

The Skipper Butterflies (Hesperiidae) of Trinidad

Part 6: Pyrginae, Genera Group D

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This contribution covers Evans's (1952) genera group D and completes the first section of the Pyrginae which was outlined in Cock (1984b). Genera group D is characterised by the third segments of the palpi parallel, and veins 6 & 7 approximate at their origins. Evans also suggests that the wings are held flat in repose, but this may not be true of *Bungalotis* spp. Cock (1982b) listed 11 species from this group for Trinidad; *Discophellus nicephorus* was added subsequently (Cock 1984a) and *Bungalotis erythrus*, *Cephise cephise* and *Discophellus porcius* treated below are further additions.

Apart from the two species of *Celaenorrhinus*, all the species treated here are rare, and the discovery of additional species of this group is likely. Hence, we have been able to give details, where they have been recorded, of the few specimens that we have seen of each species.

Moss (1949) reared several species of this group at Belem (Para), Brazil, and his observations were of considerable help to W.H. Evans in the revision of this group (Evans 1952), particularly for the correct association of some of the sexually dimorphic males and females of the genera *Bungalotis*, *Discophellus* and *Nascus*. We suggest that with the host plant clues provided by Moss's work, and that reported here of S. Alston-Smith (SAS), it would be worthwhile seeking larvae of this group in Trinidad. The larvae are much commoner and easier to locate than the adults; for example, Moss and SAS have obtained some species only by rearing larvae and have never caught the adults.

The host plant families of the Trinidad genera are summarised below; records of food plants from outside Trinidad are given in brackets. These records show a good scatter of families, only one of which (Malpighiaceae) has been found to be used by more than one species.

Bungalotis: Araliaceae, Moraceae

Salatis: Malpighiaceae, Polygonaceae

Discophellus: (Annonaceae), (Euphorbiaceae), Lauraceae, Myristicaceae

Nascus: (Meliaceae), Monimaceae, Sapindaceae

Cephise: Malpighiaceae

Celaenorrhinus: Acanthaceae.

There are several species of this group which Moss (1949) reared that are known from the adjacent mainland but have not yet been recorded from Trinidad. Their food plants are listed here to encourage enthusiasts to look for these larvae as well.

Bungalotis diaphorus Möschler: *Simarouba amara* Aubl. (Simaroubaceae)

B. quadratum Sepp: *Inga* sp. or *Pithecelobium* sp.

B. clusia Evans: *Clusia* sp.

Salatis fulvius Plötz: *Nectandra villosa* Nees & Martius ex Nees (Lauraceae),

Annona muricata L. and other Annonaceae.

Sarmentoia eriopis Hewitson: *Heteropteris mossii* Morton (Malpighiaceae)

Porphyrogenes vulpecula Plötz: *Connarus* sp. (Connaraceae)

New abbreviations introduced in this part are: T1 -T3 (thoracic segments 1-3, i.e. the prothorax, mesothorax and metathorax), A1-A9 (abdominal segments 1-9); both as used refer to the larvae. Other abbreviations as before.

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65A. D1/1 *Bungalotis erythrus* Cramer 1775
Plates 9-10

The Evans (1952) listing of the specimens in the BMNH includes a series of 30 from Belem mostly reared by A.M. Moss and just 14 other scattered records from Honduras to the Amazon - a clear indication of how much easier it is to find larvae than adults of this species.

Male. UPS dark brown, almost black in part of cell, space 2 UPF and spaces 2-7 and cell UPH. White hyaline spots in cell, spaces 1B (2) 2, 3, 6-8 F and spaces 3, 4, 6 (very small) and cell H. UNS dark brown, paler space 1A UNF; in addition to hyaline spots, white spots UNH in spaces 1C (discal and sub-marginal), 2 and faintly in 7 (discal and submarginal). Head, thorax and abdomen UPS, dark brown; palpi and cheeks below white; thorax UNS brown, abdomen UNS fulvous distally. Cilia F and H chequered - dark at the end of the nerves. Costal fold.

Female. Larger than male and wings more rounded. F spotting as male. H with additional hyaline dots in 1C, 2 and 7. UNH all spots strong, also faint spots in spaces 4 and 5.

This species has not previously been recorded from Trinidad. There is a specimen in BA collected at Sangre Grande (vi.1969) probably at light by F.C. Ulrich. SAS has recently reared this species from the Arima-Blanchisseuse Road, milestone 9 (♂, ♀ iii.1988; ♂, ♀ xi.1988) and Guanapo Valley (♂ iv.1989).

Moss (1949) reared *B. erythrus* from larvae found on young trees of *Schefflera morototoni* (Decne & Planch) Maguire, Steyermark & Frodin, S. sp. (syn. *Didymopanax glaziovii* Taub.) and *S. decaphylla* (Seem.) Harms (= *S. paraënsis* Huber) (Araliaceae). His notes and illustrations match those of SAS below.

In Trinidad, the food plant located by SAS is *S. morototoni*, for which the local names are jereton and matchwood. The young larva has a red-brown head; the body has an orange transparent skin; segments A1-A7 have a yellow-white transverse band running from just below the spiracles, fading out at the dorsum. In the mature larva the head is broadly flattened dorsally, rounded, rugose, and very dark brown-black. T1 and rest of body dull magenta with transverse yellow bands on the anterior margin of segments A1-A7, narrow on A1 but about 1/5 segment width on the others. The

large leaves of the food plant are palmate and the shelter of the mature larva is formed between two leaflets placed one on top of the other. SAS notes that in forming the shelter any extruding leaflet edges are cut off by the larva so as to maintain the leaflet profile. Furthermore when the larva has fed upon adjacent leaflets to the extent of causing eye-catching damage, it is in the habit of cutting them off at the base. The pupa, which Moss (1949) states is formed amongst leaves on the ground usually within a metre of the base of the tree, is striking. It is brown, speckled with white on the abdomen, has a large black semi-circular 'eye-spot' edged with white on T1 and a large bulbous protrusion from the front of the head, down which is a vertical white stripe.

66. D1/3 *Bungalotis midas* Cramer 1775
Plates 1-4

This species is widespread in the Americas - from Mexico to Paraguay (TL Surinam) (Evans 1952), but is always rare in collections. It was first recorded from Trinidad by Kaye (1904) without comment.

Male. Ground colour orange UPS, orange-brown UNS. UPS row of indistinct orange-brown submarginal spots and cell spot. UPH costa and space 7 deep black fading towards margin, iridescent purple-blue at certain angles; indistinct orange-brown spots in cell, spaces 2, 3 and 4. UNF with disc orange, fading to yellow-orange on dorsum; spots as UPF. UNH with two rows of brown spots with orange-brown centres; basal band: spot overlapping spaces 1B and 1/C at 1/3, end cell; distal band: upper half of space 1B and space 1C at 2/3, spaces 2-6 and 7 at about 1/2. Cilia brown, paler between veins UNF. Head orange above, orange-brown below with cheeks, upper half of first segment labial palp, adjacent eye and basal spot on second segment white. Antenna shaft brown, club brown above, yellow-brown below. Strong costal fold containing pale scales; orange hair tuft on vein 1B UNH. Illustration in Lewis (1973, Plate 81, No 10; ♂). F ♂ 29 mm.

Female. UPS brown UPH spaces 5-7, costa dark brown; F hyaline spots white. UNS brown, with a slightly coppery tint UNH; UNF spaces 2, 3 and cell basal to hyaline spots dark brown; UNF space 1A and space 1B distal to spot white, extending into space 2 at margin. UNH with two rows of dark brown spots with pale scales centrally; basal band: space 1C at 1/3, end cell, space 7 at 1/4; distal band: space 1C double spot at 2/3, single spots in spaces 2-6 and 7 at 1/2. Cilia brown. Body brown; head brown except cheeks and, adjacent to the eye, the margin of the first segment of labial palp white. Antennae dark except below club, and before apiculus above pale. The two female specimens examined differ; the one figured has less developed hyaline spots; the other has more pronounced UNH markings, and in the hyaline markings F the cell spot is half as broad again, the spot in space 2 has the inner margin of the upper half extended to touch the cell spot, and there is a small apical spot in space 9. *B. midas* is rather similar to *B. astylos* below, under which differences are discussed. F ♀ 34-35 mm.

Although rare, *B. midas* is most frequently caught at night when it is attracted to light. Single specimens are occasionally taken in most parts of Trinidad: Palo Seco (v.1910 in Kaye [1921] but note Kaye treated *B. astylos* as a synonym of *B. midas*), Palmiste (♀ 18.xii.1921, ♂ 23.iii.1922 Sir N Lamont in RSM; ♀ 14.ii.1934, Sir N. Lamont in UWI), Sangre Grande (5♀ i.1985, xi.1987, xii.1987, xii.1988[2] F.C. Urich in coll. SAS), St. Ann's Valley (♀ in BMNH) (2♂ vi.1933 in BA), Hololo Mountain Road (♀ iv.1935 in BA). The life history and food plants do not seem to be known.

67. D1/4 *Bungalotis astylos* Cramer 1780
Plates 5-8

B. astylos is almost as widespread as the rather similar *B. midas*, occurring from Honduras to South Brazil (TL Surinam) (Evans 1952), but is perhaps slightly commoner in collections. Kaye (1921) incorrectly lists *B. astylos*, as a (female) synonym of *B. midas*.

Male: Similar to male *B. midas*. UPS dull orange. UPF more heavily marked than *B. midas*: margin, submarginal band in spaces 1B-8 discal band in space 2 and cell brown. UPH space 7 and costa black (not as intense as in *B. midas*) with purple-blue sheen at certain angles; space 1A yellow-brown. UNF brown; disc from base of space 3 to whole of dorsum orange, fading to yellow on dorsum; some orange bordering the submarginal band which is similar to UPF but darker. UNH orange-brown with space 1A tawny; costa and margin brown and two broad, irregular brown discal bands. Body dull orange above; orange-brown below; head dull orange above, brown-orange below, posterior half of cheeks white. Strong costal fold; brown-orange hair tuft vein 1B UNH. F ♂ 33 mm.

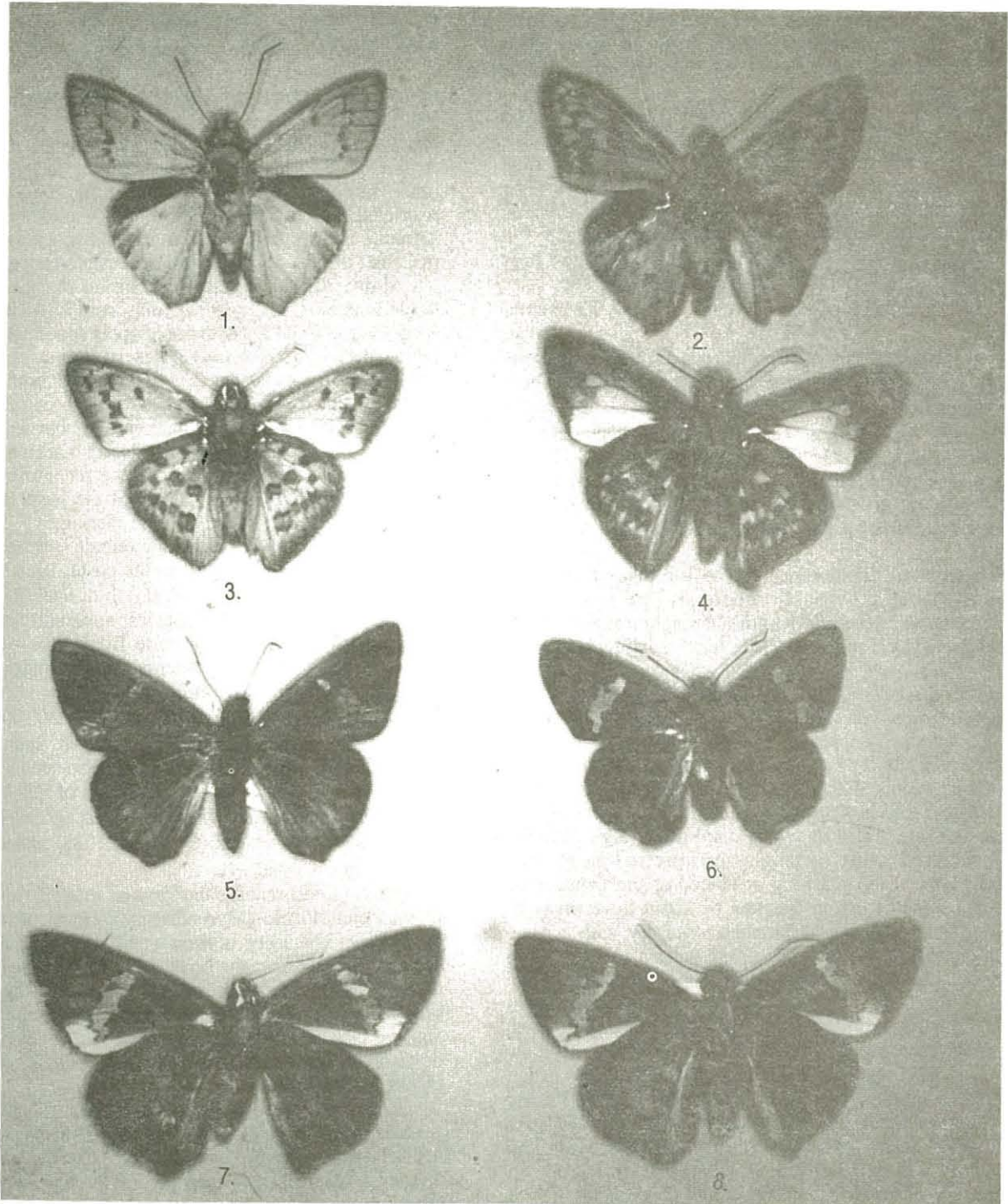
Female: Similar to female *B. midas*. UPS dark brown; F hyaline markings white. UNS brown, UNF distally and UNH with coppery tint; UNF space 1A and space 1B beyond hyaline spot white; UNH two broad irregular bands, the basal one running across space 1C and end cell, the distal one from space 1C to space 5 with detached spots at 2/3 in space 6 and 1/2 in space 7. UNS head with posterior part of cheeks white.

B. midas and *B. astylos* are similar in both the males and the females, but two features distinguish them. Firstly the UNH markings of *B. astylos* are extensive and run into each other, while those of *B. midas* are small and discreet; secondly, although the cheeks of both are white, only in *B. midas* does the white extend on to the first segment of the labial palp.

As for the last species, *B. astylos* is rare in Trinidad, but most frequently caught at light by night. Specimens have been taken at "St. Georges" (♂ xi. 1891, C.W. Ellacombe in BMNH), St. Augustine (♀ i.1974, D.J. Stradling in UWI), Sangre Grande (♀ x. 1970 in BA as *B. midas*; ♀ xii.1982, ♂ ix.1987, ♀ xi.1987, xii.1987, xii.1988 [2] all at light, F.C. Urich in SAS; ♂ xi.1988 F.C. Urich in SAS), Cats Hill (♂ x.1979, J.O. Boos in MJWC), Valencia Forest (♂ i.1986, at light, SAS) and Cunapo (♀ xii.1987, at light, SAS).

Moss (1949) records this species as restricted to host plants in the genus *Cecropia* (Moraceae) of which the only Trinidad species is the common bois canôt, *Cecropia peltata* L. He notes that the young larvae form small triangular leaf shelters, conspicuous because of the pale leaf undersurface of the flap turned up over the green leaf uppersurface. The mature larva shelters between two leaves whose tips are held together by silk; it is dirty white with a large ochreous head. Pupation is amongst leaves at the base of the tree. The pupae of *Bungalotis* spp. illustrated by Moss (1949, p. 50), including that of *B. astylos* all have a well developed, curved snout at the anterior end.

SAS has found larvae which we assume are those of *B. astylos* on *C. peltata* in Trinidad (e.g. Parrylands, i.1988, SAS/MJWC). The trees preferred seem to be those of medium height (about 5 m) growing against slopes. The shelter of the mature larva is formed by drawing together two lobes of the large deeply lobed leaves, rather than two leaves as Moss wrote. The larva is as Moss described it; there is a trace of two parallel, diffuse bars on each side of the face of the head; the ocelli and mouth parts are darker than the head.



Plates 1-8

Adult HesperIIDae, Genera Group D. Specimens from Trinidad, and in coll. MJWC except as stated. Specimens shown UPS except where stated UNS. 1, *Bungalotis midas* ♂, Cayenne (BMNH); 2, *Bungalotis midas* ♂ UNS, Cayenne (BMNH); 3, *Bungalotis midas* ♀, Sans Soluci Estate, at light, F.C. Urich; 4, *Bungalotis midas* ♀ UNS, Guyana (BMNH); 5, *Bungalotis astylos* ♂ Cat's Hill, at light, x.1979, J.O. Boos; 6, *Bungalotis astylos* ♂ UNS, Cayenne (BMNH); 7, *Bungalotis astylos* ♀, Guyana (BMNH); 8, *Bungalotis astylos* ♀ UNS, Cayenne (BMNH).

68. D2/2 *Salatis salatis* Stoll 1782

Plates 11-12

This, another rare species in collections, is found from Nicaragua to South Brazil (TL Surinam) (Evans 1952). First recorded from Trinidad by Kaye (1914) as *Bungalotis sebrus* Felder, a synonym.

Male UPS tawny; hyaline spots white; other spots, costa and space 7 UPH dark. UNS pale tawny; spots dark or hyaline white. Female UPS uniform light brown with white hyaline spots; UNS paler with dark spots more pronounced. The development of the spots is probably variable but there is insufficient Trinidad material to assess this. The presence of a pair of spots space 1B F, without a similar basal pair distinguishes this species from the *Discophellus* spp. with which it might be confused. Strong costal fold; F ♂ 25-26 mm, ♀ 30 mm.

This is a rare species in Trinidad. Kaye (1921) mentions that it had been caught only once, but gives no locality. There are four males and one female in the BMNH (1♂ St. Ann's Valley; 3♂ 1♀ "St. Georges" xi.1891). SAS has reared a male from Aripo Savanna, a male and female from Valencia Forest and three males and a female from Andrews Trace; there is a male with no data in MBA, and MJWC has a female taken above St. Benedict's on Mt. Tabor, vii.1982, by R. and J. Kennedy.

SAS has reared this species, whose life history does not seem to have been previously recorded. The food plants include *Byrsonima crassifolia* Kunth (Malpighiaceae) at Aripo Savanna, *Heteropteris macrostachya* Juss. (Malpighiaceae) at Mt. Harris, *Coccoloba marginata* (Polygonaceae) at Valencia Forest and an unidentified species from Andrews Trace. The young larva is green with a red tint and has a light brown head. The mature larva is distinctive. The body is very pale green, almost white, and its only patterning is a row of six markings laterally on segments A2-A7. Each marking consists of four more or less parallel horizontal lines, the middle two slightly longer; the ends are joined by two vertical lines bulging around the three enclosed white rectangles and protruding slightly above and below; each marking is placed at the front of its segment, and separated from the next by about three times its width. The head is rounded, flattened ventrally with a quite strongly indented vertex and a complex pattern of brown and white stripes. The brown stripes consist of a broad one down the centre of the face, a stripe from each of the apices down the face narrowing steadily to a point about two thirds down the face, a narrower stripe from the mouth parts to just below the apices laterally, one below this from the central part of the mouth parts, round the lower lateral side of the head and rising to the posterior of the apices. Based upon a sketch by SAS, the pupa is constricted at the neck with a bulbous head; the abdomen has whitish splotches laterally enclosing an incomplete row of small brown markings (? spiracles) and a very dark brown semi-circular spot dorso-laterally on the thorax (? T1 spiracle).

68a. D4/1 *Discophellus nicephorus* Hewitson 1876

Plates 13-14

The collection of the BMNH includes just 17 specimens of this species which ranges from Mexico to the Amazon (TL) (Evans 1952). First Trinidad record by Cock (1984a).

Male UPS dark brown; UPF costa, basal 1/2 UPF, basal 1/3 UPH and dorsum UPH red-brown. Female UPS pale brown; UPH white spots weak and variable. UNS pale brown

with white spots. Antenna shaft chequered, club pale at base. Distinct within the group owing to the almost complete absence of markings UPS. Costal fold; F ♂ 29 mm.

The single capture of a male on La Laja Ridge at dusk (iv.1982) (Cock 1984a) remains the only record for Trinidad, and clearly this is a very rare species.

69. D4/4 *Discophellus euribates euribates* Stoll 1782

Plates 15-16

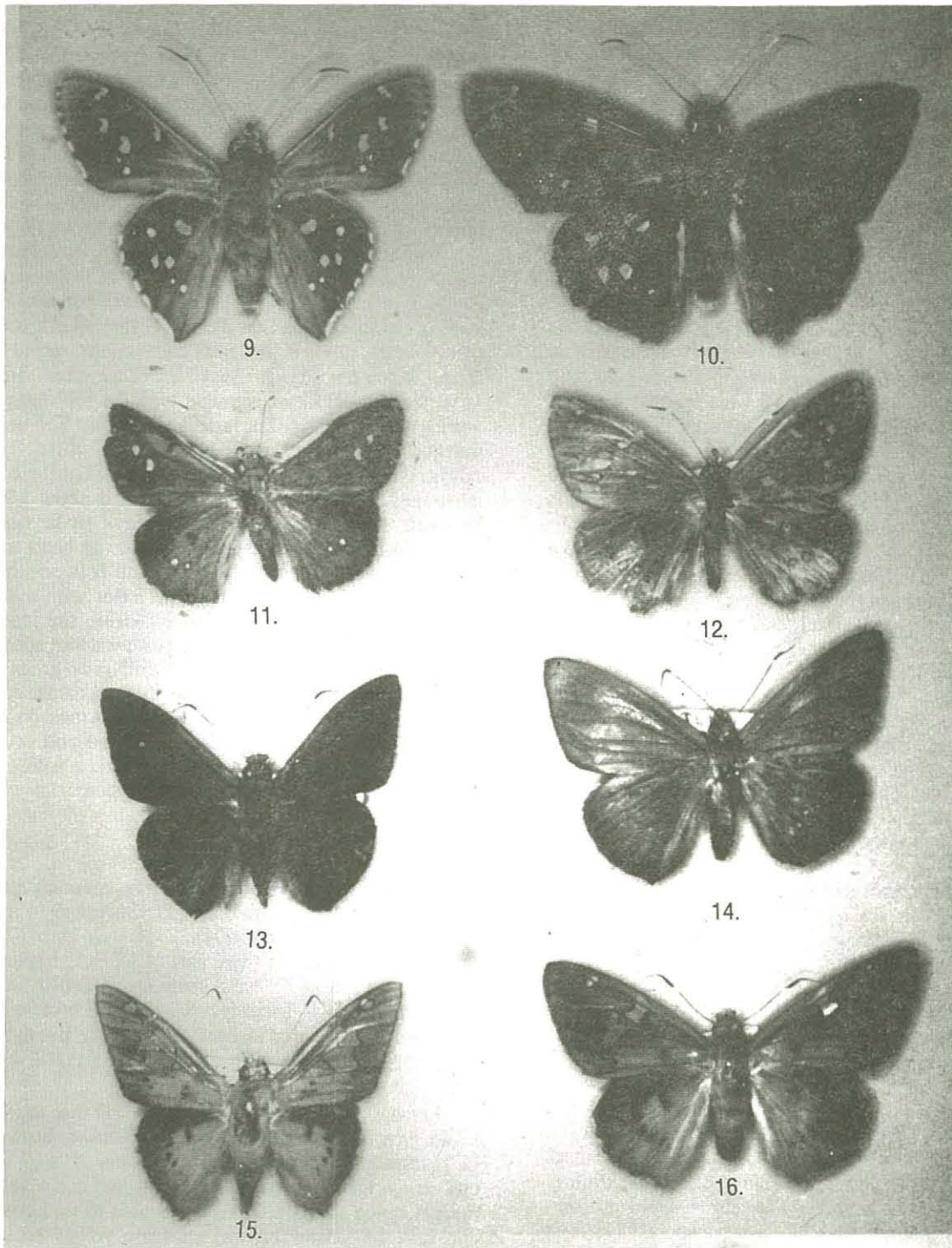
The nominate subspecies is found from Costa Rica to the Amazons TL Surinam) and is commoner than most of the others in this group. A second subspecies, *polyquis* Latreille, is restricted to South Brazil. Kaye (1940) adds this species to the Trinidad list without comment. The subspecies name is omitted in Cock (1982b) which should be amended accordingly.

Male: UPS orange-tawny; broad margin UPF, margin towards apex UPH, space 7 and costa UPH brown. Hyaline spots F yellow. UPF two pairs of spots space 1B at 1/3 and 2/3. UNS tawny; UNH two pairs of spots space 1C; dark submarginal spots spaces 2, 3 and 5; spots with ground colour centre in space 1C (basal pair), space 6, end cell and two in space 7 at 1/3 and 1/2. Female similar, but less orange; UPS dark markings less conspicuous; UNH markings indistinct, all with pale centre. This species can be recognised as belonging to *Discophellus* by the presence of the basal pair of spots in space 1B UPF; the broad hyaline markings F distinguish this from other *Discophellus* spp.; the female is distinct by virtue of the discal spots F extending to the costa. Illustration in Lewis (1973, Plate 82, No 33; ♂). Costal fold; F ♂ 30-31 mm.

This is an uncommon species, apparently associated with lowland forest. There is a male from Irois (ii.1926, Sir N. Lamont) in the RSM and a female from Sangre Grande in BA (x.1970). Several specimens have been taken at light in Valencia Forest (2♂ viii.1981, MJWC; 2♂ xii.1985, SAS; 1♀ i.1986, SAS) and a male by day at Spanish Farm, Las Lomas (i.1982, MJWC). MJWC has also seen a male from the collection of H. Govia in the possession of F.C. Urich. SAS has reared specimens from Valencia Forest (♂ xi.1987), Cunapo (♀ xii.1987), Mt. Harris (♂, ♀ xii.1988) and Aripo Savanna (♀ i.1989).

Moss (1949) records the larva as restricted to three species of the genus *Virola* (Myristicaceae). He records that the head of the larva is marked in brown and lacks the yellow markings of *D. ramusis* below; the body is pale dull green, orange-brown dorsally and with six lateral dull red spots. The pupa is plain brown, and not usually found in the larval shelter; it is rounded and the curved snout of *Bungalotis* spp. is only very slightly developed as an anterior concavity on the ventral surface (Moss 1949, Fig. 6).

SAS has found the larvae of this species on *Virola surinamesis* (Rol.) Warb. in Trinidad. The mature larva has the head flattened dorsally and is marked similarly to *D. ramusis* below. A brown central triangle has its base across the dorsal edge and the sides contract to just above the mouth parts before dilating to include the mouth parts; there is a lateral stripe of the same colour from the mouth parts round the lower edge of the head. The remainder of the head is brown-white speckled with dark dots. T1 is orange-brown. The rest of the body is dark green, spinkled with yellow-white dots, and dorsally a broad orange suffusion from A2, where it is narrower, to A8 contained within this orange suffusion is a darker dorsal line; laterally on segments A2-A7 above the spiracles there is an irregular orange blob placed near the anterior margin and occupying about 1/3 the width of the segment. Spiracles yellow-orange; prolegs red. The larva turns brown just before



Plates 9-16

Adult HesperIIDae, Genera Group D. Specimens from Trinidad, and in coll. MJWC except as stated. All specimens shown UPS. 9, *Bungalotis erythrus* ♂, Cayenne (BMNH); 10, *Bungalotis erythrus* ♀, Cayenne (BMNH); 11, *Salatis salatis* ♂, St. Georges, x.1891, C.W. Ellacombe (BMNH); 12, *Salatis salatis* ♀, St. Benedict's, vii.1982, R. & J. Kennedy; 13, *Discophellus nicephorus* ♂, La Laja Ridge, 9.iv.1982, MJWC; 14, *Discophellus nicephorus* ♀, Honduras (BMNH); 15, *Discophellus euribates euribates* ♂, Las Lomas, Spanish Farm, 16.i.1982, MJWC; 16, *Discophellus euribates euribates* ♀, Peru (BMNH).

pupation. The pupa is similar to that of *S. salatis* but dark brown all over.

69a. D4/5 *Discophellus porcius porcius* Felder 1862
Plates 17-18

The nominate subspecies is found from Costa Rica to Brazil (TL); females are particularly scarce in collections. A second subspecies, *doriscus* Hewitson, is restricted to South Brazil and Paraguay. This is a new island record for Trinidad.

Male UPS orange-tawny; distal to spots UPF, costa, space 7 and margin to space 3 UPH brown. UNS tawny brown with hyaline spots and trace of discal band UNH. Female resembles male in colour, but hyaline spots more extensive, including large ones in space 2 and cell F and cell H; apical row of hyaline spots in spaces 6-8 F; UNH with two broad semi-macular bands incorporating the hyaline spots. Costal fold.

The male resembles that of *D. ramusis* superficially but the more developed markings including those UNH distinguish it. The female resembles that of *D. euribates* owing to the extensive spots F, but is distinguished by the hyaline spots H; the hyaline spots are more extensive than those of the female of *D. ramusis*.

Three specimens are known from Trinidad: a male collected at Guaiaco (iv.1915, Sir. N. Lamont in RSM) which is almost certainly the specimen Kaye (1921) recorded as *D. ramusis* considered below, a female in BA with no data, and a male SAS took in Petit Valley (i.1986). Nothing is known of the habits of this species in Trinidad.

Moss (1949) records the larval food plant as a species of *Croton* (Euphorbiaceae). "The larva is light greenish grey, strongly ochreous on the back and sprinkled with fine white dots, whilst the ventral area is decidedly pink. There is a row of crimson stars pointed with white dots on the sides of [A2-7]. The head is maroon, darkening towards the mouth and has a broad plain band of orange on each cheek, but is without black stripes, dots or lemon spots." There are 11 species of *Croton* recorded from Trinidad (Philcox 1979) of which the candle tree, *C. gossypifolius* Vahl, is best known.

70. D4/9 *Discophellus ramusis astrapaesus* Hewitson 1876
Plates 19-20

The subspecies *astrapaesus*, which was described from Belem, is restricted to Trinidad, the Guyanas and the lower Amazon, with one specimen recorded from Ecuador (Evans 1952). Three additional subspecies extend the range to Honduras in the North and Paraguay in the South. Kaye (1921) records *D. ramusis* from Trinidad on the basis of a specimen from Guaiaco (iv.1915), Sir N. Lamont; this specimen is in the RSM, but proves to be *Discophellus porcius*.

Male. UPS tawny; UPF apex, broad margin UPF, costa, space 7 and distal parts of spaces 4-6 UPH brown. UPF dark spots in space 1B (basal and distal pairs), 2 and 3 (slightly hyaline), cell. UPH spots scarcely noticeable. UNS uniform brown. Female UPS brown with white hyaline spots. UNS light brown; space 1A and lower part of 1B near white. The male is quite similar to *D. porcius* but distinguished by the uniform UNS. The female is larger than that of *D. porcius* and the spots are less extensive. Illustration in Lewis (1973, Plate 82, No. 36; ♂). Strong costal fold; F ♂ 29-30 mm, ♀ 35 mm.

From the available records, this is a rare species, the males being encountered rarely by day and the only known females taken at light by night. Thus, there are two males of *D. ramusis* in the BMNH (xi.1891, Maraval; xi.1896, Caparo Valley, Dr. Rendall), MJWC has a female taken at light on Morne Bleu (iii. 1979) and SAS has a male taken settling under

leaves at Sangre Grande (i.1985) and a female at light in Valencia Forest (i.1986). SAS has also reared this species from Andrews Trace (♂, ♀ ii.1988, ♂ i.1989).

Moss (1949) mixed *D. ramusis* and *D. sebalus* Stoll and it is not clear whether his notes on the biology refer to one or both of these. However, on the basis of SAS's observations (below), it seems likely that the species reared was *D. ramusis*. Moss records food plants in the Lauraceae (*Nectandra*) and Annonaceae (*Annona muricata* L., *Duquetia*, *Guatteria*, *Envira*) and describes a striking larva with a maroon head with yellow eye spots and markings, a pale greenish grey body and on A2-7 lateral markings consisting of crimson stars encircled with white dots. The pupa resembles that of *D. euribates*, but the anterior snout is not developed at all (Moss 1949, Fig. 4).

The genus *Nectandra* is represented in Trinidad by four trees known as lauriers (Philcox 1978). Seven species of *Annona*, including soursop (*A. muricata*), and *Duquetia lucida* Urb. occur in Trinidad (Williams 1928); all are potential food plants for *D. ramusis*, but SAS has actually reared this species from *Ocotea leucoxylo* (Sw.) Mez (Lauraceae). In the mature larva the head is large, rounded with the top flattened and the vertices only slightly but broadly indented. The head is boldly marked in maroon, black and yellow-white. The maroon comprises a broad stripe down the middle of the face, narrowest about 3/4 down face when it is about 1/2 as wide as between the vertices; a narrower black stripe runs from the mouth parts round the lateral edge of the head to the lateral apex, the area posterior to this line and between the black and maroon areas is yellow-white, the latter with a scattering of translucent spots of varying size; within the maroon stripe, there is dorsally a pair of oval yellow-white spots, one each side of the vertex. The body is dull grey-green covered in white spots so as to give an off-white appearance; laterally on A2-7 there is a row of six striking markings on the anterior margins of the segments; each is round and crimson with, around the edge (but within the circle), a row of 4-5 white spots giving the crimson area a stellate shape.

71. D5/1 *Nascus phocus* Cramer 1777
Plates 21-22

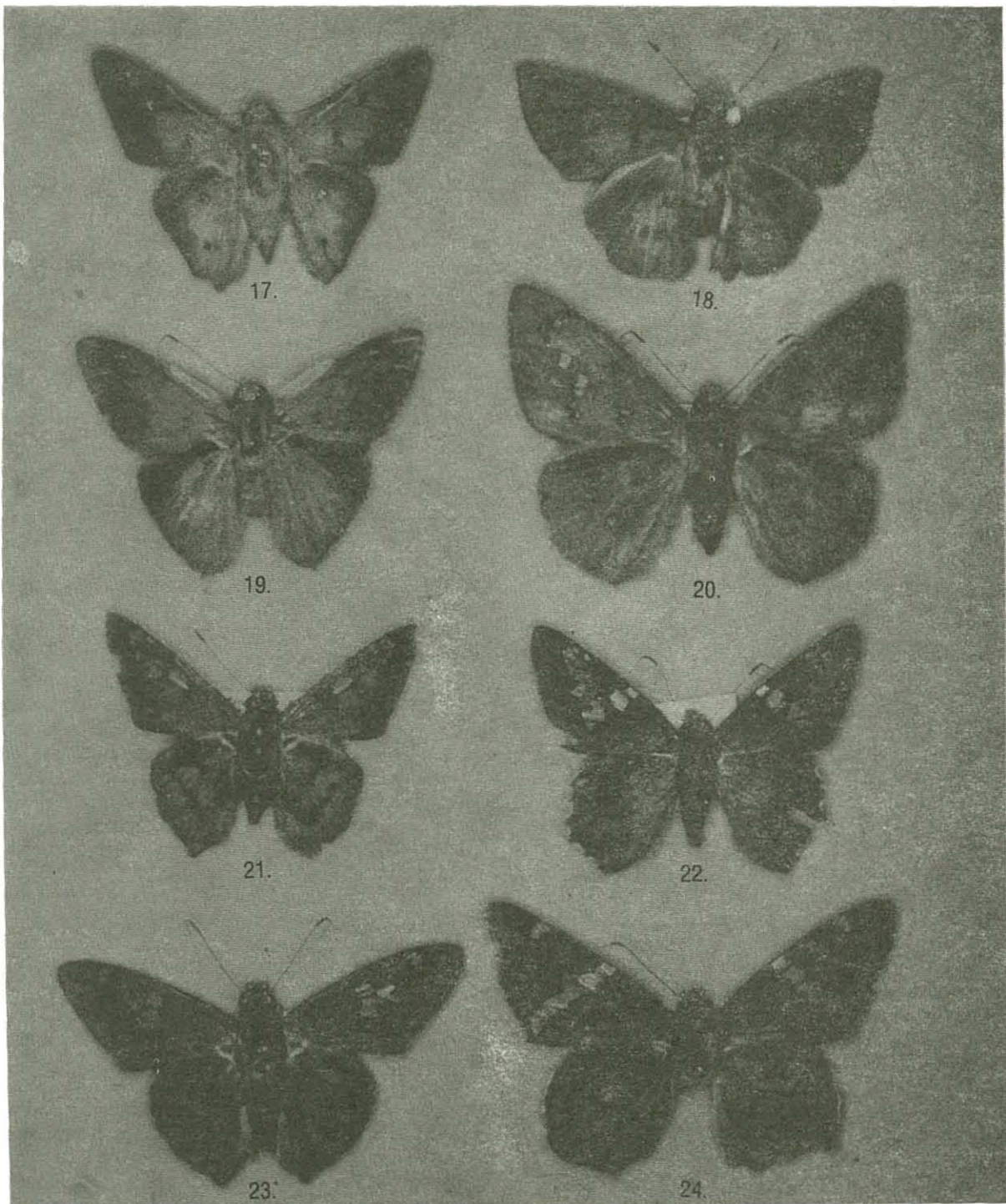
This is a widespread, moderately common species found from Guatemala to Paraguay (TL Surinam). First recorded from Trinidad by Kaye (1904).

Male. UPS brown; basal part of UPF to hyaline spots and UPH except spaces 6, 7 and costa tawny brown; hyaline spots yellow; two brown discal bars UPH. UNF brown; UNH tawny with two distinct discal bars; UNS body tawny; UNS head white. Illustration in Lewis (1973, Plate 84, No. 4; ♂). Costal fold; F ♂ 27 mm.

Female. UPS brown; UPF base, UPH disc to termen tinged khaki-brown; hyaline spots white; indistinct brown discal bar UPH through khaki area; cilia UPH vein 1B to 7 white except end veins. UNF brown; base of cell and costa yellow brown; margin space 1B pale. UNH basal area to mid costa, end cell, end vein 1A yellow brown; a diffuse yellow-brown bar from vein 1B petering out about vein 4 parallel to margin of basal yellow-brown area. Cilia UNS as UPS. UNS body yellow-brown; UNS head white. F ♀ 29 mm.

All *Nascus* spp. have four apical spots in spaces 6-9. The arc of hyaline spots from space 1B to 9 F, including spaces 4 and 5 distinguish this species from similar ones.

Kaye (1921) records a specimen he took in the Maraval Valley (vii.1896) and adds that there are several single specimens in various collections. None of the two males and two females in the BMNH records more than "Trinidad".



Plates 17-24.

Adult Hesperiidae, Genera Group D. Specimens from Trinidad, and in coll. MJWC except as stated. All specimens shown UPS. 17, *Discophellus porcius porcius* ♂, Cayenne (BMNH); 18, *Discophellus porcius porcius* ♀, Cayenne (BMNH); 19, *Discophellus ramusis astrapaeus* ♂, Maraval, ix.1881 (BMNH); 20, *Discophellus ramusis astrapaeus* ♀, Morne Bleu, at light, 29.iii.1979, MJWC; 21, *Nascus phocus* ♂, San Miguel Valley, 29.vii.1978, MJWC; 22, *Nascus phocus* ♀, El Tucuche, 9.i.1980, MJWC; 23, *Nascus broteas* ♂, Cayenne (BMNH); 24, *Nascus broteas* ♀, Trinidad (BMNH).

MJWC has a male from San Miguel Valley (vii.1978), a female from c. 2500 ft. on El Tucuche (i.1980) and a female reared by F.C. Urich at Sangre Grande on *Mollinedia laurina* Tul (Monimaceae). For such a large day-flying skipper to be so infrequently collected suggests it is a great rarity, yet SAS finds the larvae relatively easy to obtain and has found them at Arena Forest, Valencia Forest, Sangre Grande, Parrylands, Los Bajos and Inniss Field, from which he has reared a series of five males and five females.

The food plants in Brazil are recorded by Moss (1949) as *Guarea trichilioides* L. (Meliaceae) and species of the vines *Paullinia* and *Serjania* (Sapindaceae). The young larva has the same colour scheme as that of *Phocides polybius* as described in Cock (1984b); i.e. maroon with yellow transverse bands on each segment. Similarly the mature larva becomes covered in a white bloom while the head is brown above, black below with yellow eye spots. The young larval shelters are triangular, and the mature larva forms a durable cocoon incorporating decorative silk in seven or eight oblique bars. The pupa is formed within and is white and smooth.

SAS has reared *N. phocus* from *Mollinedia laurina*, *Paullinia pinnata* L. and other *Paullinia* spp. He noted that the larvae match the description given by Moss, but that the head is red with orange eye spots. The pupa is green under a white powdery covering. Pupation took 13 days and adults were observed to emerged about 20.00-20.30 hr.

72. D5/4 *Nascus broteas* Cramer 1780
Plates 23-24

This rare species is found from Panama to Paraguay (TL Surinam). Evans (1952) lists three specimens from Trinidad and this is the first published record from the island.

Male. UPS slightly tawny brown; hyaline spots slightly yellow. UNH brown; UNF costa to 1/2, base UNF, UNH except margin and UNS body yellow brown. Just within the yellow brown area UNH a straight brown discal line from vein 1C to 6; brown spots in cell and space 4 are aligned parallel to this. UNS head white. Costal fold; F ♂ 30-31 mm.

Female. UPS brown; hyaline spots white. UNS brown; base UNF and basal 1/2 UNH to termen, UNS body yellow-brown; brown cell spot. UNS head white. Illustration in Lewis (1973, Plate 84, No. 7 (not 8 as in legend); ♀). F ♀ 34 mm.

The male is similar to that of *N. paullinae* and *Cephise cephise*, but is larger and has a yellow-brown area UNS. The female superficially resembles *N. paullinae* but again it is larger and the hyaline spots F form a more continuous bar; in *C. cephise* the spots do not extend to the costa.

Kaye (1921, 1940) does not record this species, neither have we seen any recent specimens. A male and two females in the BMNH (ex J.J. Joicey coll.) are labelled only "Trinidad". Since *N. broteas* occurs in Venezuela and the Guyanas, there seems no reason to doubt the authenticity of these specimens, but confirmation is desirable.

Moss (1949) found this species to feed only upon *Trichilia excelsa* Benth. (Meliaceae) in Brazil. There are five species of *Trichilia* listed for Trinidad by Williams (1929), but not *T. excelsa*; of these five, *T. trinitensis* Juss. and *T. oblanceolata* Rusby. seem the likeliest food plants. SAS has been searching for larvae on trees of this genus, but as yet has found only the larvae of *Myscelus amystis amystis* Hewitson, which has hitherto been recorded only from Meliaceae in Brazil (see Cock 1982a). The young larva of *N. broteas* is bright green with seven yellow-crimson transverse bands

interrupted by a dark dorsal line and a light coloured line through the spiracles. The head of the mature larva is black with red eye spots and, similarly to *N. phocus*, it develops a white bloom, but differs in being covered in tiny brown bristles which are also found on the pupa (Moss 1949).

73.D5/5 *Nascus paullinae* Sepp 1848
Plates 25-26

This species is found from Guatemala to South Brazil (TL Surinam) and is moderately common in collections (Evans 1952). Kaye (1914) records this species under the synonym *N. caepio* Herrich-Schäffer (mis-spelt *calpio* in Kaye 1921).

Male UPS tawny-brown; hyaline spots yellow. UNS brown; UNS body, costa UNF to apical spots and disc UNH tawny; suggestion of brown spots in cell and spaces 4 and 5 UNH. Antenna shaft dark, chequered on posterior margin; club brown, apiculus light brown. Female ground colour brown; haline spots white; base UNF, basal 1/2 UNH and UNS body yellow-brown. Illustration in Lewis (1973, Plate 84, No. 8 [not 7 as in legend]; ♂ as *N. caepio*, a synonym). Costal fold; F ♂ 22 mm; ♀ 25-27 mm.

Kaye (1914, 1921) records this species on the basis of a specimen of G.E. Tryhane's from St. Ann's Valley and again (Kaye 1940) from Maraval Valley (xi.1931 - ii.1932, A. Hall). A G.E. Tryhane specimen from St. Ann's Valley is in the BMNH, as is another from the same locality and three labelled "Trinidad". MJWC has two males from Parrylands (xi.1980) taken on a shady path adjacent to a patch of spiny palm swamp. SAS has single males from Coromandel (no date), St. Ann's Ridge (iii.1984), Guapo (i.1986) and a female from Maracas Valley (viii.1977) Sepp (1848 described and illustrated the male of *N. paullinae* and its larva and pupa which he reared on *Paullinia pinnata* in Surinam.

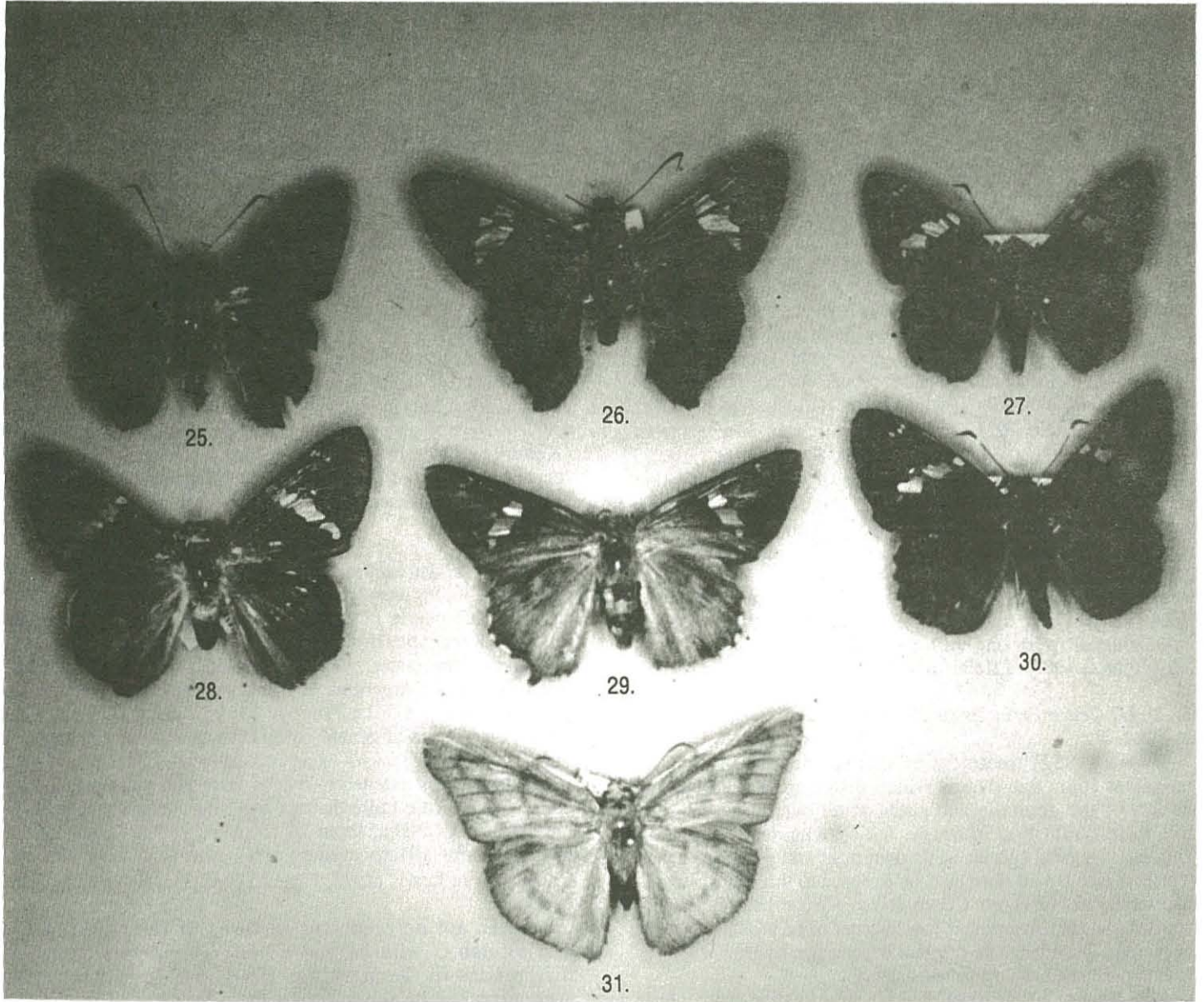
The species treated as *N. paullinae* in Moss (1949) is, judging by the footnote by W.H. Evans (Moss 1949, p. 57) and the key in Evans (1952, p. 153), actually *N. prax* Evans. The food plant was recorded as *Trichilia furcata* (Meliaceae), but C.D. Adams (pers. comm. 1989) is unable to recognise this name. SAS has reared *N. paullinae* in Trinidad from larvae collected on St. Ann's Ridge and Guapo on *Paullinia* spp. The young larva has a reddish brown head with red eye spots and light green body. The head of the mature larva is similar but the body is covered with a white waxy coating, similar to that of *N. phocus*. The pupa is light green.

73a. D6 *Cephise cephise* Herrich-Schäffer 1869
Plates 27-28

The BMNH collection includes 9 specimens from Belem, and just eight more from scattered localities ranging from Honduras to Peru (Evans 1952). A second subspecies, *hydarnes* Mabile, is found in South Brazil and Paraguay. This is a new record for the island.

Male UPS slightly tawny brown; hyaline spots yellow. UNS brown; UNF cell and space 2 basal to spots brown-black; UNH 1/3 along dorsum brown-black; termen near black; white spot UNH space 1C at 3/4. Cilia white UNH spaces 1C to 7 except end veins. UNS head pale brown. Female UPS brown; hyaline spots white; cilia H spaces 2-6 white except end veins. UNS brown; narrowly white before apex UNH; diffuse cell spot and discal band UNH. UNS head near white. Costal fold long.

The production of the H at vein 1B distinguishes this species from the rest of genera group D; also the presence of only 2 or 3 apical spots separate it from some of the somewhat



Plates 25-31.

Adult Hesperidae, Genera Group D. Specimens from Trinidad, and in coll. MJWC except as stated. All specimens shown UPS. 25, *Nascus paullinae* ♂, Parrylands, 13.xi.1980, MJWC; 26, *Nascus paullinae* ♀, Trinidad (BMNH); 27 *Cephise cephise cephise* ♂, Ecuador (BMNH); 28, *Cephise cephise cephise* ♀, Ecuador (BMNH); 29 *Celaenorrhinus eligius* ♂, Mt. Tabor, 25.i.1981, MJWC; 30, *Celaenorrhinus eligius eligius* ♀, Maracas Valley, 10.iii.1982, MJWC; 31, *Ocyba calana compusa* ♂, Port of Spain, F. Birch (BMNH).

similar *Discophellus* spp. and *Nascus* sp.

There is a single male of this species in the Admiral Bourke collection from Trinidad in the Hope Department, Oxford University; SAS has reared a male from Cumberland Hill (iv.1988).

Moss (1949) notes that the larva is dull red-brown and the pupa is brown, but was unable to identify the food plant which was a creeper with opposite leaves. The food plant located by SAS at Cumberland Hill is *Hiraea fagifolia* (Malpighiaceae). The larva is green with seven bands of yellow spots across the body and the head dark brown with red eye-spots. The pupa is dark brown with black eye-spots and is similar to those of *Discophellus* spp.

74. D8 *Ocyba calathana compusa* Hewitson 1868
Plate 31

This very rare subspecies is represented by just two specimens in the BMNH: a male from Trinidad and the type labelled Amazons. The other two subspecies are to be found between Mexico and Colombia. First recorded from Trinidad by Kaye (1940).

UPS an unusual bronze colour, with two brown discal bands UPF and UPH. UNS brown; discal bands of UPS repeated, but basal one very indistinct. In the male, the basal 1/2 space 1B UNF is bare of scales and matches a forward directed hair tuft in the cell UPH. Very weak costal fold. The colour, wing shape and secondary sexual characteristics make this species unique in the Trinidad fauna. Illustration in Lewis (1973, Plate 84, No. 22; ♂ ssp. *calathana* [ssp. *compusa* from Trinidad lacks the yellow margin UNH]). F ♂ 23 mm.

There are a few scattered records of this great Trinidad rarity; Kaye (1940) records a specimen collected from St. Ann's by F.W. Ulrich (the uncle of F.C. Ulrich); there is a male from Port of Spain (F. Birch) in the BMNH and MJWC has seen one captured above Fort George (iv.1982) by J. and F. Preston. There is a male and a female from Rio Claro (vii.1935) in BA, and SAS has a male he captured on *Eupatorium* flowers one mile past Las Cuevas on the North Coast Road (i.1985). Life history and food plants unknown.

75.. D11/7 *Celaenorrhinus similis bifurcus* Bell 1934
Figures 1, 4

Evan's (1952) treatment of this species is curious. He recognises four subspecies which differ quite markedly in features of the genitalia and show some overlap in range. I have little doubt that *bifurcus*, which was described from Trinidad, is a good species in its own right and when the genus is next revised it will doubtless be restored to that status. Evans records *bifurcus* from Costa Rica, Colombia, Ecuador, Trinidad and the Guyanas; it would seem to be most frequently collected in Trinidad. The original description by Bell (1934) is the first published record for the island.

UPS brown, UPF except base blacker; hyaline spots white; UPH traces of the spots which are more pronounced UNH. UNF brown; space 1B between spot and margin paler. UNH brown with scattered green-grey scales; two bands of yellow spots: basal band with two spots in space 1C at 1/2, end cell, space 7 at 3/8; distal band with two spots in space 1C at 3/4, diffuse shading in spaces 2-5, at 1/2 space 6 and at 2/3 space 7. UNS body brown; UNS forefemora pale brown; UNS head white. Close to *C. eligius* below, under which differences are considered. No costal fold; F ♂ 22 mm, ♀ 22-23 mm.

This species is to be found in sunlit patches of forest paths of northern Trinidad; all records are from low altitudes. This seems to be the commoner of the two *Celaenorrhinus* spp. in Trinidad; however, as the two are indistinguishable on the

wing we have not tried to critically assess their relative frequency and range. MJWC has specimens from the Northern Range (from the hills west of Diego Martin to the Arima-Blanchisseuse Road) and Las Lomas; dates of capture show a good scatter (i. iii. [2], iv, viii, x, xii [2]). Kendall (1976) states that in Mexico he caught a female of ssp. *similis* Hayward at 18.00 hr. and subsequently observed it active and feeding in captivity under low light intensity in the evening.

In Trinidad, *C. similis bifurcus* has been found to feed upon a species of Acanthaceae: *Justicia secunda* Vahl. A larva was collected by MJWC 23.i.1988 along the trace by the river at the upper end of Guanapo Valley. It had formed a shelter. When collected, the larva was in the final instar and about 30 mm long. The chordate head was about 4 x 4 mm rugose, black, covered with very short, erect white setae. T1 brown, darkest laterally. Rest of body with transparent cuticle with yellow dots laterally; fat bodies define a darker dorsal line; T2 to spiracle A8 a narrow white dorso-lateral line, level with, and immediately below, the spiracles a diffuse double white line; A5 with conspicuous yellow-orange subcutaneous organs each side of dorsal line. Spiracle A8 white, within a diffuse brown area; other spiracles white but inconspicuous. True legs with a brown tinge; prolegs concolorous with body. Although the living pupa was not examined, the empty case is shiny brown, smooth, 22 mm long, with the proboscis sheath protruding a further 3 mm.

Similarly, ssp. *similis* is recorded to feed upon Acanthaceae: an undetermined species in Brazil (Dias 1974) and *Holographys ehrenbergiana* Nees [in DC] in Mexico (Kendall 1976). In contrast, Kendall & Mc Guire (1975) recorded the larval food plant of subspecies *stola* Evans as *Rhynchosia longeracemosus* Mart. & Gal. (Leguminosae) in Mexico.

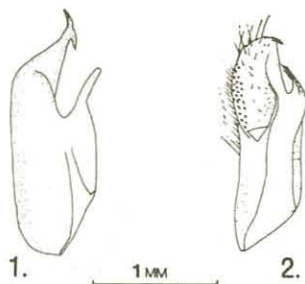
76. D11/8 *Celaenorrhinus eligius eligius* Stroll 1782
Plates 29-30, Figures 2, 3

This subspecies (TL unspecified) is recorded from Costa Rica to Peru and the Amazons. A second subspecies, *punctiger* Burmeister, which differs in genitalia is found in South Brazil and Argentina. It would seem to be as common as *C. similis bifurcus*. First Trinidad record in Kaye (1914). This is the only species of genera group D so far found in Tobago.

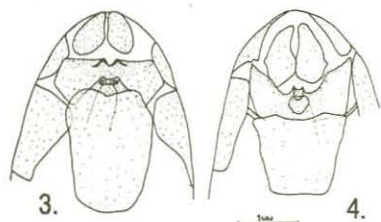
Colour as *C. similis* except as follows: UNH grey-green scales much less extensive (mostly base and spaces 1A, 1B); spots UNH a little more distinct and more yellow; on anterior margin of cell UNH at about 1/2 there is a yellow spot which in most (but not all) specimens of *C. similis* is very diffuse. Illustration in Lewis (1973, Plate 81, No. 34). F ♂ 20 mm, ♀ 22 mm.

There are no clear-cut features of the markings to distinguish *C. similis* and *C. eligius*. Apart from the differences in the markings UNH just described, most specimens can be separated by the alignment of the apical spots in spaces 6-8 F. In *C. similis* these usually form a straight line, whereas in *C. eligius* the spot in space 6 is displaced outwards slightly. The male genitalia show much better characters: the tips of the valves of *C. similis bifurcus* are produced into an inwardly directed bifurcate projection (Fig. 2) while those of *C. e. eligius* are almost rounded with a small dorsal spike (Fig. 3). The scales of the abdomen tip can be brushed away to reveal this character under a dissecting microscope or hand lens. The female genitalia also differ (Figs. 4, 5), but dissection is necessary to show this.

This species occurs in similar situations to the last, but is not as common and all MJWC's specimens are from above 300 m, extending up to 830 m on El Tucuche (viii.1979). The few



Figures 1-2. Male genitalia of *Celaenorrhinus* spp.
1, *C. similis bifurcus* (coll. Maracas Valley, Ortinola Estate, 10.iii.1982, MJWC) left valve, internal view; 2, *C. eligius eligius* (coll. Mt. Tabor, 370 m., 25.i.1981, MJWC) left valve, internal view.



Figures 3-4. Female genitalia of *Celaenorrhinus* spp.
3, *C. eligius eligius* (coll. El Tucuche, 830 m., 11.viii.1979) ventral view of terminal segments; 4, *C. similis bifurcus* (coll. Maracas Valley, Ortinola Estate, 5. xii.1978, MJWC) ventral view of terminal segments.

specimens MJWC has are from around Maracas Valley and Mt. Tabor, but it is probably more widespread.

The larval food plant is *Aphelandra pulcherrima* (Jacq.) Kunth (Acanthaceae) which is quite common along the paths of the valleys of the Northern Range where *C. eligius* occurs.

The ova are laid singly on the undersurface of leaves, well in from the edge. The very young larvae make small round leaf flap shelters in the lamina similar to those of *Pyrrhopyge* spp. (Cock 1982a). These are sometimes common, but the fact that a large proportion are empty (with no nearby larger shelters) suggests that predation causes heavy losses at this stage. One shelter was found to contain a small ?eulophid parasitoid pupa. Slightly larger larvae form a similar, but larger, shelter. At this stage the larva is about 1 cm long; the head is flattened, with the mouth parts directed forwards, strongly chordate in shape, the upper, exterior lobes almost angled; brown, with fine white setae. T1 with a dark, transverse band dorsally. Remainder of the body dark translucent green; thin white longitudinal lines, one dorso-laterally, the other through the spiracles; A5 with a pair of dorsal yellow internal marks showing through the cuticle; A8, A9 tinted orange. Approaching maturity (?penultimate instar) a 2 cm larva had the head orientated similarly, but rather than chordate its shape approached that of a heraldic shield; brown, shiny, moderately rugose. T1 pale, shiny brown. Rest of body translucent dark green-brown; a clear dorsal line and a thin white dorso-lateral line; A5 with a pair of orange internal marks; an orange area dorso-laterally on A8 at the end of the dorso-lateral line. The pupa is pale brown with dark brown transverse striations and a faint white dorso-lateral longitudinal line on abdomen; spiracles white; wing and appendage cases bright shiny brown; proboscis sheath almost reaches apex of abdomen; short blunt frontal projection. These last two characters of the pupa are in contrast to those reported by Moss (1949) and considered above for other genera of this group, such that it would seem that *Celaenorrhinus* is not very closely related. A larva of 1 cm collected above St. Benedict's on the track to Mt. Tabor on 22.xi.1981, pupated 21.xii.1981

and a crippled male adult emerged 31.xii.1981.

The descriptions presented here for the two Trinidad *Celaenorrhinus* spp. are similar, and we have not been able to compare them side by side, to clarify the apparent differences. However, the principal difference seems to be that *C. similis bifurcus* has a black head, while that of *C. e. eligius* is brown.

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