



ART. XIII. A COLLECTION OF LEPIDOPTERA
(RHOPALOCERA) FROM THE CAYMAN ISLANDS*

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FOREWORD

The collection upon which this report is based was made in 1938. The senior author prepared his first taxonomic account by the end of June, 1939, and passed the manuscript on to the junior author, who, being unable to complete it before his departure from England, took it with him to New York and later to Jamaica. The correspondence between the two authors, and eventually the manuscript, were lost in enemy action. Some time elapsed before a copy of the study was received at Oxford, then the queries raised by the junior author had to be examined and settled, involving a visit to the British Museum (Nat. Hist.) and the forwarding of the specimens to Tring.

Grateful acknowledgements are here made to the following persons who have kindly given expert advice and assistance: Dr. A. S. Corbet, of the British Museum (Nat. Hist.); Brigadier W. H. Evans, C.S.I., C.I.E., D.S.O., who is responsible for the identifications of the HesperIIDae; Mr. F. Goodson at Tring; Mr. A. Hall at South Kensington; Dr. Karl Jordan, F.R.S.; Mr. G. Talbot; and Mr. Frank E. Watson of the American Museum of Natural History.

The comprehensive account, by Marston Bates, of the butterflies of Cuba (1935, Bulletin of the Museum of Comparative Zoölogy, 78(2): 63-258) has been so useful, and it is so convenient to follow it in the present paper, that I have used the arrangement and names given by him, for easy comparison. The names for HesperIIDae are supplied by Brigadier Evans. The senior author is responsible for the identifications of the specimens; remarks by the junior author, and field notes, are prefaced by C.B.L. (G. D. H. C.).

*Results of the Oxford University Biological Expedition to the Cayman Islands of 1938.

INTRODUCTION

(C. B. L.) The three Cayman Islands are political dependencies of Jamaica. Cayman Brac lies 125 miles north-west of Jamaica and about 120 miles from the nearest point of Cuba. Little Cayman lies 5 miles to the west of Cayman Brac. Grand Cayman lies 60 miles west-south-west from Little Cayman, about 150 miles south of the Isle of Pines and 300 miles from Honduras. Cayman Brac and Little Cayman are each about 13 miles long, east to west, by $1\frac{1}{2}$ miles wide; Grand Cayman is about 23 miles long, east to west, and has a maximum width of 7 miles.

The Caymans are projecting peaks of a submarine range of mountains continuous with the Sierra Maestra Range of Cuba. The geological formation of the islands is, of course, limestone, but it is interesting to note that it is of two ages. The central portions of each island are Oligocene and Miocene, while the coastal formation is recent calcareous sand and marl with a hard "beach rock" crust. Cayman Brac attains an altitude of 140 feet in the east, grading to sea level in the west. The maximum elevation of any hill on Grand Cayman and Little Cayman might be placed at 70 feet above sea level.

The Oxford University Expedition collected on Grand Cayman from April 17 to August 27, 1938. Three members, including the entomologists, also visited the other islands, remaining on Cayman Brac from May 18 to 28, and on Little Cayman from May 28 to June 10.

Until this expedition visited the Caymans, the natural history of the islands had been largely neglected and only the birds had been studied to any extent. Ornithologists and other visitors have no doubt collected a few butterflies but this is undoubtedly the first butterfly collection of any size.

The junior author believes that the collection covered in this report is fairly complete for the Islands. There will in all probability prove to be several additional species which fly during the winter months only. *Phoebis agarithe* has been authoritatively reported from Grand Cayman, but it was definitely not seen by the Expedition members. Some of the large "whites," seen flying high over Georgetown in April, may have been *Pieris amaryllis* for they seemed very large for *P. phileta*.

The junior author again visited Cayman Brac for the first week of April, 1940, and at that time saw a battered specimen of an undetermined species of *Kricogonia*. Residents reported them to be very seasonal and occasionally appearing in great numbers. At the same time, *Papilio andraemon*, abundant at the end of May 1938, was not seen at all, certainly suggesting seasonal occurrence.

PAPILIONIDAE

Papilio polydamas polydamas Linnaeus

Grand Cayman: 3 males, 3 females.

The Cayman examples resemble specimens from the mainland, as Bates found to be the case with Cuban specimens; the Jamaican form, *polydamas jamaicensis* R. & J., is a distinct subspecies.

(C. B. L.) The species, found only on Grand Cayman, did not appear until early June and was at no time common. It apparently is not widely distributed over the island as it was never seen outside the Georgetown area. A strong flier, the butterfly was usually seen above the bush. No early stages were discovered.

Papilio aristodemus temenes Godart

Little Cayman: 1 male, 3 females.

The Cuban race, previously known only from Cuba.

(C.B.L.) Our collection of butterflies from Little Cayman was small in number of specimens, but I think it contains representatives of most of the butterfly fauna. Butterflies were very abundant, perhaps more so than on any of the other Caymans, but curiously, however, they stayed more under the dense bush on this island, instead of along the paths, and could rarely be netted. *P. aristodemus temenes* was one of the less common species which fortunately did frequent the paths. On the wing it was easily distinguished from the abundant *andraemon* by being larger, a slower and less erratic flier, and by showing a larger and slightly darker expanse of yellow beneath. The species was not observed on the low hills or in the eastern half of the island although, it must be admitted, these sections were poorly explored owing to the virtually impenetrable bush.

No early stages were found.

Papilio andraemon tailori Rothschild and Jordan

Grand Cayman: 16 males, 11 females.

The yellow spot in area 7 of fore wing short, and deeply incised externally, as in the type specimen.

Four specimens approach to a degree the Bahaman form, *bonhotei* Sharpe, in which the fore wing bears a submarginal series of more or less lunular spots. The specimen most nearly approaching *bonhotei* has curvilinear markings from areas 1 b to 7; the specimen least like *bonhotei*

has these markings faintly shown in areas 1 b to 3 only. All four specimens come from Georgetown.

(C.B.L.) This butterfly is found in all parts of Grand Cayman where there is *Citrus*. While abundant in the Georgetown area, it is uncommon elsewhere and none was seen in the interior or at the eastern end of the island.

Early stages were commonly found on *Citrus* of all kinds. Birds take a heavy toll of the larvae and, of the many under observation, none reached the chrysalid stage. Owing to the fact that we were usually in the field and only at our headquarters in Georgetown for a few days at a time, breeding in captivity was not attempted. Larvae were photographed however, and chrysalids preserved.

Individuals from around Georgetown were noticeably very large. Specimens from other and drier areas were much smaller. These insects are strong fliers but pause frequently and are not very difficult to catch. The species was flying throughout the four and one-half months of our sojourn.

***Papilio andraemon andraemon* (Hübner)**

Little Cayman: 4 males, 5 females; Cayman Brac: 4 males, 8 females.

These specimens are all small, some exceptionally small, but are of the Cuban race in which the spot in area 7 of the fore wing is much longer than broad and externally truncate or feebly sinuate. In the majority of the specimens, the black mark forming the proximal boundary of the blue lunule in area 4, on the underside of the hind wing, is a narrow transverse bar; but in three specimens it is quite lunular in shape, as in many Cuban specimens. Many specimens have the black mark on the disco-cellular vein of the hind wing broader in proportion than in others.

(C.B.L.) When we visited the Lesser Caymans, during the latter part of May and early June, this species was very abundant, in parts of both islands. Our series is rather poor because these butterflies stayed in or over the dense bush, and rarely came into the open. On Cayman Brac the species was particularly abundant beneath the bluff on the north coast, but scarce in the interior or on the south coast. Here again the extent of the food plant probably determined the abundance of the butterfly in any particular part of the islands. On Little Cayman, *andraemon* was abundant in the western half of the island and not observed in the east.

I believe that Lesser Cayman butterflies differ subspecially from the

Cuban type in as much as the band across the fore wing is narrower and the pale areas are lighter and purer yellow than in the Cuban specimens which have a slight orange tinge. The length of the tails certainly varies, but in many they are extremely long and only slightly spatulate.* One specimen shows the curvilinear markings of *bonhotei*.

It may be of interest to note that no specimens of the species were to be seen when the junior author visited Cayman Brac for a week, early in April 1940. This may indicate a definite seasonal occurrence of the species, probably correlated with the rains.

PIERIDAE

Pieris phileta phileta Fabricius

Grand Cayman: 41 males, 20 females; Little Cayman: 3 males, 1 female; Cayman Brac: 21 males, 8 females.

In the majority of the specimens the black, bordering the apical part of the fore wing, shows a dentate pattern at the edge, but in a few specimens the black border is narrow and only faintly indicated.

(C.B.L.) This species presented some very interesting aspects which our limited time did not permit to be studied. It was found on all three of the Cayman Islands but was less abundant on Little Cayman.

On Cayman Brac it was found in swarms, particularly on the bluff near the eastern end. It appears that the swarms may form nearly anywhere, however, and at almost any time of year. During the junior author's

*Specimens from the Lesser Caymans selected for greatest perfection were sent to Dr. Jordan, for comparison with the Cuban specimens at Tring, to test Mr. Lewis's suggestion of sub-species difference. He kindly replied that they show "a shifting of characters, perhaps the beginnings of sub-specific separation. . . In the Tring series of some sixty Cuban specimens, there are paler and darker specimens, one of which is as pale as the Cayman Brac male sent." This male, on the underside shows "a larger black patch at the apex of the cell of the forewing than the Cuban males, and the tawny patch on the hindwing is shorter": these characters are not so in other specimens from Little Cayman. Dr. Jordan found no difference in the width of the yellow band on the forewing of the Cayman Brac male. Regarding the females "the Lesser Cayman specimens show nothing by which they could be recognized with any degree of certainty: nevertheless, on an average the yellow band is narrower than in Cuba and the tawny patch on the underside of the hindwing shorter. In none of the Cuban females (over 30) are the narrow sub-marginal spots on the upperside of the forewing as distinct as in one of the specimens from Little Cayman." The latter, however, is exceptional in this respect: these spots are only present in two other specimens.

visit to Cayman Brac, in April 1940, he found them in the forest about half-way across the island opposite Stake Bay, and other swarms near the middle of the south coast. The butterflies congregated about an hour before sunset in the more open places and then took until dusk to get settled for the night. In the forest the butterflies commenced settling in the middle of the afternoon. They usually settled on *Croton lineare* Jacq., known locally as "Rosemary," and occasionally on *Pisoma discolor* Spreng., the "Wild-Cabbage tree."

From the day of our arrival in Georgetown, Grand Cayman, April 17, 1938, occasional specimens were seen flying very rapidly, and usually high, above the bush, but it was over a month before the first was caught. During August the species occurred in swarms at North Side. The butterflies remained close to the coast, not over a quarter-mile inland. The species was so abundant that there was scarcely room for them always to settle on their favourite plants, which again seemed to be "Rosemary." It was interesting to note that during the day all the butterflies which passed our camp proceeded in an east to west course. The steady migration began each morning at about 7:30, and continued until about 2 P.M. During the peak of the flight, between 10 and 10:30 A.M., an approximation was made of the number which passed our door, between the house and a clump of trees about 40 yards away. Our estimate, made in consultation, was 300 per minute; the band of migrating butterflies was about 300 yards in width. The speed of flight slackened after 11 A.M., and the numbers gradually became reduced; toward 2 P.M., the butterflies began to fly in small circles. Curiously we never saw the butterflies, which had proceeded so numerous and rapidly, returning, nor were they seen leaving the island. The migration was observed day after day, but the species was never found to be abundant in the west. It would seem that unobserved by us, they must have circled back at some point.

Larvae were abundant on *Croton lineare* but they probably feed on other plants as well.

***Appias drusilla peregrina* Röber**

Little Cayman: 2 males, 2 females; Cayman Brac: 3 males, 3 females.

The very fine, black border on the fore wing comes abruptly to an end at vein 3. The males show no tint of yellow above, but the base of the hind wing of the female is strongly tinted with yellow above.

Below, in three of the males, there is a yellowish tinge at the base of the fore wing; in two others it is very faintly shown. The costal margin of

the hind wing is faintly yellow in both sexes. This identification is due to the kindness of Mr. A. Hall. Bates (p. 118) seems doubtful of the occurrence of this butterfly on Cuba.

(C.B.L.) A few specimens of this rather delicate butterfly were found near the old phosphate working at the western end of Cayman Brac. On Little Cayman the species was taken near South Town in the sandy waste-land. None of the specimens was really fresh or in good condition. The butterfly was observed to be a weak flier and was never seen to rise many feet above the ground; flights were short. Weakness of flight probably accounts for the large percentage of lizard-marked wings.

***Eurema elathea* (Cramer)**

Grand Cayman: 26 males, 22 females.

Mr. A. Hall considered these to be of the wet-season form. Underside of the hind wing white in males, yellowish in females, with a slight, irregular and ill-marked, brownish band across the middle in a few cases. Apices of fore wings in males yellow beneath, in females yellow extends over whole of anterior half of wing; black bar along inner margin of fore wing in male well-developed in every case and black at its base. In all males, the black outer border of the fore wing extends to the torial angle, in some females it ends at vein 2; there is every grade of transition in the females to the pattern of the male.

(C.B.L.) A butterfly of the low bush and grasslands of Grand Cayman, not found in the forested interior of the island. It flutters slowly along through the bush and grass near the ground and is easily caught once it is in the open.

***Eurema messalina messalina* (Fabricius)**

Grand Cayman: 7 males, 12 females.

Bates commented on the "astonishing variation in size, the length of the forewing varying from 10 to 18 mm. in our series": the sexes are not stated. The same variation is noticeable in the Cayman series: the smallest is a male with length of fore wing, from root to end of vein 6, measuring 12 mm.; the largest male has a measurement of 17 mm., and the largest female, 18 mm. The colouration of the under surface of the male is variable: in the specimen in which the pinkish blotch at the angle of the hind wing is most developed, it falls very little short of the degree to which it is present in the least strongly-marked female; the black sub-

apical mark of the fore wing shows a similar relationship, and the pink of the apex in that female is absent, as in the males.

(C.B.L.) This butterfly, like *elathea*, flies close to the ground, but remains even more in the bushy (but not forest) areas, rarely coming into the open.

Eurema nicippe (Cramer)

Grand Cayman: 3 females; Cayman Brac: 6 males, 1 female.

(C.B.L.) This species, which ranges widely over Middle America, did not appear on Grand Cayman until June and then it was never abundant and was observed only in the Georgetown area. On Cayman Brac it was also limited in its distribution and only found in the eastern part of the north coast.

Eurema lisa (Boisduval and Leconte)

Grand Cayman: 26 males, 16 females.

A specimen from Old Man Bay is extremely small, and abnormal in appearance.

This species, widely distributed over North and Middle America, was very common in all open parts of Grand Cayman. It seems rather remarkable that it did not turn up on the Lesser Caymans.

Phoebis sennae sennae (Linnaeus)

Grand Cayman: 22 males, 19 females; Cayman Brac: 4 males, 2 females.

The females show much variation in colour, ranging from a yellow green, little darker than the male, to a dull pinkish orange.

(C.B.L.) A common species in open parts of each island but not always easily caught. No specimens were obtained on Little Cayman although several were seen.

Phoebis neleis (Boisduval and Leconte)

Grand Cayman: 1 male.

This species has, according to Bates, not previously been recorded from anywhere else but Cuba; Talbot (Lep. Cat. 23:544) gives its known distribution as "Cuba, Mexico, Guatemala, ? Porto Rico."

(C.B.L.) The single specimen, a fine fresh male, was taken by Mr.

Thompson. It was the only example seen as far as we know, although the species could easily have been mistaken for *sennae* when on the wing.

DANAIDAE

Danaus plexippus plexippus (Linnaeus)

Grand Cayman: 5 males; Cayman Brac: 3 males, 2 females.

The variation in the tint of the two spots on the fore wing, just beyond the end of the cell, is of interest. Among the five Grand Cayman specimens, taken on the same day at one locality, these spots are brown in two cases, in one of which they are almost lost in the black which has encroached upon them in both specimens; another has these spots large and pale brown; in another they are pale brown; in the remaining specimen they are white. In the Cayman Brac specimens these spots are pure white in the two females, pale brown in two males, and brown in one male. The last mentioned specimen also has the subapical row of spots in areas 4-5-6 brown. The character of the apical brown in areas 4, 5 and 6 of the fore wing agrees with that of Cuban specimens in the British Museum. Mr. G. Talbot, who is revising the Danaidae in the British Museum, identifies the Cayman specimens as *menippe megalippe* Hubn.*

(C.B.L.) The species did not appear on Grand Cayman until June. It

*Austin Clark's "Notes on some North and Middle American Danaid butterflies (Proc. U. S. Nat. Mus., vol. 90, no. 3118, 1941)" appeared after the senior author had completed his taxonomic study. Applying the sub-specific classification, as set out in Clark's paper, to the six specimens from the Cayman Islands which have been retained in the Oxford Museum, Professor Carpenter writes as follows:

"Four males (Cayman Brac 1; Grand Cayman 3) agree with Clark's, *p. plexippus*. A smaller, rather pale, male from Cayman Brac is almost the same as the picture of *p. tobagi*; the apex of the fore wing shows very little brown and the spots at the end of the cell have only the faintest trace of brown tint; the border spots along the middle section of the border of the hind wing are not quite so faint as in the picture of *tobagi*. Another small male from Grand Cayman is of the same rich colour as of the four *p. plexippus*, but, although it has a good orange apical patch like *plexippus*, the two spots at the end of the cell are very minute and dark orange, in this respect almost *portoricensis*, the new sub-species which Clark describes. The hind border of this specimen shows faint brown spots though they are not so 'obsolete' as in the figure of *portoricensis*, from which this specimen differs also in the larger size of the spots at the base of areas 4 and 5 of the fore wing."

It is regrettable that the other four specimens from the Cayman Islands, which had been deposited in the British Museum, were not available for re-examination.

was then very limited in its distribution and only in the meadows between Georgetown and the Great Sound. On Cayman Brac the species was observed only in the eastern region of the north coast where it was found behind the high hurricane beach.

***Danaus gilippus berenice* (Cramer)**

Grand Cayman: 14 males, 21 females; Cayman Brac: 1 male, 3 females.

There is considerable variation in size, colouration, and pattern, in this series. The largest is a male with wing expanse of 76 mm., the smallest is a male with an expanse of 50 mm.; both are from Grand Cayman. The colour varies from deep red brown to a shade matching the ground-colour of the female Cayman *plexippus* and very nearly as pale as some specimens of *jamaicensis*. The pattern varies mainly on the border of the hind wing upper surface which may be black without any spots, or have a complete admarginal row of white points and the anterior and posterior ends of an inner row.

One dark female from Grand Cayman is of the form *strigosa* Bates; another female with the same data, and also one of the females from Cayman Brac, show the grey streaks to a smaller degree. The form *strigosa*, is represented in the British Museum (Nat. Hist.) by specimens from the Bahamas and from Cuba.

One male shows a white mark, like a broad arrow-head, occupying the angle at the base of area 2 on the upper side of the fore wing; this mark is also shown on the under surface, and there is a smaller white mark at the base of area 3, and a linear mark at the base of area 1 b, at the root of vein 2. The small white mark in area 2 on the under surface is usually present, being altogether absent only in two males and five females; but the development into an arrow-head occurs in only one male and two females.

(C.B.L.) This is another species which likes open grasslands, and such conditions are mostly confined to the south-eastern part of Grand Cayman where the butterflies are abundant. No specimens were taken in the eastern regions of the island and the few taken in the interior were very dwarfed.

The species was taken in the north-east of Cayman Brac; not in the west, where it was most expected. While no specimens were taken on Little Cayman, several were seen in the savannah-land behind the high beach in the south-east, but not elsewhere.

Danaus eresimus (Cramer)

Grand Cayman: 30 males, 18 females.

The series shows considerable variation in the degree of development of white spots in areas 1 b, 2, and 3, on the upper side of the fore wing. Four males and three females show no trace; from this condition there is every stage to clear white spots in areas 3 and 2, and a faint, though possibly large, one in area 1 b. The depth of ground-colour also varies, but, when compared with the specimens in the British Museum (Nat. Hist.) (none from Cuba or the Caymans), the Cayman specimens are, on the whole, of a richer, darker, brown. This is possibly due to the recent date of capture. The breadth of the black border of the hind wing also varies considerably. Bates speaks (p. 146) of "a dark form, very like *berenice*, which agrees well with the dark Ecuadorean *erginus*," among the Cuban specimens. There are none like these in the Cayman series. The type specimen of *erginus* in the British Museum has very large and pure white spots in areas 2-3 of the fore wing; the white spots on each side of the black border to the hind wing are much more prominent than in any Cayman specimen; there is a clearer distinction between the darker basal and paler peripheral parts of the hind wing than in Cayman specimens. The pale spot at the base of area 2 on the under-surface of the fore wing, mentioned under *berenice*, is invariably represented in *eresimus*; usually faintly brown and ill-defined, in one specimen it is pure white and distinct.

(C.B.L.) Bates remarks on the resemblance to *berenice*, which, he believes, accounts for its scarcity in collections. The species was found to be more common than *berenice* on Grand Cayman, in the same situations and with *berenice*, but *eresimus* was not found on the Lesser Caymans. In spite of its wide range of variation, *eresimus* was always easily distinguished on the wing from *berenice*, the latter being much darker. No early stages were found.

NYMPHALIDAE

Heliconius charithonia charithonia (Linnaeus)

Grand Cayman: 14 males, 21 females.

This series shows an unusually high proportion of females. There is remarkably little variation except in size: the two largest, both females, having an expanse of wing of 94 and 93 mm., respectively, the smallest,

64 mm. The two large females correspond to Hall's form *punctata* (Entomologist, 1936, 69:276), with an additional yellow spot in area 3 of the fore wing, and the yellow bar in area 3 crossing vein 4 to enter the anterior part of area 3. According to Hall, this form is practically a geographical race in St. Kitts; specimens showing the same variation are in the British Museum (Nat. Hist.) from Santo Domingo, St. Thomas, and Jamaica.

(C.B.L.) Abundant in south-eastern portions of Grand Cayman and especially in the vicinity of Georgetown.

Colaenis julia cillene Cramer

Grand Cayman: 8 males, 3 females.

The black spot on the costa of the fore wing varies in development, but the specimens correspond to those designated *cillene* in the British Museum (Nat. Hist.). The Cuban specimens are termed *nudeola* by Bates but, according to Seitz's account of *nudeola*, the "ground-colour" is "dull buff" which does not accord with the Cayman specimens; the latter are of the form ascribed to *cillene* by Seitz.

(C.B.L.) This species was found to be quite local in its distribution and nowhere very common. It was one of the few species found in the interior along the forest paths. Females were definitely scarce.

Dione vanillae (Herrich-Schäffer)

Grand Cayman: 31 males, 13 females; Little Cayman: 21 males, 4 females; Cayman Brac: 13 males, 8 females.

These specimens do not seem to correspond to the form *insularis* which, according to Seitz, has the terminal border of the hind-wing "often only with some black ante-terminal arches"; in the Cayman specimens there is what Seitz calls the "chain pattern."

There is considerable variation in size, those from Little Cayman being on the whole smaller than the Grand Cayman specimens which are larger than Jamaican specimens; the Jamaican and Lesser Cayman examples are of about the same size. The largest specimen, a male from Grand Cayman, has a wing expanse of 70 mm.; the smallest, a male from Cayman Brac, 48 mm.

The large silver spot, in area 6 on the underside of the hind wing, presents some interesting features. A projection backwards into it from vein 7 occasionally traverses it completely, as far as vein 6, dividing it

into two sections. This occurs in four males from Grand Cayman and in one male and two females from Little Cayman. This feature is not shown in any of the specimens in the British Museum (general collection) from the mainland, except in peculiar aberrations from Georgia; it occurs in one female from Bermuda, two from Barbados, and one from St. Lucia. Another character is that this backward projection in mainland specimens is very markedly hooked outwards at its posterior end, which is not the case in Cayman specimens.

The black spot at the end of the cell of the fore-wing nearest the costa usually has a silver center; this is not the case in four males from Grand Cayman and one from Little Cayman, in which only a trace of silver dusting can be seen.

(C.B.L.) Abundantly found in all open sections of each island. Like several other species usually not found in the bush, this butterfly was found in numbers flying in the dense but thinly canopied bush which covers much of Little Cayman. Also, like most other species of butterflies, specimens from the vicinity of Georgetown, Grand Cayman, were very large and rich in colour, while specimens from the Lesser Caymans were small and paler in colour.

Larvae were commonly found on *Passiflora* and allied plants.

Euptoieta hegesia (Cramer)

Grand Cayman: 23 males, 10 females; Little Cayman: 9 males, 15 females; Cayman Brac: 4 males, 6 females.

The series as a whole shows a slightly more reddish tint than the series in the British Museum (Nat. Hist.), possibly due to the freshness of the specimens. The smallest specimen, a male from Cayman Brac, has a wing expanse of only 35 mm.; the largest, a female from Grand Cayman, gives a measurement of 64 mm.

(C.B.L.) Found abundantly wherever the food plant, *Turnera ulmifolia* L. is found. The plant and the butterfly were especially abundant along the south-eastern coast of Little Cayman. The wide variability of pattern and ground-colour were noticeable even in the field.

Phyciodes phaon phaon (Edwards)

Grand Cayman: 19 males, 24 females.

(C.B.L.) This species apparently breeds on *Wedelia trilobata* (L.) Hitchc., known as "Marigold," as it was always associated with this plant.

On several occasions careful search was made in an extensive clump which swarmed with the butterflies, but no early stages were found.

***Phyciodes phaon* f. *maya* Hall**

Grand Cayman: 4 males, 1 female.

These specimens were considered by Mr. A. Hall to be probably summer forms of *maya*, of which the type is a winter form.

***Precis lavinia* f. *zonalis* (Felder and Felder)**

Grand Cayman: 20 males, 17 females; Cayman Brac: 3 males, 5 females.

Transitional: Grand Cayman: 11 males, 2 females; Cayman Brac: 4 males.

***Precis lavinia* f. *genoveva* (Cramer)**

Grand Cayman: 1 male, 11 females; Little Cayman: 1 male, 1 female.

The identification of the Cayman *Precis* has been rendered easier and more interesting by the paper on "Variation in *Junonia lavinia* (Lepidoptera, Nymphalidae)," by Wm. T. M. Forbes, 1928, Journal of the New York Entomological Society, 36: 305-322. It seems that, as set out above, the majority of the Cayman specimens are of the form which Forbes (*l.c.*, p. 307) terms *zonalis* Felder, and has "commonly passed for *genoveva*."

The other form is that termed *genoveva* Cr. by Forbes (*l.c.*, p. 309) and has the characteristics of a dry-season form, with the ocelli on the under-surface greatly reduced and inconspicuous, and the general colouration more uniform.

I am unable to follow Bates in making *zonalis* and *genoveva* two different species.

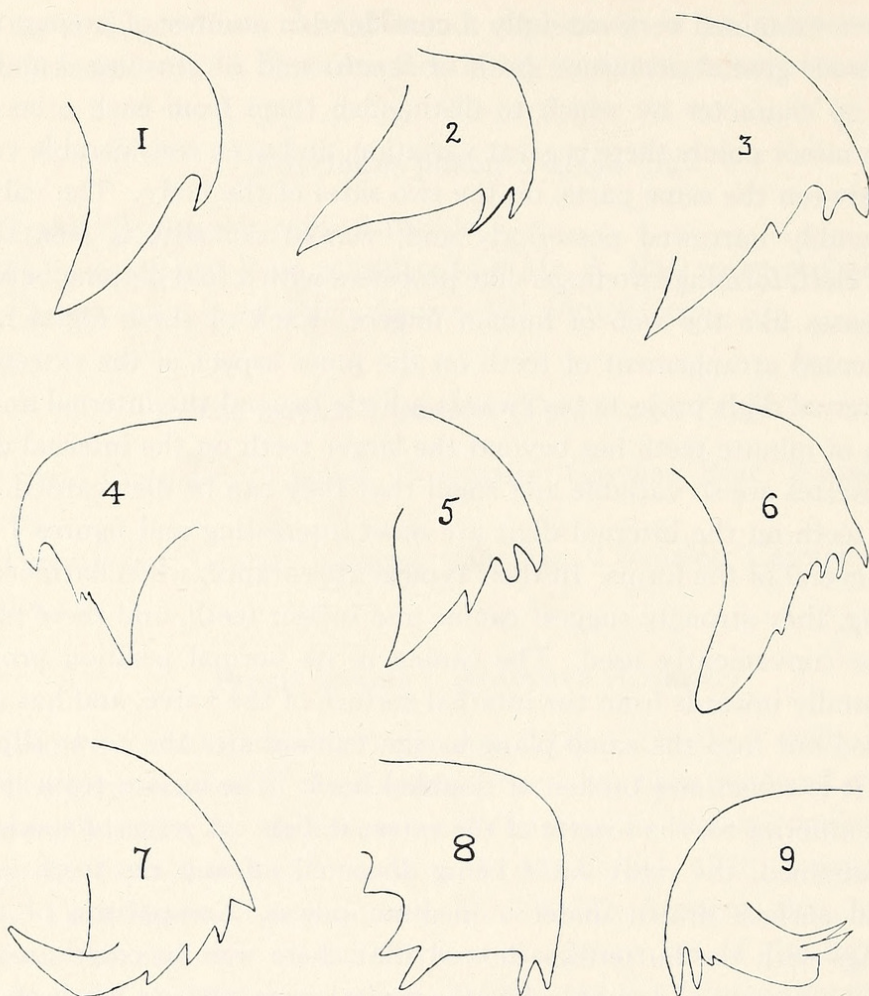
Forbes (*l.c.*, p. 305) discusses the fact that what he terms the "northern" and "central" types meet in the Greater Antilles, and that "two stocks have reached Cuba by different routes (*via* North and South America)." The Cayman series, however, differs from the Cuban in this respect, for there are none of the North American species, *coenia* Hübner. A very few specimens show a trace of the "definite red semicircle" which Forbes describes as "absolutely distinctive of this form" so that it may be said that the northern form has exerted a very slight influence.

I have examined very carefully a considerable number of preparations of the male genital armature, both of *zonalis* and of *genoveva*, but have found no character by which to distinguish them from each other. In certain minor points there is great variation, and even considerable variation between the same parts, on the two sides of the body. The valve is considerably narrowed posteriorly and, viewed dorsally, is seen to be deeply cleft, forming two finger-like processes with a fold dipping between their bases like the web of human fingers. Each of these digits has a complicated arrangement of teeth on the inner aspect of the extremity; the external digit projects backwards a little beyond the internal and its rosette of minute teeth lies beyond the larger teeth on the internal digit. The rosettes are so variable and small that they can be disregarded. The larger teeth on the internal digit are most interesting and figures 1 to 9 show several of the forms. In their typical appearance, when flattened for drawing, they strongly suggest canine and incisor teeth, and these names may be conveniently used. The canine in its normal position projects horizontally inwards from the internal surface of the valve, and has to be flattened out into the same plane as the valve under the cover slip, by which it is sometimes broken or doubled back. The incisor teeth lie on, or just anterior to, the rosette of the external digit. A series of specimens was examined, the right valve being dissected off and the teeth on its internal surface drawn under a medium power. Comparison of these drawings with the butterflies showed that there was no correlation between colouration and teeth, while the genital armature as a whole showed no appreciable variation in structure between *zonalis* and *genoveva*.

Preliminary drawings of different types having been made, second specimens of butterflies, approaching as nearly as possible to those from which the first preparations had been made, were selected for examination of their genitalia, and the results were quite unharmonious. It was even found that the teeth might be different on the two sides of the body.

A few specimens of the *zonalis* form from Jamaica, St. Kitts, Mexico and Guatemala, were examined, but came within the range of variation of the Cayman specimens, as did one from Cuba and one from Honduras, for which I am indebted to the Dept. of Entomology, British Museum (Nat. Hist.).

The variations in the teeth are shown in the figures.



EXPLANATION OF FIGURES

1. Canine and one incisor. In one specimen the incisor was divided on the right side of the body into two, equal sized, smaller teeth.
2. Canine and two incisors of equal size, the commonest type.
3. Canine and two incisors, with an accessory smaller tooth at the base of the canine.
4. Canine and one incisor, with two unequal, smaller, accessory teeth at the base of the canine. Drawing from left valve.
5. Canine and two incisors, with a large accessory of about equal size.
6. Canine and three small incisors, with a minute accessory behind the incisor and another half-way along the canine.
7. Canine (doubled back in the picture) and four incisors.
8. A very different arrangement; there are two incisors but the canine has divided into two teeth of equal, but smaller, size, and an accessory tooth has developed behind the base.
9. Three anterior and two posterior teeth. The posterior teeth, unfortunately, could not be flattened out so that the drawing is not quite comparable to the others. This is from the left valve of the specimen, of which fig. 8 shows the teeth of the right valve.

TABLE

The following are the specimens examined, assigned to the particular type of teeth enumerated above.

Type of teeth	Specimen	Locality	Pattern of underside	Condition of anterior ocellus (hind wing)
1	D (R)	Grand Cayman	<i>genoveva</i>	Small and black.
1	G (R)	" "	<i>zonalis</i>	Small and black.
1	M (L)	Mexico	<i>genoveva</i>	Fairly large; few blue scales.
1	P (R)	Jamaica	<i>zonalis</i>	Small, one-third blue.
1	*R (L)	Jamaica	<i>zonalis</i>	Small, few blue scales.
1	S (L)	Jamaica	<i>zonalis</i>	Fairly large, black.
1	B.M. (L.R.)	Mexico	Not specified.	Not specified.
2	B (R)	Grand Cayman	<i>zonalis</i>	Small, black.
2	C (R)	" "	<i>zonalis</i>	Slightly enlarged, black.
2	D (L)	" "	<i>genoveva</i>	Small and black.
2	E (R)	" "	<i>genoveva</i> trans. to <i>zonalis</i>	Small, half blue.
2	H (R)	" "	<i>zonalis</i>	Slightly enlarged, few blue scales.
2	I (R)	" "	<i>zonalis</i>	Small, black.
2	J (R)	Cayman Brac	<i>zonalis</i> , trans. to <i>genoveva</i>	Small, black.
2	M (R)	Mexico	<i>genoveva</i>	Large, few blue scales.
2	N (L.R.)	Guatemala	<i>zonalis</i>	Small, few blue scales.
2	O (R)	Jamaica	<i>zonalis</i>	Slightly enlarged, black
2	Q (L)	Jamaica	<i>zonalis</i> , trans. to <i>genoveva</i>	Small, black.
2	T (L.R.)	St. Lucia	<i>zonalis</i>	Small, black.
2	B.M. (L.R.)	Honduras	Not specified.	Not specified.
3	F (R)	Grand Cayman	<i>genoveva</i>	Large, half blue.
4	O (L)	Jamaica	<i>zonalis</i>	Slightly enlarged, black
4	†P (L)	Jamaica	<i>zonalis</i>	Small, one-third blue.
4	Q (R)	Jamaica	<i>zonalis</i> , trans. to <i>genoveva</i>	Small, black.
4	†S (R)	Jamaica	<i>zonalis</i>	Fairly large, black.
5	K (R)	Little Cayman	<i>genoveva</i> trans. to <i>zonalis</i>	Small, few blue scales.
6	D (R)	Grand Cayman	<i>genoveva</i> trans. to <i>zonalis</i>	Small, half blue.
7	L (L.R.)	Cayman Brac	<i>genoveva</i> trans. to <i>zonalis</i>	Small, black.
8	H (R)	Grand Cayman	<i>zonalis</i>	Small, black.
9	H (L)	Grand Cayman	<i>zonalis</i>	Small, black.

*This specimen had the incisor divided into two, smaller, equal teeth.

†These (two) did not show the minute second accessory on the canine.

(C.B.L.) *Precis* was found to be very interesting in the field as well as under the microscope. On Grand Cayman both *zonalis* and *genoveva* occur; *genoveva* was the only form found along the tops of the beaches and within one hundred yards of the shore; *zonalis* was never taken in this area, but was found to be the meadow and pasture form with occasional *genoveva* and transitionals in the same regions. I found it easy to distinguish the two forms by their flight; *zonalis* flew erratically and for short distances only, while *genoveva* took long, rapid, and fairly straight flights. Transitional forms were noticed to take rather short flights, and were not as erratic in their course as the more typical *zonalis*.

The situation on the Lesser Caymans seemed very remarkable. The two islands are quite similar, as far as the coastal habitats are concerned, but only *genoveva* was found on Little Cayman and only *zonalis* on Cayman Brac— islands only five miles apart.

The butterflies were definitely scarce on Little Cayman; only one pair was secured and but a few more were seen. On Cayman Brac, *Precis* was found only within 200 yards of the coast; where, according to our experience on Grand Cayman and Little Cayman, we would have expected *genoveva*, we found *zonalis*! For the most part the Brac specimens were quite typical in pattern, colour, and manner of flight.

***Anartia jatrophae jamaicensis* Möschler**

Grand Cayman: 18 males, 9 females.

(C.B.L.) On the first day of our visit to Cayman Brac, as we were landing, a much battered individual was seen. At the time, I made no attempt to capture the example thinking the species would be found as commonly as on Grand Cayman; it was the only example seen. On the latter island the species showed wide variation in colour, both of the pattern and ground.

***Victorina stelenes insularis* Holland**

Grand Cayman: 1 pair *in copula*; 2 males.

All four specimens have two well-marked spots in the cell of the forewing, agreeing with Bates' account of Cuban specimens.

Specimens of *stelenes* in the British Museum (Nat. Hist.) from Jamaica, St. Kitts, St. Domingo, and Haiti, have only one cell spot in the forewing, or even none; a specimen from Mexico is like the Cuban and Cayman specimens with two spots.

Seitz (p. 463) ignores Holland's name *insularis* and figures (pl. 95a) a form which he calls *biplagiata*: this corresponds to the Cayman specimens and it would seem that *biplagiata* is synonymous with *insularis* and must yield to it.

(C.B.L.) The specific name of this species has been misspelled by many authors and is incorrect in the British Museum (Nat. Hist.). Linnaeus probably intended *steneles* following the Greek, but the fact remains that he wrote *stelenes*. Bates and Kaye (Trans. Ent. Soc. London, 1926) are recent writers who have followed the correct nomenclature.

The species was always scarce, and, unlike those of the Bath region of Jamaica, was difficult to catch on Grand Cayman. Our four specimens, all in poor condition, are the fruits of four and a half months of trying to obtain a series of the species. None was ever seen outside of Georgetown where they were occasionally observed throughout our stay, from April to September.

Representatives of *stelenes* in Jamaica are fairly consistent in pattern and colour but these Cayman specimens varied greatly. One of the pair, taken May 18, seems to be almost exactly like Fruhstorfer's type of *pallida* from Central America, and of a pattern and colour exhibited by many specimens from Nicaragua and Panama in the British Museum collection. The other specimen resembles those of the Cuban series.

Anaea verticordia echemus (Doubleday, Westwood, and Hewitson)

Grand Cayman: 30 males, 15 females; Little Cayman: 5 males, 2 females; Cayman Brac: 1 male, 2 females.

The type of *echemus* in the British Museum (Nat. Hist.) is from Honduras and shows a trace of a white spot on the hind wing in area 4 at the proximal end of the black spot. There is, among the Cayman series, a difference in the number of these small white spots; there may be one (in area 3), two (in areas 2 and 3), three (in areas 1, 2, 3) or four (in areas 1, 2, 3, 4). The series in the British Museum (Nat. Hist.) from Cuba shows the spot in area 4 in only one female out of twenty, and in none of the twenty-two males. On the other hand, in the British Museum (Nat. Hist.) series from the Bahamas all three males and four of the six females have the spot in area 4, and two of the females also have one in area 5; in one of these females there is another spot in area 6.

The Honduras specimens in the British Museum (Nat. Hist.) do not have the white spots as well developed: the type specimen is the only

female out of five which has spot 4 even faintly represented, though it is shown in one of the three males. In the development of the white spots the Cayman series agrees more closely with the specimens in the British Museum (Nat. Hist.) from the Bahamas than with those from Cuba; the fourth spot is present in ten out of fifty-five specimens.

(C.B.L.) A species of the bush and forest, and probably the most uniformly distributed butterfly on the islands. It may be expected almost anywhere except in open meadows and along the beaches.

Activity began at sunrise when I observed the butterfly flying freely in the open above the bush. As the sun rose and the light and heat became more intense, these butterflies retreated beneath the bush, flitting about just above the ground. In areas where the foliage was fairly high, the insects remained just below the canopy, frequently resting on the trunk or main branches of the trees. Activity is apparently suspended entirely from about 11 A.M. until 3 P.M.

The butterflies' habit of alighting on trees, makes them easy prey for the lizards (*Anolis conspersus* on Grand Cayman, *Anolis sagrei* and *Anolis maynardi* on Little Cayman, and *Anolis luteosignifer* on Cayman Brac), so abundant on the Caymans.

One rarely catches a specimen that does not bear evidence of attacks by lizards. Thus most of our specimens had tears and nicks in the secondaries.

LYCAENIDAE

Strymon martialis (Herrich-Schäffer)

Little Cayman: 1 male, 1 female.

(C.B.L.) This pair was taken fluttering about the low vegetation at the top of the beach near South Town, Little Cayman. No others were seen although little time was spent looking for them.

Strymon acis (Drury)

Grand Cayman: 6 males, 3 females; Little Cayman: 1 female; Cayman Brac: 13 males, 1 female.

The specimens from Grand Cayman differ appreciably from those from Little Cayman and Cayman Brac by being much more distinctly marked. The anal lobe is more strongly orange, and there is a triangular orange patch on the hind wing separated from the base of the shorter tail by a round black spot. This orange patch is absent from specimens from

Little Cayman and Cayman Brac except for a trace in one from the latter locality. Dr. K. Jordan kindly reported on species from the Caymans, sent him for comparison, as the genus is being closely studied at Tring.

"The name is evidently *acis* Drury 1770, said to have been received by Drury from New York, where it does not occur. In most specimens the hind wing upperside bears a red submarginal spot in front of the long tail: sometimes this spot is reduced to a few scales not entirely absent from any of the specimens I have here. In your two pairs from Cayman Brac and Little Cayman the spot is reduced, in those from Grand Cayman fairly large. In our series from various places in Cuba there is only one male with the spot so much reduced, in the other males it is small or fairly distinct to the naked eye. In our single female from Grand Cayman the spot is as conspicuous as in your females from that island. The description of *mars* F. 1777 fits the species. Fabricius identifies this in 1793 with Drury's *acis* and with Cramer's fig. 175 (Cape of Good Hope!); in both figures the orange patch on the underside of the hind wing is exaggerated; at least we have no female in which it is as large as in the figures."

Regarding the red spot on the upperside of the hind wing it may be said that all of the specimens from Grand Cayman show a good development, whereas not one of those from Lesser Cayman shows so much: indeed in only two (females) from Cayman Brac is there an approach to a definite spot, and in most there are only a few scales discernible with a lens, or even none.

(C.B.L.) A species reported from Florida, Cuba, Jamaica, and Dominica as uncommon. It is interesting to note that examples from Florida exhibit the same orange triangular patch on the hind wing as shown by those from Grand Cayman. Another case of a mainland, rather than an Antillean form, on Grand Cayman.

***Strymon columella* (Fabricius)**

Grand Cayman: 8 males, 12 females.

(C.B.L.) A species always found at the tops of beaches where *Suriana*, known as "Bay cedar" or "Juniper" is found. The plant and butterfly are common on all shores of Grand Cayman except those of the Great Sound. In all probability the species will also be found on both of the Lesser Caymans where the food plant occurs.

Hemiargus filenus (Poey)

Grand Cayman: 18 males, 4 females.

Dr. A. S. Corbet of the British Museum has kindly examined Cayman specimens and sent the following note: "The [form of] *Hemiargus* from Cayman is named *hanno* Stoll in the British Museum, but I cannot see that Stoll's figure can be applied to this species or that named *filenus* Poey in the Museum collection. Nor does *antibubastus* Hbn. represent the same species. As far as I can trace it, the oldest name for the Cayman specimens is *filenus* Poey, with *pseudoptilates* Bsdv. & Lec. as a synonym or race. From this it follows that the name *filenus* Poey is incorrectly applied in the Museum collection. Again, the male genitalia of the Cayman specimens are distinct from those of *catalina* and *ammon*." According to Bates, West Indian specimens are *filenus*.

(C.B.L.) The species was found in open areas all around the coast of Grand Cayman.

Hemiargus ammon (Lucas)

Grand Cayman: 32 males, 21 females.

(C.B.L.) Abundantly found with *H. filenus* in all open areas around the coast of Grand Cayman.

Hemiargus catalina (Fabricius)

Little Cayman: 3 males; Cayman Brac: 1 male, 1 female.

Dr. A. S. Corbet kindly examined these specimens and made the following remarks about the species: "The type of *catalina* Fab. is probably lost and the original description can be applied to the specimens thus named in the British Museum. The original description of *ammon* Lucas is accompanied by a figure which clearly represents the species so named in the British Museum. These two species are quite distinct, the males differing in genitalia and in androconia."

The female from Cayman Brac is a very dark specimen with the blue on the upper surface more restricted than in the *ammon* females.

(C.B.L.) Specimens in the British Museum (Nat. Hist.) are from Nevis, Haiti, and St. Domingo.

Brephidium exilis thompsoni subsp. nov.

Grand Cayman: 15 males, 17 females.

The identification of this butterfly has been difficult, in the absence of an authoritatively named series of good specimens in England. Neither

the British Museum (Nat. Hist.) in Cromwell Road, nor its annex at Tring, enabled Mr. Lewis and myself to decide upon the specimens of which he and Mr. Thompson obtained a good series at a single locality. The original descriptions of *isophthalma* by Herrich-Schäffer (1862) and of *exilis* by Boisduval (1852) were too indefinite to allow a decision, especially as *exilis*, the species to which the Cayman examples seemed to belong, has apparently not been recorded off the American mainland. Mr. Frank E. Watson, of the American Museum of Natural History, New York, very kindly sent typical specimens of both species, which showed that the Cayman series belongs to *exilis* but is sufficiently different to be described as a new geographical race. I have much pleasure in naming it after Mr. G. H. Thompson who was responsible for its discovery. Mr. Watson kindly indicated the following characteristics about the specimens which he sent.

- A. The small white spot on the primaries at the outer angle in *exilis*, due to the interruption of the white fringes, holds in most individuals but occasionally fails in brown specimens; when it fails the other differences will easily separate the species.
- B. In *isophthalma* the wings above and below, as well as the fringes, are dull uniform brown.
- C. The primaries in *exilis* have the underside with the inner half grey and the outer half brown.

Description: Males differ from *exilis exilis* by the much darker tint of the upper surface of the outer half of each wing which is dull black. There is a difference on the under surface in the series of paired white submarginal linear markings which occur in each interspace on the fore wing, parallel with the outer (hind) margin. In *thompsoni* these paired markings are equally conspicuous in each of the two rows, and obviously represent the accentuated proximal and distal borders of six internervular spots; in *e. exilis*, however, the proximal marking is much less developed, so that in the four areas in the middle of the series it is scarcely visible, and even at the anterior and posterior ends of the series it is less marked than in *e. thompsoni*. Consequently in *e. thompsoni* there is an apparently wider area of the brown ground-colour free from spots until examined very closely.

Holotype: ♂, Grand Cayman, English Sound, off Great Sound; June 23, 1938; C. B. Lewis and G. H. Thompson; 14 paratypes, with data previously given.

The females show the same characters beneath, but are not quite so black on the upper surfaces of the wings.

Allotype: ♀, same data as for holotype; 16 paratypes with data previously given. Types will be placed in the British Museum (Nat. Hist.), paratypes at Oxford, the American Museum of Natural History, and the Carnegie Museum.

(C.B.L.) The tiny butterfly is indeed limited in its distribution for it was not found outside of an area of about fifty square yards, on the edge of a secluded lagoon, known as English Sound, lying to the east of and off of the Great Sound. The vegetation of this area is low, but not unusual, and is typical of such situations which are numerous on the island. No early stages were found.

***Leptotes theonus* (Lucas)**

Grand Cayman: 4 males, 2 females; Little Cayman: 1 female; Cayman Brac: 1 male, 3 females.

(C.B.L.) This species was never very common but was occasionally taken in open areas along with the species of *Hemiargus*.

HESPERIIDAE

The names given are according to Brigadier W. H. Evans, who has kindly identified the specimens and has written the following comments: "The species of the genera *Urbanus*, *Hylephila*, and *Cymaenes*, represented in the collection, occur unchanged commonly throughout the West Indies as does *Panoquina sylvicola*. The incidence of the two forms of the latter is of interest. The *Phocides* form occurs only in Cuba, not very commonly; in a slightly modified form rarely in the Bahamas, and in another slightly modified form in Florida more commonly; the originally described form, *pigmalion*, looking very different, occurs throughout Central and South America. The occurrence of *Panoquina panoquinoides* is remarkable and of very great interest; the members of any future expedition should try to discover the food plant and early stages."

***Phocides pigmalion batabano* (Lucas)**

Little Cayman: 4 males.

One of the specimens, captured on May 31, has an extremely clear imprint of a lizard's jaw on the right forewing, near the apex, from the costa backwards.

(C.B.L.) Our field notes for May 31, read as follows: "The trip across Salt Rocks Hill was a hard battle through the bush. We were probably the first to cross that section since the days of the pirates. Directly at the top of the hill we caught three specimens of an Hesperid new to us. Two were quite perfect but unfortunately became rubbed in our fight through the bush going down."

Only seven or eight examples of this species were seen during our stay on Little Cayman; they were all in the west. Capturing this form is a real task as they fly above the trees and alight in the foliage at considerable heights. It is really amazing to me that a lizard was ever able to get near enough to make an imprint on the wing of one of the specimens. The lizard responsible was probably *Anolis maynardi*.

Urbanus proteus proteoides Plötz

Grand Cayman: 8 males, 22 females; Cayman Brac: 2 females.

One female from Grand Cayman has the tails and hind margins cleanly shorn from the hind wings symmetrically.

(C.B.L.) Many other specimens seen and caught show these evidences of attacks, presumably by lizards. Common in open areas in the north, south, and west, of Grand Cayman, but curiously it was not taken in the east; it probably was overlooked. While no specimens were collected or seen on Little Cayman, I expect that it occurs.

Hylephila phylaeus phylaeus (Drury)

Grand Cayman: 9 males, 6 females; Cayman Brac: 2 males, 1 female.

(C.B.L.) Found in grasslands and frequently at the top of beaches in dry clumps of vegetation.

Cybaeus tripuncta tripuncta (Herrich-Schäffer)

Grand Cayman: 22 males, 14 females.

Panoquina panoquinoides panoquinoides (Skinner)

Grand Cayman: 4 males, 7 females; Little Cayman: 1 female; Cayman Brac: 1 male, 4 females.

Brigadier Evans remarked upon this insect as follows: "This is a rare insect; it was described from Florida, and the British Museum has only seven males from there. The Cayman specimens seem typical. Godman

and Salvin subsequently described *eugeon* from Grenada as a good subspecies. It is curious that *panoquinoides* does not seem to occur in Jamaica." Bates mentions two specimens from Pinar del Rio, Cuba.

(C.B.L.) The species was found only within a hundred yards of the sea in the scrubby vegetation growing at the top of and behind the beaches of the north and east coasts of Grand Cayman. On the Lesser Caymans it was taken in pasture lands much further from the sea.

***Panoquina sylvicola woodruffi* Watson**

Grand Cayman: 7 males, 16 females.

Evans wrote: "This form has the underside of the hind wing, plain brown in the female, and the spots in both sexes have no pale blue tinge." Watson described this form in 1937 (Am. Mus. Nov.) from Jamaican material.

***Panoquina sylvicola sylvicola* (Herrich-Schäffer)**

Grand Cayman: 1 male, 1 female.

Evans wrote of this form: "The costal half of the hind wing on the underside is shining purple-blue and the white spots are of a distinctly bluish tinge. This is the prevalent Cuban form and *P. s. woodruffi*, the Jamaican."

DISCUSSION

Of the forty-one forms and species listed in this paper, all but six occur on Grand Cayman, of these six all occur on Little Cayman and three on Cayman Brac; three are found only on Little Cayman, none are peculiar to Cayman Brac; six species were taken on Grand Cayman and Cayman Brac, but not on Little Cayman.

(C.B.L.) A few affinities are of interest: *Papilio polydamas*, *Phyciodes phaon*, and the new form of *Brephidium exilis*, all found on Grand Cayman, seem to be mainland forms; also *Dione vanillae* and *Hemiargus filenus*, found on all three islands. *Victorina stelenes* is represented on Grand Cayman by forms resembling mainland and Cuban examples. *Papilio aristodemus temenes*, from Little Cayman, *Phoebis neleis*, and *Panoquina sylvicola sylvicola*, from Grand Cayman, are Cuban species. *Panoquina sylvicola woodruffi* is a Jamaican form. *Papilio andraemon* and *Anaea verticordia echemus* tend to resemble Bahaman material.



Carpenter, G. D. Hale and Lewis, C. B. 1943. "A collection of Lepidoptera (Rhopalocera) from the Cayman Islands." *Annals of the Carnegie Museum* 29, 371–396. <https://doi.org/10.5962/p.215160>.

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