular-shaped red spot absent or sometimes barely indicated by a little red in interspace  $M_3$ ; this red never with a distinct black pupil.

Length of forewing 11–13 mm.

Male genitalia, as illustrated by figure 12, with aedeagus in dorsal view sharply bent to the right at distal end; with saccus short, much shorter than harpe; with forward bend of vinculum lower than in

*drusilla*. Lateral lobe of uncus with distal margin slightly concave and lower margin slightly concave near base; with upper and lower distal angles not greatly produced, lower angle less produced than in *drusilla* and *vitruvia*; inner surface of gnathos with pointed carina. Eighth tergite (fig. 20*m*) similar to *drusilla*, somewhat more cordate in shape.

FEMALE.—Unknown.

TYPE-LOCALITY.—Belém ("Pará"), State of Pará, Brazil.

ADDITIONAL TYPE DATA.—This was described from both sexes from "Brazil, the Amazon (Pará), and New Granada" and the total number of specimens in the series was not stated in the original description. According to Mr. D. S. Fletcher of the British Museum (Natural History) "there are eight specimens from Hewitson's original series in the collection" (in litt.). A study of these specimens reveals that there are three or possibly four species in addition to *vibulena* in this series. Two males are *partunda*, one male and two females are *janeirica*, one male is *lerbela* and the male with missing abdomen is probably *susanna*. Only one of these *vibulena* specimens was given a type number and I designate this specimen the lectotype. It is labeled "Para, Brazil" and "BM Type No. Rh. 912." Mr. Fletcher dissected this lectotype and compared with it a topotype which was then lent to me. This compared topotype is the basis for the identification of *C. vibulena* in this paper and is the one illustrated (figs. 12, 20*m*, 93, 94).

REMARKS.—Three of the five figures included by Hewitson in his original description (1877) are of species other than *vibulena* as follows: figure 599 is of a male *C. janeirica*, figure 600 is of a male *C. lerbela* and figure 602 is of a female, probably *C. janeirica* although it looks more like female *susanna*.

DISTRIBUTION.—Known only from the State of Pará in Brazil.

BRAZIL: State of Pará, Belém, Igarapé-Açu.

MATERIAL STUDIED.—Five males, including their genitalia.

#### *Calycopis vitruvia* (Hewitson), new combination

FIGURES 13, 20*n*, 29, 109, 110, 119, 120

*Thecla vitruvia* Hewitson, 1877, Illustrations of diurnal Lepidoptera: Lycaenidae, vol. 1, p. 193; vol. 2, pl. 77, fig. (♂) 613 (two figures).

*Thecla fortuna* Druce, 1907, Proc. Zool. Soc. London, 1907, p. 608.

MALE (figs. 109, 110).—Wings above dull metallic bluish purple in color, similar to those of *C. vibulena*, with the dark borders on costal and outer margins more narrow, with brilliant blue color of forewing extending over base, below the cell and vein Cu<sub>2</sub> and with a streak of blue in lower half of the cell. Wings below similar to



*vibulena*, not as dark brown in ground color and with red along inner side of postmedian band absent as in that species but with the lunular marking adjacent to outer side of W-shaped portion of postmedian band in interspace  $Cu_2$  dark red with very little fuscous.

Length of forewing 11.5–12 mm.

Male genitalia, as illustrated by figure 13, with aedeagus nearly straight, slightly upturned at distal end; saccus not as long as harpe; forward bend of vinculum below middle; lateral lobe of uncus with distal margin nearly straight, only slightly convex and shortened, being about same length as lower margin and forming nearly a right angle with lower margin, which is slightly concave; inner surface of gnathos arm with carina pointed and much nearer distal end than in *vibulena*. Eighth tergite (fig. 20*n*) with posterior margin undulate with a very shallow posterior concavity.

FEMALE (figs. 119, 120).—Wings above similar to male, the blue color almost as brilliant and restricted in hindwing to the base, the cell, and area below vein  $M_3$ ; the blue in the forewing, as in the male, covering base of wing below cell and vein  $Cu_2$  with a few scattered blue scales in lower half of cell and in interspace  $Cu_1$  near cell; hindwing with a submarginal white to bluish-white line below vein  $M_3$  (this line absent in the male); dark border broken into three individual spots below vein  $M_3$ . Wings beneath similar to male with red markings larger.

Length of forewing 12 mm.

Female genitalia, as illustrated by figure 29, with combined length of ductus bursae and bursa copulatrix five times the width of ostium bursae, the posterior ostium bursae lobes forming spurs that are closer to one another than in *C. fractunda*; ductus seminalis from near middle of combined ductus bursae and bursa copulatrix.

TYPE-LOCALITIES.—For *vitruvia*: Belém (“Pará”), State of Pará, Brazil. For *fortuna*: “Yurimaguas,” Department of Loreta, Peru.

ADDITIONAL TYPE DATA.—*Vitruvia* was apparently originally described from a single male, the holotype (locality as given above; Hewitson Collection; British Museum (Natural History) type No. Rh. 900; genitalia preparation number NHB 1951 484.) *Fortuna* was apparently described from at least two male specimens as the localities given in the original description are “Yurimaguas, Peru” and “Topajos, Amazona.” The specimen from Peru bears a type label and the British Museum (Natural History) type number Rh. 902. I designate this specimen the lectotype.

NOTE ON SYNONYMY.—Mr. D. S. Fletcher dissected and compared the types of both *vitruvia* and of *fortuna* and found the latter to be a synonym. A third specimen compared with these types and found



to be identical was sent to me for study. This is the specimen illustrated in figures 13, 20*n*, 109, 110.

DISTRIBUTION.—Brazil and Peru.

BRAZIL: State of Pará, Belém, (Pará). PERU: Department of Loreto, Yurimaguas, Iquitos, Department ?, Achinamiza.

MATERIAL STUDIED.—Two males and one female, including their genitalia.

*Calycopis bellera* (Hewitson), new combination

FIGURES 14, 20*o*, 30, 79, 80, 95, 96

*Thecla bellera* Hewitson, 1877, Illustrations of diurnal Lepidoptera: Lycaenidae, vol. 1, p. 194; vol. 2, pl. 77, fig. (♀) 618.

*Thecla origo* Godman and Salvin, 1887, Biologia Centrali-Americana, vol. 37 Lepidoptera-Rhopalocera, vol. 2, p. 73; *ibid.*, vol. 3, pl. 56, figs. 32, 33.

MALE (figs. 95, 96).—Wings above most similar to *drusilla*, differing by the broader outer margin above vein Cu<sub>1</sub> which gradually broadens toward costa. Wings below most similar to *vibulena* but with a small amount of red along inner side of postmedian band on hindwing.

Length of forewing 13.5 mm.

Male genitalia, as illustrated by figure 14, with aedeagus bent downward at base and slightly and gradually upturned distally; saccus relatively short, much shorter than harpe; forward bend of vinculum prominent and low (much below middle); lateral lobe of uncus with distal margin strongly concave, lower distal angle as prominent as upper distal angle, lower margin slightly undulate; inner surface of gnathos arm with carina ridgelike and pointed; harpe in lateral view broad at base, gradually tapering and suddenly expanding before apex and spatula-like in shape; harpes, in ventral view, with apices widely separated. Eighth tergite (fig. 20*o*) not cordate in shape with posterior concavity broad and deep.

FEMALE (figs. 79, 80).—Wings above darker than the females of most other species in the genus, the forewing, except outer border, dull metallic blue and hind margin below vein 2dA, brilliant blue; hindwing with base of wing, cell, and area below vein M<sub>3</sub> of same brilliant blue; a blue submarginal line between vein M<sub>3</sub> and the black anal lobe, and immediately inward from this line a series of three black lunular-shaped marks. Wings below similar to those of male, with ground color slightly paler brown or gray brown; hindwing with red along inner side of postmedian band more distinct and red markings in lower half of wing slightly larger.

Length of forewing 10–12.5 mm.

Female genitalia, is illustrated by figure 30, with combined length of ductus bursae and bursa copulatrix slightly over four times the

width of ostium bursae and with lobes posterior to ostium bursae only slightly pointed; ductus seminalis distinctly beyond middle of combined length of ductus bursae and bursa copulatrix.

TYPE-LOCALITY.—For *belleri*: "The Amazon." For *origo*: Belém ("Pará"), State of Pará, Brazil.

ADDITIONAL TYPE DATA.—*C. belleri* was described from both sexes although the number of specimens was not stated. I designate as the lectotype, the female specimen which is labeled type number Rh. 914 in the collection of the British Museum (Natural History). The male is apparently lost. *C. origo* was evidently described from at least three male specimens since the localities given in the original description are Chiriqui, Panama, Panama City, and the "Amazons Valley." The specimen labeled "Amazon, Para," is the one that bears a red type label and the British Museum type number Rh. 909. I designate this specimen the lectotype. A topotype compared by Mr. D. S. Fletcher with the lectotype of *origo* and found to be a perfect match in both maculation and color as well as the genitalia is the basis both for identification and for synonymizing with *C. belleri*. This is the male illustrated in figures 14, 200, 95, 96.

DISTRIBUTION.—Brazil and Bolivia.

BRAZIL: State of Pará, Belém (Pará). State ?: "Amazon." BOLIVIA: Department ?, Guanay (1300 ft., April).

MATERIAL STUDIED.—One male and two females, including their genitalia.

#### *Calycopis partunda* (Hewitson), new combination

FIGURES 15, 21a, 31, 97, 98

*Thecla partunda* Hewitson, 1877, Illustrations of diurnal Lepidoptera: Lycaenidae, vol. 1, p. 206; vol. 2, pl. 82, figs. (♂) 685, 686.

MALE (figs. 97, 98).—Forewings above similar to those of *belleri* in the ground color with a decidedly dull metallic purplish sheen; differing from *belleri* in having a small ray of bright purplish blue in base of forewing below 2dA and in having the dark border of hindwing very wide throughout and thus restricting more to the base the bright purplish blue; wings below as in *vitruvia* entirely lacking the red usually found along inner side of postmedian band. The two syntypes of *C. partunda* were compared by Mr. D. S. Fletcher of the staff of the British Museum (Natural History) with Hewitson's figure of the undersurface (fig. 686). Mr. Fletcher reports that "the area between the elements of the postmedian arch below vein  $Cu_1$  should be rusty red in this figure" (in litt.).

Length of forewing 13 mm.

Male genitalia, as illustrated by figure 15, with aedeagus nearly straight; saccus shorter than harpe; dorsal margin of tegumen (in

lateral view) terminating abruptly; lateral lobe of uncus with lower and distal margins concave, upper distal angle produced, lower distal angle rounded; inner surface of gnathos arm without carina; harpe in lateral view with apex blunt; harpes in ventral view with apices not widely separated. Eighth tergite (fig. 21a) cordate in shape and similar to that of *torqueor* except for the posterior concavity being more like that of *drusilla*.

FEMALE.—Not illustrated. Similar to *bellera* on both surfaces of wings, differing only in having the ground color a slightly darker blue above and darker gray below.

Length of forewing 11.5 mm.

Female genitalia, as illustrated by figure 31, with combined length of ductus bursae and bursa copulatrix between three and three and one-half times width of ostium bursae; posterior ostium bursae lobes rounded, and thus very similar to *drusilla*, but with these lobes more flat than in that species. Ductus seminalis from near middle of combined ductus bursae and bursa copulatrix.

TYPE LOCALITY.—“The Amazon.”

ADDITIONAL TYPE DATA.—*Partunda* was described from two males from Bolivia and the Amazon in the collection of W. C. Hewitson now in the British Museum (Natural History). I designate the male specimen bearing the type label number Rh. 910 as the lectotype. This is the specimen from the Amazon. Mr. D. S. Fletcher, who reports that this specimen lacks its abdomen, has kindly compared with it a specimen labeled “Amazonas” which he found to be identical. This compared specimen is the basis for the identification of the name *C. partunda* in this paper and is the male illustrated in figures 15, 21 A, 95, 96.

DISTRIBUTION.—French Guiana, Brazil and Bolivia.

FRENCH GUIANA: Territory of Guyane, Cayenne. BRAZIL: State ?, the Amazon; State of Pará, Pará; State of Paraíba, João Pessoa (June). BOLIVIA: no specific locality.

MATERIAL STUDIED.—Four males and one female, including their genitalia.

#### *Calycopis amplia* (Hewitson), new combination

FIGURES 32, 121, 122

*Thecla amplia* Hewitson, 1877, Illustrations of diurnal Lepidoptera: Lycaenidae vol. 1, pl. 195; vol. 2, pl. 77, figs. (♀) 621, 622.—Godman and Salvin, 1887 Biologia Centrali-Americana, Lepidoptera-Rhopalocera, vol. 2, p. 75; *ibid.*, vol. 3, pl. 57, figs. [female not male] 7, 8.

MALE.—Unknown.

FEMALE (figs. 121, 122).—Wings above most similar to those of *bellera* and *indigo*, but with less blue on hindwing than in *bellera* and

with this color indistinct and confined entirely to area near base; wings below differing from all of its known relatives in having a crescent-shaped bar below vein  $Cu_2$  on forewing placed inward from postmedian line; otherwise similar to *indigo* except that the light markings are orange not red and with orange lunule adjacent to postmedian line in interspace  $Cu_2$  much obscured with fuscous; in addition to the submarginal black pupillated orange lunule in interspace  $Cu_1$  there is a similar but smaller lunule in interspace  $M_3$  and sometimes a trace of a third one in interspace  $M_2$ .

Length of forewing 10.5–11 mm.

Female genitalia, as illustrated by figure 32, with combined length of ductus bursae and bursa copulatrix much the shortest of any species in the genus, being more than two and one-half and just under three times the width of ostium bursae; bursa copulatrix shorter than ductus bursae plus ostium bursae lobes; teeth on posterior ostium bursae lobes very short.

TYPE-LOCALITY.—“Nicaragua (Chontales).”

ADDITIONAL TYPE DATA.—Described from a single female, the holotype (locality as given above, Hewitson Collection, British Museum (National History) type No. Rh. 917). The abdomen being missing from this type, Mr. D.S. Fletcher compared two topotypes (including one figured by Godman and Salvin in the “Biologia”) and four other specimens with the holotype. Finding these specimens to be conspecific with *amplia* they were loaned to me and are the basis for the identification of that name in this paper.

DISTRIBUTION.—Nicaragua, Costa Rica, Columbia and Ecuador.

NICARAGUA: Department of Chontales. COSTA RICA: Province of Limón, Guápiles (March, July). COLUMBIA: State of Cundinamarca, Cananche (September). ECUADOR: Province ?, Paramba (April).

MATERIAL STUDIED.—Six males including their genitalia.

*Calycopis indigo* (Druce), new combination

FIGURES 16, 21b, 33, 105, 106, 123, 124

*Thecla indigo* Druce, 1907, Proc. Zool. Soc. London, 1907, pp. 608, 609.

MALE (figs. 105, 106).—Wings above quite similar to those of *partunda* in having a much narrower border on hindwing than in most species and in having a longer ray of brilliant blue below 2dA of forewing. Wings below hardly distinguishable from *partunda* differing only in having a smaller submarginal black pupillated lunule below vein  $Cu_1$  on hindwing.

Length of forewing 12 mm.

Male genitalia, as illustrated by figure 16, with aedeagus nearly straight, the base slightly bent downward; saccus nearly as long as

harpes; lateral element of uncus with distal margin concave just before upper distal angle, which is greatly produced in lateral view, almost spurlike, and with lower margin nearly straight, or only slightly concave; lower distal angle of uncus only slightly rounded; arm of gnathos with a small ridgelike carina on inner surface; apices of harpes in lateral view slightly pointed and in ventral view close together. Eighth tergite (fig. 21*b*) most like *C. bactra* in shape with posterior concavity very shallow.

FEMALE (figs. 123, 124).—Wings above dark brown with a slight dull purplish-blue sheen in base of hindwing. Wings below like the male except that the ground color is lighter.

Length of forewing 12 mm.

Female genitalia, as illustrated by figure 33, with combined length of ductus bursae and bursa copulatrix less than two and one-half times the width of ostium bursae and with a pair of prominent spurlike teeth on posterior ostium bursae lobes; ductus seminalis near middle of combined ductus bursae and bursa copulatrix.

TYPE-LOCALITY.—“Chapada Campo,”=Plain near Serra da Chapada, “Brazil.”

ADDITIONAL TYPE DATA.—Originally described from a single male, the holotype (locality as given above; H. H. Smith; British Museum (Natural History) type No. Rh. 901; genitalia preparation number NHB 1951-485). This holotype was compared by Mr. D. S. Fletcher with a specimen from Mato Grosso, Brazil and found to be conspecific. This compared specimen is the basis for the identification of the name *indigo* in this paper and is the one illustrated in figures 16, 21*b*, 105, and 106.

DISTRIBUTION.—Brazil and Argentina.

BRAZIL: State of Mato Grosso, Serra da Chapada (January); State ?, Amazon-  
ARGENTINA: Territory of Misiones, Puerto Aquirre.

MATERIAL STUDIED.—Two males and two females, including their genitalia.

*Calycopis anfracta* (Druce), new combination

FIGURES 17, 21*c* 53, 54, 101, 102

*Thecla anfracta* Druce, 1907, Proc. Zool. Soc. London, 1907, p. 609.

MALE (figs. 101, 102).—Wings above with dark border slightly broader than in *indigo* but not nearly as broad as in *C. partunda*. Forewing with ground color having more of a purplish-blue sheen, sometimes with a greenish overcast and with brilliant blue ray below vein 2*dA* shorter, confined to base. Wings beneath similar to those of *C. indigo*, differing only in the red markings on hindwing being more distinctly red.

Length of forewing 12.5-13 mm.



Male genitalia, as illustrated by figure 17, with aedeagus nearly straight and with base less downward bent than in *indigo*; saccus distinctly shorter than harpes; lateral lobe of uncus with distal and lower margins concave; upper distal angle of uncus greatly produced, more so than in *indigo*; lower distal angle broadly rounded; gnathos arm with more distinct carina than in *indigo*; harpe in lateral view distinctly constricted before apex forming a small apical lobe. Eighth tergite (fig. 21c) much broader than that of *indigo* but otherwise similar.

FEMALE (figs. 53, 54).—Wings above quite similar to *indigo*, below paler than in the male and as in that sex with markings more distinctly red than in *indigo*. Red lunule next to postmedian line below vein  $Cu_2$  on undersurface of hindwing less obscured with fuscous.

Length of forewing 10.5 mm.

Female genitalia, not illustrated, not different from *indigo*.

TYPE-LOCALITY.—“Chancamayo,”=Chancamayo, “Peru.”

ADDITIONAL TYPE DATA.—Originally described from a single male, the holotype (locality as given above; H. Whitely; British Museum (Natural History) type No. Rh. 908; male genitalia preparation number NHB 1949 150). Mr. D. S. Fletcher sent me a topotype specimen that he compared with the holotype and found to be conspecific. This compared specimen is the basis for the identification of the name *anfracta* in this paper.

DISTRIBUTION.—Colombia, Peru and Bolivia.

COLOMBIA: Department of Cundinamarca, Bogotá. PERU: Department of Junin, Chancamayo; Satipo. BOLIVIA: Department of Santa Cruz, near Santa Cruz.

MATERIAL STUDIED.—Nine males and one female, including their genitalia.

#### *Calycopis anastasia*, new species

FIGURES 18, 99, 100

MALE (figs. 99, 100).—Wings above similar to those of *anfracta* except that the borders on the hindwings are wide as in *partunda*; wings underneath with slightly darker ground color than in *anfracta* but with markings almost exactly as in that species.

Length of forewing 11.5 mm.

Male genitalia, as illustrated by figure 18, with aedeagus nearly straight, base slightly bent downward and with distal end elongated, upcurved, and fingerlike; saccus distinctly shorter than harpes; lateral lobe of uncus with distal margin concave and with lower margin much more concave than in *anfracta*; upper distal angle of uncus greatly produced as in *anfracta*; lower distal angle somewhat truncate; gnathos arm with carina placed further back from distal end than in



*anfracta*; harpe in lateral view gradually narrowed to apex which is rounded forming a lobe that is not as distinct as in *anfracta*. Eighth tergite not illustrated and shaped about as in *partunda* (fig. 21a).

FEMALE.—Unknown.

TYPE-LOCALITY.—Province of Chapare, Department of Beni, Bolivia.

ADDITIONAL TYPE DATA.—Originally described from the holotype, male (locality as given above; USNM type 34901; male genitalia preparation WDF 3432, 1951) and two male paratypes from Santiago del Estero and Santa Cruz de la Sierra, both in the department of Santa Cruz de la Sierra, Bolivia.

LOCATION OF TYPES.—Holotype and one paratype in United States National Museum, one paratype in British Museum (Natural History).

DISTRIBUTION.—Known only from Bolivia.

MATERIAL STUDIED.—Three males, including their genitalia.

*Calycopis fractunda*, new species

FIGURES 19, 21d, 34, 103, 104, 125, 126

MALE (figs. 103, 104).—Wings above similar to those of *indigo* with brilliant blue on the hindwing decidedly purplish and with forewing a dull metallic bluish purple except along outer margin where the color is dark brown; wings below not different from *partunda* and as in that species with the bars of postmedian band in interspaces  $M_3$  and  $Cu_1$  nearly straight.

Length of forewing 14 mm.

Male genitalia, as illustrated by figure 19, with aedeagus nearly straight, distal end fingerlike, upcurved, and greatly elongated, much more so than in *anastasia*; saccus nearly as long as harpes; lateral lobes of uncus connected across the top and in lateral view with distal and lower margins concave; upper distal angle of uncus greatly prolonged, much more so than in any other species of *Calycopis*; lower distal angle broadly rounded and similar to that of *anfracta*; gnathos arm without carina; harpe in lateral view similar to *anfracta*, in ventral view similar to *anastasia*. Eighth tergite (fig. 21d) similar to that of *anfracta*, slightly more cordate in shape.

FEMALE (figs. 125, 126).—Wings above and below very similar to those of *vitruvia*, differing only in the hindwing underneath having a smaller black pupil in submarginal red lunule of interspace  $Cu_1$ , in having the bars of postmedian band in interspaces  $M_3$  and  $Cu_1$  nearly straight and with postmedian black line above  $Cu_2$  lacking red inner border.

Length of forewing 10.5 mm.

Female genitalia, as illustrated in figure 34, differing from *vitruvia* in having spurs of ostium bursae lobes set further apart and with base of these lobes more produced medially.

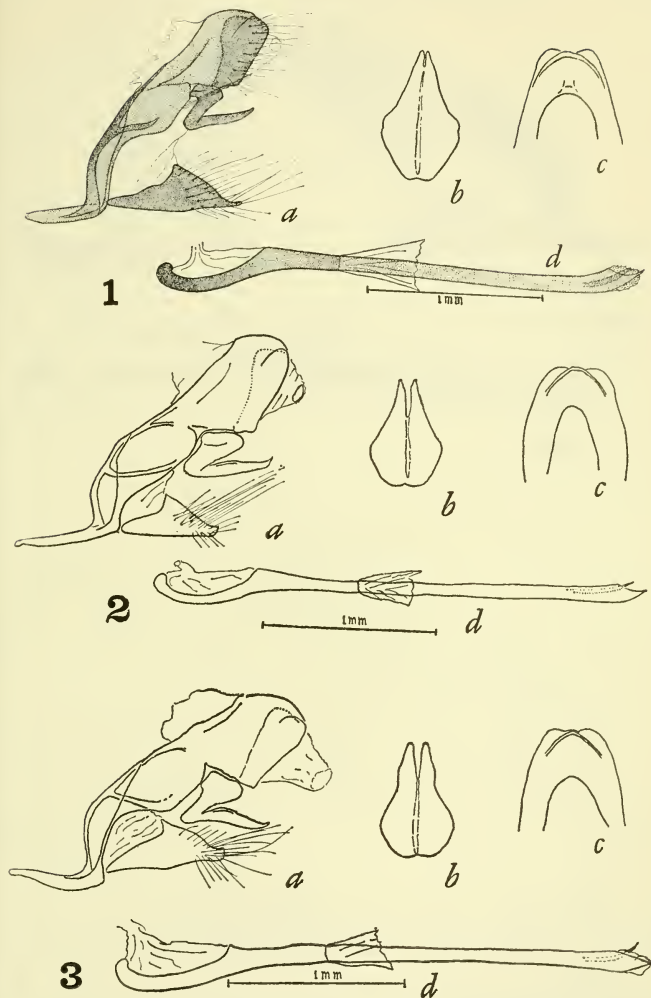
TYPE-LOCALITY.—Achinamiza (Department of Loreto), Peru.

ADDITIONAL TYPE DATA.—Described from the holotype, male (locality as given above; September; H. Bassler Collection; male genitalia preparation WDF 3443, 1951) and from the allotype, female (Iquitos, Department of Loreto, Peru; October; collection of E. I. Huntington; female genitalia preparation WDF 5069, 1951).

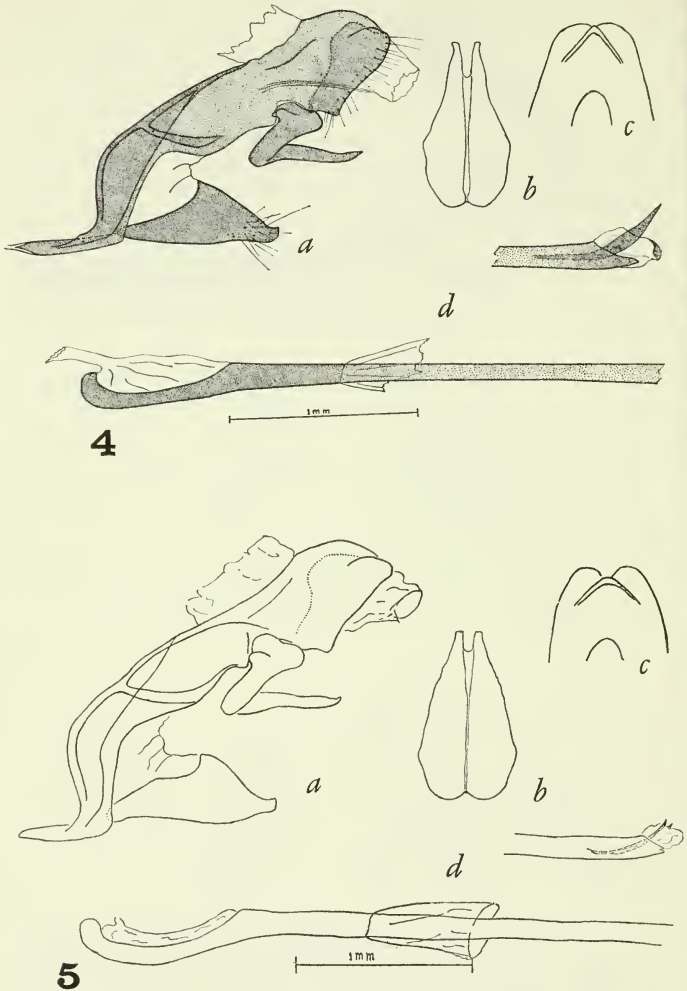
LOCATION OF TYPES.—Holotype and allotype in American Museum of Natural History, New York City.

DISTRIBUTION.—Known only from Peru.

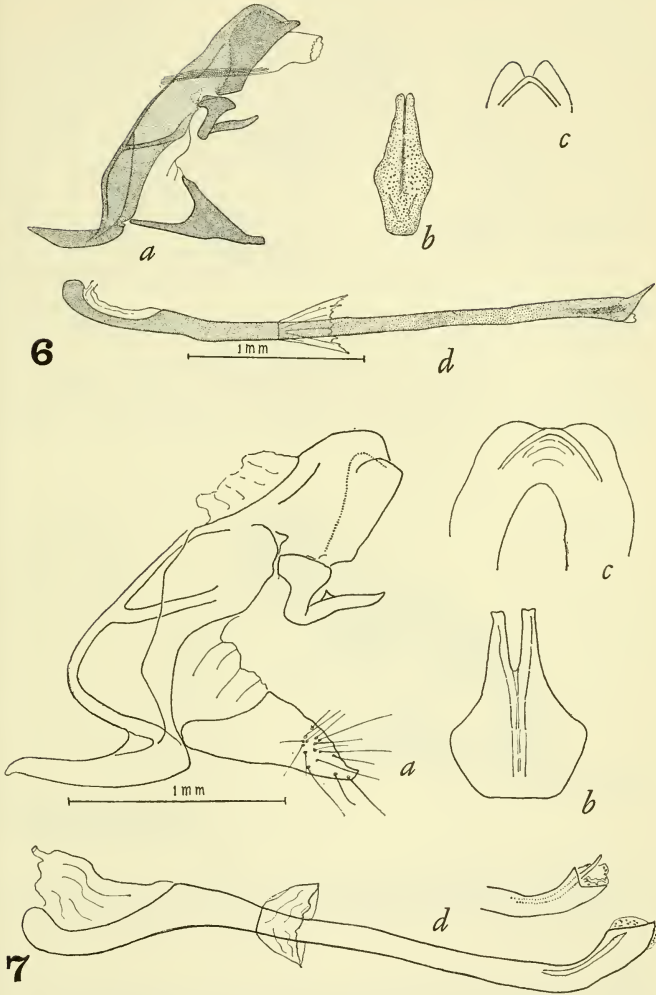
MATERIAL STUDIED.—One male and one female.



FIGURES 1-3.—Male genitalia (*a*=harpe, tegumen, uncus, vinculum, saccus and gnathos in lateral view; *b*,=fused harpes in ventral view; *c*=uncus and tegumen in dorsal view; *d*,=aedeagus in lateral view): 1, *Calycopis bactra* (Hewitson), from preparation 2887 (WDF); 2, *C. nicolayi* Field, holotype; 3, *C. caulonia* (Hewitson), from preparation 5310 (WDF).

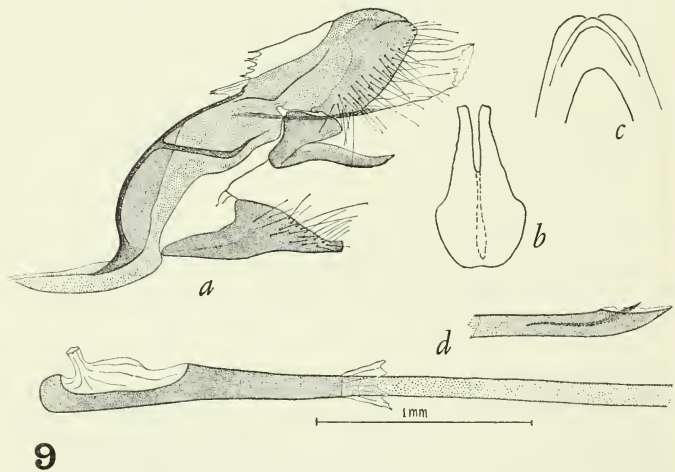
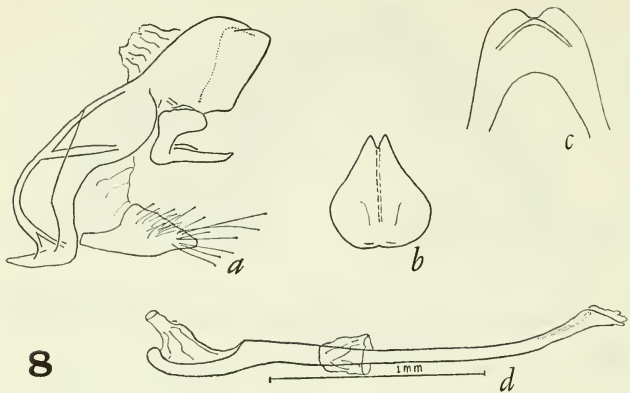


FIGURES 4-5.—Male genitalia (see figs. 1-3 for key): 4, *C. janeirica* (C. Felder), from preparation 2697 (WDF); 5, *C. chacona* (Jørgensen), from preparation 2696 (WDF).

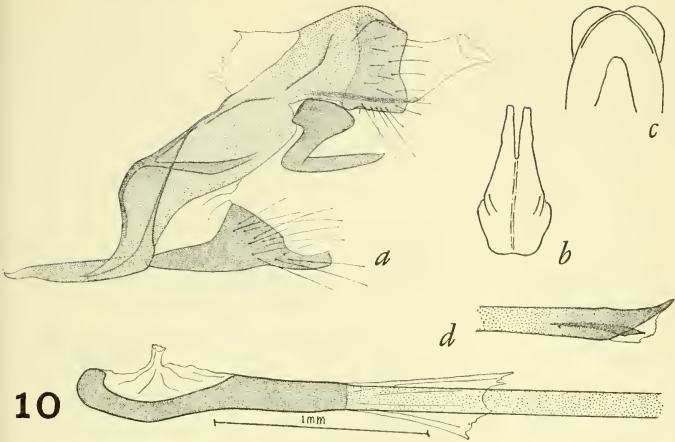


FIGURES 6-7.—Male genitalia (see figs. 1-3 for key): 6, *C. lerbela* Field, holotype; 7, *C. torqueor* Druce, from preparation BM 1951 490.

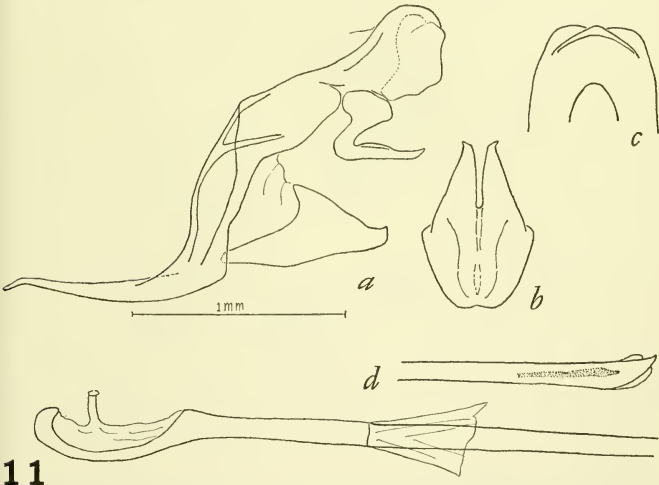




FIGURES 8-9.—Male genitalia (see figs. 1-3 for key): 8, *C. xeneta* (Hewitson), from preparation BM 1951 492; 9, *C. cecrops* (Fabricius), from preparation 2729 (WDF).

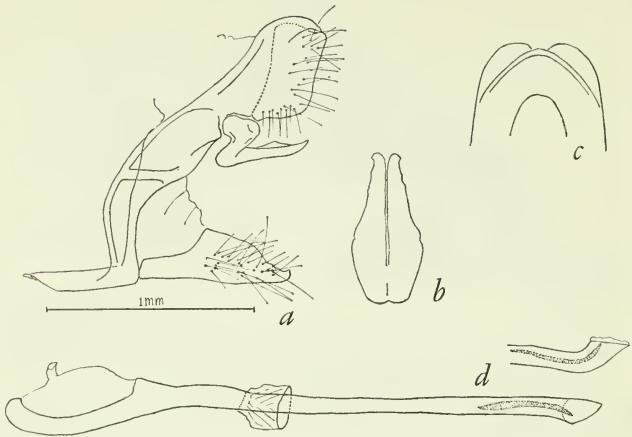


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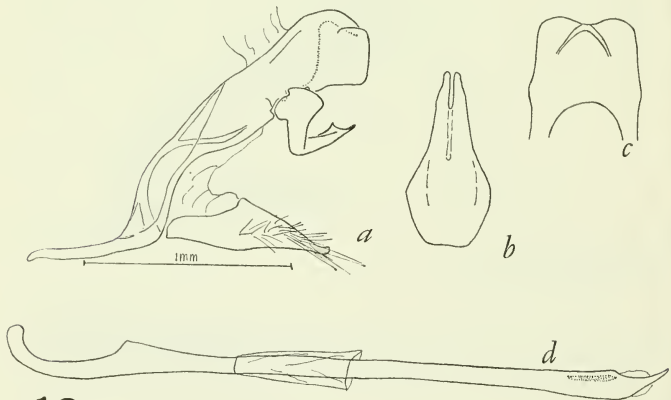


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FIGURES 10-11.—Male genitalia (see figs. 1-3 for key): 10, *C. susanna* Field, from preparation 2683 (WDF); 11, *C. drusilla* Field, holotype.

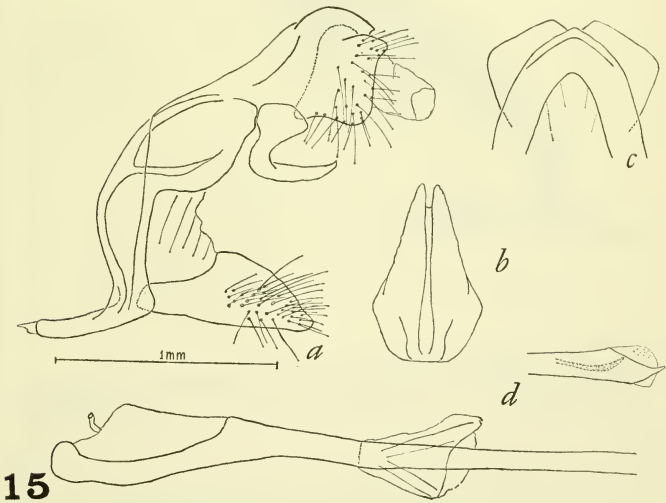
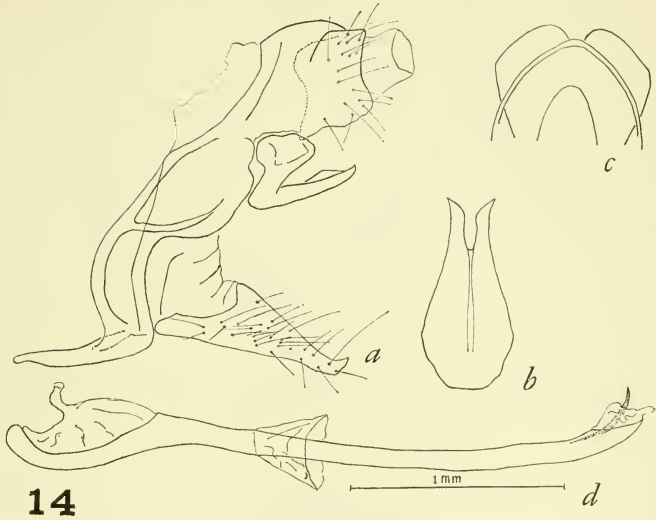


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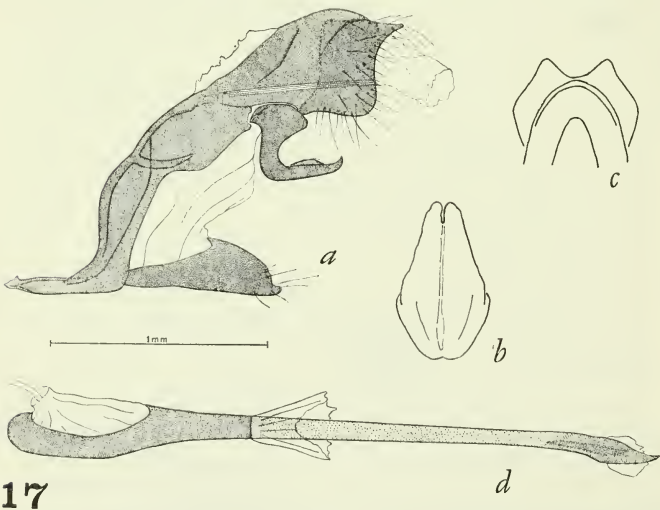
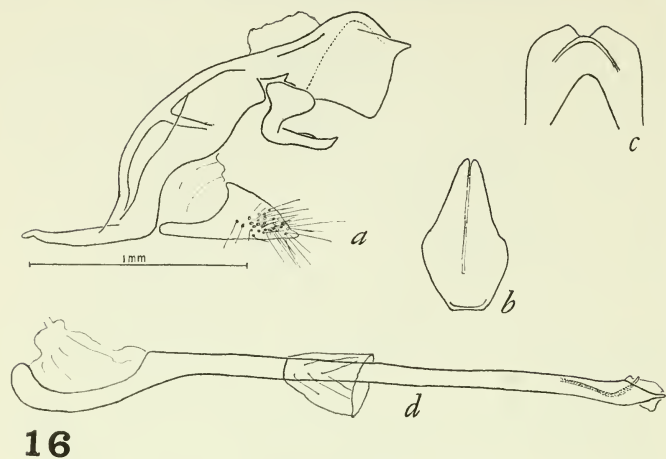


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FIGURES 12-13.—Male genitalia (see figs. 1-3 for key): 12, *C. vibulena* (Hewitson), from preparation BM 1949 165 A; 13, *C. vitruvia* (Hewitson), from preparation BM 1951 488.

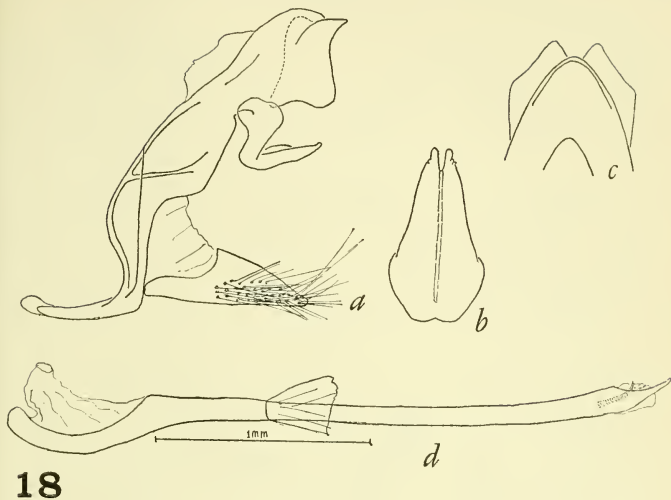


FIGURES 14-15.—Male genitalia (see figs. 1-3 for key): 14, *C. bellera* (Hewitson), from preparation BM 1949 147; 15, *C. partunda* (Hewitson), from preparation BM 1949 148.

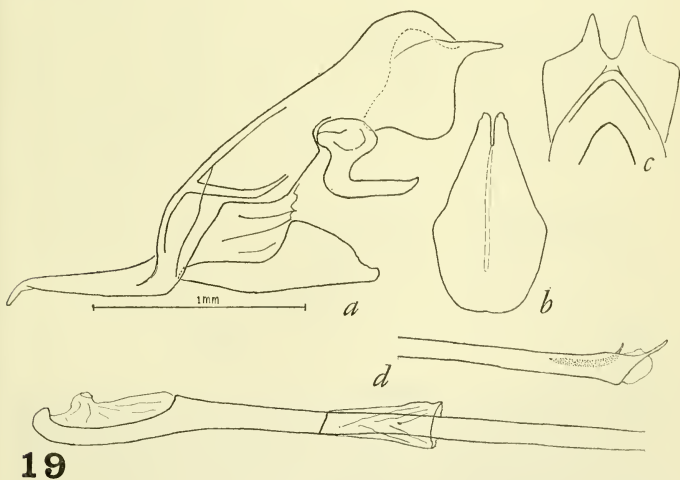


FIGURES 16-17.—Male genitalia (see figs. 1-3 for key): 16, *C. indigo* (Druce), from preparation BM 1951 497; 17, *C. anfracta* (Druce), from preparation 2700 (WDF).



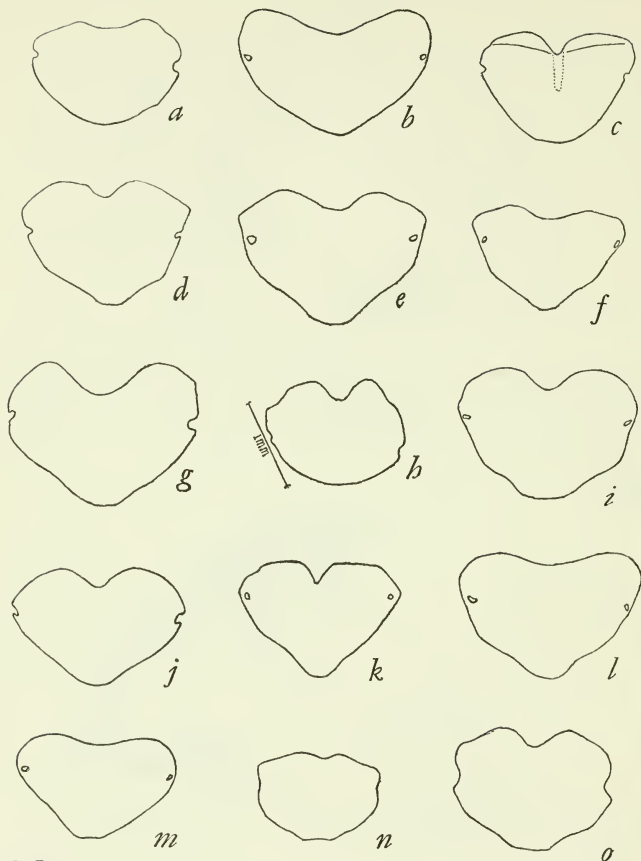


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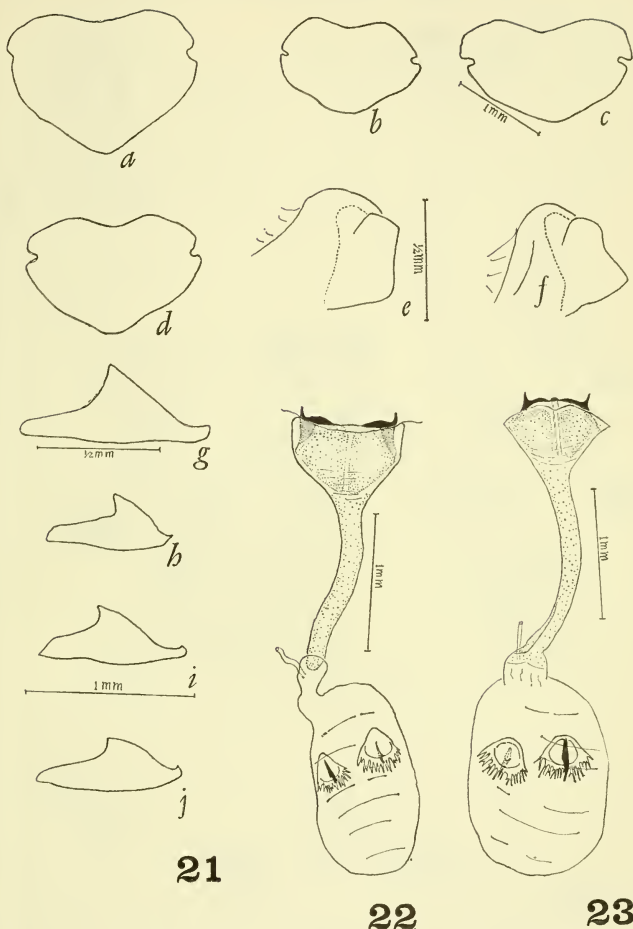
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FIGURES 18-19.—Male genitalia (see figs. 1-3 for key): 18, *C. anastasia* Field, holotype; 19, *C. fractunda* Field, holotype.

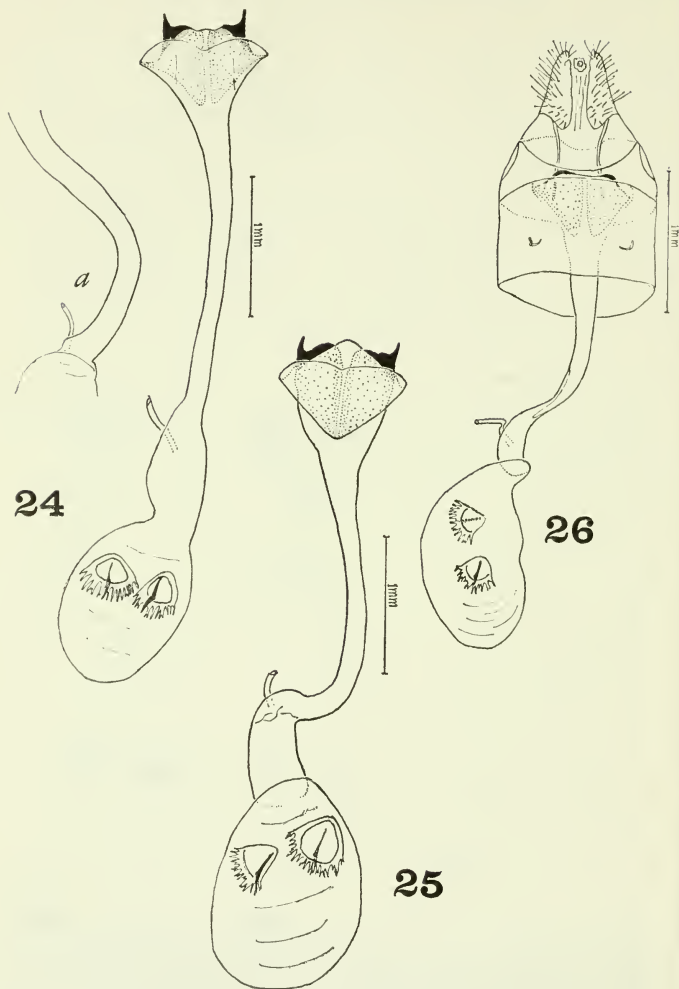


## 20

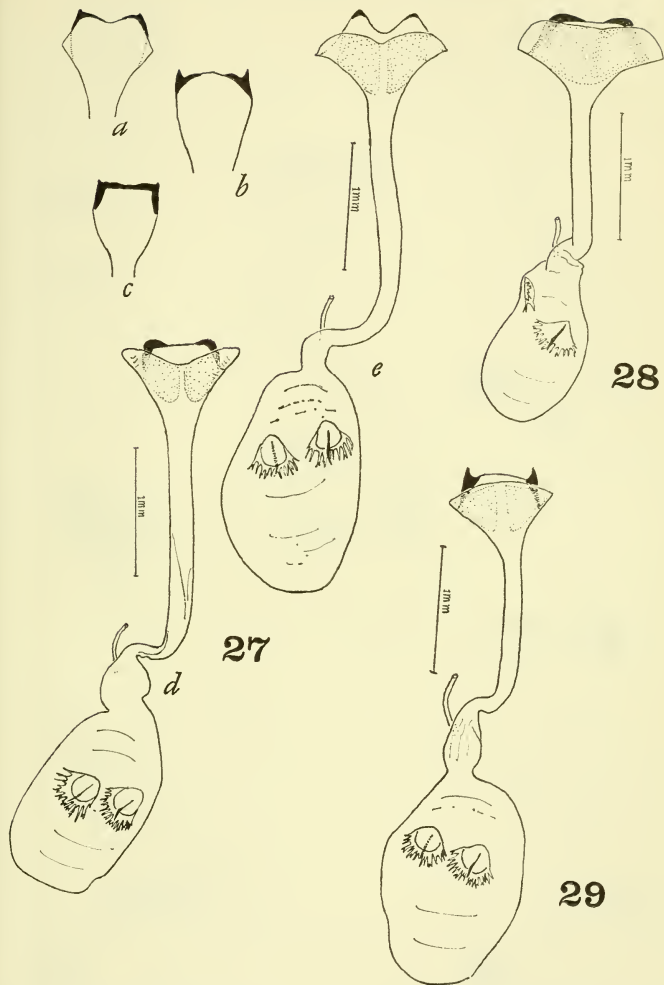
FIGURE 20.—Eighth tergite of male abdomen (scale in fig. *h*): *a*, *C. bactra* (Hewitson), from preparation 2887 (WDF); *b*, *C. nicolayi* Field, holotype; *c*, *C. caulonia* (Hewitson), from preparation 5310 (WDF); *d*, *C. janeirica* (C. Felder), from preparation 2697 (WDF); *e*, *C. chacona* (Jørgensen), from preparation 2696 (WDF); *f*, *C. lerbela* Field, holotype; *g*, *C. torqueor* (Druce), from preparation BM 1951 490; *h*, *C. xeneta* (Hewitson), from preparation BM 1951 492; *i*, *C. cecrops* (Fabricius), from preparation 2729 (WDF); *j*, *C. isobea* (Butler and Druce), from preparation 2839 (WDF); *k*, *C. susanna* Field, holotype; *l*, *C. drusilla* Field, holotype; *m*, *C. vibulena* (Hewitson), from preparation 3436 (WDF); *n*, *C. vitruvia* (Hewitson), from preparation BM 1951 488; *o*, *C. bellera* (Hewitson), from preparation BM 1949 147.



FIGURES 21-23.—Eighth tergite of male abdomen: 21a, *C. partunda* (Hewitson), from preparation BM 1949 148; b, *C. indigo* (Druce), from preparation BM 1951 497; c, *C. anfracta* (Druce), from preparation 2700 (WDF); d, *C. fractunda* Field, from holotype. Lateral views of uncus and harpe showing variations in *C. susanna* Field: 21e, from preparation 2833 (WDF); f, from preparation 2681 (WDF); g, from preparation 2681. Lateral views of harpes showing variations in *C. chacona* (Jørgensen): 21h, from preparation 2923 (WDF); i, from preparation 2925 (WDF); j, from preparation 2920 (WDF). Female genitalia in ventral view: 22, *C. bactra* (Hewitson), holotype; 23, *C. caulonia* (Hewitson), from preparation BM 1949 145.

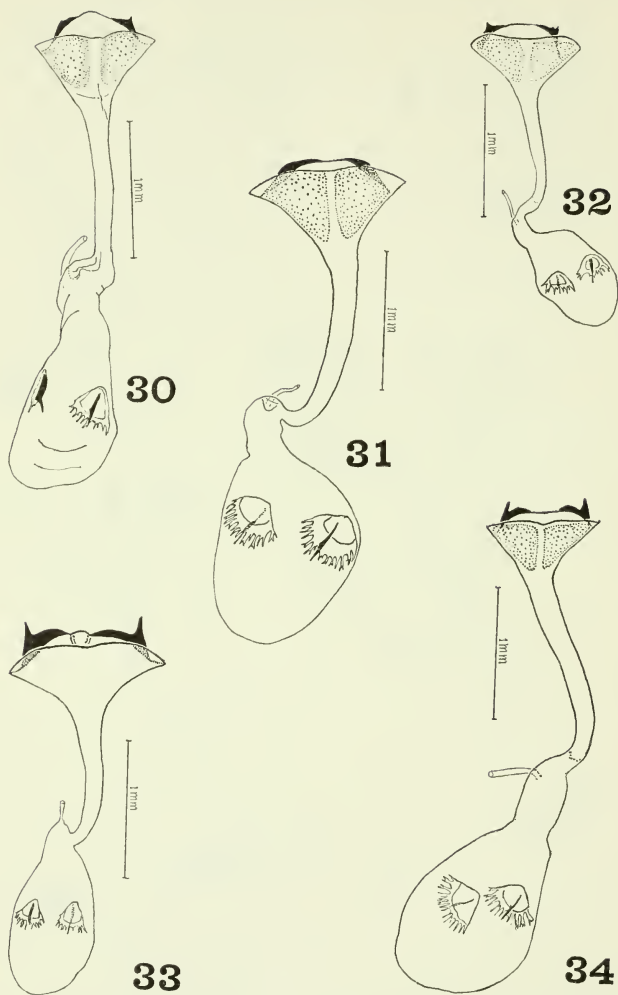


FIGURES 24-26.—Female genitalia in ventral view (except 24a, which shows portion of bursa copulatrix and ductus bursae in lateral view): 24, *C. janeirica* (C. Felder), from preparation 2765 (WDF); 25, *C. chacona* (Jörgensen), from preparation 2766 (WDF); 26, *C. lerbela* Field, allotype.



FIGURES 27-29.—Female genitalia in ventral view: 27a, *C. susanna* Field, from preparation 2780 (WDF); b, from preparation 2792 (WDF); c, from preparation 3467 (WDF); d, allotype; e, from preparation 2896 (WDF); 28, *C. drusilla* Field, allotype; 29, *C. vitruvia* (Hewitson), from preparation 5070 (WDF).





FIGURES 30-34.—Female genitalia in ventral view: 30, *C. bellera* (Hewitson), holotype; 31, *C. partunda* (Hewitson), from preparation 5319 (WDF); 32, *C. amplia* (Hewitson), from preparation 5091 (WDF); 33, *C. indigo* (Druce), from preparation 3185 (WDF); 34, *C. fractunda* Field, allotype.