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## 7. Family: Nymphalidae.

This gigantic family — even understood in the narrower sense — embraces approximately 2000 American forms, which in spite of apparently great superficial differences yet form a very natural division of the butterflies. Its delimitation has been worked out on very varying principles. Sometimes they have been grouped together with the Satyrids and Danaids as a subfamily, on account of their agreement with these in the structure of the legs, sometimes the *Acraeinae*, *Apatura* and the genus *Heliconius*, the *Biblinae* and others have been eliminated from them. After the comprehensive works of DOUBLEDAY and WESTWOOD C. FELDER was the first who made the classification of the Nymphalids a special study. But he was too much prepossessed in favour of HERRICH-SCHÄFFER's exaggerated estimate of neuration to be able to establish a purely natural system. Although his publication appeared almost at the same time as HERRICH-SCHÄFFER's "Revision der Tagfalter", and apparently independently, yet he was bound, with only prepared butterflies before him, to come to pretty similar results, and he classified essentially according to the number and the origin of the subcostal veins and the presence or absence of a discocellular vein, although he himself pointed out the worthlessness of these two characters. Evidently neither author knew the function and influence of the discocellular vein and they were also unaware that a discocellular which we fail to detect with the aid of our rough appliances is nevertheless frequently present though in a greatly reduced form, or is present in the pupa before emergence. When the wing-stratum is sufficiently firm the discocellular is not only unnecessary but it is even detrimental to the flight, as it makes independent movements of the costal and inner-marginal parts of the wing quite impossible. A slight bend of the wings, particularly of the hindwing, allows the butterfly to steer its course much more conveniently, hence it is especially the more highly developed species that are without a discocellular vein and consequently also even when flying at a great speed never give the same impression of precipitation, haste or exertion as when the inflexibility of the costal and median systems precludes any sailing pose of the wings. Compare the elegant motion of an *Apatura* with the unsteady, jerky flight of a pursued *Charaxes* or a *Prepona*, which in spite of their great strength give almost the impression of moths dashing about and with a far greater expenditure of energy only reach the elevations which an *Apatura* attains without visible effort by, an imperceptible bend of the costa and with scarcely appreciable motion of the wings. Moths without a discocellular, e. g. *Actias artemis*, I have seen ascend without trouble in a straight line vertically skywards, whilst Satyrids, which disappear in the blue heavens, rise in corkscrew-shaped gyrations and *Papilio* has to raise itself laboriously with continued flutterings. The arrangement of the subcostal veins is also inadequate to support a classification system, and thus it came about that FELDER included *Eueides* in his Nymphalids but omitted *Heliconius*, thus placing these quite nearly allied genera in two separate families. HERRICH-SCHÄFFER, however, included *Morpho* in his more restricted Nymphalids.

In the meantime later attempts at taxonomy received considerable assistance from the knowledge of the formerly almost entirely unknown larvae. F. MOORE and L. DE NICÉVILLE bestowed special attention on the Asiatic, H. BURMEISTER and W. MÜLLER on the American butterfly-larvae and thus provided a really solid foundation for a new system. E. REUTER called attention to the systematic utility of more exact and more specialized anatomical investigations and E. HAASE harmonized the results of biological research with the conclusions previously arrived at in another way and thus correctly separated off for the first time, under the name "*Acraeomorpha*", the section here accepted by us, in contradistinction to the *Satyromorpha* and *Danaomorpha*. He divided the group into 3 subdivisions, which he named *Heliconini*, *Acraeini* and *Nymphalini*.

These 3 groups are unmistakably somewhat further removed from one another than any 2 neighbouring "subfamilies" out of the number of those into which HAASE again split up the *Nymphalini*. Hence we might more accurately classify HAASE's 3 groups as subfamilies and the further subdivisions as tribes, so that we obtain the following scheme for the American *Nymphalidae*:

- |                               |                          |
|-------------------------------|--------------------------|
| I. <i>Acraeinae</i> .         |                          |
| II. <i>Heliconiinae</i> .     |                          |
| III. <i>Nymphalinae</i> s. s. |                          |
| A. <i>Clothildidi</i> .       | G. <i>Eunicidi</i> .     |
| B. <i>Argynnidi</i> .         | H. <i>Catagrammidi</i> . |
| C. <i>Vanessidi</i> .         | I. <i>Linenitidi</i> .   |
| D. <i>Biblid</i> .            | K. <i>Gynaeciidi</i> .   |
| E. <i>Diademidi</i> .         | L. <i>Apaturidi</i> .    |
| F. <i>Ageroniidi</i> .        | M. <i>Anaeidi</i> .      |



In this classification scientific criteria are indeed taken as a basis, but the extent of the difference between the separate groups of section III is not further taken into consideration, as a further classification would not increase the clearness, but rather destroy it. Hence we content ourselves with the above grouping.

The superficial appearance of the collective family of the *Nymphalidae* is so multiform that but little of any value can be said about them as a whole. They agree in having the eyes large and hemispherical, the palpus strong, mostly standing straight out and always extending beyond the head, the antenna quite straight and thickened at the end, the proboscis always developed, the collar often well defined, the thorax oval and high, the abdomen in the ♂ sometimes very short, in the ♀ often much thickened, the forewing strong, triangular, often angled at the distal margin and very frequently with transverse markings in the cell, the hindwing round, often angled, occasionally tailed or lobed. The larvae are as a rule provided with spines, often thick and regular, but sometimes reduced, defective, or even entirely suppressed except for points on the head or tail, resulting in a chagrin-like granulation of the skin-surface. The pupa is always attached at the cremaster, mostly hanging down, but occasionally also placed upright and then usually so disfigured by fantastic appendages that it resembles a bird-dropping, a gall or some indefinable dried-up substance. Sometimes it has points, teeth, occasionally gilded cones, spines, filaments, knobs, tubercles on the dorsum or head, wing-like appendages, etc., or it is quite smooth, semitransparent green and resembling small fruits.

The early stages, which were for the most part still entirely unknown to the earlier systematists, in particular DOUBLEDAY and WESTWOOD, we have here considered individually, and practically only where these yield different results have we deviated from the system of the older authors, always keeping in view the aim of our work, which is primarily a practical guide to determination and work of reference, so that, while following the more recent investigations of others, it itself initiates as few changes and reforms as possible.

In their habits the Nymphalids vary as greatly as in their form. We find them as larvae on Dicotyledons and (though only rarely) on Monocotyledons, on trees and on herbs, gregarious or quite singly; living free or in nests, lively and nimble or sluggish and inert. The butterflies inhabit the earth from the equator to the highest latitudes and there is scarcely a remote island on which they are wanting. They ascend in the mountains to the highest slopes, bordering on the eternal snow, and penetrate further into the hot deserts of the tropics than most other groups of butterflies. They travel over wide tracts of land and enliven every clearing in the woods, every river-bank and even fly around rocky crags in the high mountains entirely devoid of vegetation. They feed at flowers, but also very commonly prefer the sap of bleeding trees or are attracted by stinking substances (rotten fruit, cheese, dung-water) or by alcohol and ether. In temperate regions may hibernate and come out from their winter hiding-places in the spring as the earliest insects. But almost without exception they are sun-lovers and do not share the habits of many Satyrids or Hesperids in flying exclusively or principally at night. They present themselves as an evidently natural though very diversified family of considerable geological age, but well adapted and keeping pace with the transformations of their environment.

### I. Subfamily: *Acraeinae*.

The *Aeraeids* are a comparatively very small branch of the great Nymphalid stirps and approximate rather closely to the *Heliconines* on one side and to the lowest groups of the Nymphalids proper on the other. They can easily be recognized by the palpus, the neurulation and the scaling, and the earlier stages have also a very characteristic structure.

Body of the butterfly slender, with tough skeleton; abdomen long, extending beyond the anal angle (i. e. the end of the 2nd submedian vein), towards the base rather strongly narrowed. Antenna beneath scaleless, longitudinally with 2 broad, deep grooves, which are bounded by 3 very sharp longitudinal keels. Palpus slender, either completely clothed with long bristly hairs and only scaled at the sides, or at least on the underside with a stripe of such bristles, between which are placed hardly any scales, the 2nd segment long, distinctly bent in S-shape, commonly somewhat inflated, the 3rd very short, often only as long as broad. The palpal bristles, as well as the hairs on the breast and legs, distally surrounded with short pointed teeth, so that in profile they recall feathers. Forelegs much aborted, bearing a small number of bristles; in the ♂ the foretarsus consists of 1 to 4 joints and, like the foretibia, varies very much in length in the different species or groups and is not even constant within the species. In the ♀ the foretarsus is 4-jointed, more constant in length and structure than in the ♂, on the underside at the ends of the joints with strong spines and tufts of sensory bristles. Foretibia and foretarsus of the ♂ never with such long pencil-like hairs as in the Nymphalids, often almost scaleless, especially the tarsus. Middle and hindtibiae and tarsi without long hairs and more sparsely scaled or not at all, on the underside with stronger, on the upperside with weaker spines or bristles, which are always numerous. Claws with large, broad, obtuse tooth, without pulvillus and free paronychium, in all the ♀♀ and in a small number of species also in the ♂ more or less symmetrical, on the contrary in the



♂♂ of nearly all the American and the majority of the Old World species the outer claw reduced and mostly almost rectangularly bent.

Wings always entire-margined, the apex and hinder angle of both wings rounded, especially the anal angle of the hindwing. Scaling very variously developed; in non-transparent wings the scales are toothed at most in the distal part of the wing and on the veins, but in *Planema* the underside of the hindwing with the exception of the base bears toothed scales; in transparent species the scales are reduced in number and size and are either rounded and upright, or narrow, forked or hair-like. The veins bear on the under surface long, stiff bristles, at least in the abdominal region of the hindwing. The upper radial vein (with the exception of *A. mirifica*) in both wings arising near the anterior angle of the cell or stalked with the subcostals, 2nd discocellular curved, cell of the hindwing closed.

In this description no notice is taken of the African *Pardopsis punctatissima*, which is not a true Acraeid. Cf. vol. XIII, p. 288, pl. 53 a.

The larvae bear 6 rows of spines, which are adorned with stiff simple bristles. The head is hairy, but has neither spines nor horns. They are mostly gregarious until shortly before pupation and many *Actinote* species feed on lower plants and shrub-like herbs, especially Eupatorium and allied Composites, as well as Mikania, Evalus, Veronia, Boehmeria, etc. The pupa is likewise very characteristic; it is straight, almost cylindrical or dorsally convex, between thorax and abdomen only quite slightly constricted, and as a rule chalk-white; on the wing-cases black stripes corresponding to the neurulation of the wings and on the dorsum two rows of spines, which commonly vary according to the species.

The butterflies are found especially on clearings and at the edges of woods and some species allied to *A. thalia* sometimes occur in such abundance that they hang on the bushes in countless numbers. Such forms are often so sluggish that when placed on the hand they remain there or if shaken out of the bushes slowly crawl up into them again (SEITZ). Other species on the contrary fly singly and many so high above the ground in the tops of the trees that they are difficult to catch.

The distribution of the Acraeids in America is peculiar. They occur from Mexico to Buenos Aires and South Brazil, but the species are by no means uniformly distributed. The mostly dense-scaled blue forms with red-yellow, yellow or white markings, are all confined to the Andes; not one of the numerous species of the *abana*, *hylonome*, *neleus* and *ozomene* groups descends to the lowlands east of the Andes or occurs in the mountains east of the Orinoco or in South-East Brazil. On the other hand the *thalia* group has its centre of distribution in South-Eastern Brazil, Paraguay and Argentina, and the large Amazon region, from Pará to Iquitos, otherwise so rich, produces only one or two species of *Actinote* and these are forms of the *thalia* group.

### 1. Genus: **Actinote** Hbn.

The American Acraeids differ from the Old World forms in the structure of the wings. In all the species the veins on the underside of the hindwing are covered with stiff bristles and the upper submedian is developed proximally as a fold and distally as a vein and bristled like the other veins; the 1st subcostal of the forewing always arises proximally to the end of the cell, whilst the common stalk of the other 4 arises from the angle of the cell; the 1st radial is placed quite near to the subcostal stalk or branches off from it. In the only Old World Acraeid in which the upper submedian of the hindwing is developed distally as a vein, *A. mirifica*, the 2nd palpal joint is inflated and the subcostal of the hindwing has a much more proximal position than in *Actinote*. The wings of *Actinote* have neither the punctiform markings nor the marginal curves which are found in the majority of the Old World species.

According to the structure of the wings as well as the habitus *Actinote* splits up into two sections, one of which is composed of several natural, sharply differentiated groups of species. The differences between the species are commonly very slight and in many cases it is not yet possible, in the absence of sufficient material, to come to a satisfactory conclusion as to the specific right of the forms. The study of *Actinote* is rendered still more difficult on the one hand by the often very strong individual and geographical variability and on the other by the remarkable uniformity of the copulatory organs. The larvae and pupae, which, however, are unfortunately only known in a few cases, seem often to show more striking specific characters than the imagines.

Section I. On the under surface the space between the costal margin and costal vein in the distal half of the forewing is scaled, not adorned with numerous bristles; hindwing always with a central row of bristles in the cell; all the bristles on the veins of the forewing and at the distal margin forked. — Confined to the Andes south of Bolivia and the Sierra de Mérida of Venezuela; only one species in Central America, which is distributed northwards to Mexico.

Subsection 1. Under surface of the hindwing with numerous long, scattered bristles between the veins.

#### a) **abana** Group.

Only three species show this peculiar clothing.



*radiata.* **A. radiata.** Sepia-brown to black; forewing with a pale orange-coloured or somewhat reddish band, broken up into spots by the veins and running in a curve from the costal margin to the hinder angle, much narrowed posteriorly and placed entirely outside the cell. On the underside the band is somewhat more rose-coloured than above, the apex of the forewing and the entire hindwing regularly striped, the stripes somewhat more brownish than the band. Ecuador and Peru, will probably also be found in Bolivia. The ♀ is apparently not known. — **radiata** Hew. (81 a). Wings sepia-brown. Eastern Ecuador. — **intensa** Jord. Wings nearly black. Band narrower, with more distinct rose-coloured tone. Eastern Peru.

*erinome.* **A. erinome.** Brown-black, slightly tinged with bluish; abdomen beneath with reddish stripe. Forewing with orange-red discal band from the costa to the lower median; often also a costal stripe, the whole cell with the exception of the extreme apex and some postcellular spots of the same colour as the band. These markings are reproduced on the under surface; apex of the forewing and the whole hindwing beneath uniformly striped with yellowish grey. The ♀ paler than the ♂ and somewhat larger. Ecuador?, Peru and Bolivia. — **erinome** Fldr. (81 a). Forewing only with discal band; in some examples a reddish costal stripe is indicated. *sciana.* Central East Peru; FELDER's locality "Ecuador" required confirmation. ab. **sciana** Jord. is unicolorous brownish black above; the band of the forewing distinctly present beneath, very much reduced above. — **carabaia** Jord. Forewing with costal stripe and usually on both surfaces, or at least beneath, with yellowish red cell-spot. South-East Peru. — **testacea** Salv. & Godm. (= *byzia* Hew., *aethilla* Hpffr.) (81 a). The yellowish red colour fills up the cell with the exception of the extreme apex and usually extends distinctly below the cell as far as the lower median vein. Occasionally the discal band is joined to the postcellular spots, so that a black discocellular spot is separated off. Bolivia.

*capnodes.* **A. abana.** Wings slightly transparent, with faint blue gloss; upper surface sepia-brown; forewing with large pale orange area, extending from the base to beyond the cell and to the hinder angle, but very commonly reduced from the base onwards or even replaced by a discal band; the veins intersecting the area more or less black. Beneath the veins quite narrowly black, the apex of the forewing and the whole hindwing yellowish grey, striped with black, the area on the forewing less often reduced and then not so strongly as above and distally never incised at the veins. ♀ paler and larger than the ♂. Columbia, Ecuador and Peru; two geographical forms. — In **capnodes** *subsp. nov.*, from Frontina, province of Antioquia in Colombia, the yellow colour on the forewing is confined to a broad discal band, which only just crosses the lower angle of the cell, is for the most part almost equal in breadth and then pointed towards the hinder angle. The band is about 2 or 2½ times as broad as the blackish brown apical part of the wing and is so strongly suffused with smoky brown that it scarcely stands out at all from the ground-colour. On the under surface, on the other hand, it is almost as yellow as in the following form; hindwing and apex of the forewing beneath more yellowish than in the latter. The ♀ larger than the ♂ and the discal band yellow and well defined above also. *abana.* 2 ♂♂ and 1 ♀ in the British Museum. — **abana** Hew. (81 a). The yellow area of the forewing extended to the base or, if reduced, broken up into stripes. East Ecuador and East Peru, known to me southwards as far as the Rio Pozuzo.

Subsection 2. Under surface of the hindwing without scattered bristles on the disc between the veins.

#### a) hylonome Group.

Under surface of the hindwing with a number of bristles in and below the cell besides the bristles on the cell-fold, the veins and the reduced submedian vein.

*hylonome.* **A. hylonome** Dbl. (82 b). Black, wings slightly transparent; forewing with white band, composed of 4 spots; the 1st spot quadrate, in the cell, the 2nd small, in the angle before the base of the upper median vein, and the 3rd and 4th larger, between the upper median vein and the submedian fold, no spot distally to the end of the cell. Beneath the band somewhat broader, the apex of the forewing and the whole hindwing striped with yellowish and with black, the stripes in the middle of the hindwing less distinct. ♀ larger than ♂, with broader band, under surface paler, usually with whitish scaling distally to the end of the cell. The abdomen is usually in both sexes spotted with lighter or darker yellowish beneath, occasionally quite black. — A common species in Venezuela and Colombia.

*euryleuca.* **A. euryleuca** Jord. (82 b). ♂ larger than that of *hylomene*, with broader band, which runs so far distally that the discocellular veins are placed inside it, the spot between the two median veins (the last but one) the largest, reaching nearly to the distal margin. Under surface uniform yellow-grey with black stripes; the band broader than above. Upper radial of the hindwing from the cell or stalked with the subcostal, the bristles in and beyond the cell of the hindwing (beneath) more numerous than in the preceding species. Moyobamba, North Peru, only a few ♂♂ known to me.

#### b) neleus Group.

The bristles on the underside of the hindwing confined to the cell-fold and veins. Upper radial of



the forewing stalked with the subcostals, rarely from the upper angle of the cell, abdomen for the most part red or yellow (cf. also *A. callianthe*).

**A. neleus** Latr. (= *nelea* Godt.; ♀ = *are* Hew., *edulis* Weym.) (81 b, c). Abdomen red. Sexes very similar. *neleus*. ♂ blue-black, very strongly glossy above, the costal margin and the distal half of the forewing as well as the distal margin of the hindwing slightly glossy; under surface brown-black, base of the hindwing pale yellow. In some ♂♂ from Zamora (Ecuador) the forewing bears a red cell-spot on the under surface: ♂ ab. **haemera** *haemera*. ab. nov. The ♀, which in "STÜBELS Reise" was erroneously described and figured as ♂ under the name *edulis*, has only a slight blue gloss and bears on the forewing a broad yellowish white median band, which is placed proximally to the end of the cell and runs obliquely to the hinder angle. Beneath the apex of the forewing and the entire hindwing are striped with yellowish grey and the forewing bears a distinct black, oblique discal band, which reaches neither the costal nor the inner margin and is placed distally to the median band. — A pupa-case of this species sent to us by FASSL is grey-yellow, not chalk-white; the black subdorsal spines of the abdomen are only about half as long as the distance between the two spines of a single segment; the black markings are very extended on the dorsum of abdominal segments 2 and 3 and the following segments bear an interrupted black median line; the lateral markings are numerous and more or less regularly divided, not united into a longitudinal stripe. — *A. neleus* is one of the commoner species. It occurs both in the east and west of Colombia and Ecuador and apparently, unlike the following species, does not vary geographically.

**A. alcione**. Wings above black, in some forms uniformly tinged with blue, in others entirely without blue, never strongly glossy; with or without yellow or orange area on the forewing. The abdomen usually red, occasionally grey-yellow, in some dark, smoky forms more or less extended black above. The ♀ is similar to the ♂. Distributed from Colombia to Bolivia in numerous geographical forms. The extremes are so different in appearance that one might take them to be specifically separated. Yet the forms appear strictly to represent one another geographically, and moreover they shade so gradually into one another that for the present I can only regard them as forms of one species. Possibly, however, *theophila* occurs independently together with *alcione*, in which case it must rank as a species. We are not yet well informed as to the distribution of the butterfly in North Peru; the material from those parts is very small in collections, and moreover the physiographical conditions seem often to vary there even at short distances and corresponding differences to appear in the clothing of the butterflies. The earlier stages of *A. alcione* are not known. — **varians** *varians*. Jord., from Central and West Colombia, occurs in three forms which fly together: f. **cyanea** form. nov. Upper *cyanea*. surface of both wings uniform blue, without a trace of markings. This common form probably only occurs in the male. It resembles *A. neleus*, but lacks the strong gloss of that species. In f. **varians** Jord. the forewing above bears a washed-out, oblique yellowish flesh-coloured band in the basal half; the ♀ is larger than the ♂ and the band is somewhat less reddish in tone. In f. **extensa** form. nov. the band is widened, more sharply *extensa*. defined and occupies  $\frac{1}{2}$  or  $\frac{2}{3}$  of the basal half of the wing, but also remains distant from the base; rest of the upper surface as blue as in f. *varians* and f. *cyanea*. Intergrades between the 3 forms are of common occurrence; on the underside examples of f. *cyanea* also often bear a flesh-coloured stripe before the hindmargin and f. *varians* and f. *extensa* have a similarly coloured narrow discal band. This band is usually indicated in f. *cyanea* also and distinct traces of it are visible in exceptional cases on the upper surface of f. *extensa*. — **elatus** Druce flies at Paramba in West Ecuador. The upper surface much less distinctly blue than *elatus*. in the different forms of *varians*. The forewing always has a pale orange median area on the upperside, reaching from the lower angle of the cell to about halfway to the base, but varying somewhat in extent; beneath the area is mostly much paler, almost straw-coloured, and nearly reaches the base and the hinder angle; a narrow discal band of the same colour is at least indicated and traces of it are occasionally found on the upper surface also. Abdomen paler red than in fresh specimens of *varians*. ROSENBERG took numerous specimens of this subspecies during his stay in Paramba in March, April and May, at elevations of somewhat over 1000 m. — **sarsanda** Druce (82 d). The yellow area is so densely covered with smoke-colour above and beneath that only a few scales have retained a pure yellow colour, though individual examples incline towards *sarsanda*. *elatus*; the discal band is indicated beneath or may be entirely absent. Abdomen broadly black. Chimbo, West Ecuador, met with by ROSENBERG in large numbers at 300 m. in August. — **subelatus** subsp. nov. (81 c). *subelatus*. Only two or three ♂♂ are known to me: Los Llanos (type) and Balsabamba, Ecuador. These specimens form the transition from *elatus* to *melina*. The yellow area is somewhat deeper coloured than in *elatus* and as in that subspecies is placed at a distance from the base, but there is always a distinct stripe immediately before the hindmargin of the wing, while in *elatus* this is at most merely indicated; a short discal macular band present. Beneath the hindwing and the distal margin and apex of the forewing are still more strongly striped with grey-yellow than in *sarsanda* and hence the black discal band of the forewing stands out sharply. The under surface of our figure is somewhat too reddish and the black discal band too near the distal margin. — **melina** Jord. The pale orange area is more sharply defined than in *subelatus*, extends nearly to the *melina*. base and is cut off sharply at the anterior margin of the cell; discal band more distinct. Hindwing and apex of forewing darker beneath than in *subelatus* and *alcione*. Rio Negro in North-East Peru (not to be confused



*theophila*. with the large tributary of the Amazon of the same name); only 2 ♂♂ in the Tring Museum. — **theophila** Dogn. (81 c). Perhaps specifically distinct. Abdomen orange, above rather broadly black. The area of the forewing orange, extending from the base to the lower angle of the cell and on the disc beyond it; a narrow discal macular band is often present and many examples have also a spot between the apex of the cell and the band. South-East Ecuador: Loja, Zamora, etc. — **alcione** Hew. (82 d). Quite similar to *melina*, but the area of the forewing somewhat larger and, like the narrow discal macular band, very pale grey-yellow, paler than in any other form of this species. The under surface lighter than in *melina*, densely striped with gray-yellow. North-East Ecuador: Rio Napo. — The 4 following forms perhaps constitute a separate species. In them the discal band of the forewing is more strongly developed and is orange-red, like the large proximal area. In **salmonea** Jord. the discal band is about  $\frac{1}{2}$  to  $\frac{1}{3}$  as broad as the black interspace which separates it from the proximal area. The latter extends to the base of the upper median vein, occasionally there is also a spot before this vein. The dark parts of the upper surface have a faint blue tinge. Found in North Peru, to the south-east of Chachapoyas. — **sodalis** Btlr. (81 d), from Central East Peru (Ucayali, Chanchamayo, etc.), is somewhat brighter orange-red than *salmonea* and the discal band on the whole somewhat broader. — **messerer** Jord., from South-East Peru (Carabaya), has the underside of the hindwing somewhat lighter than in *sodalis*, and in particular the wing is less broadly blackish round the apex of the cell. — **corduba** Hew. (81 b), the form from Bolivia, is distinguished by the basal area on the upperside of the forewing not extending to the upper median vein, while on the other hand the discal band reaches the lower median vein.

### c) ozomene Group.

The bristles on the underside of the hindwing confined to the cell-fold and veins. Upper radial of both wings from the cell. Abdomen black, beneath often light-spotted (in the ♀ of *A. callianthe* largely red).

*leucomelas*. **A. leucomelas** Bates (= *orizava* Reak., *leucomelaena* Dew., ♂ = *nox* Bates) (81 d). ♂ above black-blue; forewing beneath with large yellow-white proximal area, extending to the apex of the cell; hindwing with small yellow-white spot at the base. ♀ bluish black, with yellow-white macular band in the middle of the forewing; beneath the band much broader and the veins intersecting it less broadly black. — A purely Central American species, which is distributed from Mexico to the Chiriqui in Panama.

**A. ozomene**. Represents the preceding species in Colombia and Ecuador; easy to distinguish by the yellowish red colour of the basal area of the forewing above and beneath. ♂ above black-blue; the orange-red basal area either unicolorous or distally pale yellow; beneath the basal area is more or less extended pale yellow, but always remains yellow-red at the base. The area is very variable in size above, but beneath always extends nearly to the lower angle of the cell. ♀ bluish black, with large yellow-red proximal area, which is distally pale yellow and above more or less reduced from the base onwards, but at least beneath extends to the base; on the under surface the hindwing and the distal part of the forewing dirty yellow-grey, striped with black. The larva, of which A. H. FASSL has sent us two blown examples, is almost pure black above and light (probably in life green-yellow) beneath; the two colours sharply defined. Head and thoracic legs black; the lateral spines placed in the light part light at the base, the others dark with lighter base and pale bristles, and about three times as long as the distance between two dorsal bristles on the same segment. Pupa chalk-white, with black spines and black markings; the spines longer than the space between the two spines on the same segment. The spines are placed at the upper edge of a longitudinal band of black markings, a similar band immediately below the stigmata, and on the ventral side three posteriorly opened ellipses; the spaces between these bands with a few fine streaks and dots of the same colour; cremaster entirely black. The species is very common. — **ozomene** Godt. (81 e, f; the names of 81 e fig. 4 and 5 are reversed). ♂: underside of the hindwing with small pale yellow basal spot, the rest of the hindwing without yellowish stripes. ♀: underside of the hindwing and of the apex of the forewing dirty grey-yellow, striped with black. In ♂-ab. **calimene** Rebel and in ♂-ab. **granadina** Rebel the proximal area of the forewing beneath is entirely red, in ab. *granadina* in addition the base of the hindwing more broadly yellow. **reducta**. The red basal area of the upper surface is reduced in ♂-ab. **reducta** ab. nov. to a spot only 5–7 mm. in length. *ozomene* occurs in Central and West Colombia and is common in "Bogotá collections", but I am not aware whether it is really found in the East Cordillera of Colombia. — **gabrielae** Rebel differs in the ♂ in having somewhat less of the blue gloss. In the ♀ the brown-red colour of the proximal area of the forewing above is somewhat reduced. West Ecuador: Balsabamba, Agua Santa, Paramba. — **cleasa** Hew. (= *catopasta* Jord.) has even less blue gloss on the upper surface of the ♂. Beneath the hindwing of the ♂ is striped with yellow-grey with the exception of a central band; some examples, however, show scarcely a trace of these stripes (except for the basal patch). The red-brown on the upperside of the forewing in the ♀ is strongly reduced; and sometimes almost entirely absent, in which case the proximal area above is fused into a macular band. In south-western and southern Ecuador: Chimbo, Zaruma, Zamora.

**A. stratonice**. Black, with slight blue gloss. ♂: forewing with large orange median area, which at least



beneath reaches the base in the cell, leaves the hindmargin of the wing free and encloses a black discocellular spot; under surface of the hindwing in the basal area striped with orange-red, the stripes sometimes partly grey-yellow, gradually disappearing distally. ♀ larger and paler, the median area of the forewing orange or pale yellow, in the latter case proximally washed over with red-brown and above not reaching the base; underside of the hindwing almost uniformly striped with orange-red, on the disc often grey-scaled. Earlier stages unknown. Distributed from the Sierra de Mérida in Venezuela to Ecuador. — **meridana** Jord. ♂: *meridana*. the orange area of the forewing extends nearly to the base above also, the stripe of this area below the lower median vein is continued basad beyond the base of this vein, but is usually interrupted by a black patch. Beneath the area is grey-yellow with orange-red base; distal half of the hindwing almost entirely without stripes. ♀: the median area of the forewing pale yellow, the basal area as far as the lower median black, washed over with brown-red, the stripe of the median area placed between the two median veins not interrupted, the spot below the second median about 6 mm. in length. Mérida, Venezuela. — **marthae** Jord. *marthae*. ♂ as the preceding, but the stripe of the area of the forewing below the lower median vein more strongly interrupted and hence the distal part of the stripe shorter; the underside of the hindwing is also more uniformly striped. In the ♀ the black spot, which projects from the hindmargin obliquely towards the cell at the proximal side of the pale yellow area, extends as a band beyond the lower median as far as the cell, the basal area proximally to this black band brown-red. Sierra de Sta. Marta, North Colombia. — **acipha** *acipha*. Hew. (82 a, b). ♂: the orange area does not extend so nearly to the base as in the preceding forms, in particular the proximal part of the stripe below the cell is wanting, and beneath the base of the forewing is somewhat less extended brownish orange. In the ♀ the brown-red scaling proximally to the pale yellow median area on the forewing above is merely indicated, and on the underside also the red-brown is more restricted than in the preceding forms. East Cordillera of Colombia, rather common in "Bogotá collections"; from 400 m. upwards. — **stratonice** (82 a). On the whole larger than the preceding forms, the sexes almost *stratonice*. alike in colour, and the orange area beneath but little paler than above and on both surfaces larger and darker than in *acipha*, etc. Central and West Cordilleras of Colombia. In the only ♀ before me from the West Cordillera the area of the forewing on the underside is nearly as pale from the apex of the cell onwards as in *acipha* ♀; our two ♂♂ from the same locality (Rio Dagua, collected by W. F. H. ROSENBERG) agree with the specimens from the Central Cordillera. The ♀ forms a transition to the next subspecies. — **diversa** *diversa*. *subsp. nov.* Two ♂♂ and one ♀ from East Ecuador in the British Museum, type from Baños (Rio Pastaza). The ♂♂ are very little paler than *stratonice*, but the hindwing above has very distinct traces of an orange colour in the basal half. ♀ larger, paler, area of the forewing distally yellow, this colour proximally not sharply defined, on either surface, hindwing with traces of orange stripes before the cell; under surface paler, hindwing striped with grey, in the cell and at the distal margin blackish. — **aereta** Jord. One ♂ from *aereta*. Zamora, South-East Ecuador. The discocellular spot of the forewing very large and joined to the costal margin; the orange area reaching to the base and quite near to the hindmargin, beneath paler distally than proximally. Cell of the hindwing beneath striped with yellow-grey. — **carica** Weym. Not known to me *carica*. in nature. Quite similar to *aereta*, perhaps identical with it, though according to WEYMER the stripes on the underside of the hindwing are red. 5 ♂♂ were found by STÜBEL in North Peru between Tambo Almirante and the Rio Negro at altitudes of 860 to 2000 m. The figure, however, certainly represents a ♀.

**A. adoxa** Jord. This small species is based on a single ♂ from "Bogotá", which cannot be referred to *adox*. any known species. Black, with very faint blue gloss, the markings yellowish salmon-colour (similar in tone to those of *A. callianthe*). Forewing with the distal margin more uniformly rounded than in *A. stratonice*; a large area, fading out at its margins, extends from the anterior edge of the cell to the lower submedian, commencing about 5 mm. from the base and widening to a little beyond the apex of the cell; a black discocellular spot adjoins the black costal margin. Beneath the area of the forewing is larger, better defined, and the discocellular spot is entirely enclosed by it; hindwing in the basal half rather strongly striped with reddish, the stripes distally weak, distal part of the forewing almost without stripes. Length of the forewing 23 mm. — Resembles *A. diceus diceus*, but the hindmargin of the forewing is much shorter.

**A. callianthe**. One of the most beautiful species. ♂ above velvety black; on the forewing a yellowish salmon-coloured or ochre-red area, which does not reach the base or the hindmargin and anteriorly terminates at the subcostal; the bordering of this area (except the costal margin) and also the hindwing from the base to the disc strongly glossy blue, this colour rather sharply defined. Under surface of the hindwing likewise characteristically coloured; the basal area is greenish yellow (dark wax-yellow) to the apex of the cell and usually also nearly to the anal angle, whilst the rest of the wing is of a reddish brown colour. The ♀ quite unlike the ♂; above brown-black, with rather strong blue gloss from the base to the band of the forewing and to far beyond the cell of the hindwing; forewing with dirty white oblique band, which enters the lower angle of the cell, does not quite reach the costal margin and hinder angle and is broader beneath than above. On the under surface of the hindwing the basal area is of a similar yellow to that of the ♂, but not so sharply defined, as the distal area is light-striped; abdomen of the ♀ for the most part red. Distributed from Venezuela to Ecuador. — **alla** Jord. The red area of the forewing narrowed into a band, which is prox- *alla*. imally cut off by the base of the lower median, so that the part of the band placed in the cell is almost quadrate. Beneath, however, the area almost reaches the base of the wing. Mérida, Venezuela; only 1 ♂ known to me. — **callianthe** Fldr. (81 d, 82 b). ♂: the area of the forewing paler than in *alla*, extending *callianthe*.



basewards far beyond the origin of the lower median vein, triangular, distally rounded, the black discocellular spot distinct. Many specimens have traces of red on the upperside of the hindwing before and in the cell. ♀ with distinct grey striping on the upperside of the hindwing about halfway between cell and distal margin. East Cordillera of Colombia; rather rare, especially the ♀. — **amoena** *subsp. nov.* (♀ S1 d, as *callianthe*). ♂: the patch on the forewing deeper red than in *callianthe*, similarly shaped, but not extending beyond the apex of the cell, the discocellular spot consequently almost entirely confluent with the black distal area. Beneath the patch as in *callianthe*, but much redder. The hindwing of the ♀ has no stripes on the upperside; the band of the forewing is posteriorly somewhat shorter than in *callianthe* and at the lower angle of the cell somewhat broader; on the under surface the band is distally somewhat more distinctly bordered with black and the hindwing is more conspicuously blackened distally to the cell. West Cordillera of Colombia, found by A. H. FASSL in the Río Aguaca Valley at elevations of 2000 m. The species flies high and very swiftly and is difficult to catch. — **rufa** *Jord.* ♂: the patch on the forewing is red-ochre, reaches much nearer to the distal margin of the wing than in the other forms, but distally to the discocellular spot there are only a few red scales and the stripe below the lower median is basally much more abbreviated than in *amoena* and *callianthe*. The basal area of the hindwing beneath paler yellow than in the preceding forms and the stripes between cell and abdominal margin indistinct. Río Zamora, South-East Ecuador, 1800 m., 1 ♂ found by SIMONS in May. The specimen is not in good condition and this is perhaps the reason why the blue gloss is less strong than in the other forms.

**A. naura.** A small species; breast and base of the hindwing beneath with ochre-red spot, a spot of the same colour also at the costal margin of the forewing. ♂ Forewing with ochre-red triangular basal area, which does not reach the apex of the cell and is sometimes reduced to a cell-spot. Hindwing with red patch in and below the cell and a row of red discal spots; these markings very variable and often entirely absent. Under surface of the forewing similar to the upper, the red area paler; the hindwing and apex of the forewing striped with yellowish grey, with nebulous dark discal band, the cell of the hindwing almost entirely filled in with yellowish grey. ♀ much larger than the ♂, paler. Venezuela and Colombia, rather rare in collections. — **naura** *Druce* (= *ozinta* *Schaus*). Upperside with rather strong blue gloss. Area of the forewing reduced to some subbasal spots, of which the cell-spot is the largest. Forewing more rounded than in the following form. **chea.** ♀ quite similar to the ♂. Mérida, Venezuela. — **chea** *Druce* (S1 b). Upper surface with slight blue gloss; the red area of the forewing large, many examples with traces of a red subapical band; markings of the hindwing sometimes united into a rather large central patch, sometimes almost obsolete. In the ♀ the area of the forewing is much paler, at the hinder angle a reddish grey area, from which a narrow macular band, either distinct or very indefinite, runs to the costal margin in a uniform curve; markings of the hindwing reddish grey, more extended than the red markings of the ♂, the abdominal area in particular is also light-striped. Beneath the whole hindwing and an anteriorly broad distal border on the forewing are yellowish grey, finely striped with brown-black. Colombia, in the East Cordillera, found by A. H. FASSL at Pacho (2200 m.).

**A. trinacria.** *A. trinacria* *Fldr.* (S1 a). Smaller than *A. naura*, the veins intersecting the triangular red area on the forewing somewhat more broadly black, the hindwing without red markings. Beneath the forewing usually bears one or two red spots just distally to the end of the cell, while in *A. naura* a red spot further distad is usually traceable outside the blackish discal band. ♀ unknown. — Colombia. This species is received in "Bogotá collections" and probably occurs in the East Cordillera; more exact localities are not known to me.

**A. tenebrosa.** *A. tenebrosa* *Hew.* (S2 a). Only a few ♀♀ known; possibly belongs to *trinacria* or *segesta*. Black-brown with slight blue gloss. Forewing with reddish — orange oblique band running from the costa across the apical part of the cell to the hinder angle, where it joins a narrow discal band of the same colour; these markings indistinct above; beneath better developed, the proximal band in particular much broader, hindwing and apex of the forewing yellow-grey, the discal band of the forewing gradually shaded off distally, hindwing with dark nebulous band about the apex of the cell. — Ecuador.

**A. segesta.** *A. segesta* *Weym.* (= *doghini* *Schaus*) (S2 b). Much larger than *trinacria*, resembling it above. Beneath the hindwing and the distal border of the forewing are striped with reddish; the scaling of these stripes is condensed into a very narrow band at the distal side of the black discal band of the forewing. ♀ similar to the ♂, larger and somewhat paler. — In eastern Ecuador: Huamboya, Zamora, Loja.

**A. flavibasis.** *A. flavibasis* *Jord.* (= *diceus* *auct.*) (S1 e fig. 4, ♀, erroneously called *ozomene*, S1 g ♂). The material which I have been able to compare since sending off the manuscript of the *Acraeinae* for WAGNER's Lepidoptorum Catalogus makes it probable that the forms enumerated there under *diceus* and *callianira* are geographical races of one species, with the exception of *flavibasis*, which I must now treat as an independent species. This common *Actinote* in "Bogotá collections" does not seem to be confined to the East Cordillera of Colombia, as WEYMER states in "STÜBELS Reise" that this species with yellow base (which he erroneously took for *diceus*) occurs in the Central Cordillera together with the form with red-striped under surface (the true *diceus*). The sexes are similar. ♂: the patch on the forewing orange; no discal band above, while



beneath, on the other hand, this is occasionally more or less distinctly developed: ♂-ab. **fasciata** *ab. nov.* *fasciata*. Hindwing beneath with yellow basal area, striped with black; rest of the hindwing, as well as the distal part of the forewing, at most with traces of stripes. The ♀ much larger than the ♂, the patch on the forewing similar, upper surface usually suffused with black proximally. On the underside the whole hindwing and the distal part of the forewing clay-yellow, striped with black, the yellow sealing especially dense in the cell and at the base of the hindwing; forewing with broad black band, which enters the extremity of the cell and reaches neither costal margin nor hinder angle; at the distal side or even inside the band mostly reddish scales, which often form a narrow band, sometimes distinct on the upper surface also.

**A. diceus**. Blue-black, abdomen beneath often reddish. ♂: forewing with large triangular proximal area, which does not reach the apex of the cell and varies from orange-red to rose-red; the discal band is always present at least beneath and is placed much nearer to the extremity of the cell than to the apex of the wing. Hindwing above without markings, at most in aberrant examples with traces of red spots. The ♀ paler and much larger than the ♂, similar to it in colouring, or the basal area of the forewing above darkened or suppressed and the always broad discal band yellow or white. Colombia to South-East Peru. The earlier stages unknown, although the species is in many places one of the commonest butterflies. LATREILLE's description of *diceus* is very clear. GODART, however, has mixed up several species under the name (changed into *dice*) and later authors (probably in consequence) have often misidentified the species. It is worthy of mention that the part of HUMBOLDT and BONPLAND's "Reueil" which contains LATREILLE's description of *diceus* as well as the excellent plate (pl. 42) is wanting in most examples of the work and hence has probably seldom been compared. — **amida** *Hew.* (♀ = *theogonia* *Weym.*) (81 h). ♂: discal band of *amida*. the forewing broad, above scarcely paler than the proximal area, beneath, however, entirely yellow or only proximally slightly reddish. In the ♀ the basal area is red-brown above, suffused with black, beneath purer red; the discal band yellow above and beneath. Sierra de Mérida in Venezuela and East Cordillera of Colombia. — **diceus** *Latr.* (♂ = *dice* *Godt.* part., *aurantia* *Weym.*, *olgae* *Rebel*; ♀ = *albofasciata* *Therese* *nee Hew.*) *diceus*. (81 f). ♂: forewing at least beneath always with discal band more or less strongly developed, hindwing beneath striped with rose-red, this striping mostly confined to the basal part, but often occupying the entire wing. The examples may be divided into 3 groups according to the development of the discal band: f. **sinefascia** *form. nov.*, above entirely without discal band; f. **diceus** *Latr.*, the discal band more or less *sinefascia*. developed above; f. **confluens** *form. nov.*, the discal band beneath broadly confluent with the basal area, *confluens*. so that a black discocellular spot is isolated posteriorly and at the sides. These individual forms intergrade one into another. In addition examples occur in which the hindwing bears small red spots in and before the cell: ♂-ab. **rubrosticta** *ab. nov.* WEYMER's description of *aurantia* fits f. *diceus*, but the figure given in Stübels "Reise" seems to be incorrect. The ♀ of *diceus* (81 f) is blue-black above and bears on the forewing a narrow yellow-white discal macular band; on the under surface the red basal area is present, but very much reduced. Central Cordillera of Colombia; both sexes found by A. H. FASSL on Monte Tolima at an altitude of 1700 m. Fresh ♂♂ are bright red. — No *diceus* form is yet known from the West Cordillera of Colombia or from West Ecuador. — In north-eastern Ecuador flies **napensis** *Jord.* ♂: upper surface with much weaker *napensis*. blue gloss than in *diceus*, the basal area reduced from its anterior part, the discal band narrow. Rio Napo. — **albofasciata** *Hew.* (♂ = *rosaria* *Weym.*) (81 g ♂). ♂: paler rose-coloured than in *diceus* and the blue gloss *albofasciata*. as weak as in *napensis*, the basal area reduced as in *napensis*, but the discal band always broad. The discal band of the ♀ white, without a distinct yellow tone, somewhat straighter and distally less strongly notched at the veins; underside of the abdomen red. In south-eastern Ecuador: Rio Zamora, Rio Pastaza, etc., and perhaps also in North-East Peru. — **thespias** *Weym.* ♂ as *albofasciata* ♂, but the markings of the *thespias*. forewing above orange-red, not rose-coloured, the discal band beneath yellow, posteriorly widened and here usually united with the basal area above and beneath, the underside of the hindwing striped with grey-yellow at the base. The ♀ figured in "Stübels Reise": basal area red-brown, discal band light yellow, running in a curve from the costal margin to the hinder angle; hindwing above grey-blue, with the exception of the distal margin. Central North Peru: district of Chachapoyas. — **callianira** *Hbn.* (81 h). ♂: markings *callianira*. of the forewing above bright orange-red, discal band beneath distally yellow, sometimes entirely red, sometimes entirely yellow, rarely confluent with the basal area, the striping of the hindwing beneath on the disc somewhat more distinct than in *thespias* ♂. The ♀ similar to the ♂, paler and larger, on the upper surface with the basal area and discal band orange-red, the latter beneath usually for the most part yellow. Central East Peru: Pozuzo, Chuchuras, Chanchamayo. ab. **stenia** *Jord.* may be retained for examples in which the *stenia*. discal band is entirely yellow beneath; the name was originally erected for the Chanchamayo specimens, which, however, do not form a well defined subspecies. — **euris** *Jord.* In both sexes the black band which on the *euris*. forewing separates the basal area from the discal band is broader than in the preceding form, the discal band beneath is entirely orange-red, at most with a slight yellow tinge. Underside of the hindwing entirely yellowish striped with grey, a short median band from the costal margin to the lower angle of the cell and a narrow, sharply defined marginal band black-brown. South-East Peru: Marcapata, Cuzco district, Carabaya.

**A. jucunda** *Jord.* (81 h) represents the preceding species in Bolivia, but has the cell of the forewing *jucunda*. longer. Pronotum with orange spot on each side. Markings of the forewing similar to those of *A. diceus* *euris*, but more yellowish, the discal band broken up into spots, and in the ♀ the basal area almost entirely



suppressed above, hindwing without distinct blue gloss. Underside of the hindwing and apex of the forewing in the ♂ striped with brownish orange, in the cell somewhat more grey, in the ♀ the stripes grey, the orange-red discal band of the forewing in the ♀ not sharply defined distally. — East Bolivia.

*griseata*. **A. griseata** *Bltr.* (♀ S1 b, abdomen erroneously spotted with orange). This species flies in East Peru in places where *callianira* also occurs. ♂♀: wings narrower than in *callianira*, the discal band of the forewing posteriorly not widened, distally more regularly notched at the veins, hindwing paler bluish grey. Both the markings on the forewing beneath scarcely paler than above, whilst in *callianira* the discal band is more or less yellow; underside of the hindwing densely striped with grey, with narrow dark distal margin; abdomen beneath and laterally entirely black. — Central East Peru: Pozuzo, Cushi, etc.

*anaxo*. **A. anaxo**. ♂: upper surface with the exception of the distal margin strongly glossy green-blue; forewing with orange-red discal band from the costal margin to the hinder angle, without orange or red basal area. ♀ not known. East Peru. — **anaxo** *Hpffr.* Under surface of the hindwing only in the basal third distinctly striped with yellowish grey. Chanchamayo. — **comta** *Jord.* (S2 d). Band of the forewing broader, underside of the hindwing and distal part of the forewing densely striped with yellowish grey, in *anaxo* the distal  $\frac{2}{3}$  of the hindwing and the distal part of the forewing almost pure black-brown. Callanga, province of Cuzco, South-East Peru, taken by GARLEPP at 1500 m.

*hilaris*. **A. hilaris** *Jord.* (S2 a). ♂: collar and breast with small orange or more grey spots, underside of the abdomen marked with orange. Upper surface much as in *callianira*, the discal band shorter and the hindwing less blue. The under surface quite different; the discal band of the forewing edged with white distally, hindwing with broad white discal band, which is proximally bounded by a blackish line and posteriorly joins a large white patch occupying the basal and abdominal areas from the costal margin nearly to the anal angle; there remains thus in the basal  $\frac{3}{5}$  only a large triangular brown costal patch, of which the above-mentioned fine line forms the continuation. ♀ similar to the ♂, paler, the proximal area above tinged with black at the base, the white colour yellowish, less pure and conspicuous. In both sexes the lower angle of the cell of the forewing is more produced than in the allied species. — East Peru.

*amphilecta*. **A. amphilecta** *spec. nov.* In East Ecuador occurs an *Actinote* which stands midway between *A. diceus thespias* and *A. negra*. ♂ somewhat smaller than that of *thespias*, the basal area of the forewing paler orange, dentate on the veins, incurved between. Discal band coloured like the basal area or more yellow, varying in length and breadth, the band-like black interspace posteriorly more oblique than in *thespias*, sometimes broken up into spots in consequence of the greater extent of the orange colour. Hindwing with very faint blue gloss, from the base to just beyond the apex of the cell orange, this area strongly striped with black (in the type the cell almost entirely black), often only orange stripes present, which are placed between the cell and the costal margin. Beneath the discal band of the forewing is yellow or orange, the basal area as above, a basal costal spot on both wings grey-yellow, the base and cell of the hindwing striped with yellow-grey, these stripes as well as the basal spots often distinctly tinged with orange-brown. ♀ larger and paler, the discal band of the forewing yellow, proximally slightly orange, in the single example posteriorly joined to the proximal area; hindwing to beyond the apex of the cell orange, blurred, striped with black. Beneath paler, hindwing and distal part of the forewing striped with yellow-grey, cell of the hindwing almost entirely yellow-grey, round its extremity a dark nebulous band, distal margin likewise blackish, on the disc yellow-grey stripes. Palpus in ♂ and ♀ laterally yellowish-scaled at the extreme base; abdomen beneath with three rows of washed-out yellowish spots; pronotum without spots. Hinder angle of the cell of the hindwing less produced than in *thespias*. — In the British Museum 7 ♂♂ and 1 ♀ from East Ecuador: Gualaquiza (type), Canelos, Sa. Inez and Aguano.

*eresia*. **A. eresia**. Recalls the *thalia* group in the great extension of the light colour on the upperside. ♂: upper surface pale ochre-yellow to red-orange, with black veins; on the forewing the distal margin, an oblique band distally to the end of the cell, a discocellular spot and a cell-spot black. Underside of the hindwing characteristic: at the base some small orange spots, in the middle a white band, proximally bounded by a black line which is angled at the apex of the cell. ♀ paler than the ♂, the black markings more extended, the markings on the underside of the hindwing standing out less sharply. The two lower radial veins of the hindwing close together and the lower angle of the cell strongly produced. Distributed from Colombia to Bolivia in several geographical races, only known from the east of these countries and rather rare in collections. — **eresia** *Fldr.* (S2 d). ♂: the veins of the forewing broadly edged with black, these stripes as thick as the discocellular streak. Ground-colour sometimes much paler than in our figure. ♀ not known. East Cordillera of Colombia. — **leptogramma** *Jord.* (S2 c). Variable. ♂: vein-stripes slender, discocellular stripe and black discal oblique band broad and usually united, the distal margin broadly black to the hinder angle; distal margin of the hindwing washed-out black. On the under surface the black discal line of the forewing extends to beyond the lower median vein. ♀ with the black more extended than in the ♂; basal area of the forewing and the hindwing entirely black, or again only the basal third and the distal margin of the hindwing blackened. East Ecuador: Archidona and Baños at the Rio Pastaza. — **eresina** *Hpffr.* (S2 c). Paler than the preceding forms, the ♀ sometimes pale straw-yellow, the black reduced, on the under surface the black discal line of the forewing only reaching to the upper median vein. The examples vary considerably in the tone of the ground-colour as well as in the extent of the markings. Known to me from the Rio Palcazu and Rio Marcapata, from Cuzco and Carabaya; examples from Bolivia, the typical locality, I have not been able to compare.



**A. desmiala** *Jord.* Nearly allied to *eresia*. ♂: forewing above black with orange-red basal area, which is placed between costal margin and lower submedian, extends furthest distad in the cell, where it reaches the point of origin of the lower median vein and is truncate; a broad discal band of the same colour from the costal vein to the lower submedian, reaching the latter nearly at the hinder angle and touching the lower angle of the cell, the proximal margin of this band anteriorly twice indented, then almost entirely straight, its distal margin obtusely angled at the middle radial and notched both at this vein and at the lower median. Hindwing likewise black, with a broad diffuse median band, which enters into the cell and is posteriorly extended nearly to the base and the anal angle, the anterior and posterior part of this band grey-yellow, the middle part orange-red, the veins and interneural folds black. On the under surface the forewing as above, but the orange markings paler, the discal band distally bordered with yellowish white and the distal margin shaded with deep orange. Hindwing as in *eresia leptogramma*, but without light scaling proximally to the cell and at the costal margin, the light median band broader, and the distal margin sprinkled with orange-red scales, which form a distinct line. — Archidona, North-East Ecuador, 1 ♂ in the British Museum.

**A. laverna** *Dbl.* (82 e). Palpus, collar and breast pure black. Forewing as in the following species with orange basal area and discal band, the costal margin black to the base, the last spot of the discal band (placed below the 1st median vein) small; the black stripes of the hindwing broad, the broad black distal margin not very sharply defined. On the under surface the discal band yellow or yellowish, lighter than the basal area and longer than above; hindwing (as in *A. callianthe*) striped with grey-yellow from the base to the apex of the cell and the anal angle. Rest of the wing striped with reddish brown, especially at the end of the cell, at the margin blackened, often yellowish submarginal spots are present. ♀ (type in the British Museum, figured by DOUBLEDAY): discal band above pale yellow, basal area darker than in the ♂; hindwing washed over with brown-orange. In both sexes the lower angle of the cell of the hindwing more strongly produced than in the next two species. — Larva (in the Oxford Museum, ex coll. KADEN) above brownish with light transverse markings, beneath entirely light, head and thoracic legs black, spines on segments 1, 2 and 3 and the dorsal spines of 11 and 12 dark, all the rest light, the bristles light, the spines about 4 times as long as the distance between two dorsal spines on the same segment. Pupa (likewise in Oxford) chalk-white, with subdorsal longitudinal band of blackish markings, a weaker lateral band and a strong ventral double stripe; spines black, about as long as the distance between the 2 spines on the same segment, anal segment black; between the longitudinal bands weak markings. — Venezuela. Probably this species also occurs in East Colombia, but apparently there are no examples from there in collections as yet.

**A. leontine**. Palpus with yellowish grey scaling at the sides, collar and breast spotted with red-brown (in examples which are not worn). Forewing above similar to that of *A. laverna*, but the basal area extends proximally nearly to the costal margin. Beneath the discal band is always yellow, not orange, and hindwing densely striped with grey-yellow, the striation either extends to the distal margin or an abbreviated broad discal band, which passes round the apex of the cell, and the distal margin remain dark. Ecuador and North Peru, varying very much geographically. — **leontine** *Weym.* ♀: according to the figure in "STÜBELS Reise" the proximal area of the forewing is pale orange-yellow (according to the description "red-yellow"), the discal band pale yellow, hindwing as the proximal area of the forewing, the black distal margin broad but diffuse. Beneath the apex of the forewing and the whole hindwing yellowish grey, the discal band of the forewing not sharply defined distally. Here belongs probably a ♂ in coll. GODMAN from Gualaquiza, Ecuador, and a second ♂ in coll. HEWITSON from "Ecuador", both in the British Museum. In these examples the black cell-spot of the forewing is narrow, the discal band pale orange, also beneath scarcely lighter than the basal area, the hindwing above black-brown with quite washed-out orange area, or pale orange with black, posteriorly very narrow marginal band. Under surface of the hindwing at most in the basal half with faint light stripes, the distal half or almost the whole wing as well as the distal part of the forewing blackened, with deep black stripes on the veins and folds, without light scales. — A further form, in the British Museum from Quito and Sarayacu (Rio Pastaza), is very similar to *leontine*. ♂♀: the basal area of the forewing almost as much reduced as in *hypsipetes*, the orange spot in the apex of the cell small, hindwing grey-yellow, strongly striped with black, with or without orange-red tone, distal margin variable in breadth; in almost all examples the proximal area of the forewing dusted with washed-out black at the veins and the hindmargin. — **bulis** *Jord.* (82 e). ♂: on the under surface the yellow discal band of the forewing not sharply defined distally, the distal part of the forewing and the whole hindwing densely and regularly striped with yellow-grey, the hindwing with faint reddish brown discal band and without black marginal band. ♀ not known to me. South-East Ecuador: Loja, Zamora. — **catochaera** *Jord.* (82 e). ♂: somewhat darker orange than the preceding form; the black marginal band on the hindwing above more sharply defined and broader. Beneath the distal part of the forewing and the distal half of the hindwing only weakly striped with yellow-grey, but the hindwing bears a marginal band composed of grey stripes. North Peru: San Pablo, and Central South Ecuador: Cuenca, taken by SIMONS at 2000 and 2200 m. — **hypsipetes** *Jord.* (82 e). In general larger than the last two forms. The orange-red basal area not reaching quite so far distad in the cell and also abbreviated towards the hinder angle, hence the black median band broader than in the preceding forms, the discal band lighter yellow and the black distal border of the hindwing as broad as or broader than in *catochaera*. Beneath the basal area often somewhat larger than above, the apical part of the forewing and the distal half of the hindwing



almost as densely striped with grey-yellow as in *bulis* and *leontine*, the yellow discal band consequently not sharply defined distally, the hindwing without distinctly defined marginal band. ♀ similar of the ♂; upperside of the hindwing with black line bordering the apex of the cell, which is sometimes distinct also in the ♂. Cajamarca, North Peru, taken by O. T. BARON at about 3000 m. in large numbers in May.

**A. negra.** Whether the two forms referred here constitute an independent species from *leontine* can scarcely be decided from the very few examples yet known. The black median band of the forewing above and beneath narrower than in the *leontine* forms and the orange discal band, which is yellow beneath, correspondingly broader; the black distal margin of the hindwing sharply defined. Underside of the hindwing grey-yellow in the basal half, especially in the cell, otherwise red-brown with dark distal margin, without the dark abbreviated band round the apex of the cell, which occurs in all the *leontine* forms. South-East

*euclia.* Ecuador and North Peru. — **euclia** Dogn. Not known to me in nature; perhaps the form is identical with *A. leontine bulis* from the same locality, though the (uncoloured) figure given by DOGNIN does not fit with any of the rather numerous *bulis* examples that I have compared. ♂: the black distal margin of the hindwing

*negra.* above much narrowed anally and beneath only indicated. Loja, Ecuador. — **negra** Fldr. ♂: the black distal margin of the hindwing but little narrowed posteriorly, sharply defined, broad and distinct beneath also. Rio Negro in North Peru.

*nomina.* **A. nomina** Jord. (= *mamina* Jord. laps. typ.) (82 e). Very similar to the following species, occurs together with it and is therefore probably an independent species. Palpus entirely black, collar and breast spotted with red-brown. The basal area and discal band of the forewing above and beneath, as in *A. demonica*, orange-red, of a deeper tone than in *A. leontine*, the orange-red stripe along the hindmargin better developed than in *demonica*, the veins intersecting the discal band more distinctly black; the black distal margin broader than its distance from the apex of the cell, not sharply defined, the black stripes thick, the abdominal margin and the base washed over with black. Beneath the base and cell of the hindwing are striped with yellowish grey, the rest of the hindwing as well as the apex of the forewing more or less dark reddish brown, sometimes with distinct grey submarginal streaks on the hindwing. The forewing bears commonly 1 or 2 light spots in the orange-red discal band both above and beneath. The ♀ above similar to the ♂, but the basal area of the forewing darkened and the hindwing shaded with grey-yellow. The whole under surface of the hindwing and the distal part of the forewing densely striped with yellow-grey, the whole costal margin of the forewing grey-yellow. — East Peru, in the provinces of Huánuco, Junín and Cuzco.

**A. demonica.** Distinguishable from *A. leontine* by the orange-red colour of the discal band on the underside of the forewing. At most this band is somewhat yellow distally. Palpus laterally with yellowish grey scaling; collar and breast sprinkled with orange. ♂: forewing as in *A. nomina*, but the discal band intersected by much finer black veins; the black marginal band of the hindwing sharply defined. Beneath the hindwing is red-brown with darker, broad distal margin, the cell and often a few short stripes before and below it yellowish grey. ♀ larger and paler than ♂, the basal area of the forewing frequently strongly washed over with black; the markings vary in colour from orange-red to pale yellowish grey; beneath the hindwing either as in the ♂ or striped throughout with yellowish grey, as also the distal part of the forewing.

*scotosis.* Distributed from South-East Ecuador to Bolivia; a common species. The earlier stages unknown. — **scotosis** Jord. ♂: the basal area mostly larger than in *demonica* Hpffr. (82 b), hence the black median area narrower, the discal band longer, as the spot placed between the median veins is larger and there is mostly also a small spot below the lower median; the breadth of the marginal band of the hindwing in the middle greater than its distance from the apex of the cell. ♀ similar to the ♂, paler, the basal area of the forewing

*sobrina.* not shaded with black. South-East Ecuador. — **sobrina** Jord. ♂: quite similar to the preceding form, perhaps not constantly differing from it. Discal band beneath with distinct yellow tinge; hindwing somewhat more

*demonica.* distinctly striped. Environs of Chachapoyas in North Peru. — **demonica** Hpffr. (♂ = *nicylla* Hpffr.) (82 b, c). ♂: the orange-red discal band nearly always considerably narrower than the black median band, seldom reaching the lower median and never extending beyond it; the diameter of the black marginal band of the hindwing, measured in the middle, shorter than the distance of the band from the apex of the cell. The ♀ occurs in 3 principal forms, which are connected by transitions. In all of them the basal area of the forewing

*aurantia.* above is more or less strongly suppressed by black. ♀-f. **aurantia** form. nov., discal band and hindwing orange;

*intermedia.* ♀-f. **intermedia** form. nov., discal band yellow-grey, hindwing orange; ♀-f. **demonica** Hpffr., discal band and hindwing yellow-grey. HOPFFER described the butterfly first from the ♀ as *demonica* and then from the ♂ as *nicylla*; as *demonica* was described on p. 345 and *nicylla* on p. 346 the former name takes precedence. *demonica* is common in eastern Peru and Bolivia and is known northwards as far as the Rio Pozuzo.

Section II. Distal half of the costal margin of the forewing beneath clothed with bristles, without scales.

#### d) thalia Group.

Distal part of both wings beneath and above scaled, only at the distal margin with hair-scales; claws of the ♂♂ asymmetrical.

**A. antea** Dbl. (83 c). Cell of the hindwing beneath without row of bristles. The discal band of the forewing broad,



always paler than the hindwing, nearly always complete, as the last spot but one (between the two median veins) is seldom entirely absent; the basal area is mostly well developed, but in the ♀ often reduced; in the latter case cell-stripe and cell-spot always remain very distinct; the upperside of the hindwing is always brownish orange. Beneath the hindwing from the base to the apex of the cell and a postmedian costal patch are coloured like the proximal area of the forewing, the disc is washed-out brown and the angled median band, which passes round the apex of the cell and in *thalia* and its allies is commonly strongly developed, is only indicated and sometimes entirely absent, the distal margin is slightly darkened. According to the colouring of the upper surface we differentiate: f. *holochroa* form. nov., discal band of the forewing scarcely paler orange than the hindwing; f. *ochrotaenia* form. nov., discal band pale yellow, proximal area orange; f. *anteas* Dbl., discal band and proximal area pale yellow, hindwing orange. These colour-forms are not local. *A. anteas* is distributed from Guatemala to Colombia and eastwards to East Venezuela; there are also 2 examples before me from the island of Tobago. A. H. FASSL, who has bred *anteas* from the larva, has presented to the Tring Museum a blown larva and some pupa-cases. The larva is black above except for the spines, the latter light at the base with the exception of those on the prothorax, each spine on a dark spot surrounded by a light circle, each segment with 2 or 3 light transverse lines, the thoracic segments in this example so pressed together that their markings cannot be seen; the bristles on the spines white, those at and near the tips dark; the length of the spines is more than twice the distance between two spines on the same segment. Pupa-cases chalk-white, anal end black, the black spines of the abdomen about as long as the distance between two spines (on the same segment), the pattern of the abdomen consists of longitudinal streaks, namely a subdorsal, a lateral, and a strong ventral double row; in addition to these 10 longitudinal lines (in 5 pairs) the abdomen bears only some very small and not numerous spots. Larva and pupa are quite different to those described on p. 371 (from *limbata*). — In the Cordillera of Mérida (Venezuela) flies a form which will possibly prove to be a local race of *anteas* and which I therefore add here provisionally: f. *straminosa* form. nov., the light parts of the upper surface entirely pale yellow, the hindwing distally sometimes more or less extended brownish orange, the stripes of the proximal area of the forewing reduced in breadth, occasionally for the most part suppressed, the black stripes of the hindwing on the whole stronger than in *anteas*. Under surface paler yellowish grey than in *anteas*, the hindwing less brown and the angular median line on the whole more distinct.

*A. thalia* L. (83 c). Underside of the hindwing usually without row of bristles in the cell. Wings duller-coloured than in *anteas* f. *ochrotaenia*, which resembles *thalia*, the veins dividing the basal area of the forewing always broadly black, the black stripes on the upperside of the hindwing more strongly developed, the discal ones all extending nearly to the cell, the cell-stripe strongly developed. The underside of the hindwing on the whole darker than in *anteas*, especially in the ♀. The discal band of the forewing always interrupted, the last spot but one being absent or quite small. A ♂ from Paramaribo is distinguished by its colouring: ab. *idiographa* ab. nov., on the upper surface the basal area very much reduced, the postmedian spot of the cell scarcely indicated, hindwing brown-black, a cell-stripe divided by a black longitudinal streak, a discal band 4 to 5 mm. in breadth composed of stripes and a long, diffuse line in the abdominal area, extending to the base, dirty orange. Beneath as above, but the basal area of the forewing and the markings of the hindwing paler, the band of the hindwing posteriorly still more strongly suffused with black than above. — Surinam and British Guiana. The larva is described and figured by STOLL as cinnamon-brown, with black lateral stripes and cinnamon-brown head. Pupa white, marked much as in *A. anteas*.

*A. cedestes*. ♂ and ♀ without or ♂ with row of bristles in the cell on the underside of the hindwing. On an average larger than *anteas* and *thalia*; markings of the forewing pale straw-yellow; hindwing with the exception of the base commonly tinged with orange, the lower angle of the cell long-produced, so that the base of the upper median vein is placed much more distally than the upper angle of the cell, above usually entirely without blackish median band, under surface as in *anteas* shaded with blackish in the distal half, especially near the lower angle of the cell, the median band indicated, but not sharply defined. Ecuador. — *suspecta* subsp. nov. ♂♀: the basal area strongly suffused with black, washed out, the cell-spot, however, purer pale yellow. In western Ecuador: Paramba and Chimbo; in the type from Paramba (♂) the hindwing without bristles in the cell on the underside and the disc above brownish orange. — *cedestes* Jord. (83 a). ♂♀: the basal area well developed, the postcellular stripe in particular sharply defined and broad. South-East Ecuador: Zamora.

*A. terpsinoë*. The largest species of the *thalia* group, except for stunted specimens. Wings broad, especially the hindwing; on the underside of the hindwing the cell always without row of bristles and the light costal patch sharply defined and more distal than in the preceding forms. Peru and Bolivia. The races of *terpsinoë*, *cedestes*, *thalia* and *anteas* replace one another geographically and are possibly forms of a single species. — *terpsinoë* Fldr. ♂: on the whole somewhat paler than *crassinia* (82 g), especially the basal area of the forewing beneath, the discal band of the forewing nearly always pale yellow, rarely white, the last spot but one in it mostly indicated. North Peru: Rio Negro and Chachapoyas. — *crassinia* Hpffr. (82 g). Wings very broad, the discal band of the forewing mostly white, more rarely yellowish, its penultimate spot seldom indicated; the black stripes of the hindwing as a rule very short. Basal area of the forewing and the



*eupelia*. hindwing occasionally paler than in our figure. East Peru and East Bolivia, not rare. — *eupelia* Jord. (83 a), from South-East Bolivia (Dept. Sta. Cruz de la Sierra), is distinguished by the dirty clay-yellow to yellowish grey colouring of the hindwing and the basal area of the forewing, the veins intersecting the latter more broadly black, and the stripes of the hindwing thicker and longer, the discal band of the forewing always white, and the underside of the hindwing greyer than in *crassinia* and *terpsinoë*.

*veraecrucis*. **A. guatemalena.** Cell of the hindwing beneath with row of bristles. Wings narrow; the markings of the forewing and the hindwing yellow-grey, the latter occasionally brownish orange; the veins in the basal area of the forewing broadly black, the last spot but one of the band absent; the hindwing strongly striped, the marginal band sharply defined, the black median band above at most at the costal margin distinct; beneath without marginal band. Mexico to Colombia; earlier stages unknown. — *veraecrucis* subsp. nov. ♂♀. On the forewing the light stripes of the basal area on the whole broader than in *guatemalena*, the discal band likewise broader, the spots in it not separated; the distal margin of the hindwing narrower, the disc in the ♀ sometimes tinged with orange. Veracruz, East Mexico. — *guatemalena* Bates (83 b). The light stripes of the forewing narrow, the discal band separated into narrow spots by the broad black veins. Guatemala and Costa Rica. — *latior* subsp. nov. Somewhat broader-winged than the preceding forms, the hindwing somewhat deeper yellow. Distinguished by the under surface, which is more uniform yellowish grey, so that the black transverse markings stand out more sharply, the light band of the forewing, on the other hand, less contrasted with the apical part of the wing. Magdalena Valley in Colombia.

*melampeplos*. **A. melampeplos** Godm. & Salv. Very similar to the preceding species, but probably specifically different. Less densely scaled, hence slightly transparent, the hinder angle of the cell of the hindwing much less produced. The light stripes of the forewing very distinct, but somewhat diffuse at the edges, the cell-spot always small, the spot between the median veins likewise small, almost obsolete, the discal band never reaching beyond the upper median, as the last two spots are always absent. The black fold-stripes of the hindwing on the whole narrower than in *A. guatemalena*. Hindwing with or without orange-red tone. — Costa Rica and Ecuador, probably also in West Colombia.

*lapitha*. **A. lapitha** Stgr. (83 c). A strikingly pale, small, semitransparent species from Panama, in which on the forewing the basal area and the discal band are confluent posteriorly and the blackish median band is very narrow. On the hindwing the median band is always wanting above and the marginal band is very narrow and washed out. Subcostal and 1st radial of the hindwing short-stalked. ♀ quite similar to the ♂. — Chiriqui; in the Tring Museum also from the island of Jicarón off the west coast of Panama.

The study of the *thalia* group of *Actinote* occurring in the Andes, except those which belong to the preceding species, presents such difficulties that we have not yet arrived at any satisfactory conclusions. According to the material before me there are in many districts 3 or 4 forms independent of one another, i. e. specifically different, but their differences are so confused with the characters of the examples from other districts that it is at present impossible to give sharp diagnoses of these species. Many forms are fairly constant in colouring, others on the contrary evidently vary from orange-red to pale yellow-grey; the markings, scaling, wing-contour, genitalia and neurulation offer no reliable characters on which one could unite into species the examples coming from different districts. Under these circumstances it seems to us advisable for the present only to name the conspicuous, easily recognizable forms and to attach the others to them as probably varieties, until further investigations on more abundant material and the results of breeding shall have given us fuller enlightenment concerning these doubtful forms. As the pupae before me of two Andes forms have short spines, whilst the pupae of a form from East Bolivia belonging to the Brazilian *A. pellenea* have long ones, I refer to *A. equatoria* the Andean forms under consideration and to *A. pellenea* the forms which occur in the districts east of the Andes as far as the Atlantic Ocean and northwards to the north coast of Venezuela. This purely geographical division will certainly prove incorrect, as no doubt many of the Andes forms likewise belong to *A. pellenea*, but in our present defective knowledge of these *Actinote* it has the advantage that it will render it comparatively easy to find the names of the examples to which localities are attached.

*hahneli*. **A. equatoria.** We unite under this name the forms which are known to us from the Andes from Guatemala to Bolivia and from the Cordillera from Mérida in Venezuela and the Sierra de Sta. Marta in North Colombia. — *hahneli* subsp. nov. (Stgr. i. l.) flies in Mérida. Pale straw-yellow, basal area of the forewing sharply expressed, not diffuse, but the black vein-stripes intersecting it strong, the costal margin black to the base, above nearly always and beneath always complete. On the under surface the black stripes of both wings strong, the marginal band and the angled band of the hindwing sharply expressed, the light part of the disc between them band-shaped. Together with this light form occurs a second, in which on the upperside the hindwing and the whole basal area of the forewing, or the greater part of it, are brownish orange, while the discal band of the forewing is pale yellow; on the under surface this form agrees with true *hahneli*, as the basal area of the forewing has only quite a weak orange tone: f. *semilutea* form. nov. Both forms also fly in the Sierra de Sta. Marta. — From the East Cordillera of Colombia 3 forms are known to me: one is quite like true *hahneli*, except that the marginal band on the underside of the hindwing is less deep black. A second, commoner form, *perfulva* subsp. nov., is brownish orange above, at most the discal band of the forewing is a little paler, the black stripes of the hindwing are narrow, the atripes in and before the cell



short, narrow or absent. Under surface distinctly tinged with orange, on the hindwing the marginal band black, but usually washed out, the angled band nearly always well developed, the light discal area which it bounds forming a sort of band, as the disc is not or scarcely darkened at the apex of the cell. As a third form we find in the same district f. *flavifascia* form. nov., which is probably a subspecies of *A. pellenea*; in it the discal band of the forewing is yellowish and contrasted with the basal area and hindwing, which are orange; the black stripes of the hindwing are longer than in *perfulva*, the subostal and cell-stripes are distinct above, thick beneath, the angled band strongly developed beneath, the light part of the wing distally to it band-like. — From the Cauca Valley I have 2 principal forms before me: *limbata* subsp. nov. represents *equatoria* and probably *hahneli*; ♂: the markings of the forewing are chamois-yellow and the hindwing brownish orange, or both wings are of the latter colour, the discal band always of the same tone as the basal area; beneath the forewing has at most a suggestion of orange-colour, the cell and the subcostal area of the hindwing light, as their stripes are usually short or absent, the distal margin deep black, sharply defined, the angled band mostly linear, often only distinct towards the costa, the disc not darkened at the end of the cell. ♀ pale yellowish grey, marginal band on the hindwing beneath as in the ♂ or densely overlaid with light scales, angled band weakly indicated, the wing very pure in colour as far as the marginal band. A ♂ from Monte Tolima (A. H. FASSL leg.) probably belonging here has the underside of the forewing a deeper orange-brown tone. The second principal form from the Cauca Valley, which lies before me in large numbers from the neighbourhood of Popayan, may be a form of *pellenea*; upper surface brownish orange, the discal band of the forewing either as deeply coloured as the basal area or lighter, the black stripes of the hindwing above and beneath long, the marginal band of the hindwing beneath indistinct, washed out, the disc darkened at the end of the cell, so that a light costal patch is separated off: f. *cauca* form. nov. — In the West Cordillera of Colombia FASSL bred a form which pretty certainly belongs to *limbata*, with the ♂ deep straw-yellow, i. e. nearly as pale as the ♀. The larva, from the two blown specimens before me, has a red-brown (not black) head, black subdorsal stripe and fine black dorsal transverse lines, the spines are light like the body, except on segments 1 to 3 and 11 and 12, where they are dark; the length of the spines exceeds the distance between two dorsal spines on a middle segment by about one third. The spines of the pupa are only about half as long as their distance from one another; the black-brown subdorsal stripes are very strongly developed and about twice as broad as the light dorsal stripe, which is almost entirely without dark markings, the ellipses which form the ventral stripe are very strong; one pupa-case before me is much less strongly marked than the other. On a narrow-leaved, Eupatorium-like Composite. A ♀ from the western slopes of the West Cordillera (Rio Dagua) has the hindwing above tinged with brownish orange. From Nicaragua we have a number of examples which exactly agree with *limbata* from the Cauca Valley. — From the West Cordillera of Ecuador I know only one form, *grammica* subsp. nov., which is similar to the pale *hahneli*, but in the ♂ has often a slight orange tinge, especially on the hindwing. The black vein-streaks are thick, especially on the marginal band of the hindwing. The discal band of the forewing above only reaches to the 1st median, the two posterior spots being always absent, the fold-stripes are short, except the stripes of the abdominal area, the anterior are commonly absent, the angled band is at most quite weakly indicated above. Beneath the distal margin of both wings is black, the hindwing is not darkened at the end of the cell, the angled band always narrow and mostly only anteriorly indicated as a line, the cell-stripe and the discal fold-stripes short or absent. Paramba, Rio Mira, taken in numbers in March by ROSENBERG at about 1000 m. Some larvae collected by R. HAENSCH, probably found at Balsambamba in the West Cordillera, agree well with the larvae of *limbata* from the West Cordillera of Colombia. — On the central plateau of Ecuador, between the West and East Cordilleras, and also in the dry coast districts of West Peru, occurs *equatoria* Bates (83 a). Very pale yellowish grey without any trace of orange. The wide distribution of this *Actinote* in dry districts suggests that the lighter or darker colour of the *thalia* group of *Actinote* depends on the lesser or greater amount of moisture in the air, i. e. that the light forms are “dry” and the deep orange forms “wet”. The discal band of the forewing is nearly always complete, occasionally the last spot but one is wanting; the stripes on the hindwing are well developed, the cell-stripe especially strong, the marginal band very variable in breadth, narrower than in *hahneli* and *grammica*, beneath washed out, and like the distal margin of the forewing light-scaled, angled band always distinct, not filled in, mostly developed above also. The pupa resembles that of *limbata*, but the spines are on the whole somewhat shorter, in one of the four specimens before me the posterior 3 pairs reduced to small humps. The larva, judging by a cast-off skin attached to one pupa, shows no differences from that of *limbata*. — To *equatoria* probably belongs also *mucia* Hpffr., described from Chanchamayo and founded on a “pale straw-yellow” ♂, with very narrow black marginal band on the hindwing. — *epiphaea* subsp. nov. In the examples before me from East Peru southwards as far as the Rio Perené district (Chanchamayo) the basal area of the forewing and the hindwing are brownish orange and the discal band of the forewing is paler, yellowish; the wings are more elongate than in *grammica* and the following form; the spot placed before the base of the 1st median in the basal area of the forewing is small or absent, the discal band is often complete, the last two spots seem to be especially well developed in small examples (type), the marginal rays of the hindwing, or at least the middle ones, are short and the angled band is more or less distinct above. Beneath both wings are very distinctly tinged with orange, the angled band broad, filled in with blackish brown, the light part of the disc distally to it band-like, rather sharply defined distally also, the distal fold-stripes almost confined to the dark distal



margin (except for the abdominal area). ♀ similar to the ♂; the angled band scarcely indicated above and somewhat paler brown beneath than in the ♂; the discal area of the hindwing beneath usually darkened posteriorly, so that a light costal patch contrasts with the rest of the disc. Type from the Rio Palcazu.

*adriana*. Probably a subspecies of *A. pellenaea*. — *adriana* Hpffr., described from Bolivia, has the hindwing strongly rounded. We refer here also examples from South-East Peru, which vary from brownish orange to pale yellowish grey and are paler than *epiphaea* both above and beneath. The colour of the true *adriana* is described as a pleasing clay-yellow, also in typical specimens of this form the distal margin of the hindwing is said to be much broader than in *pellenaea*. — From the Andes of Bolivia we know a further *pellenaea*-like form, which is somewhat paler than the Peruvian *epiphaea*; the basal area of the forewing is larger, especially the spot between the 1st and 2nd medians, the distal margin of the hindwing is narrower, the angulated band is scarcely indicated and the last spot but one in the band of the forewing is absent, also the fold-stripes before, in and below the cell of the hindwing are strikingly narrow and indistinct. The under surface, as in *epiphaea*, is strongly tinged with orange, the angulated band is distinct, broad and filled in, but paler than

*lodis*. in *epiphaea*, the light part of the disc distally to it is band-like: *lodis* subsp. nov. Belongs probably to *A. pellenaea*.

*calymma*. **A. pellenaea**. Cf. the note inserted before *A. equatoria*. — *calymma* Jord. (83 c), from Paraguay and Argentina, is dark brown-black, slightly transparent, the basal area of the forewing and the hindwing dull orange, diffuse at the edges, the discal band of the forewing pale yellow, occasionally suffused with orange. Under surface dull orange, angulated band of the hindwing extending to the 2nd median or beyond it, in the ♂ mostly very well developed above also. Together with this dirty orange form flies a pale yellowish grey one, in which the markings are sharply defined; angulated band of the hindwing always strongly developed above

*clara*. also: f. *clara* form. nov., type from Paraguay. — *crucis* Jord. (83 c). Deep black, brightly coloured, discal band

*crucis*. of the forewing and the distal and anterior parts of the basal area yellow, the rest of the basal area and the hindwing orange, these markings sharply defined and contrasting much more strongly than in *calymma* on account of the purer ground-colour, costal margin of the forewing broadly black, the vein-stripes narrow. On the under surface the basal area faintly tinged with orange at the base, apex of the forewing and the hindwing yellowish grey, marginal band showing through, posteriorly much narrowed, fold-stripes long, angulated band distinct beneath, distally to it a light costal patch. Bred by J. STEINBACH in large numbers at Buenavista in East Bolivia; the examples only vary very slightly. The spines of the pupa as long as the distance between two spines on the same segment or somewhat longer, the three stripes on the mesonotum sharply separated, the light dorsal interspace of the abdomen broader than the subdorsal stripes; tongue-case with very narrow black margins, not almost entirely black as in *A. equatoria* and *limbata*. Larva not known to me, but on one pupa hangs a larval spine, which is brown and nearly as long as the transverse diameter of the pupa. — *pellenaea* Hbn. Deeper orange than *crucis*, especially the basal area on the under surface, cell-spot larger. Under surface darker. Occasionally the basal area of the forewing above entirely grey-yellow. South Brazil northwards almost to the mouth of the Amazon. — From the Lower and Middle

*pellenaea*. Amazon no *Actinote* is yet known. — *subhyalina* Stgr. A very small, light, semitransparent form from the Upper Amazon, in which the discal band of the forewing is complete and the angulated band of the hindwing, at least in the ♂, distinct above also. The light parts of the wings are in f. *subhyalina* yellowish grey, at most the forewing shows some orange colouring at the extreme base. Specimens also occur, however, in which

*ferrugata*. the basal area of the forewing and the hindwing are pale orange: f. *ferrugata* form. nov., type from the

*trinitatis*. Rio Cachiyaco, a tributary of the Rio Ucayali. — *trinitatis* subsp. nov., from Trinidad and the eastern parts of Venezuela nearest to Trinidad, is very similar to f. *ferrugata*. ♂ deeper black, discal band of the forewing pale yellow, complete, but the penultimate spot often small, basal area distally slightly lighter, hindwing with short fold-stripes at the narrow black distal margin which tapers to a point posteriorly, the fold-stripes in, before and below the cell are absent or quite faint, a black discocellular streak distinct, on the other hand the angulated band only showing through. Beneath the basal area of the forewing slightly orange, distally as pale as the discal band; hindwing uniform light yellowish grey, marginal band indicated, disc not darkened at the end of the cell, angulated band sharply developed, nearly always entirely filled in. ♀ paler than the ♂, the larger distal and anterior part of the basal area of the forewing as light as the discal band, also the disc

*subbadia*. of the hindwing above somewhat lighter at the marginal band. — *subbadia* subsp. nov. Basal area and hindwing above much deeper orange-red than in *trinitatis*, the former only in the ♀ somewhat lighter distally and in both sexes also beneath much more extended orange than in *trinitatis*, the fold-stripes more strongly developed, the angulated band at least in the ♂ more distinct above, the hindwing much darker beneath, its distal margin broadly black or brown, the angulated band broad, the light part of the disc reduced to a narrow band; in the ♀ the underside of the hindwing lighter than in the ♂, but the distal area still always darker than in the ♀ of *trinitatis*. North Venezuela: San Esteban (type), Valencia, La Guaira. This form approximates to orange-coloured specimens of *A. equatoria hahneli* from Mérida, but the vein-stripes are more slender, the marginal band of the hindwing is narrower above, beneath the forewing is much more strongly orange, the angulated band broader, and the distal margin of both wings less pure black.

In addition to *A. pellenaea* there are in Brazil three *Actinote* so similar to one another that they have usually been regarded as forms of one species. Although the differences are not sharp when one compares the examples of one of these forms from different localities with those of another, yet the specimens of the four *Actinote* occurring together seem to be well differentiated and hence I regard these four forms as specifically distinct. As the butterflies are very common it ought not to be difficult to settle the question



on the spot by breeding. Hitherto, however, none of the entomologists residing in Rio and the neighbourhood have undertaken the task. PETERS has bred from the larva two of the butterflies in question and there are water-colour drawings of larva, pupa, butterfly and food-plant in his unpublished contributions to the Brazilian butterfly fauna in the Tring Museum. In one of the larvae, however, a mistake has evidently occurred and the figures of the pupae, as is usually the case with such, are not sufficiently exact for reliable specific differences to be gathered from them.

**A. pyrrha** F. (= ? *euterpe* Fldr.) (83 b). The example described by FABRICIUS from the BANKS collection is still in the British Museum, but in very indifferent condition. Very variable in size, length of the forewing 28 to 40 mm. The light markings of the forewing yellow-grey to dirty orange, much lighter than the hindwing; the basal area very much reduced, diffuse, mostly only the cell-spot well defined; the two posterior spots in the discal band are absent or small; the hindwing rarely yellow-grey, yet rather variable in colour, base and abdominal margin commonly grey. The scales of the forewing easily get detached and the basal half of the wing is usually transparent. The light scales in the distal part of the under surface of both wings are dentate. The anal tergite of the ♂ is either sharply pointed or obtuse. — South-East Brazil and Paraguay, common. — The description of *euterpe* Fldr. is so indefinite that the name must be allowed to sink, as neither in the Vienna Museum nor in coll. FELDER is there a specimen labelled by FELDER as *euterpe*. pyrrha.

**A. carycina** spec. nov. (83 b). A smaller form, length of the forewing 18 to 30 mm. Markings of the forewing grey-yellow, hindwing orange with grey abdominal margin, rarely the hindwing with the exception of the black distal margin and the markings of the forewing grey. The basal area of the forewing broken up into narrower stripes than in the next species by the very broad black veins. Under surface of both wings yellowish grey, without orange tone, the brown-black median band of the hindwing usually well developed as far as the lower median vein, rarely abbreviated. The light scales on the underside of both wings not dentate. — The larva which PETERS (Ms.) figures as belonging here shows a pair of long horns on the neck (or head) and is probably a *Dirphia* larva. The pupa, from which he obtained the butterfly, is more slender than usual and bears 6 rows of spines (!), which are not quite as long as the distance of one pair from another; the tip of the head is black, the cremaster on the contrary light; an uninterrupted subdorsal stripe black; on the ventral side a pair of black stripes on each abdominal segment. The sketch is probably incorrect. — South-East Brazil and Paraguay, common; name-type from São Paulo. carycina.

**A. parapeles** Jord. (83 a). A broad-winged and brightly coloured species. Discal band of the forewing always yellow, sometimes slightly tinged with orange, especially at the veins, the basal area either orange like the hindwing or as light as the discal band. On the under surface the basal area of the forewing and the hindwing either orange (f. *parapeles*) or as pale as the discal band of the forewing (at most slightly tinged with orange); the postmedian costal spot of the hindwing always pale (f. *pallescens* form. nov., name-type from Rio). The light scales in the distal part of the under surface of both wings dentate; valve of the ♂ pointed. — Larva according to PETERS (Ms.) with black head and blackish double lateral line, dorsal surface pale reddish, from the 7th to the 9th or 10th segment white; the spines correspondingly coloured, but the anterior and posterior ones brown. On *Boehmeria caudata*. The larvae when young gregarious and free on the leaves; before pupation they scatter. Pupa more weakly marked than in *carycina*, tip of the head and cremaster in PETERS' figure light, spines shorter than in *carycina*. According to PETERS the butterfly has a swift and powerful flight and is found at Novo Friburgo only in open, unwooded places. The butterfly figured by PETERS seems to belong to this species and to f. *pallescens*, but is possibly a form of *A. pellenea*. — South-East Brazil (very common near Rio), Paraguay, Matto Grosso. Examples with orange on the under surface I only know from Rio, where, however, the pale form also commonly occurs. parapeles.  
pallescens.

The following forms are sharply defined and certainly specifically different from the preceding.

**A. quadra** Schaus (82 f). A large species, which may be recognized by the large spot at the hinder angle of the forewing and the uniformly grey under surface of the hindwing. The submedian stripe of the forewing is divided by a fine longitudinal line, which is not the case in the preceding Brazilian species; the last spot of the always complete discal band is about as large as the cell-spot or even larger and the submedian stripe correspondingly abbreviated. — South-East Brazil, rare, known from the provinces of Rio, São Paulo and Paraná. PETERS (Ms.) found a larva suspended for pupation on a Composite (*Conyza*); it was entirely yellow-grey, including the head (discoloured?). Pupa thicker than usual, spines moderately long, the lateral stripe consisting of two lines. quadra.

**A. perisa** Jord. (82 f). The whole upper surface in ♂ and ♀ yellow, the veins and narrow streaks between them in the distal area black; the black transverse markings, as may be seen from the figure, sharply developed, beneath as well as above. Margins of both wings beneath washed over with grey, apex of the forewing even less black than above. — A pair found by J. STEINBACH in Tucuman. The same collector also sent from there two *Actinote* larvae and two pupae, which perhaps belong here. The larva is similar to that of *A. antea* (p. 365), but the spines are only half as long. Upper surface including the spines black, the latter light at the base, bristles white, the apical ones brownish, body from the stigmata downwards light (yellow-green perisa.



in life ?), above the legs with dark markings; thoracic legs and head black. Spines of the pupa only about half as long as the distance between the two spines on one segment.

*conspicua.* **A. alalia.** In this species also the spot at the hinder angle of the forewing is always rather large and the submedian stripe extends much less far distad than the median spot of the basal area; markings sharply developed; the penultimate spot in the discal band often very small but never quite absent; median band of the hindwing above and beneath distinct. Chiefly distinguished from *A. surima* by having the scales in the distal part of the wings beneath strongly denticulate, while the marginal cellules of the forewing beneath bear no hair-scales posteriorly to the 3rd subcostal. South-East Brazil. I only know the ♂. — **conspicua** Jord. (82 e). A very large, perhaps specifically different form from the province of Rio (Petropolis, Novo Friburgo). Very deep orange, also beneath. The black median band of the forewing as well as the marginal band of the hindwing broad. Under surface of the hindwing orange-brown. PETERS (Ms.) figures, together with its larva and pupa, a butterfly which resembles *conspicua* on the upper surface, but beneath has the discal band quite yellow instead of orange-coloured (♀?). The larva, which was found on *Eupatorium triplinervia* at Novo Friburgo, is dorsally reddish grey with black transverse bands; spines light, the anterior and posterior ones blackish, head grey-green, underside of the body yellow-green. Spines of the pupa short, the longitudinal bands not interrupted, black with small light spots. According to PETERS (Ms.) the butterfly lays its eggs in January in small clusters on the underside of leaves. The young larvae make a common web close to the place where they are hatched, afterwards in the top of the plants, where they draw together and spin over leaves and flowers. They remain in the web from February to October, undergo a moult there and eat little. With the arrival of the first rain they leave the web for good, eat voraciously, grow rapidly and remain together until shortly before pupation. PETERS found the butterflies in 1871 very common in all the clearings, in the following year rare. They shun the woods and when not disturbed fly with weak, slow flapping of the wings like a Heliconian, often hang suspended in the air for a long time, sometimes mount up high, then raise the wings somewhat and sink slowly without moving the wings. They visit the flowers of Composites, *alalia.* Lantana, etc., and are here easy to catch. — **alalia** Fldr. was described from an example without locality, which is characterized by the especially strong reduction of the black markings on the forewing. This specimen and others more broadly black, but undoubtedly belonging to the same species, are distinguished from *conspicua* by the hindwing beneath bearing distally to the black median band a reddish brown band, followed distally by grey longitudinal stripes, while the cell and the abdominal area are light-coloured and the cell of the hindwing has in the middle a short black transverse streak. São Paulo, Paraná, Espiritu Santo.

*surima.* **A. surima** (82 f, g). ♂: similar to the true *alalia*, somewhat paler yellow, the black median band of the hindwing above and beneath very strongly and sharply developed, forewing beneath with hair-scales between all the subcostals (at least on the folds), the other scales entire-margined, net dentate as in *alalia*. Underside of the hindwing with orange-brown tinge, distally to the median band somewhat more distinctly orange, this colour, however, not well defined distally as in *A. a. alalia*, but towards the margin gradually overspread with black. The only two ♀♀ before me (from Paraguay) are very pale, as the figure shows (82 g). — South-East Brazil (Paraná) and Paraguay.

#### e) mamita Group.

Wings semitransparent, with the same greasy gloss as in worn specimens of the preceding group, the distal part of the wings above and beneath with numerous hair-scales and bristles. Claws almost entirely symmetrical in the ♂ also.

*mitama.* **A. mamita.** Almost hyaline. On the upperside of the forewing in the distal part and on the underside of both wings about half the scales and in the distal part of the under surface nearly all the scales are replaced by bristles. On the under surface the bristles in the distal part yellowish with the exception of those placed on the veins and at the margin, which are black. ♀ similar to the ♂, larger, somewhat paler. Larva according to BURMEISTER dirty clay-coloured, head and the spines on segments 1 to 3, as well as the thoracic legs and a thin lateral line black, the spines on the other segments red; on *Amarantus*, *Evalus* and other low plants. Longitudinal bands of the pupa filled in with black, with round light spots, spines short. Argentina, *mitama.* Paraguay and South-East Brazil. — **mitama** Schaus (82 f), from South-East Brazil, is somewhat deeper orange than the corresponding sex of *mamita*, the forewing a little more broadly black and the under surface less *mamita.* grey. — **mamita** Burm. occurs in Argentina from Buenos Aires to Tucuman, and in Paraguay. The difference in the colouring of the sexes is greater in *mamita* than in *mitama*, at least in the examples before me.

*canutia.* **A. canutia** Hpffr. (= *pellenea* Geyer nec Hbn.) (82 g). Less transparent than *A. mamita*; the upper surface with the exception of the distal margin much more densely scaled. Under surface, in addition to the bristles which stand on the veins, with numerous black bristles, the marginal area consequently almost entirely black. Cell of the hindwing beneath without bristles. Proximal area of the forewing and the hindwing brownish orange, the discal band much more yellow. ♀ larger and much paler than the ♂. — South-East Brazil and Paraguay. The earlier stages not known.



Subfamily: **Heliconiinae.**

In this group of insects we are confronted with one of the most curious phenomena in the lepidopterous world, in as much as it is in an almost unique manner most closely connected and associated with the other genera of butterflies found in Tropical America. To him who demands scientific proof that for the natural classification of insects structure and anatomy are all-important, whereas colouring and markings play no very great part, one should recommend the study of this group. A limited number of most characteristic patterns are constantly recurring in quite different subgroups of the *Heliconiinae*; and not enough with that, but an exact copy of these patterns is found also in most of those groups of butterflies, which occur more or less frequently in the localities where the models are found. One has the impression that the *Heliconiinae* could but difficultly exist independently by themselves, and that it were necessary for them to associate with a whole number of partly allied, partly quite different forms, in order to hold their own in the struggle for existence.

This most curious fact becomes at once clear to any one who lands at the coast of South America. Whoever takes the road from Rio de Janeiro to the Monte Corcovado, observes, even before leaving the real town, flying along the bamboo-walls of the gardens, *Heliconius narcaea*. But were he to capture all butterflies resembling in colouring, markings and manner of flight this most gaudily coloured form, what would he bring home? Most assuredly a number of this same *Heliconius*; but in addition a whole series of very similar butterflies belonging to the most heterogeneous groups. Surely he will have obtained a few ♀♀ of *Perhybris pyrrha*, some *Eueides dianassa* (which would be its nearest allies), and in addition a whole number of Danaids (that is to say quite a different group of butterflies) which have such a marvellous external similarity to *H. narcaea* that even the most experienced eye of the collector could not discern any difference in them while flying. Such a butterfly occurring around Rio is f. i. *Melinaea ethra* (33 d), which agrees with *narcaea* also in size; *Mechanitis lysimnia* (34 b) is only to be distinguished by its smaller size, and since during certain times one may find at Rio also dwarf specimens of *H. narcaea*, it is absolutely impossible to tell with certainty whether a certain butterfly one there sees flying about or alighting upon a flower, is a *narcaea* or not. Further we observe at precisely the same hour another species, exactly resembling it in its mode of flying and its outward appearance, viz. *Ceratinia euryanassa* (35 b); it is only when we hold it in our hand that we may recognize the delicate wax-like softness of its wings. Also from the ♀ of *Eresia eunice* (91 a) it is difficult to distinguish small specimens of *narcaea*; indeed we may capture day-flying moths, such as *Castniidae*, *Pericopiidae* and others, — all wearing the dress of *Heliconius narcaea*.

A similar experience we may have on landing on the north coast of South America. Here we notice, fluttering about shrubs and bushes, a host of black butterflies with a blood-red spot behind the middle of the wing; playing together they form perfect bands of butterflies, all alike, only some a little larger, others smaller, some flying slowly, others more rapidly. A portion of these butterflies undoubtedly belongs to the *Heliconiinae*, most probably *H. melpomene* (75 a). But what else would we find, were we bent upon capturing all these black and red specimens which here fly at the same time, and often about the same shrub? A swallow-tail, *Papilio euterpinus* (12 c), which dropped its tails and assumed an entirely different shape and mode of flight in order to make the deception effective. Of *Pieridae* we notice above all *Pereute charops* (21 b) which forms the larger, and of *Nymphalidae* *Eresia castilla*, which makes up the smaller members of the uniformed company. In addition a whole number of *Heliconiinae* belonging to quite different groups than *melpomene*, as f. i. *H. guarica*, the northerly form of *vulcanus* (76 c), and *E. viculata* (78 b). Sometimes they still reveal by certain characteristics their origin from quite different groups, as f. i. *H. rubellia* (74 f) by its yellow subterminal band; but these marks are so much reduced that they do not interfere with the mimetic deception. Again we meet at these landing-places in Venezuela or Colombia *Acraeids* of the genus *Actinote* presenting the same type of colouring, and in addition a whole number of more or less distant *Nymphalids*, such as *Eresia acraeina*, *Adelpha lara* and others, all of which are mutually closely associated, and present in their outward appearance a similarity which must bewilder any observer.

As to the biological value of this resemblance which in most cases depends on mimicry and not on relationship or physical influences, naturalists are still at variance. But that it is of some advantage to many butterflies to imitate in an almost unnatural manner certain invariable, but not at all simple or easily explained colour-schemes, probably no one doubts. Certain it is that the Danaids are protected against certain enemies by the



poisonous nature of the fluid in their bodies derived from certain plants; and it is equally certain that many *Heliconiinae* are protected against certain other enemies by a most acrid odour of the living insect, which, if the wind was favourable, I not only perceived at a distance of 10 yards, but which in the case of *H. phyllis* may be called just as penetrating as that of a flying bug (*Pentatoma*). Whichever it is, it is certain that this protection must be a most effective one. This is best shown by the habits developed by them in their various functions of life: They fly in open places, alight very frequently, assemble in groups, have a slow, deliberate, perfectly straight and often soaring flight, and are so little shy that many may be almost taken up with the hand. They have a very tough life, enabling them to fly away without any difficulty even after having had the thorax compressed; they display the brightest and most striking colour-patterns that may be imagined, and, notwithstanding the fact that by means of their broad wings they can easily gain the tops of the trees upon which they pass the larval stage, they descend very often to lower heights, or fly near the ground.

If, leaving aside the colour-scheme, we consider their relationship from a systematic point of view, we meet with two theories. One, considering the neurulation to be the only valuable criterion for the classification of lepidoptera, separates the *Heliconiinae*, i. e. the two genera *Heliconius* and *Eueides*, as a family of their own, contrasting it with the *Nymphalidae*, a number of which have the cell of the hindwing open. But it must not be forgotten that a great number of Nymphalid genera have the cell of the hindwing also closed, as f. i. *Argynnis*, *Hypanartia*, *Vanessa*, *Pyrameis*, *Kallima*, *Ageronia*, *Callithea*, *Amnosia* and many others, among them also a number of genera considered to be closely allied to the *Heliconiinae* (*Cethosia*, *Terinos*, *Atella*, *Euptoieta* etc.). During the process of development in the chrysalis, the tubular discocellular, commonly called the cross-vein, is always present, disappearing as a rule in the best fliers (*Apatura*, *Doleschallia*, *Junonia*, *Catagramma*) either entirely, or at least in the hindwings (*Colaenis*, *Cirrhochroa*, *Araschnia*, *Melitaea* etc.). Beyond that the venation fails to afford us any possibility of effectively separating the genera *Heliconius*, or *Eueides* (a genus with very short antennae) from the *Nymphalidae*. Of much greater importance seem their habits and earlier development, and these closely connect the *Heliconiinae* with the New World genera *Colaenis*, *Metamorpha* and *Dione* and even more so with *Cethosia* of the Old World. Already FRITZ MÜLLER observed that a group of structurally more or less similar genera, among them the American *Heliconius*, *Eueides*, *Metamorpha*, *Colaenis* and *Dione*, live in the larval stage almost exclusively on the leaves of Passiflorae, for which reason he comprised them all under the name of "Maracujá-butterflies" (from the Brazilian name of those plants). This group to which would have to be added the Old World genus *Cethosia*, would be followed by the *Argynnininae*, comprising the genera *Argynnis*, *Melitaea*, *Euptoieta*, *Cirrhochroa*, *Atella*, *Terinos*, *Cynthia*, the African *Lachnoptera* etc.; thereafter would come the *Vanessinae*, the *Limenitinae* etc., the *Charaxinae* and *Apaturinae* concluding the series. HAASE, although separating the *Heliconiinae* as a subfamily, united them with the group of *Nymphalinae* (comprising all other Nymphalids), as well as with the *Acræinae* into the main group of the *Acræomorphae*. Here we only wish to point out these differences of opinion, since it would exceed the limits of our work to introduce new points of view; on the contrary we think it best to retain the old system in order to render it easier to readily find the described forms. For that reason we also give the Heliconids in the same sequence adopted in the classical treatises of WEYMER's and RIFFARTH's. The latest monography (STICHEL and RIFFARTH, das "Tierreich", Heliconiidae) is only a recent, rather more complicated edition of RIFFARTH's earlier Work, embodying but a few changes. For practical reasons we will refrain from introducing any changes in RIFFARTH's system, without, however, agreeing to it in every instance. Thus we would not place *passithoë* after *novatus*, nor *hortensia* after *clysonimus*, their resemblance being merely mimetic. But on the whole RIFFARTH's system clearly shows, in the chaos of colour-resemblances the natural relationship, for which reason we follow it without essential changes. Only for the genus *Eueides* we have adopted a system which seemed to enable the student to find more readily the desired forms.

Judging from RIFFARTH's Work which within recent years has been supplemented by some new additions, the number of known *Heliconiinae* amounts to 420, of which 360 belong to *Heliconius*, and 60 to *Eueides*. They are entirely limited to Tropical America, neither passing in the North the boundaries of Texas and Florida or going (except as a great rarity) as far south as Buenos Aires. In the Antilles, notwithstanding their favourable climate, only one species is known. On the whole there are not so very many separate species, but every one of them has developed a large number of frequently quite unsimilar forms, mimicking the outward appearance of some other protected species occurring in the same locality, as we have already mentioned above. The other genera of the subfamily barely comprise a dozen of species.

I doubt if any species of *Heliconius* is really scarce. Often I have observed in certain localities of South America certain *Heliconiinae* to be rather scarce, but I invariably found later on, that the species first considered so rare would, at some more distant place, at some other time or in a certain limited locality, suddenly appear in great numbers,



proving thereby that it is only at the limits of its range of distribution or outside of their normal time of appearance that they become really scarce. In curious contrast with the often enormous commonness of the *Heliconiinae*, is our very deficient knowledge of the earlier stages, which seems to be due, as also in the equally common and equally little known larvae of the Indian Euploids, to the fact that the caterpillars are living upon trees. A few isolated observations, however, which I have been able to gather, are of interest. The eggs are of a peculiar bottle-shape, produced by the originally spindle-shaped ovum being affixed to the leaves endwise, having thereby its lower extremity compressed. As they are always deposited singly, the larvae live also singly and widely dispersed. I observed *narcaea*, *phyllis* and *apseudes* fluttering always at noon around the vines of Passiflorae, depositing their eggs, in the same manner as the allied Nymphalid *Colaenis julia*, on the under surface of the vines, with the wings fully extended.

The larvae are covered with spines, two of which, placed immediately behind the head, are longest. Also the pupa is armed both at the back and in front with fine, hook-shaped spines, that of *apseudes* with a heavy crest of fine ventral spines. The second and third abdominal segments project distally, and the head is frequently provided with two wing-shaped appendages above the eyes, generally called „hare's ears". The duration of the pupal stage varies greatly; as a rule it is only 8—14 days, but may, during the dry season, be very much prolonged.

The life-time of the imago may be quite considerable; for I have seen certain individuals showing some characteristic defect, daily during four weeks flying at about the same place; I observed their lovely fresh colours fading, and the delicate downy covering of the body give way to the chitinous gloss of the bare thorax. It seemed, moreover, curiously obvious that, unless there was some good reason for their flying away, they remained steadily in the same locality, and in small openings I could observe day by day the love-sick ♂♂ flying up and down in that characteristic fashion which I have elsewhere called „promenading". This habit of flying for hours or half days at a time up and down for a certain distance, turning sharply about at a certain point and returning the same way, is shared by many species of butterflies, but is nowhere quite so distinct as in the genera *Eueides* and *Heliconius*, and a few isolated Indian species; I have observed it especially in *Eueides aliphera*, *dianassa*, *Metamorpho dido* and *Cethosia nietneri*.

Many Heliconiids fly all the year round, since in South-America, on account of the more equally distributed rains, seasonal forms, which are quite common in India, are as a rule not observed. In Central and Southern Brazil (Bahia, Rio. Santos), however, I found, that in the wet spring-time, particularly in the beginning of November, aberrative forms with more profusely black markings were more frequent than in the drier late summer. But it is not impossible that different conditions prevail at the more arid westcoast. The genus *Heliconius* s. s. is not at all represented in the rainless districts of Chile; otherwise its range of distribution is rather uniform, so that, notwithstanding the great number of forms, there are but few localities known, where more than 8—12 *Heliconius* and 2—3 *Eueides* may be found at the same time; for the numerous forms are distributed over an immense region, and, a few far-spreading species excepted, the greater number inhabit a very limited area.

This fact permits us to hope that a large number of good subspecies may still be discovered; this is almost certain to be the case with regard to the so-called intermediate forms. OBERTHÜR in his beautiful Work \*) has shewn with the help of a very large number of illustrations the gradual changes which the subspecies, races and aberrations undergo, and, although the position of some forms may seem somewhat forced, still the comparison of varieties and local forms clearly illustrates the manner in which certain forms entirely different from one another in their extremes, may be proved to be allied to each other by their intermediate forms. On the other hand, the many complications that are met with in the study of said treatise, render it advisable not to go beyond the purpose of our present Work, but, refraining from all critical remarks, to limit ourselves to enumerating and characterizing the known forms, without entering upon the pros and contras of their specific rights. The great abundance of figures by which we illustrate no less than 220 forms, renders it superfluous to give a tabular division into chief and subgroups, sections or subgenera \*\*).

### 1. Genus: *Heliconius* Latr.

Rather large-sized butterflies of most characteristic appearance. Head large, frons broad, eyes large, distended, naked. Palpi fringed with hair, moderately long; tongue always well developed; thorax narrow and elongate, slender, but considerably stronger than in the delicate Danaid species of the *Ithomiinae* which they resemble in their outward appearance. Antennae very long, uniformly thin, at the tip but slightly thickened; forelegs aborted to mere brushes, the middle and hindlegs stouter and far shorter than in the *Ithomiinae*. Abdomen cylindrical and rather slender, differing in length, scarcely projecting beyond the tornus. Forewings

\*) Variation des *Hel. thelxiope* et *vesta*. Ét. d'Ent. Livr. 21.

\*\*) The following treatise has been written some years ago, and it is over twelve months ago that the plates illustrating *Heliconius* and *Eueides* were published. Meanwhile descriptions of several new forms have appeared, the more important of which could be incorporated with the text; the rest, however, will be published in the supplementary notes on the *Nymphalidae*.



very long, much broader at the apex, rather soft and always displaying gay, often very bright colours. Only of one species (*Helic. erato*) I know an aberrative form having the forewings entirely black, without any markings. Hindwings oval with evenly rounded, very seldom feebly undulate termen. As in the Indian *Euploea*, we find on the inner margin of the forewings beneath and in the costal area of the upper side of the hindwings a friction surface, frequently displaying a silky gloss, but never any tufts or pencils of hair as are characteristic of many *Ithomiinae*. The subcostal is five-branched, the system of radials complete and intact, displaying no tendency to dissolve or give way to an higher development of the costal or median systems of veins. In the forewing the cell is mostly broad and about half the length of the wing, in the hindwing short and narrow; the former frequently has near the base a median spur; the submedian is single at the base; but the hindwings lack the anal fold found in most other Nymphalids, serving to receive the abdomen when at rest.

All the species of *Heliconius* eagerly visit flowers, many displaying a decided predilection for certain blossoms; they are anything but shy, and even when frightened, fly so slowly that they are without any difficulty captured unless they fly too high. Once in the net, they generally keep quite still, so that it is easy to have perfect specimens. The colouring is mostly yellow, brown-yellow or red upon a black ground, more rarely blue and very seldom green. The pupa often with silvery spots.

*narceae.* **H. narceae** Godt. (= eucrate *Hbn.*) (72 a). The typical form is that from Southern Brazil, distinguished by its large size, a white apical spot, lemon-yellow subapical band, and brown-yellow, black-marked discus of the forewings; hindwing with a bright yellow longitudinal band. — *ab. connexa* (72 a) *ab. nov.* is the name I have given to the small, generally dull coloured form having the brown-yellow discal markings of the forewing reduced to such a degree that the subapical band is separated from it by a black transverse bar. — *polychrous.* In *ab. polychrous* Fldr. (72 b) the black and lemon-yellow tints are greatly increased, with a corresponding reduction of the brown-yellow. — As in all the brightly coloured *Heliconius*, there occur, especially towards the end of longer periods of rain, specimens suffused with black, offering all possible grades and transitions to the typical form; in other species they have received special names, as f. i. *subnubilis* Stich. and *obscurior* Stich. (belonging to *novatus*), but unjustly, as they cannot be either strictly defined nor limited to one species or subspecies. — *satis.* *ab. satis* Weym. (= infuscata *Stgr.*) (72 a) resembles typical *narceae*, but on the hindwing the longitudinal band is not pale yellow, but brown-yellow, and the apical spot of the forewings mostly suffused with fuscous. — *flavomaculatus.* *ab. flavomaculatus* Weym. (72 a) refers to a local form distinguished by having the apical spot of the forewing lemon-yellow; I have never taken this form together with *narceae* or any one of its aberrations with white apical spots; it is only found in Central Brazil, as f. i. near Bahia and in Espiritu Santo, together with the likewise yellow-spotted *Mechanitis nessaea*; *narceae*, on the other hand, flies exclusively in Southern Brazil, in company of *Mechanitis lysimnia* which also has white spots. — Besides greatly varying in colour, the species also deviates in the markings which may vary in either direction. Only one form shall be specially named: *ab. physcoa* *ab. nov.* (72 b). This form which I took occasionally at Santos, where it was, however, always scarce, has the yellow band on the hindwing very much broader, which enables one to distinguish it even when flying, notwithstanding its great resemblance in colouring to *polychrous*. — *H. narceae* is one of the commonest *Heliconius* and butterflies altogether. It is limited to the eastern parts of Central and Southern Brazil, the form *flavomaculatus* occurring more in the North, *eucrate* in the South. Localities where, as it is stated in "Tierreich" (Vol. 22, p. 40), both occur side by side, are not known. Occasionally they come even into the gardens, and are found in the suburbs of Rio. — The egg is conoidal, lemon-yellow; the larva feeds on various species of Passiflora; it is brown-yellow, later on whitish with black markings and black spines, those at the head longer and slightly curving backwards. Pupa with rather long wing-shaped appendages at the head, and black dorsal spines, yellow-brown, marked with fuscous; abdomen adorned at the sides with faint silvery spots. The imago is found throughout the year, without any interruption, in open spots, along garden-hedges or bamboo-walls, sipping the honey from a great variety of flowers, generally keeping the wings closed, whereas other *Heliconius*, as f. i. *phyllis*, keep them generally wide open; the species is exceedingly common and, unless flying too high, easy to capture.

*ismenius.* **H. ismenius** Latr. (= fritschei *Möschl.*) (72 b) is found in Colombia, where it is in certain localities very common; it is an exact copy of *Melinaea messatis* (33 d) with which it associates, undergoing all the variations in colouring to which this Danaid species is subject. — *ab. immoderata* Stich. has on the hindwing an uninterrupted, black median band of greater width than in typical *ismenius*, whereas in *ab. defasciatus* Neust. this band has been reduced to mere traces left at the apex of the hindwing. — Intermediate between these two is *fasciatus.* *ab. fasciatus* Godm. and *Salv.*, which is found farther north, in southern Central America; here the black band on the hindwings is complete, but not increased in width. — *faunus.* *ab. faunus* *Stgr.* (72 c), likewise found in Colombia together with the typical form, has on the forewing the apical spots yellow instead of white; — in *hermanni* Riff. these are greatly reduced in size. In the ♂ we still find traces of the white macular band traversing the wing behind the cell. Not scarce, but local.

*telchinia.* **H. telchinia** Dbl. (72 b). This, the largest species of *Heliconius* known, is by most authors united with *ismenius*; but, although connected with it by intermediate forms, it is of quite different appearance. The dis-



cal area of the forewing, and the hindwings are those of a gigantic *narcaea* ab. *satis* (72 a), but the very broad apex of the forewings has two rows of sulphur-yellow spots. From Colombia to Honduras. — *clarescens* Btlr., *clarescens*. from the Volcano of Chiriqui and Panama, lacks on the forewing the dash connecting the discal spot with the base, and the median band on the hindwing has almost entirely disappeared. Locally very common.

**H. hippola** Hew. (72 c). Ground-colour bright rufous, both wings with quite narrow black termen, the *hippola*. spots on the forewing greatly reduced. — *lyrcaeus* Weym., probably from Peru, like the preceding, has the *lyrcaeus*. black spots somewhat larger, the median band on the hindwings, however, reduced to mere traces. — The species seems to be very local or to occur only in places whence we do not often receive material, for it is very rare in collections.

**H. numata** Cr. (= *pione* Hbn.). Easily recognized by the uncommonly broad black termen of the *numata*. hindwings which, together with the likewise very broad median band, gives the hindwing an almost black appearance. Guayana. — ab. *guiensis* Riff. has the median band of the hindwing club-shaped, beginning quite *guiensis*. narrow at the anal margin, and widening towards the apex; British Guayana. — In *melanops* Weym. (72 c) *melanops*. the median band of the hindwing confluesces with the black termen, rendering the lower half of the wing entirely black; likewise from Guayana. — *superioris* Btlr. (= *maecenas* Weym.) has on the forewing the oblique band *superioris*. narrower or broken up into spots, the median band of the hindwing separated from the black termen by a streak of the brown-yellow ground-colour. From Amazonas. — A similar form is *gordius* Weym. (72 d) from the Up- *gordius*. per Amazon, but here the apex of the forewing is very broadly and contiguously sulphur-yellow, spotted with brown-yellow. — ab. *isabellinus* Bates (72 c) has the sulphur-yellow apical half of the forewing tinged with brown- *isabellinus*. yellow, very much like the ground-colour; in *mavors* Weym. the latter is deeper and duller brown. Both these *mavors*. yellow-brown forms come from the Amazon. — *praelautus* Stich. is a form from the Ucayali, having the broader *praelautus*. discal band united with the subapical spot, both being of the same colour. Apparently less abundant than *narcaea* although much less scarce than *hippola*. — *geminatus* Weym. (= *superioris* Riff.) (72 d) is characterized by the *geminatus*. very brilliant white-yellow apical spots; on the hindwing the band is not only completely separated from the still very broad, black termen, but dissolves into barely connected triangular spots; the apex and termen occasionally with small pale yellow spots. — *nubifer* Btlr. from Fonteboa has the ground-colour mahogany-brown, *nubifer*. with broader black bands, but without the whitish spots visible in the apical area or on the under surface of *geminatus*. Widely distributed on the Amazon: Para, Santarem, Obidos, Teffé; locally common.

**H. silvana** comprises more than half a dozen of forms. Wings very long, smaller than in the preceding species; the sulphur-yellow band of the forewings gradually shades into the ground-colour, without being separated by black. From the typical *silvana* Cr. (= *clara* Hbn.) (72 c), from Venezuela, Guayana and North-Brazil, *silvana*. *ethra* Hbn. (= *dryalus* Hpffr., *zuleika* Buch., *hopfferi* Neust.) (72 e) is at once distinguished by the very heavy *ethra*. black markings; on the hindwing the band is deep black throughout, not interrupted, very slightly denticulate, its outer edge encroached upon by rays emitted from the broadly black termen. The costal band of the forewing is tinged with brilliant sulphur-yellow, the wedge-shaped discal spot large, drawn-out to a sharp point near the base of the cell. In its entire appearance it is so much like *narcaea flavomaculata* that they can hardly be distinguished from one another when flying. I also took it at Bahia near the cemetery, in the same places as *flavomaculata*. — *brasiliensis* Neust. (72 d) is intermediate between *ethra* and *robigus*. — In *robigus* *brasiliensis*. Weym. (72 d), from Southern Brazil, the forewing is divided into a black apical half and a brown-yellow *robigus*. inner half, gradually shading into lemon-yellow distally, with an almost isolated, generally not very large, discal spot; when flying it may be mistaken for *narcaea satis* on account of the absence of the lemon-yellow band of the hindwing. — *diffusa* Btlr. refers to the Para form, hardly to be distinguished from typical *silvana*; *diffusa*. the median band of the hindwing is completely cut off from the black termen, but contiguous and outwardly denticulate. — The most northerly form is *metaphorus* Weym. (= *antioquensis* Stgr., *ocanna* Buch.) from *metaphorus*. Colombia and Ecuador; Costa more deeply black, the discal spot larger, the yellow transverse band of the forewing more sharply separated from the ground-colour, the median band of the hindwings reduced to a mere trace at the apex. — Farther south, along the west-coast of South-America, we find in Peru *mirifica* Stich., *mirifica*. which has on the forewing the outer spots subhyaline and partially suffused with blackish; the median band of the hindwing consists of triangular, isolated spots, giving it a superficial resemblance to *mirus*, which has, however, the spots of the forewings not transparent. — *adela* Neust. has the shape and apical macular band *adela*. of *silvana*, but otherwise rather resembles *narcaea*; indeed its author considers it to be a species of its own; from Iquitos. Of all these forms I have only observed in nature *robigus* and *ethra*, which in Brazil associated, though always singly, with the other brown-yellow *Helionius*.

**H. eucoma**. The twelve forms which are known of this species, inhabit the Amazon Valley and Peru, extending northward as far as Panama. The figured *metalilis* Btlr. (= *metabilis* Ky.) (72 e) resembles in its *metalilis*. outward appearance a small-sized, faded *telchinia*, together with which it is found in Colombia. But it also occurs in Venezuela and even on the island of Curaçao. Whether specimens from these localities resemble in every respect the figured specimen, I cannot decide, having none from the island at hand. —



*semiflavida*. **semiflavida** Weym. (= *daguanus* Stgr.) has the transverse band of the forewing very brilliant lemon-yellow, the black median band of the hindwing broader than in *metalilis*; from Cauca and Dagua (Colombia). — **claudia** Godm. and Salv. from Panama is distinguished by the darker ground-colour, which is mahogany instead of yellowish-brown. This, together with the reduced median band of the hindwing, gives it a great resemblance to *Hel. clara*, with which this form associates in Panama. — **eucoma** Hbn. Typical specimens as found on the Lower Amazon, are yellow-brown; forewing with the apex black, enclosing minute yellow spots; the costal margin united with the discal spot; on the submedian vein always a broad streak; the median band on the hindwing contiguous, differing in this from *claudia*; otherwise resembling **tyndarus** Weym. (72 e), but not so dark, rather yellow-brown; occurs in Bolivia. — **aërotome** Fldr. (72 f, wrongly named *gradatus*), from Peru and the adjacent parts of Brazil, has the ground-colour likewise dark, deep chestnut-brown, sharply contrasting with the yellow band of the forewing and the small apical spots. — ab. **flavofasciata** Weym. is an unusual aberration of the typical *eucoma*, found with the latter at Pará; hindwing with a yellow anterior band, giving it a close resemblance to several *Itomiinae* occurring with it at the mouth of the Amazon. — **ethilla** Godt. which also belongs here, is probably identical with **flavidus** Weym.; should this prove true, it would be the first-described form of the group as well as the type. It resembles exactly *semiflavida* Weym., but has not only the forewing largely sulphur-yellow, but also on the hindwing, between median band and costal margin, a broad streak, the brown-yellow ground-colour being limited to the veins at the base of the forewings and a streak along the inner margin; from Venezuela. — **cephallenia** Fldr., which is unknown to me, is said to have the entire hindwing black-brown, with the exception of a narrow yellow-brown band behind the costal margin; from Surinam. — **juntana** Riff. from West-Colombia closely resembles *semiflavida*, but has the apex altogether black, without any light spots. — **mentor** Weym., from Cauca is not unlike the figured *metalilis* (72 e), but of broader build; forewings with clear sulphur-yellow spots, that are neither hyaline nor dusted over with fuscous, but smaller and more isolated; on the forewing the black apical area is bordered with sulphur-yellow; on the hindwing the median band frequently dissolved into spots. — Finally there remains to be mentioned **numismaticus** Weym. (72 c), which is sufficiently characterized by our figure; from the Lower Amazon. All the forms of this species seem to be rather scarce, and are comparatively rare in collections.

*gradatus*. **H. gradatus** Weym. (73 b) closely resembles *numatus* and *melanops* in the broad median band of the hindwings which is scarcely separated from the equally broad black termen. Forewings with deep black apex, inwardly bordered by a clear yellow band interrupting the brown-yellow ground-colour which is but slightly spotted with black; from Pebas on the Amazon. — **thielei** Riff. from Cayenne has 3 yellow subapical spots.

*sulphureus*. **H. sulphureus** Weym. (72 f) from the Rio Negro in Brazil has the ground-colour pale sulphur-yellow, only the veins and the black submedian band slightly shaded with ferruginous.

*paraënsis*. **H. paraënsis** Riff. closely resembles *eucoma*, but is larger, and the yellow band of the forewings is more denticulate distally and less sharply defined; the black submedian streak traverses the entire forewing; on the hindwing the black terminal border is at the middle broader than in *eucoma*, the median band continuous, not denticulate, in the outer half about 3 mm. wide, slightly tapering towards the inner margin. Upper surface of the forewing with apical spots, of the hindwing without terminal spots; these however are present underneath, where the basal area is almost entirely sulphur-yellow. Para. — **latus** Riff., from Itaituba on the Rio Tapajos, has on the forewings above the submedian stripe broader, and the yellow band, especially on the veins, dusted with brownish; on the hindwing the median band considerably broader.

*aulicus*. **H. aulicus** Weym., from Venezuela, is closely related to *eucoma*, but the black apex of the forewing lacks the yellow spots, and the sulphur-yellow transverse band is, like that of *latus*, feebly denticulate, also distally; the black spot at the end of the cell irregular, occasionally separated from the black costa; the submedian stripe beginning as a narrow line, gradually growing broader towards the termen. The median band of the hindwing made up of elongate, proximally confluent spots, at the apex united with the black costa. — **zobrysi** Fruhst. from Matto Grosso chiefly differs from typical *aulicus* Riff. in having on the forewing, the basal streak in the cell reduced and on the hindwings the black bands broader.

*schulzi*. **H. schulzi** Riff. Forewing with very broad, sulphur-yellow band, costa and submedian finely black, the wedge-shaped spot small, oval, not drawn out to a point; hindwings almost as in *silvana* (72 c), but the median band not curved, separated at the inner margin and broken up into small spots; at the apex 2 or 3 large sulphur-yellow spots. Pará.

*vetustus*. **H. vetustus** Btlr. differs from the figured *metellus* Weym. (72 f) in having the ground-colour brilliant orange, not chestnut-brown. The forewings resemble those of *schulzi*, but have the yellow oblique band narrower; from Guayana; *metellus* from the Lower Amazon has on the forewing the black spots larger, likewise the apex and anal angle more black.

*mira*. **H. novatus**. Among the forms referred to this species, the most lovely is *mira* Weym. (73 a) from Peru.



The black apical area encloses numerous small sulphur-yellow spots arranged in two rows and continuing somewhat on the rufous discal area. Hindwing with a series of isolated black spots crossing the middle of the wing; the apex black, with a light tear-shaped spot. — A very similar form, *novatus* Bat. (= *illustris* Weym., *novatus*. *spadicarius* Weeks) (72 d) from Bolivia and Peru, has the brown-yellow ground-colour paler, rather dull ochreous, and the black markings of the forewings partly reduced, giving way to a sulphur-yellow band. Hindwing precisely as in *mira*. — In *leopardus* Weym. (73 a) from Bolivia the oblique band of the forewing is quite broad, *leopardus*. brilliant lemon-yellow and fairly well defined, sharply contrasting with the duller, more chestnut-brown ground-colour. — ab. *subnubilus* Stich. from Peru, and ab. *obscurior* Stich. from Bolivia, refer to darker specimens *subnubilus*. *obscurior*. suffused with fuscous, such as are known among all the yellow-brown species of *Heliconius*; such melanisms are especially common and pregnant among the various forms of *narcaea*, without, however, having received any special names.

**H. urania** Müll. (= *pasithoë* Cr., *hecale* F.) (73 a). This easily recognizable species is referred to in the *urania*. three latest works under its three synonyms. MÜLLER gave this name to a *Heliconius* which is unmistakably recognized from his figure, and which cannot be confounded with LINNÉ's *Papilio urania* (a *Tenaris*). For that reason we follow WEYMER. Two forms are known, both black with a dull white, black-spotted band crossing the forewing and with three whitish subapical spots. The typical form of Guayana has the ground-colour above coal-black, whereas in *fulvescens* Lathy (73 a) from Demerara the inner half is suffused with brown. This species *fulvescens*. is one of the less common *Heliconius*.

**H. aristiona**. It is doubtful whether the 20 forms described all belong to one and the same species, the greater number of them being distinctly separated geographically. This seems less to depend upon the climatic conditions of their home than upon the models which they find there, that is to say upon the outward appearance of the Danaid species which occur in the same locality. The typical *aristiona* Hew. (73 d) comes from *aristiona*. Bolivia and Peru, being only found, although not everywhere, where the exceedingly common *Melinaea mothone* (32 e) occurs; there we find also *Mechanitis deceptus*, *Hyposcada fallax* (38 c), *Ceratinia semifulva* (34 d), *Eresia murena* (91 c), a very similar *lampeto*-form of the genus *Eueides* etc.; indeed in some localities the majority of all the more common butterflies look like *H. aristiona*, and it is only after their capture that one realizes that but few of them really belong to that species. Very similar to this quite unmistakable, typical *aristiona* is the form *bicolorata* Btlr. (= *peruana* Hpffr.) (73 d), likewise from Peru; the black apex is cut off pretty straight *bicolorata*. from the rufous discal area, and the brown colour reaches the termen in cell 1 and 2 (between submedian vein and the median nervules). — *splendida* Weym. (73 d). Like *aristiona*, but with the base of the forewings and *splendida*. the apex of the hindwings dusted with dull chestnut-brown; from Bolivia. — *timaeus* Riff. (73 d) from Peru *timaeus*. resembles in the forewing *aristiona typica*, being somewhat more profusely spotted with black; but the hindwing is not black, but brown-yellow, with an incomplete band similar to that found in the forewing, and an equally interrupted series of median spots, both obsolete before the apex. — *phalaris* Weym. (73 e), from the Brazilian *phalaris*. Rio Madeira, has the entire hindwing deep black, only the apical area being brilliant rufous whereas the apex of the forewing is laved with rufous just from the tip inwards. — In *seraphion* Weym. (73 c) from Iquitos *seraphion*. the apex of the forewing is black, with a yellow-brown subapical band, sharply separated from the likewise yellow-brown discal area by a black oblique band. On the hindwing a black median band separated from the black termen by the yellow-brown ground-colour. This is undoubtedly due to the influence of certain forms of *Heliconius* belonging to other groups flying in the same locality, giving rise to such a great similarity that when flying neither can be distinguished from the other. — *arcuella* Druce (73 c) from Ecuador is quite similar, but *arcuella*. more brilliant yellow; in its markings it almost exactly coincides with the following *aurora*, only the apex of the forewing is quite different. — *aurora* Bat. (73 b) would be like *aristiona*, were it not for a lemon-yellow *aurora*. oblique spot in the apex of the forewing which gives it an entirely different look. — *elegans* Weym. (73 c) from *elegans*. Peru, Bolivia and Amazonas, possesses likewise the lemon-yellow apical streak; but this is not separated from the brown-yellow apical area by a broadly black band, but gradually shades into it, only a few black scales occasionally indicating their line of contact. From *aurora* it is easily distinguished by having on the hindwing the black median band separated from the black termen by a streak of the yellow-brown ground-colour. — *euphrasius* Weym. (73 b) from Colombia and Ecuador probably does not belong here, but rather to the next *euphrasius*. following group. Forewing like that of *novatus*, but lacking the apical spots; the hindwing is traversed from the anal angle to the middle of the costal margin by a dirty brown band, leaving the base of the hindwings as well as a large spot in the lower half of the same wing suffused with black; also the forewing obscured with sooty black. — *lenaus* Weym. (73 e) from Ecuador, Peru and Colombia has the forewings marked as in *euphrasius*, but *lenaus*. the ground-colour is yellow-brown, not suffused with black, the lemon-yellow band is narrower, the black discal spots smaller, the submedian band greatly reduced. The hindwings, however, are quite different, uniformly yellow-brown, occasionally traversed by a dark median row of dots, which give it a suprising resemblance to *Melinaea zaneka* (32 e) which also flies in Ecuador. In exactly the same way the form *tarapotensis* Riff. from Tarapoto coincides with its model *Melinaea tarapotensis* Haensch, a form of *Mel. menophilus* (32 e) flying in the same locality; the base of the hindwings is adorned with rows of black dots, which, however, only reach to



*euphone*. the middle of the wing. — *euphone* *Fldr.*, widely distributed in north-eastern South-America, resembles *Hel. tarapotensis*, but the black markings are heavier, more profuse, and the band of the hindwings is not made up of an incomplete row of spots, but forms a complete and contiguous median fascia, recalling a strongly marked *Melin. menophilus*. — This similarity exists also in *pretiosus* *Weym.* (72 e); hindwing with the band *staudingeri*, almost complete, the apex of the forewing laved with rufous; from Sarayacu in Peru. — *staudingeri* *Weym.* *messene*. (73 e) is somewhat larger, with the black spots on the forewings more contiguous; Huallaga. — *messene* *Fldr.*, one of the more common of Bogotá-butterflies, particularly abundant in the higher, more open districts of Colombia, represents a melanotic form of *euphone*; forewing with the entire apical and basal areas black, leaving only an inwardly brown, outwardly yellow band; hindwings chiefly brown-black. It thus closely resembles *Mechanitis messenoides* (33 f) and *Melinaea messenina*, two Danaiids named after it, the latter very much like *mothone* (32 e), but differing from it in having on the forewing the band outwardly lemon-yellow. *Hel. messene*, *Melin. messenina* and *Mech. messenoides* are always found together, being on the wing only distinguished by their *idalion*. size. — *idalion* *Weym.* is closely allied to *euphone*, the only chief differences being the very distinct apical spots of the forewings, the 3 upper ones of which are nearly united, whereas the lower one, as well as the broader *floridus*. submedian band and wedge-shaped cell-spot are small. Colombia. — The last form is *floridus* *Weym.* (73 c), widely distributed through northern South-America, especially also in Bolivia and Peru. It may be recognized by having in the apical area of the forewing two lemon-yellow macular bands, separated from one another by the brown-yellow ground-colour.

*ithaka*. *H. ithaka* *Fldr.* (73 f) from Colombia resembles in the forewing *euphrasius* (73 b), but has the ground-colour clearer yellow-brown, less obscured with fuscous; the hindwing, however, is completely black, with *vittatus*. the exception of a transcellular dash of rufous and 3—5 small white anteterminal spots. — ab. *vittatus* *Btlr.*, likewise from Colombia, has the forewing as in *ithaka*, but the hindwings lighter, not quite black, but only *marius*. with a black median band made up of spots which are confluent above. — In ab. *marius* *Weym.* (73 b) the black colouring is even more reduced, the spots of the forewing are smaller, those of the median band of the hindwing separated; from Colombia, especially Muzo, San Martin; formerly often found in so-called “Bogota”-*cajetani*. collections. — *cajetani* *Neust.* resembles typical *ithaka*, but the black median spot is bisected, confluent with the termen in cell 4, where it cuts off a sulphur-yellow spot of the oblique band. The terminal spot in cell 3 likewise very large, being united with a portion of the upper median spot; forewing with 3 yellow apical spots. Colombia. — *ithaka* seems to be rather common in the valleys surrounding Monte Tolima.

*H. pardalinus* and its forms seem to take farther south the place of the preceding species, inhabiting *dilatus*. the Amazon-Valley, Ecuador, Peru and Bolivia. — *dilatus* *Weym.* (73 e) from Ecuador and Peru is dull yellowish-brown; the forewings strongly spotted with black, the apex yellow-brown, with lemon-yellow spots of variable number and size and dissected by black veins. — *radiosus* *Btlr.* differs but very slightly in the somewhat duller colouring, and the broader black border and median band of the hindwing. This, especially if the lemon-yellow apical spots of the forewing are rather large, gives it a deceptive resemblance to the form *floridus* of the *pardalinus*. preceding group. — *pardalinus* *Bat.* from the Upper Amazon is like *radiosus*, but the ground-colour is even darker brown, more strongly contrasting with the generally broader, whitish-yellow transverse band of the forewing; the apex itself entirely black, whereas in *radiosus* and *dilatus* it encloses on the forewing some dashes *lucescens*. of ferruginous. — *lucescens* *Weym.* from the Lower Amazon (particularly from Santarem where a great number of *Heliconius* are found), but occurring aberratively also on the Upper Amazon, together with the typical form, has the apex much more profusely adorned with lemon-yellow of which occasionally a bright band extends to *maeon*. beyond the submedian vein, sometimes faded to bone-white. — *maeon* *Weym.* (habitat not known, but without any doubt the Amazon) resembles *dilatus*, but has the brown oblique band of the forewing narrower and rather broken up into spots, the black discal spots large, confluent, and on the hindwing the median band *tithoreides*. dissolved into triangular spots. — *tithoreides* *Stgr.* from Peru resembles *radiosus*, but is of larger size, the wings are broader, the black markings increased, more confluent, on the hindwing the median band more regular and continuous.

*H. fortunatus*. On account of the great variability of the markings characteristic of the genus, it is difficult to decide whether the two forms referred to this species should not rather be classed with some *spurius*. other group. — *spurius* *Weym.* (74 a) from the Lower Amazon closely resembles *floridus* (73 c) in all but the apical area, which displays a series of lemon-yellow spots and is separated from the yellow-brown discal area by an oblique band, remarkable on account of its unusually horizontal course from the middle of the costa to *fortunatus*. the middle of the termen. — *fortunatus* *Weym.* from Villa Bella on the Lower Amazon, possesses also this almost horizontal band, but lacks the apical row of spots, and has on the hindwing the black median band strongly denticulate.

*sergestus*. *H. sergestus* *Weym.* (74 a) is probably the southern representative of the preceding group, being found in Peru, where GARLEPP discovered it at Tarapoto. Resembles the preceding, also in the brilliant rufous colour-



ing, the apex being always immaculately black as in typical *fortunatus*; on the forewing the lemon-yellow band somewhat steeper and narrower; the hindwing very bright rufous, with narrow median band and narrow, black, inwardly frayed termen.

**H. ennius** Weym. (74 a), from Amazonas, is black, yellowish-brown and lemon-yellow, the colours being *ennius*. distributed very much as in the preceding; but it is easily distinguished by the band of the forewing being steeper, slightly curved and not so close to the termen at the middle. It is followed by a subapical row of small white spots, and again, immediately before the termen, a series of pale spots, rather complete in the typical form, but interrupted or entirely obsolete in the much blacker form *nigrofasciatus* Weym. (74 a) from the Rio *nigrofascia-* Madeira; this latter has also the curved lemon-yellow transverse band reduced by the increased black colour-*lus*. ing, with its inner edge irregularly defined. But the hindwings are in both forms alike, having a rather broad, isolated, distally dentate median band and the termen inwardly deeply dentate, broad, with white terminal spots arranged in pairs.

**H. quitaleña** displays in its typical form a pattern which is somewhat different from that of the hitherto described forms; the ground-colour of *quitaleña* Hew. (73 f) is not bean-yellow or ochreous-brown, but *quitaleña*. a brilliant orange-red; the black apical area of the forewings contains two lemon-yellow macular bands placed at about equal distance from the termen, from the red discus and from one another; on the hindwing a greatly reduced, although contiguous, median band, and white terminal spots, arranged in pairs on the narrow black terminal border. — In *felix* Weym. (74 b) from Bolivia and Peru the forewing has in addition on the ter- *felix*. men a third row of spots, and the median band of the hindwing is broken up into small black wedges. — *con-* *sors* Weym. (74 b), although on the whole more black, has the markings still thin enough not to interfere with the brilliant fulvous ground-colour. But on the forewings the light apical spots are greatly reduced, being only re-*sors*. presented by one row and traces of a second; like the preceding, from Peru and Bolivia. — *sisyphus* Salv. *sisyphus*. from Peru resembles *felix*, but has the ground-colour duller and darker, the transverse band of the forewing not sulphur-yellow, but like the ground-colour. — *jonas* Weym., likewise from Peru, also resembles *felix*, but *jonas*. with deep yellow-brown ground-colour and the black markings diminished to such a degree that they do not encroach upon the oblique band which is broadly and uninterruptedly yellow. — *versicolor* Weym. (74 b) from *versicolor*. the Rio Madeira is at once distinguished by the ochreous spots on the apex of the forewing, which latter appears in consequence mottled with brown, black and lemon-yellow, recalling *dilatatus* (73 e).

**H. anderida**. The forms which are referred to this group, differ greatly in colouring and markings from each other, and it is probable that the study of their anatomical structure which unfortunately has not been made as yet, will separate some of them. The name-type *anderida* Hew. (73 f) is bright red-brown, with the *anderida*. basal area of the forewing brilliant fulvous. Both the apical and transverse bands break up into a number of isolated pale spots; the submedian band a fine line, the median band of the hindwing narrow. The species has a wide range extending from Venezuela to Colombia, and in Central America to Honduras, but seems rather local. — Quite a different aspect is presented by *clara* F. (= *melicerta* Bat.) (73 f) from Guayana, *clara*. Colombia and Panama, which undoubtedly has undergone some mimetic change that has rendered it so unlike the type. Ground-colour much duller brown, the forewing with very slightly spotted, broadly black apex and an irregular oblique band dissected by the discocellular spot; hindwing without any median band, but with broadly black termen. It associates with the very similar *Melinaea idae* (33 c), *Mechanitis macrinus* (34 b) and *Callithomia beronilla* (36 c). — *semiphorus* Stgr. from Colombia resembles *clara*, but has on the hindwing the *semiphorus*. terminal border narrower, with a median band branching off from it at the apex, dissolving into spots towards the middle. — *holcophorus* Stgr. (74 b) from Colombia reapproaches the type again, but the median band is *holcophorus*. very brilliant lemon-yellow, irregularly dentate, but only reaching to the lower median nervule, where it is sharply separated from the dull rufous ground-colour. — *annetta* Riff., likewise from Colombia, has the forewings *annetta*. marked as in *anderida*, whereas the hindwings display the peculiar pattern of *semiphorus*. — *albucilla* Bat. from *albucilla*. Panama exactly resembles *anderida*, but the apical spots and the oblique band are white instead of yellow. — *zuleika* Hew. (74 c) from Central America has undergone such a complete mimetic change that it is hard *zuleika*. to believe it to be the same species as *anderida*. Although of larger size, it closely resembles the (in Central America) so greatly favoured models of *Callithomia Lezia* (36 b), *Ceratinia callispila* (35 a) and *Dircenna cele-* *mia* (37 c). Forewing deep black, dusted with red-brown at base and inner margin, the apex heavily spotted with yellow or white, the latter form being ab. *albipunctata* Riff., especially found on the Volcano Chiriqui. — *albipunc-* *chrysantis* Godm. and *Salv.* from Nicaragua has on the forewing the spots united into a chain, and the cell of *chrysantis*. the hindwings traversed by a sulphur-yellow band. — *xanthica* Bat. from Panama resembles *zuleika* (74 c), *xanthica*. but has not only the basal area of the forewing, but its entire inner half brown, even the black discocellular spot being surrounded by the brown ground. — *jucunda* Bat., likewise from Panama, is like *xanthica*, but has *jucunda*. the ground-colour darker brown, with white, instead of yellow, apical spots. — A completely black ground-colour we find in *fornarina* Hew. (74 c) from Guatemala, only interrupted on the forewing by the apical spots *fornarina*. and the brilliant lemon-yellow, strongly dentate transverse band. — *discomaculatus* Weym. is in a way inter- *discomacu-* mediate between *zuleika* and *fornarina* (74 c); resembling the latter, but with brown hindwings and similar *latus*.



*muzoënsis*. submedian spots on the forewing; from Honduras. — ab. *muzoënsis* Neust., from Muzo in Colombia, is more like *clara*, but has on the forewing a second row of 5 yellow subapical spots. Most of these forms are, wherever they occur, rather common.

**H. cydno.** In this group to which RIFFARTH in his classical Work on the *Heliconiidae* refers about 20 forms, we find, with a single exception (*galanthus*), on the hindwing a pale, white, lemon-yellow or light blue band which, however, may greatly vary in its position upon the otherwise black wing. Forewings black, often with a lovely blue lustre, nearly always with lemon-yellow or white bands or spots. — *hermogenes* Hew. (74 d) from the Cauca Valley has the apical area of the black forewings spotted with white, as in the white-spotted variety of *zuleika*; hindwing with a pale yellow submarginal band, about 3—4 mm from the terminal border. This gives it a close resemblance to *Tithorea humboldti* (32 a) or, if the spots are clear white, to its aberration *albomaculata* Hsch. but only on the upper surface (there being also another *Heliconius* mimicking the under surface of that Danaid species). — *galanthus* Bat. (74 d) from Central America (and Peru?) is above a lovely black-blue; forewing with a broadly white, wedge-shaped band, hindwing with a terminal row of white spots. Above it is a true representation of *Hel. leuce* (77 e), which, however, lacks on the hindwing the terminal spots; but underneath it looks entirely different, with brown curved stripes crossing the cell and accompanying the termen. In Honduras both species which, although not closely allied, cannot be distinguished when flying, are generally met with on the same bush or even on the same blossoms. — *zelinde* Btlr. (74 d) is another form from Western Colombia, having on the under surface of the hindwing the white marginal spots very distinct, but above only faintly shining through from underneath. — *stübeli* Riff. has on the forewing the band more regular, not projecting into the cell, but in addition two rows of white terminal spots Costa Rica. — *diotrepes* Hew. Forewings with white marginal spots above, hindwings with a yellow costal streak underneath; otherwise like *galanthus*. From Nicaragua and Guatemala. — *chioneus* Bat. (74 c) has the white band of the forewing narrower, more uniform than in *galanthus*; on the hindwing the marginal spots are united into a submarginal band, likewise white. West Colombia and Panama. — In typical *cydno* Dbd. and Hew. (74 d) the band of the forewing is yellow; widely distributed and very common in Colombia, every lot of "Bogotá"-butterflies containing it. — *hahneli* Stgr. (74 c) from Merida (Venezuela), discovered by Dr. HAHNEL, has on the forewing the yellow band narrower, with a few spots directly before the apex. — *alitheia* Hew. from Ecuador is almost like *hahneli*, but on the hindwings the submarginal spots form a broad terminal band, without any black between them and the termen. — *bronus* Stich. has in the place of the regular band of the hindwing some triangular terminal spots. — *haenschi* Riff. from Balzabamba (Ecuador), a discovery of Dr. HAENSCH's, is an *alitheia* with white instead of yellow band of the forewing. — *temerinda* Hew. (= *tamarinda* Ky., *termerinda* Riff.) from Colombia has the band of the hindwing lemon-yellow, but rather distant from the termen; the band of the forewing resembles that of *hahneli*, but is somewhat curved, either white or lemon-yellow (= *flavifascia* nom. nud.); apex often with a few dots. — *epicydnides* Stgr. (74 e) from Rio Dagua and the Cauca Valley has on the forewing the band divided into two lemon-yellow oblique stripes; the band of the hindwing occasionally margined with black spots. — in *subcydnides* Stgr. from the same locality the white band is on the hindwing even farther distant from the termen: in *cydnides* Stgr., likewise from Colombia, it is placed at about 1 mm. from the termen, being about as broad as in *cydno*. — *weymeri* Stgr. (74 e) from the southern Cauca Valley and the Rio Dagua, resembles in the forewing *epicydnides*, but the hindwings lack the marginal border, having on either side a straight, broad, somewhat pointed median band traversing the cell directly behind the base. — Occasionally the forewings have in the place of the bands a larger, white median spot, and both wings underneath a row of round white submarginal spots: ab. *submarginalis* Fassl i. l. (74 e); on the other hand the forewings may also be on either side quite black as in *weymeri*: = ab. *gustavi* Stgr. (74 f).

**H. pachinus** Salv. (74 f). This most characteristically marked species stands quite by itself. Upper surface black, forewing with two oblique bands, hindwing with one submarginal fascia. From the Volcano Chiriqui.

**H. heurippa.** This small group forms a transition from the *cydno*- to the *melpomene*-group, the yellow oblique band of the forewing showing some red. In *heurippa* Hew. (75 a) from Colombia this band is broad, half yellow and half red. — *wernickei* Stgr. (75 a) resembles the preceding in the bi-coloured band, which is only somewhat more regular; hindwing with a broad, clear white submarginal band. — *emilius* Weym. (74 b as *fassli* \*) has the bi-coloured band of the forewing narrower and that of the hindwing suffused with grey-blue. — In *rubellius* Sm. and Ky. (74 f) finally, the yellow portion of the quite narrow band has almost completely disappeared, and the hindwings are entirely black; all are found in Colombia.

**H. melpomene** L. (75 a). The typical *melpomene* is found in Guayana, Northern Brazil, Ecuador, Peru and probably also in the adjacent parts of Bolivia. When fresh, it is brilliant black with a scarlet oblique band. But these colours fade very easily into black-brown and minium-red. In this state

\*) This specimen had been sent to me as *fassli* Weym. i. l. Since, however, after the plate was printed, but before its publication, another *Heliconius* was described as *fassli*, this one received the name of *emilius* Weym.



they are frequently caught, but never leave the chrysalis like that; even while alive, this butterfly rapidly fades under the influence of sunshine and rain, a fact which is not often observed among tropical insects the colours of which generally resist for a long time to the weather. At the same time of the year and in the same localities we find together with *melpomene* a large number of butterflies belonging to the most heterogeneous families, as Papilio, Pierids, Adelpha, Eresia etc., all of which display on the forewing in the same place a carmine band on black ground. Whether all the *Heliconius* that have been described as local, seasonal or aberrative forms of *melpomene*, really belong to one and the same species, is neither proved nor likely. RIFFARTH, in his Monography on "Heliconius", after an exact study of this group, refers to it about 40 forms, some of which deviate considerably, and not in colouring alone. Other systems outside that of RIFFARTH not being recognised, we follow here his most painstaking Work. — In *melpomene* L. (75 a) the oblique spot is moderately large and blood-red (in the collections generally scarlet or minium-red), starting directly under the costa and descending below the first median nervule, where it is cut off almost parallel with this and projects outwardly to near the termen. — ab. *atrosecta* Riff. (75 a) is an aberrative form mentioned by RIFFARTH from Obidos, by OBERTHÜR from French Guayana, but which surely occurs within the entire range of the species; the red band is divided into segments by the black veins. — ab. *melpomenides* Riff. (75 b) has the spot much narrower, outwardly convex and likewise frequently interrupted; mentioned from Guayana. — *lucinda* Riff. (75 b) from Guayana and the Amazon, has the band irregularly defined inwardly and its upper portion proximally laved with lemon-yellow. — In *karschi* Riff., likewise from Guayana and the Lower Amazon, the band is yellow above and red beneath. — *lucia* Cr. (75 b) has the band outwardly and below red, inwardly and above yellow, preceded by a lemon-yellow spot traversing the cell. Guayana, Amazonas. — *melanippe* Riff. (75 b) has both the oblique cell-spot and the generally narrow band yellow, often with traces of red; therein it approaches the form *timareta* from western South America, but may be easily distinguished by the shape and position of the yellow spot. Surinam. — *diana* Riff. (75 c) from Guayana has both cell-spot and band lovely red, with additional red rays from the base of the wings, greatly varying in extent. — *deinia* Möschl. (mutabilis Btlr.) (75 c) is quite similar, but the cell-spot is very large and lemon-yellow; Guayana. In *funebria* Möschl. from Surinam only the fiery-red basal rays are remaining, cell-spot and band having disappeared. — *faustina* Stgr. resembles the following *cybele*, but has the cell spot margined with red distally. — *cybele* Cr. (75 c) from Guayana and Amazonas has nearly the entire basal half of the forewings brilliant red, the cellspot and the oblique macular band yellow; hindwing with a red subcostal streak. — *tyche* Bat., from Amazonas and Guayana; almost exactly like *diana* (75 c), but the hindwing with red rays radiating from the base below the red subcostal streak towards the termen. — *hippolyte* Bat. (75 c) from the same locality is similar, but lacks the cell-spot and has the oblique band as well as the other markings of the forewing red. — *angusta* Riff. (75 d) is very similar to *tyche*, but has on the forewing the band inwardly yellow, outwardly red; from Guayana. — ab. *aglaopeia* Stgr. (75 d) from Guayana has the entire distal half of the forewing black, at the most with only a few traces of red, whereas the basal half of both wings and the rays on the hindwing are beautifully red and well developed. — *thelxiope* Hbn. (75 d) from the Amazon has the basal half of the forewing and the entire hindwing red, in some localities vermilion (Pará), in others rather minium-red (Manaos); but the system of spots in the outer half of the forewings is lemon-yellow. — *thelxiopeia* Stgr. from Guayana has the red markings arranged as in *thelxiope*, but very deep and dark, even brown-red or violet. — In *aglaope* Fldr. (75 d) the red markings resemble those of *aglaopeia*, but are more brownish, and the black distal half of the forewing encloses a pale yellow, hook-shaped semi-band; occurs on the Amazon all the way up to Peru. — In *niepelti* Riff. the colouring is brilliant crimson, with a fine black dot in the cell of the forewing. — *isolda* Niep. has this spot, particularly in the ♂, larger, the apical spot white, slightly edged proximally. Ecuador. — In *rubripicta* Niep., likewise from Ecuador, the apical macular band as well as that part of the discal spot which is not red, is heavily dusted with red scales. — *adonides* Niep., from Ecuador approaches *plesseni* fa. *adonis*; on the forewing the discal spot within the cell yellowish, densely sprinkled with black scales; "the apical macular band distally edged with red, broadly shaded with yellow proximally; the *aglaope*-pattern red, the red basal colouring of *niepelti* very extensive as in *aglaope*, likewise the fiery rays; underneath it resembles *isolda*, but, like *aglaope*, with a transverse streak of rufous over the red rays, which is not found either in *isolda* or *niepelti*". — *gisela* Niep. is quite similar, "representing a transition from *aglaope* Fldr. to *plesseni pura* Niep.; the spots on the upper surface of the forewings white, the discal one proximally sprinkled with black scales and defined by a heavy, black spot. Hindwings as in *adonides*"; Ecuador. — *elevatus* Nöldn. from the Upper Amazon looks almost precisely like a typical *aglaope*, but the red basal colouring extends somewhat farther on the forewing and the lemon-yellow semi-band is rather broader. — *anna* Neust. is the form from Ecuador, distinguished by having the white band of the forewing slightly margined with red distally. — *equadoriensis* Neust. from Sarayacu has this white macular band reduced. — ab. *dione* Neust., likewise from Ecuador, has the outer macular band of the forewing yellow edged with brown; cell 3 and the middle cell tinged with brown. — Another form from Ecuador described by NIEPELT as "*fraterna*" I am unable to identify; the forewing is said to have a white apical spot, edged with red proximally, and a discal spot "which, being strongly encroached upon by the black ground-colour, has its entire inner portion red". —



*rubra*. **rubra** Stich. from Cuzco has the basal red deeper than in typical *aglaope*. — *gratiosa* Niep. is marked like *rubra*, but has the apical spot white, edged with red distally. — *bari* Oberth. (75 e) from Guayana has the lemon-yellow discal spots rather spread about, and in addition a chain of apical spots. — In *mirabilis* Riff. from Peru the sub-apical band is very short, sulphur-yellow; but otherwise the colouring of the upper surface is entirely black, without any basal red. According to O. MICHAEL it is found always together with other forms of *aglaope*, in some localities more abundantly, otherwise always singly; it represents only a more or less perfectly developed melanism. — *unimaculata* Hew. (75 f) has the subapical band feebly edged with red distally, but both wings without the basal red. — ab. *rufescens* Stich. and *riffarthi* Stich. both resemble *hippolyta*, but have the forewings more profusely marked with red, the hindwings less so; *riffarthi* has, moreover, also the discal red well reduced. — *vicina* Mén. (75 e) resembles *aglaope*, but has in the place of the lemon-yellow semi-band a series of spots, the lower of which at the end of the cell is lemon-yellow, the semi-band projecting downwards; from the Upper Amazon. — ab. *rufolimbata* Btlr. (75 c) has the yellow band margined with red distally, and the cell-spot generally larger. — In the same way as this is related to *aglaope*, the form *amor* Stgr. (75 f) is related to *unimaculata* Hew., that is to say the yellow, outwardly red-margined semi-band is broken up into a number of spots; otherwise the entire upper surface is black-brown; both have a somewhat different shape, for which reason I assume that they do not belong here; from the Massauary. — *eulalia* Riff. (75 f) from Guayana has the forewing as in *vicina*, but less brilliant red, and the lemon-yellow spots more compact; on the hindwing the red transverse basal stripe is reduced and the red rays are altogether wanting above. In his original description RIFFARTH states that the lemon yellow spots on the forewing are edged with red. But one year afterwards he corrected this statement, expressly observing that the spots are not margined with red. Thus we figure in accordance with the author as *eulalia* a specimen without any red margin. — However there do exist such specimens, the figure of which, like most of our figures of *melpomene*, is taken from OBERTHÜR's excellent illustrations of this most variable species. But since RIFFARTH expressly dissociates this form from the name *eulalia*, I give it a new name: ab. *fascinatrix* nom. nov. (75 f). — *penelope* Stgr. (76 a) from Bolivia closely approaches *vicina*, but has the red of the upper surface strongly tinged with brown, and the lemon-yellow spot on the forewing often shaded with black along its periphery. — In ab. *margarita* Riff. (76 a) which, together with typical *penelope*, flies on the Rio Juntas, the transverse band under the costa of the hindwing is bright yellow, densely dusted with red, particularly on the veins. — *penelamanda* Stgr. has this band of the hindwing almost clear lemon-yellow, but on the forewing the otherwise yellow discal spot bright minium-red; Bolivia. — *penelopeia* Stgr. (76 a) likewise from Bolivia, is intermediate between *penelope* and *penelamanda*, having the discal spot either red with yellow center, or, as RIFFARTH expressly observes, entirely red. — Also in Ecuador we find a number of allied forms of *melpomene* resembling *aglaope*. The most characteristic is *timareta* Hew. which has the upper surface completely black-brown, with only the spots in the discal area of the forewing lemon-yellow, thus being related to *penelope* in the same way as *unimaculata* is to *aglaope*; it closely resembles our figure of *pluto* (76 a), lacking only on the forewing the red spot above the anal angle, and on the hindwing the yellow band which also in *timareta* is nearly obsolete. — ab. *virgata* Stich., occurring together with the following aberrations in Ecuador, in the same localities as typical *timareta*, has the terminal area of the hindwing intersected by nail-shaped red rays. — In ab. *contigua* Weym. these stripes are at the base confluent, and in ab. *richardi* Riff. (76 b) preceded by a red transverse band; ab. *peregrina* Stich. has on the forewing instead of the yellow spots of *timareta* a yellow semi-band. — *pluto* Stgr. (76 a) from Bolivia is likewise a copy of *timareta*, but has a fine red spot on the lower median nervule of the upper surface of the forewing, about 2—3 mm. from the termen, and on the hindwing a transverse band half concealed under a scaling of fuscous. — *erebia* Riff. is undoubtedly also an aberrative form from Ecuador, differing from *timareta* in having the lemon-yellow spots on the forewing outwardly edged with red, as in *unimaculata* (75 f) and *amor* (75 f). — *amandus* Sm. and Ky. represents a distinct transition to the *amaryllis*-group, in that the yellow median stripe extends to the discal spot which is almost completely red, only occasionally faintly dusted with yellow inwardly; Bolivia, Peru. — The last form is *aphrodyte* Stgr. (76 b), likewise from Bolivia; ground-colour uniformly dark, only interrupted on the forewing by a frayed red transverse band similar to that of *melpomene atrosecta*, preceded by a yellow, more or less red-tinged discal spot. — Nearly all the forms of *melpomene*, those at least representing local races and not isolated aberrations, are in certain localities extremely common. Although we have here recorded all the names given by RIFFARTH, NIEPALT, STICHEL and others to quite unimportant aberrations, we are far from attaching importance to all of these. Applying the same principles, one might, following OBERTHÜR's work on *melpomene*, *vesta* and *telxiope* alone, invent dozens of new names, all of which would have more or at least as much value as many of the above mentioned forms. It is easy to see that such liberality in giving names does not add to clearness, but rather obstructs it, considering that dozens of such forms are found at the same time and in the same locality. Any work which reduces this jumble of names to a reasonable measure, would be of much more value than the introduction or description of further "formae novae".

*rosina*.Of *H. amaryllis* we know several forms ranging from Guatemala and Venezuela to Peru: *rosina* Bsd.



(= *amaryllis* Dist., *petiverana* Godm. and Salv.) (76 b) resembles above, as may be judged from its synonyms, *petiverana*, *columbina*, *demophoon* etc.; forewing with narrow red transverse band, hindwing with yellow, pointed subcostal streak. From Costa Rica, Panama and Colombia. — *amaryllis* Fldr., the name-type, from *amaryllis*. Peru and the adjacent parts of northern Brazil, resembles the preceding, but has the red band of the forewing much broader; on the under surface there are fewer red basal dots and the costal stripe is absent. — *euryas* *euryas*. Bsd. (= *melpomene* Bat.) and *euryades* Riff. (76 b) are mere aberrations of the preceding form, lacking above *euryades*. on the hindwings the yellow band, which only faintly shines through from underneath; *euryas* represents the form *rosina*. *euryades amaryllis*; hindwings without the yellow band. The former occurs in Central America, Colombia and Venezuela, *euryades* in Colombia, Venezuela and Trinidad. All the forms of this species may or may not display a blue iridescence. — *amaryllis* flies the whole year round, and counts in its home (f. i. at Tarapoto) among the commonest butterflies, but is especially abundant during certain periods (May and October). Specimens found in the mountain-forests are said to be larger than those from the arid plains. Several different aberrations are known, having f. i. the  $\frac{5}{2}$  band of the hindwing white instead of yellow.

**H. vulcanus** Btlr. (76 c). The typical form above like *euryas*, but with very short white fringe of the *vulcanus*. wings. Forewing beneath with traces of a yellowish-white median line; Colombia and Panama; said to range as far as Guayana, but this must be a mistake. — In fa. *cythera* Hew. (76 d) which in Ecuador *cythera*. flies together with the very similar *Hel. cyrbia* (78 a), the hindwings have the distal border whitish, the forewings the red transverse band edged with yellow proximally. — *modesta* Riff. from Paramba in Ecuador *modesta*. stands midway between *vulcanus* and *cythera*; on the forewing the band is as narrow as in the latter, but the termen of the hindwing shows no white at all or very little. — In *concinna* Stich. the band of the *concinna*. forewing is half yellow, the termen distinctly spotted with white; from Balzabamba.

**H. xenoclea**. The forms belonging to this group have on the forewing two bands, one behind the other, a characteristic distinguishing them from most other red-banded *Heliconius*. But the similarity of their forms is partly depending on mimicry, and they have no more to do with each other than *cyrbia* and *cythera*. If, as sometimes happens, both bands flow together, they of course show only one spot, which is, however, so broad that with the exception of the apex and base the whole wing is occupied by it. We know two quite similar forms, both above black, marked on the forewing with 2 red semi-bands or spots, the upper one of which is vase-shaped, the lower one obliquely oval; both fly simultaneously at the same places in Ecuador and Peru, but differ from one another in that the ♂♂ of one have the costal area of the hindwing greyish-white, and on the under surface of the forewing the inner margin glossed as far as the median vein (seent-organ), whereas the ♂♂ of the other, otherwise quite similar form have no gloss on the under surface of the forewings, and the costal area of the hindwing is brown above. To which of these the type belongs which was named *xenoclea* by HEWITSON, was for a long time doubtful. The specimens in HEWITSON's collection are set so low, that the costal margin of the hindwings remains invisible. RIFFARTH evidently believed, — probably misled by HEWITSON's figure, — that the ♂ of HEWITSON's *xenoclea* had the costal margin of the hindwing brown, and called therefore the form with glossy white-grey anterior margin "*batesi*". Later investigations, however, seem to have proved this to be an error; for the type of *xenoclea* in HEWITSON's collection has actually a pale costal margin, for which reason the specimens with brown costal margin of the hindwing have been named *microclea* Kaye. As we do not attempt to arrange the groups from a systematic point of view, *microclea*. x but only wish to render on easy recognition of the forms possible, we here bring both forms together, naturally as separate species. In recent years a good many aberrations were described of both forms, but partly in a manner that leaves it doubtful whether they belong to *xenoclea* or to *microclea*. — *confluens* Lathy (76 d) *confluens*. x has the red spots broadly confluent. The water-coloured illustrations of PLOETZ's show a specimen with very broad apical spot, and specimens having the apical spot broadly, the discal spot quite narrowly bordered with red distally, but otherwise white, are named *superba* (76 b) by LATHY. — *plesseni* Riff. (= *pura* Niep.) *superba*. x from Ecuador has the spots altogether white, instead of red; the extracellular portion of the urn-shaped discal *plesseni*. x spot may be inwardly margined with brown-red (= *corona* Niep.), or the portion within the cell may be *corona*. x crimson (*diadema* Niep.). — *adonis* Riff. has on the forewing the spots dusted with yellow, the posterior *diadema*. x one narrowly edged with red proximally. — In *rubicunda* Niep. they are all dusted with red. All these forms *rubicunda*. are, wherever they occur quite common. — The typical form *xenoclea* Hew. (= *batesi* Riff.) from Ecuador *xenoclea*. x and Peru has both spots on the forewing bright minium-red. Of all the above named forms as well as of others we know transitions from red to almost white spots, either the outer or the inner spot being affected.

Of **H. microclea** Kaye (= *xenoclea* Riff.) we know some particularly white specimens that were named *microclea*. x *notabilis* Salv. and Godm.; both the apical and discal spots are clear white, only a very narrow streak at their *notabilis*. inner margin remaining red.

**H. nanna** Stich. (76 e) bears the same relation to the common Brazilian *phyllis*, as *xenoclea* Hew. to *nanna*. *microclea* Kaye. But above it shows the characteristic difference that the discal band is not sharply cut off



at the lower median nervule as in *phyllis*, but extends somewhat beyond it. Underneath the hindwing lacks the yellowish-white apical spots, some of which are always found in *phyllis*. The figured specimens has been set especially high on purpose in order to show the silky grey-white costal area of the hindwings. Central and Southern Brazil.

✕ *beschkei*. **H. beschkei** Mén. (76 c) closely resembles the preceding above, but may be at once recognized by the red line bordering the termen of the hindwings. Southern and Central Brazil, from Sa. Catharina (f. i. Blumenau) to Espiritu Santo.

*atthis*. **H. atthis** Dbl. and Hew. (76 e) from Ecuador mimics *Tithorea pavonii* (32 b) with which it is found in the same localities, to such a degree that only the transverse streak of the hindwing remains to point out its relationship with the hitherto mentioned species; the forewings are spotted with white.

*crispus*. **H. crispus** Stgr. resembles the preceding; but since it is found in the Cauca Valley of Colombia, it does not mimic the Ecuador species *Tithorea pavonii*, but the Cauca form *descandollesi* of *Tith. bomplandi*. It is larger than *atthis*, and the hindwings have besides the oblique band two rows of yellow dots. Described from Antioquia.

*hecuba*. **H. hecuba** Hew. (76 d) likewise mimics a *Tithorea* of the *humboldti*-group; this form has the band of the hindwing pretty regular. — In *choarina* Hew. from Ecuador, captured by HAENSCH in January at an altitude of about 4800 ft., the band is rather dull yellow, placed nearer the termen and tapering strongly towards the oval margin. — The lovely *tolima* Fassl, a wonderfully exact copy of *Tith. bomplandi* (32 b) both above and on the most complicated under surface, was discovered by FASSL on Monte Tolima in Colombia. The forewings lack the pale median band, and on the hindwing the band is rather curved and narrower at either end. — *cassandra*. **cassandra** Fldr. (76 c) differs above but slightly from *tolima* in that on the hindwing the apical and anal spots of the yellow band do not grow suddenly smaller than those in the middle.

*hecalesia*. **H. hecalesia** Hew. (76 e). This Columbian form which is not at all scarce in the Cauca Valley, copies a *Tithorea* with brown marked upper surface of the hindwings, flying with it in the same localities and at the same time. Thus it resembles in colouring a whole group of Danaids, of which we only mention *Ceratinia peridia* (35 d) and *Callithomia tridactyla* (36 b). As it is a most exact copy of *Tithorea hecalesina* (32 c), further description is unnecessary. — In Central America its place is taken by the form **formosus** Bat. (76 f) which, particularly in Costa Rica, flies together with the similar *Tith. pinthias* (32 b). From its Columbian ally it differs in the same way as the Central-American *Tith. pinthias* from the Columbian *Tith. hecalesina*, having nearly the entire hindwing, with the exception of the black termen, brilliant red-brown. — *gynaesia* Hew. (habitat not known) has forewings like *hecalesia*, but on the hindwings the red-brown colouring is confined to a broad median band encroaching upon the end of the cell and preceded by a row of yellow submarginal spots. — These forms are less common than most other species of *Heliconius*, or are less often captured since they do not descend to the ground.

*octavia*. **H. octavia** Bat. resembles *gynaesia*; on the forewing the spots are united into short oblique bands; above and below the median vein brown stripes. Central America.

*longarena*. **H. longarena** Hew. Like the preceding, but larger, the wings more elongate, the median vein and entire hindwing crossed by very brilliant red brown bands, the yellow submarginal spots divided longitudinally by the black veins. Colombia.

*godmani*. **H. godmani** Stgr. from Colombia differs from *gynaesia* in having also in the cell on the forewing a yellow spot, whereas in *gynaesia* all the spots are distributed over the apical area without entering the cell.

*metharme*. **H. metharme** Erichs. (= *thetis* Bsd., *methame* Ky., *erato* Salv. and *Godm.*) (76 f). Above black with a bone-white semi-band across the cell and before the apex. Both above and beneath some characteristic white longitudinal dashes before the termen of the hindwing. Occurs throughout northern South America, but rather singly.

*aoede*. **H. aoede** Hbn. (76 f) resembles, like the members of the following group, at first sight the forms of the *aglaope* and *thelxiope*-groups, but the spots and streaks are quite different. In the *aglaope*-group which is figured on Pl. 75, c, d and e, we find on the hindwing, obliquely traversing the cell, a red band from the margin of which nail-shaped rays radiate toward the termen; here, however, the system of rays as a rule follows the veins; the cell is filled with red, the red streaks starting from its periphery. The typical *aoede* (76 f) has an aggregate of lemon-yellow, deeply frayed discal spots, the base of the forewing and the ray-like streaks



of the hindwing minimum-red; from Amazonas and Guayana. — *astydamia* *Erichs.* (= *emmelina* *Oberth.*) from the same locality, is brighter red, but on the hindwings the rays are only well developed in the basal half. — *lucretius* *Weym.*, from Guayana, Venezuela and Amazonas as far as Bolivia, has on the forewing the yellow discal spots not frayed as in *aoede*, but united into a large compact spot. — In *bartletti* *Druce* (= *vedius bartletti* *Stgr.*) (76 f) the sulphur-yellow markings of the forewing are reduced to a short band, preceded by a small bi-or triangular cell-spot. The red rays on the hindwing very fine. Amazonas and Ecuador. — *cupidiaeus* *Stich.* from Peru has the yellow subapical band of the forewing narrower and more oblique, the upper surface more intensely red. — *faleria* *Fruhst.* from Matto Grosso resembles *bartletti*, but the stripes of the hindwings are more delicate. *aoede* and its allies are distinguished by their-violet-like odour.

**H. xanthocles** *Bat.* (77 b). The name-type from Guayana differs from the following *vola* (77 b) in having the base of the forewing not rufous, but brilliant vermillion-red. — *vola* *Stgr.* (77 b), likewise from Guayana, has on the forewing the base rufous, and before the apex a short sulphur-yellow subapical band. — **paraplesius** *Bat.* resembles *vola* also in the colouring of the base of the forewing, but has the lemon-yellow transverse band broader and the adjacent spots smaller; on the hindwing the cell is filled with flame-red and the red rays are very broad. — **melete** *Fldr.* (77 b) from Colombia, Bolivia and Peru has the lemon-yellow spots on the forewing united into a large discal spot which is only interrupted by the black veins and the crescent-shaped discocellular; on the forewing the red rays are well developed, but suffused with brownish. — In **melittus** *Stgr.* which stands midway between *melete* and *melior*, the yellow spot forming the end of the cell is very much reduced, in consequence of which the discal patch appears smaller; the red colouring is lighter than in *melete*. From Peru. — **cethosia** *form. nov.* (77 a) is the name given to a new form from Colombia sent to me by H. FASSL; the yellow is confined to a small band behind the cell, which is entirely black; the basal red greatly reduced, although very brilliant; underneath the red rays have completely disappeared, the colouring being uniformly black-brown, with a narrow whitish discal fascia. — **melior** (77 a) *Stgr.* from Ecuador and Peru is very bright fulvous, the lemon-yellow band at the beginning broad, growing rapidly narrower; on the hindwing a red band before the broader ends of the rays gives it some resemblance to the forms of the *penelope*-group.

**H. burneyi** deviates in its appearance not inconsiderably from the other *Heliconius*, being closely allied to the following *egeria*-group. Its size is much larger than that of the average *Heliconius*, often reaching 10 cm. in expanse. It is about the only *Heliconius* which in some localities is really scarce, so that outside of the typical *burneyi* none are regularly met with in commerce. It seems that their whole life is passed in the crowns of the trees, for only incidentally and very seldom one sees one of them descend to some more easily accessible height. — **hübneri** *Stgr.* (77 a), is distributed from Guayana throughout Amazonas to Peru and Bolivia. On the wing it resembles a large-sized *aglaope*: Both wings with red-brown basal rays, the forewings with a yellow transverse blotch composed of 3 spots, and with small subapical spots. On the hindwing the red rays end in very sharp points in the distal half, in contradistinction to **lindigii** *Fldr.* (77 a), where they do not enter the outer half, but at the most reach the height of the end of the cell; Colombia; especially near Muzo. — **catharinae** *Stgr.* has on the hindwing the red-brown colouring even farther reduced; the 3 spots making up the discal patch are widely separated by heavy black bars of the ground-colour. From Guayana and the Amazon. — The name-type **burneyi** *Hbn.* found southward as far as Peru, closely resembles *hübneri*, but has on the forewing the 3 lemon-yellow spots farther apart; the subapical spots, which in *hübneri* are very small or entirely obsolete, are larger, frequently united, and the comma-shaped terminal striae on the under surface of the hindwings, which in *hübneri* are always distinct, are much fainter. In the North *burneyi* and *hübneri* are always found together in the same localities, and since there occur all kinds of intermediate forms, *hübneri* might be taken for an aberration of *burneyi*, if it should be found to occur also outside of Peru.

**H. egeria** *Cr.* (= *isaea* *Hbn.*, *ergatis* *Godt.*) bears the same relation to the forms of *burneyi* with which it might well be united into a special group, as *thelxiope* (75 d) to *aglaope* (75 d): The lemon-yellow discal spot of the forewings breaks up into numerous isolated smaller spots. In typical specimens these are very small, and the entire inner half of both wings is suffused with purplish-red. From Guayana and Amazonas. — **egerides** *Stgr.*, likewise from Surinam and Amazonas (Manaos), has on the forewing only a purplish-brown subcostal band. — In **hyas** *Weym.* from Amazonas the basal area of the hindwings is rather yellow than brown-red, emitting thin, far spreading rays almost to the termen; **astraea** *Stgr.* has the yellow spots of the forewing again united, as in *burneyi*, thus recalling *aglaope*; but the forewings are more pointed and lack the subapical spots.

**H. doris** is one of the most variable species of the genus, which for a *Heliconius* is saying a great deal. Above all it is remarkable on account of the hindwings varying from red to blue or green and, as if the aberrative combinations thereby possible did not suffice, all the forms may be more or less, or even



totally obscured. Neglecting these latter melanisms, the forewing nearly always shows a tapering, discal band of bone-colour, and a smaller subapical streak composed of dull yellowish-white dashes. The oldest described form is *doris* L. (= *quirina* Cr., *erato* Salv. and *Godm.*) (77 b). The discal band of the forewing ends clean at the lower median nervule. In the hindwing the cell is filled with blue, sending out very short blue rays which hardly reach the middle of the wing; before the termen a more or less extended row of white dots.

*doris.* — In ab. *metharmina* Stgr. (= *doris nigra* Stgr.) (77 c) the basal blue of the hindwing has disappeared, giving it a likeness to *metharme* (76 f) and, less superficially, also to the forms of the *rhea*- and *sara*-groups. Also the forewings may be obscured with black, both in the red and the blue forms. If quite black, or at the most only adorned by a few subapical dots, we have ab. *obscura* Weym. (77 c); if the discal spot is still distinct, being only dusted over with black, we have *tecta* Riff. (77 c). *doris* is, together with its subforms, distributed over the entire northern part South of America, but does not go farther south than North-Brazil and in the West to Peru and Bolivia. In Colombia and Ecuador it is replaced by various local forms, but it must be said that the mentioned aberrations are not confined to the main form, but may occur also in all the subforms. Thus the figured ab. *obscura* is a melanism of the Colombian *eratonius*; *tecta* (77 c) a dark form of *aristomache*. — Regarding first the green forms, we have one, with yellow-green rays on the hindwing, known for a long time as *doris viridis* Stgr. (77 c); from this RIFFARTH has separated the form *luminosus*, distinguished by the rays having the points "whitish". Equally unnecessary was the separation by STICHEL of "*viridana*", with deep green instead of yellow or blue-green base of the hindwings. If we would consider all such, often purely individual deviations, we could have at least 50 names for the forms of *doris* alone; one would have to separate above all the "blue-green forms" from the "yellow-green", of which STAUDINGER gave us a figure. There are specimens of *viridis* which have the tips of the green rays very feebly yellow, and others having the entire inner half of the cell scaled with yellow. On the forewing the yellow median streak may be entirely or almost absent, the terminal dots of the hindwing may vary in number and intensity, and all this may be the case in the green as well as the blue and red forms. — Therefore we mention only the named forms with short characteristic notes: Besides the green forms there are also red ones: *delila* Hbn. (= *erato* Cl. nec L., *doris* Blanch., *mars* Stgr.) (77 c), from Guayana throughout northern Brazil as far as Ecuador, Peru and Bolivia; forewings with a short blunt semi-band and, like the hindwing, with heavy red basal rays. — *eratonius* Stgr. (= *erato* Btlr.) (77 d). Ranges from Central America to Venezuela and Colombia. On the hindwings the red basal rays reach within 4—5 mm. to the termen; — *transiens* Stgr. (77 d) very closely resembles *eratonius*, but the rays are shorter, separated by black, not reddish veins as in the preceding. This is the most northerly form, ranging from Colombia to Mexico, and altogether one of the most northerly *Heliconius*. — *amathusia* Cr. (= *eranis* Hbn.), a most striking form, having on the hindwing the red rays partly suffused and edged with blue; also their terminal continuation is blue. Ecuador; taken by HAENSCH at an elevation of about 2000 ft.; mentioned also from elsewhere, but apparently nowhere common. — *aristomache* Riff. (= *doris* Weym.) (77 d), ranging from southern Central America southward to Ecuador, is much more blue than typical *doris*. Like the colour of the hindwing, thus also the bone-yellow discal band of the forewing may vary, from being very broad, to being obscured to such an extent that it disappears almost completely. The material before me shows such a degree of variation in this that among over 40 specimens I can hardly find two that are alike. For that reason it is a mistake to separate the narrow-banded blue specimens passing in commerce as *doris*, under the name of "*caeruleata*" Stck., simply because the width of the band does not coincide with that of LINNÉ's type. To base new forms on the difference in the width or shape of the bone-yellow discal band would, if applied to the forms already established, add at least 100 further names. — Nearly all the forms of *doris* are, wherever they occur, exceedingly common; flying throughout the year, they are in the dry period when but few Lepidoptera are seen, beside the *Catopsilia* frequently the only striking butterflies enlivening Nature by their numerous appearance.

*hierax.* H. *hierax* Hew. (77 d) from Ecuador resembles *transiens*, one of the red *doris*-forms, but has the yellow discal band steeper and, like the apical spots, differently arranged than in *doris*; the basal half of the hindwings is also purplish-brown, but of a clearer tone, and irregularly bounded by the darker outer half, but not drawn out into ray-like streaks.

*clytia.* H. *clytia* Cr. (= *antiocha* Hbst.). Upper surface deep black, largely suffused with an intense blue iridescence. Hindwings without any markings, forewings with two bands, one oblique through the middle, the other narrow, often partially obsolescent, before the apex. Typical specimens have these bands white. From Guayana through Amazonas to Peru. — *flavescens* Weym. (= *clytia* Stgr., *sara* Godt.) (77 d) has the bands brilliant pale yellow; likewise from Guayana, North-Brazil and Peru. — In *wallacei* Reak. (77 e) the oblique discal spot is contracted into a band, the subapical fascia relatively broad; from the very similar *sprucei* etc. it may be distinguished by having on the under surface of the hindwings a red costal stripe and pale radiating subter-



mineral striae. The width of the yellow discal band is rather variable, all transitions occurring connecting it with *flavescens*. Guayana, Amazonas and Colombia. — *mimulinus* Btlr. from Colombia refers to specimens *mimulinus*, which above resemble *wallacei*, but show less intense blue iridescence and have the yellow cell-spot within the band nearly square. — *elsa* Riff. resembles *wallacei*, but has the bands white instead of yellow. Surinam. *elsa*. — ab. *parvimaculata* Riff. refers to specimens of *flavescens* having the discal band divided into spots by the black *parvimaculata* veins. — In *colon* Weym. the discal band is only indicated by two small white spots. — All the forms of *clytia* *colon* belong, wherever they occur at all, to the commonest butterflies; they are met with on broad forest-roads, nearly always in company with similarly coloured forms of other groups, as *Heliconius antiochus*, *sara* or *leucadia*, from which they cannot be distinguished on the wing; but besides the genus *Heliconius* no other mimics or their models are found.

**H. sappho** has, like the preceding, the upper surface suffused with a deep blue lustre; forewings with one broad, or two narrower, white, somewhat translucent, transverse bands. **leuce** Dbl. (= *sappho* Hbn.) (77 e). *leuce*. On the forewing the band broadly white, interrupted on the discocellular vein by a black tooth-like bar and by a similar projection from the termen between the median nervules. The hindwings have only the apex and fringe faintly white. Central America, especially Honduras; generally found together with *H. galanthus* (74 d) which it greatly resembles above. On the wing the species cannot be told from one another; but *galanthus* has on the under surface of the hindwings a number of discal arches, *leuce* some large red basal spots only separated by the veins. The nearest allied form **eleusinus** Stgr. (77 e) from West-Colombia is above black, not steel-blue; the *eleusinus*. black spot at the end of the cell is nearly met by a black tooth from the termen at the middle, almost dividing the white patch into two. — In **primularis** Btlr. (77 e) from Ecuador this division is complete, the two *primularis*. component spots being widely separated; hindwing with broadly white-yellow terminal border almost reaching the middle of the wing. — In **eleuchia** Hew. (77 e) from Colombia the terminal border of the hindwing is clear white; *eleuchia*. on the forewing the discal portion of the transverse spot, which is likewise cut into two, is narrower. Ecuador, common in the plains, taken by HAENSCH as high up as 2500 ft. — **sappho** Drury, the name-type, has on the *sappho*. forewing only one band, which is broadly white, at the costa divided by the black discocellular spot, slightly curved inwards toward the anal angle, leaving the termen black. From Colombia and Ecuador; not scarce.

**H. hewitsoni** Stgr. from Chiriqui (Costa Rica) is a copy of *H. pachinus* (74 f) which flies in the same *hewitsoni*. locality. Forewing with 2 oblique yellow bands, hindwing with only one curved band placed at about 5 mm. from the termen. Differs from *pachinus* in that the discal band crosses the cell at the end, whereas in *pachinus* it passes beyond it.

**H. congener** Weym. (= *paranapuræ* Stgr.) exactly copies *wallacei*, *sara*, *apseudes* etc.; like these, the upper *congener*. surface is black, the inner half of both wings suffused with a bright lustre of steel-blue. May be distinguished from all these by the sulphur-yellow discal band, which on either side is quite irregularly bounded by fine teeth and lunules of the black ground-colour. Ecuador and Peru, ascending to above 3000 ft.

**H. antiochus** L. (= *araneides* Stgr.) (77 f) ranges nearly over the entire North of the South-American *antiochus*. continent; the type is found in Guayana and Amazonas as far as Peru. Above black with blue iridescence, with two white transverse bands and a yellow streak on the median vein. Hindwings with a red wedge-shaped subcostal streak underneath. — ab. **alba** Riff. (77 f) very closely resembles the name-type, but on the *alba*. forewing the bands are less pointed at the ends, and the yellow median streak is absent. — **aranea** F. has on *aranea*. the forewing the bands paler yellow; — **zobeida** Btlr. (= *divisus* Stgr.) has the white discal band interrupted *zobeida*. on the median vein. — **ocannensis** Stich. (= *ocannus* Stich.). Like *zobeida*, but the bands yellow instead of *ocannensis*. white; North Colombia. — A rather different appearance has **salvinii** Dew. from the Orinoco. Forewing *salvinii*. as in *antiochus*, but the hindwing with a yellow band similar to that of *phyllis*, *chestertoni* and many other Heliconids.

**H. leucadia** resembles the preceding, but with very brilliant lustre of blue above; the subapical band much shorter, the oblique discal spot not extending beyond the lower median nervule, frequently composed of only two spots, one large, placed above the median, the other below it in cell 2. — **pseudorhea** Stgr. (77 f), *pseudorhea*. from Amazonas, Ecuador and Bolivia, has the hindwings quite dark. — **leucadia** Bat. comes from Ecuador and *leucadia*. the Upper Amazon. Hindwing with rather large white terminal spots.

**H. sara** F. (= *magdalena* Bat., *rhea* Btlr. and *Druce*) (77 f). Very much like the preceding species, but *sara*. the discal band of the forewings narrower, more pointed at either end. Hindwings with numerous red basal dots underneath. From Panama, Colombia and Venezuela. — ab. **albinaculata** Stgr. from Colombia has on the *albinaculata*. forewing the bands white, not pale yellow as in typical *sara*. — **apseudes** Hbn. (= *sara* Luc.) (77 f), which is the *apseudes*. commonest species coming to Europe from Southern Brazil, where it may be seen even in the gardens of Rio de Janeiro, has the discal band sulphur-yellow, and nearly twice as wide as in *sara*. — In **albula** Riff. from *albula*. La Guayra this band is of the same width as in *apseudes*, but white. — **brevimaculata** Stgr. has the subapical *brevimaculata*. and shorter and the discal band divided into two. From the Rio Dagua (Colombia). — **sprucei** Bat. (78 a) *sprucei*.



from Ecuador is above like *sara*, but with unusually brilliant blue lustre and uncommonly long white fringe of the hindwings. — In *rhea* Cr. (= *thamar* Hbn.) (78 a) the discal band is an almost regular oval, the subapical band shorter; both bands yellow. From Guayana throughout Amazonas to Peru and Ecuador. — *albinea veraepacis* Riff. from Surinam has the bands as in *rhea*, but clear white. — *veraepacis* Bat., an alpine form of Guatemala, unknown to me, has the subapical bands whitish, slightly curved, and interrupted; the discal band yellow in the middle, angular, enclosing a yellow, nearly square cell-spot. — *theudela* Hew. from Panama, Colombia and Venezuela resembles *sara*, but the transverse band almost reaches the anal angle, the hindwings with yellow terminal dots. — *fulgidus* Stich. (78 a) from Costa Rica has the same intensely blue lustre as *sprucei*; the fringe shorter, but more brilliantly white, the discal spot as broad as in *apseudes*.

*himera*. **H. himera** Hew. (77 a) does not fit in with any of the larger groups. It is a rare species of Ecuador, copying in its outward appearance *H. clysonimus* (79 b) with which it associates in the same localities. Its scheme of colouring is the reverse of *colombina* (78 b), being red where that is lemon-yellow, and vice versa.

*cyrbia*. **H. cyrbia** Godt. (78 a) is one of the plainest and at the same time most elegant forms of this magnificent genus. The wings are black with steel-blue lustre and white fringe. Forewings with a semiband of purplish pink, hindwing with bluish-white terminal spots, growing shorter towards the apex. Ecuador; some specimens, including the original of our figure, were taken by HAENSCH even at altitudes of 2500 ft. — *diformata* Riff. has on the forewing the red band much broader, on the hindwing the terminal spots frequently dusted over with darker, the light median band of the under surface nearly twice as wide as in *cyrbia*. From Paramba (Ecuador). — *venus*. — *venus* Stgr. from Colombia has the red band even broader, twice as broad as in *cyrbia*; but it lacks the white terminal spots of the hindwings. — *juno* Riff. which above resembles *venus*, is said to be without the blue lustre of the upper surface; the hindwings with the median band obsolete underneath, but with red costal streak. Described from a specimen in RIFFARTH's collection, locality unknown.

*favorinus*. **H. favorinus** Hpffr. (= *pseudamaryllis* Stgr.). Forewing with blood-red, almost round spot, which is, however, cut off almost straight on the lower median nervule. Hindwing with yellow discal band, tapering at both ends, in the middle broader, underneath rather longer, ending in a point about 3 mm. before the termen. Peru.

*petiverana*. **H. petiverana** Dbl. and Hew. (= *demophoon* Bat.) (78 b) closely approaches *phyllis*, but lacks on the forewing the yellow median streak, like *rosina* (76 b); differs from all other similar forms in having the yellow costal streak of the hindwing very narrow. Ranges from Mexico throughout Central America as far as Colombia and Venezuela. — *demophoon* Mén. has the yellow band of the hindwing broader; thus it approaches *rosina* as well as *columbina*, but differs in the characteristic shape of the red spots of the forewings as well as of the yellow band of the hindwing, which is nearly straight, whereas in *colombina* its outer edge is distinctly curved upwards behind the cell. From Central America and Colombia. — ab. *tristis* Riff. from Panama and Costa Rica lacks above the yellow band of the hindwings, which is underneath faintly indicated by an obsolete shade.

*colombina*. **H. hydara** is connected with the preceding group by the form *colombina* Stgr. (78 b), but easily distinguished from it by the characteristics mentioned under *demophoon*. The curving up on the hindwing of the outer margin of the yellow band is largely due to the band swelling in the middle. — ab. *antigona* Riff., likewise from Colombia, is distinguished from the preceding by the blue iridescence of the upper surface. — In the name-type *hydara* Hew., likewise occurring from Costa-Rica to Venezuela, the hindwing lacks the yellow band; it resembles *melpomene*, but the red spot on the forewing is much broader, almost as in *euryas* or in *vicina* (75 e). — ab. *guarica* Reak. from the same locality is an aberration with steel-blue lustre, every grade of intensity being known. — HEWITSON lays stress upon the fact that typical *hydara* have also on the hindwing in the middle a small spot of scarlet, which appears so distinct in his figure that there can be no doubt about the character of his *hydara*; for this reason I have named all specimens in which this spot is not present, although they are the more common, ab. *adana* nom. nov. This form closely resembles *melpomene typica* in all but the much broader and more brilliant red band of the forewing. — ab. *molina* Sm. looks like *guarica*, but has the red band on the forewing interrupted by black. — In the same way as in this the hindwings may lack the yellow band, whereas the red band on the forewing is strongly developed, it may vice-versa happen that the latter disappears and the former is retained. This is *chestertonii* Hew. (= *damysus* Hpffr.) (78 b), which somewhat resembles *cydno fa. gustavi* (74 f), with the same blue iridescence, but lacking the rows of white submarginal dots, and on the hindwing the yellow band reaching underneath almost the apex. — *nocturna* Riff. from Venezuela looks like *chestertonii*, but the yellow band of the hindwings is obsolescent, and there is a white spot above the end of the cell in the forewing. — *magnifica* Riff. resembles *guarica*, but is larger; the blue lustre is not confined to the black-brown ground-colour, but also suffuses the red spot of the forewing. Guayana, Ecuador, *viculata*. Peru. — In *viculata* Riff. (78 b) the spot of the forewing is large and broad, traversing almost the entire width of the wing; but it is pale red, of a shade only seen in *hydara* and *melpomene* specimen-



when exposed to sunlight for any length of time. — **amphitrite** Riff., from Peru, has on the forewings the spot *amphitrite*, even larger and paler, orange-red.

The last-named forms represent a transition to the group of **H. phyllis** in which we again trace *phyllis*, quite a number of the most various Heliconid patterns, as f. i. of *rosina*, *besckei*, *lindigii*, *thelxiope*, *aglaope* etc. — In **callycopis** Cr. (= *callicopis auct.*) (78 c) from Guayana and Para the red spot in the forewings, which in *callycopis* *hydara* is compact, appears frayed out and broken up into a larger, upper curved spot and two smaller ones below it. — In **callista** Riff. (78 c) from Guayana these spots are united into a sort of ring, the upper of the *callista*, two posterior spots being uncommonly large. — **dryope** Riff. (78 b) from Surinam and the Amazon River, *dryope*, has the red spot broad and long, as in *viculata*, and in addition, the entire basal area of the forewings brilliant red. — **coralii** Btlr. (= *palantia Möschl.*) from Guayana and the Lower Amazon has on the forewing the discal spot broken as in *callista*, but the basal area red as *dryope*. — In **elimaea** Erichs., likewise from Guayana *elimaea*, and the Amazon, the discal blotch of the forewing is broken up into a number of small red spots, and the basal area is red. — **cybelina** Stgr. (78 c) from Manaos, one of the loveliest *Heliconius*, has the entire inner half of the *cybelina*, forewing, as well as the basal portion of the costa beneath, beautifully red; the discal spot replaced by a lemon-yellow, slightly curved, oblique band. — **amalfreda** Riff., from Guayana and Amazonas, resembles *cybelina*, *amalfreda*, but has a lemon-yellow spot at the end of the cell. — **erythrea** Cr. (78 c), from Guayana and the Amazon *erythrea*, River, resembles on the forewing *dryope*, only the discal spot is somewhat smaller; but the hindwings with red rays in the anal half. — **tellus** Riff., from Cayenne looks like *erythrea*, but has the discal band yellow instead *tellus*, of red. — **udalrica** Cr. (= *ubrica Hbn.*) (78 c), one of the commonest forms, has on the forewing in the place *udalrica*, of the minium-red discal spot a much cut-up, somewhat paler red blotch; basal area of the forewings and some rays on the hindwing likewise red. From Guayana. — **andremona** Cr. (78 d), from Guayana and Amazonas resembles *callycopis* (78 c) in that the discal blotch is composed of a larger, horseshoe-shaped upper spot with 1—2 smaller ones below it; but all these are largely laved with yellow or may even assume a yellowish flesh-colour; base of forewings and rays on the hindwings light red with slightly brown-yellowish tone. — It is the extreme of this form from the mouth of the Amazon River, reproduced, as many of our figures of *Heliconius*, from the beautiful illustrations of OBERTHÜR's, to which we give the Amazon name ab. **androdaixa** *nom. androdaixa*, *nov.* (78 d). All the red markings are heavier, the rays on the hindwings twice as broad; all the spots and stripes brilliant light red, only the spot at the end of the cell more dull. — **leda** Stgr. (78 d) from Guayana *leda*, closely approaches the preceding, but the lovely light red discal spots are replaced by 3—4 rather small, lemon-yellow spots, preceded by another curved spot at the end of the cell; occasionally even these may be reduced to mere traces, leaving the entire outer half of the forewing black: = ab. **oberthüri** Riff. — In **vesta** *oberthüri*, *Cr.* (= *cynisca Godt.*) these yellow spots are greatly increased; the hindwing with red rays, but the forewings *vesta*, without any red at the base. Guayana. — **amazona** Stgr. (= *vesta Hbn.*, *philadelphus Ky.* [in "HÜBNER"]) *amazona*, (78 d) from Pará exactly resembles *androdaixa* (78 d) in colouring and markings, but has the discal spots not red, but lemon-yellow, otherwise unaltered in shape and size. — In **etylus** Salv. (78 d) from Ecuador the group of discal spots *etylus*, is reduced to a lemon-yellow, obliquely oval subapical spot, — in **estrella** Bat. (= *vestalis Stgr.*), from Amazonas and Ecuador, to a lemon-yellow semifascia, which in ab. **emma** Riff., from Ecuador and Peru, is uncommonly narrow. — If on the other hand, this sulphur-yellow discal band projects outwardly, with its lower portion cut off as a separate spot, we have **palmata** Stch. Peru. — **aquata** Stch., like the preceding from the *palmata*, Ucayali, resembles *estrella*, but has the subapical band lemon-yellow instead of red, and placed nearer the apex. *aquata*.

— **simplex** Riff. differs but very little from *aquata*; unknown to me in natura, as is also **ilia** Niep., which is said *simplex*, to resemble *estrella* in its ochreous markings, but with the discal spot of *notabilis*; the apical band "reduced *ilia*, to one half of its length distally, somewhat concavely excised towards the apex". Described from a ♂ taken at Canelos (Ecuador). — **feyeri** Niep., likewise from Canelos and described from a ♂, is intermediate between *feyeri*, *estrella* and *rosacea*; the *estrella*-pattern brilliant brick-red; the large semicircular apical band as in *rosacea* *rosacea*, Riff., but clear white, feebly margined with red proximally. — **ochracea** Riff. has the spots uniformly ochreous; *ochracea*.

— **rothschildi** Niep. Like the preceding, but with the apical band white. — **diva** Stch. has the red markings *rothschildi*, gorgeously scarlet, but reduced, and widely separated by black, the oblique discal band yellow, dusted with blackish *diva*, distally. — This dark shading is even more intense in **demeter** Stgr. (78 e) from Peru; but all the markings *demeter*, are here pale red, not scarlet; on the hindwing the rays coalesce at the base and unite with the red cell. —

**bouqueti** Nöld. (= *buqueti Riff.*). Like *demeter*, but with the lemon-yellow discal band reduced to a number *bouqueti*, of small yellow spots surrounding the black discocellular spot. Mentioned from "Cayana" (?). — **lativitta** *lativitta*, *Btlr.* (78 e), from the Amazon, Bolivia and Peru, has the red markings reduced, the lemon-yellow discal blotch large, almost enclosing the black discocellular spot; on the hindwing the rays well separated. — **venusta** *venusta*, *Salv.* (78 e). Forewing red from the base to the yellow discal band, which latter, being encroached upon by the black apical area, appears behind the end of the cell contracted, whereas in *lativitta* that portion is broader.



*donatia*. Bolivia. — *donatia* <sup>Fruhst.</sup> from Matto-Grosso looks like *venusta*, but has the yellow discal spots behind the cell longer, the red basal stripes on the forewings shorter, those of the hindwing more brilliant red, widening towards the anal angle. — *anactorie* *Dbl.* has the yellow discal spot dusted with red distally. Bolivia. — In *sanguinea* *guinea* *Stgr.*, likewise from Bolivia, this discal spot is entirely brick-red or vermillion. — RIFFARTH mentions a specimen from Rio Juntas (Bolivia) in which the discal spot confluesces with the red base to form a single large blotch of red: = *ab. confluens* *nom. nov.* — Some forms have on the hindwing the red rays intersected by the yellow band characteristic of *phyllis*: = *anacreon* *Sm.* and *Ky.* (78 e), with red, — *ottonis* *Riff.* (78 e) with yellow discal band of the forewing; both from Bolivia and Peru. — The name-type *phyllis* *F.* (= *roxane* *Cr.*, *phyllus* *Prittw.*) (78 f) ranges from Argentina and Paraguay throughout Southern Brazil to Peru, northward to far beyond Rio de Janeiro; it is, next to *narceus*, the form most frequently seen in Europe. Extremely common, especially on the coast, in Rio, Santos etc., it lends a wonderful charm to the landscape. Everywhere, on roads, in openings in the forest, near wood-fellers' camps, even in the yards and gardens, they may be seen flying, or resting on some flower, and often shrubs with quite insignificant blossoms are covered with the gaudily-coloured *phyllis*, — frequently accompanied by the much more wary *Colaenis julia* and *Dione vanillae* —, to such a degree that they appear to be in full bloom. The odour of *phyllis* is probably the most penetrating and disagreeable which I have noticed in any Heliconius. The thorax being crushed this odour may be perceived in the open air even at a distance of 10 yards; it reminds one of the smell emitted by many of our European Pompilids and Ichneumonids, perceived f. i. when one crushes or rubs the thorax of the road-wasp (*Psammophila*) or of a large *Trogus lutorius*; at least it struck me that way at the time when I examined in Brazil the Heliconids as to their odour. *phyllis* flies in Rio and Santos the year round, appearing particularly fresh after heavy rains, but becoming comparatively scarce in January and February, at which time one meets at Santos only worn specimens. At that time the Nymphalid *Eresia lansdorfi* (91 a) is pretty common, a species which, — curiously enough —, does not copy a fresh, but a worn and faded *phyllis*. — Of other forms belonging to the *phyllis* group we mention: *ab. artifex* *Stich.*, from Southern Brazil and Paraguay, distinguished by some red dots below the yellow band on the hindwing. — *ab. phyllidis* *Sm.* (78 f) has on the hindwing the yellow band shortened, especially near the inner margin, and dissected by the black vein.

*amata*. — In *amata* *Stgr.* this band is even more heavily obscured, and at the same time the yellow median streak of the forewing is obsolete. Bolivia. — The larva of the typical *phyllis* from Southern Brazil exactly resembles the figure of *melpomene* given us by SEPP (Pl. 4). Head with 2 longer horns; the first segment with 2, the second with 4, the following with 6 spines each. Pupa brown, with very fine, long dorsal spines and 3 silvery spots on either side of the thorax. Head with 2 short ear-shaped horns which are covered with spines.

*hermathena*. **H. hermathena** *Hew.* (78 f) appears to combine the markings of *phyllis* and *charithonia*, resembling the latter in the hindwing and in the basal half of the forewing; forewing with a red oblique band in the outer half, differing somewhat from that of *phyllis* in shape as in colouring, being minium-red, not blood-red as in *phyllis*. From the Amazon. Good specimens are rather rare in European collections.

*charithonia*. **H. charithonia** *L.* (79 a). This species, known in North America as the "Zebra butterfly", is the only *Heliconius* found in the United States and the Antilles. A median band, angled upwards, a subapical and apical oblique band, on the hindwings the characteristic *phyllis*-band and a partially double row of dots are pale yellow. Very common throughout the Gulf-States, Antilles, and from Mexico to Colombia and Venezuela, but at the most northerly limits of its range, as in Texas, Georgia and Florida, only locally abundant. — In Peru we find a dwarfed form having the bands of the forewing reduced: *peruviana* *Fldr.* (79 a); occurs at Lima and at the landing-places in Callao; in Ecuador HAENSCH took it at an elevation of 2500 ft. above the sea.

*nattereri*. **H. nattereri** *Fldr.* (78 f). This species I have never seen alive, and if the habitat "Bahia" refers to our Bahia of to-day, the full name of which is San Salvador de Bahia de todos os Santos, it must be very scarce indeed; for I have never taken a single specimen, although I collected near there in January, February, April, July, August, October and November. Also in collections one sees it but rarely, and all the known specimens are ♂♂; they differ from *charithonia* in having on the hindwing the yellow band broader and the terminal dots suppressed; on the forewing both oblique bands are replaced by a broad irregular discal spot. — A number of ♀♀ distinguished from *nattereri* by having the median bands dusted with brown, were described as *fruhstorferi* *Riff.* Possibly they represent a variety or even the normal ♀♀ of *nattereri*. If the locality is correct, the species seems to range in Eastern Brazil from Bahia south to Rio grande do Sul.

*telesiphe*. **H. telesiphe** *Dbl.* (79 c, d), from Peru and Bolivia, has on the forewing a pinkish-purple subapical and transverse band, on the hindwing a white median band which in fresh specimens has a bluish shade. The



figure given in STAUDINGER's "Exot. Tagfalter", showing the bands of the forewing brown and that of the hindwing sky-blue, is hardly recognizable. It flies together with *Colaenis telesiphe* (S4 d) from which it cannot be distinguished at all in the air; only the bluntly projecting forewing, the dentate outer margin of the hindwing and the totally different under surface betray *Colaenis*. But above they agree so exactly in colouring that one cannot doubt the mimetic connection between the two. A further proof of this seems to be the fact that in Ecuador we find a form of *Colaenis* having the band on the hindwing yellow instead of white, viz. *Col. tithraustes* (S4 d); now we meet in the same localities also a *Heliconius telesiphe* which is yellow-banded, and indeed this band is exactly 1—2 mm wider than in typical *Hel. telesiphe*, even as in *Col. tithraustes* it is somewhat broader than in *Col. telesiphe*. To try to explain such astonishing coincidences by "chance" or by "physical laws", seems indeed too much to ask of the reader. — The name of the yellow-banded Ecuador form of *Hel. telesiphe* is *sotericus* Salv. (79 c); it is found in Peru wherever *Col. tithraustes* flies. HAENSCH captured it in October near Sa. Inez in Ecuador at an altitude of 3800 ft., STRÜBEL in January at Riobamba and Huamboya. *sotericus*.

**H. hortense** Guér. (= *hortensia* Dbl.) (79 c). On the forewing the band irregular, pale yellow, on the hindwing curved, broadly ochreous-brown. Under surface most peculiar, with a faintly violet-pinkish median band, the veins and intranervial rays very dark. From Honduras to Colombia and Ecuador. Associates with a number of species partly belonging to *Heliconius*, partly to *Eueides*, but all with similar upper surface, such as *Hel. clysonimus*, *Eu. ricini* etc. *hortense*.

**H. clysonimus** Latr. (79 b) resembles above in colouring *hortense*, with which it associates; but all the bands are narrower, those of the hindwing more brilliantly red. From Venezuela to Ecuador, where HAENSCH found it as high up as 3800 ft. above the sea. — A dwarf form, hardly half as large as the Colombian *clysonimus*, is ab. *micra* form. nov. (79 a, b); on the forewing the oblique band approaches nearer to the termen, on the hindwing dull cinnamon-brown. From the Llanos of Venezuela. — An intermediate form from the mountains of Costa Rica and Panama is *montana* Salv. which has on the hindwing the brown band considerably broader than the black terminal area. — *hygiana* Hew. (79 a) from Ecuador has on the forewing before the apex a second small yellow spot, and the median vein dusted with yellow. *montana*, *hygiana*.

## 2. Genus: **Eueides** Hbn.

Closely allied to *Heliconius*, but at once distinguished by the shorter and more distinctly clubbed antennae. The majority of species do not reach the average size of the *Heliconius*. Head relatively broader; palpi larger and more porrect; abdomen of ♀ stouter, but not so long as in many *Heliconius*, never projecting far beyond the anal angle, frequently not even reaching it. In their whole appearance they rather approach the *Argynninae*, especially *Eresia* or *Melitaea*, than *Heliconius*; for which reason FELDER separated them from the latter altogether, uniting them with the *Nymphalidae*.

About 60 forms are known which have an even more limited range than those of *Heliconius*. In the North they do not pass beyond the Neotropic limits, in the South only to Southern Brazil and Paraguay. Wherever they occur, they are very common; their flight is elegant, swimming, but not rapid; they have a very tough life, and love to visit flowers. Flying throughout the entire year they seem but little influenced by the seasons. Their greatest enemies are the spiders, in the webs of which large numbers of *Eueides* daily lose their lives. In Bahia I often found in the webs of large spiders dozens of them dead which had been either too weak or too awkward to liberate themselves.

In the woods they are but rarely met with, never in the dense forest; they prefer the open country, sun-lit openings, hilly slopes, the borders of broad roads and flower-covered meadows, where they associate not only with their own kind, but with a host of butterflies belonging to quite different families or genera, all coloured and marked alike. No other larger genus of *Lepidoptera*, not even the *Heliconius*, mimic other models to such a degree as the *Eueides*, and their models are found among the Pierids, Danaids, Acraeids, Nymphalids, Erycinids, Castniids, Pericopids etc. Indeed one may say that no *Eueides*, without any exception, has a character of its own, but that for every *Eueides* we find in one or the other genus at least one, often even a whole series of analogous forms. Thus one may separate the *Eueides* into those that copy the *Heliconius* of the groups of *narcoea*, of *melpomene*, of *thelxiope*, of *clysonimus*, those that mimic the Danaid genus *Lycorea*, or the genus *Actinote*, or *Colaenis julia*, and finally those which in the ♂ copy one species, in the ♀ another.

The eggs resemble in shape a wine-bottle; they are deposited singly or in clumps on the underside of the leaves of Passiflora, which form the food of the larva. One species (*Eu. cleobaea*) is said to live in the larval



stage on Asclepiadeae; this, however, must be an error due to mistaking it for *Lycorea cleobaea* (31 b), a Danaid closely resembling *Eueides* in colouring, but in no manner related to it.

The caterpillars of *Eueides* resemble those of many of our *Argynnis*; when young they are ringed, later on quite black, the spines moderately long, those behind the head slightly curved and diverging. The pupa has a peculiarly dried-up and shriveled appearance, with more or less long spines and knobs at the back, resembling the asci of fungi one frequently sees in South America on dead caterpillars and chrysalids, which probably are to lead the enemies of the pupa to believe it to be unpalatable. The pupal stage lasts about 14 days; after emerging, the imago remains for some time quietly in its place before flying away. Imperfectly developed specimens are but rarely met with.

*ricini.* **E. ricini** L. (79 d) closely resembles in colouring *Heliconius hortense* (79 c) and *clysonimus* (79 b). Forewing with a pale yellow, hindwing with an ochre-brown median band; in addition a small subapical band-like that of *H. hygiana* (79 a), but in size approaching *micra* (79 a, b). Associates with the respective forms of *clysonimus* and *hortense* in Guayana and certain parts of Amazonas, also in Venezuela; specimens from *insulana.* Trinidad have the red-brown basal area of the hindwings much narrower: = *insulana* Stich. Not scarce. Larva on *Passiflora laurifolia*.

*procula.* **E. procula** Dbl. (79 d). Above very much like *Helic. clysonimus*; forewing with a pale yellow, spindle-shaped band, hindwing with a band of fulvous; distinguished, aside from the antennae and the entirely different under surface, by the fulvous band extending somewhat beyond the hindwing and appearing on the forewing as a red dash at the inner margin. Flies in Venezuela and Colombia together with *Hel. clysonimus*; not scarce; associates in Colombia also with the much larger *Helic. hortense* (79 c).

**E. edias** is the first of a group of *Eueides* copying the forms of an entirely different family, viz. *Dalmaninosus.* *luminosus* of the *eutresis*- and *olyras*-groups. They also approach *procula*, and the form *luminosus* Stich. (79 e) of which we figure the type, has the hindwings just as in that species, but on the forewing the oblique band replaced by a number of isolated yellow spots accompanying a basal streak of fuscous. From *eurysaces.* Venezuela. — In *eurysaces* Hew. the ground-colour contrasts less sharply with the spots which on the forewing are united to a contiguous band. Ecuador, all the way up to Quito. — On the other hand *vulgiformis* Btlr. and *Druce* has these spots reduced and farther separate than in *luminosus*, the basal stripe not visible. From *edias.* Panama to Guatemala. — The name-type *edias* Hew. (= *kuenowii* Dew.) (79 d, e) occurs in Colombia. On the forewing all the spots, particularly in the ♂, are much larger and semi-translucent, giving it, together with the much larger size, a great similarity to *Olyras theon* (31 d) and *Eutresis theope* (31 e), also to certain species of *Dircenna* as well as the Nymphalid *Eresia prisca* (91 e) and other forms of western South America.

**E. lampeto** copies the *aristiona*-group of the genus *Heliconius*, as well as its numerous followers. — *carbo.* **carbo** Stich. from Ecuador has the hindwings nearly completely black, likewise the apex and 2 large, broad basal streaks on the forewing. It is found together with *Hel. bicoloratus* (73 c) and *lenaeus* (73 e), the Nymphalid *fuliginosus.* *Eresia murena* (91 c), *Ceratinia semifulva* (34 d) and *Hyposcada fallax* (38 c). — ab. **fuliginosus** Stich., likewise from Ecuador and Peru, has the apex less black, leaving the discocellular spot as well as another *amoena.* spot in the middle of the termen standing quite alone on the yellow-brown ground. — ab. **amoena** Stich. (79 f), intermediate between the former two, is more black than *fuliginosus*, but less so than *carbo*. Found *acacates.* together with the others. — **acacates** Hew. has the terminal spot covered over by the much broader apical blotch, but the discocellular spot still isolated; hindwing brown, banded with black. Found in Peru, together *lampeto.* with the very similar *Mechanitis deceptus* and *huallaga* (34 a). — **lampeto** Bates, the first described form, from the Upper Amazon River. Forewing brighter fulvous, apex and costal margin narrowly black; 2 spots in the middle and at the end of the cell, and a stripe on the submedian vein black. Hindwing fulvous with black subcostal *copiosus.* streak and border. A macular band crossing the wings. — **copiosus** Stich. Ground-colour brown. Forewing with the median area behind the cell paler. Costa, two streaks, one within and one beyond the cell, an oblique row of confluent spots and the apex black. Hindwing with an oblique, often interrupted, discal band, a narrow subcostal streak and broad termen black; a terminal row of small white dots. Patara (Essequibo), captured by RICH. HAENSCH in March and April. Unknown to me. Also of this species many forms are not easy to capture, being among the large numbers of very similar *Ithomiinae*, *Heliconius* and *Nymphalidae* only recognized with difficulty.

**E. vibilia** copies in its various forms the Acraeid genus *Actinote* (Pl. 83), but its ♂♂ mimic in part also the common Nymphalid *Colaenis julia* (84 b), displaying in consequence some superficial similarity with



*E. aliphera*, another follower of *julia*. *vibilia* Godt. (= *merceni* Hbn.) (79 e), the name-type; ♂ bright fulvons, *vibilia*. bordered with black; on the forewing a black wedge in the cell, an oblique band and submedian stripe. ♀ more gaudily coloured, almost like a very bright *edias*, especially on the under surface, which is also that of *procula*. Widely distributed and common in Brazil, but difficult to recognize among the innumerable *Actinote* flying about in July at Rio de Janeiro. The ♀ resembles these so much that, although flying slowly, it cannot be distinguished, until one sees the under surface. The flight of the ♂ is more rapid; it generally associates with the very similar *Dione juno* (84 e), *Megalura petraeus*, the numerous *Eresia* etc. — ab. *pallens* *pallens*. *Stich.* refers to a ♀ form with whitish-ochreous ground-colour and broader and heavier black markings. — *vialis* *Stich.* (79 f) is the northern form of Colombia and Central America. Ground-colour more brilliant fulvons, on the forewings the spots brighter yellow and deeper black. — *vicinalis* *Stich.*, based upon a ♀ from *vicinalis*. Ecuador, with duller ground-colour and reduced spots. — *unifasciatus* *Stich.* (79 f) has the entire apical half of *unifasciatus*. the forewing and the termen of the hindwings broadly black. From the Upper Amazon.

*E. pavana* Mén. (= *thyana* Fldr.) (79 e) resembles *Actinote pellenea* even more closely than *vibilia* ♀; *pavana*. differing from it only in the intranerval rays encroaching upon the yellow-brown ground-colour of the hindwings, which peculiarity it also shares with the *Actinote* ♂♂. ♀ coloured and marked like the ♂, but larger. Rio de Janeiro, Espirito Santo.

*E. lineata* Salv. and Godm. (79 f). Almost precisely like *vibilia* ♂, but without the oblique bar crossing the cell. Ground-colour rather deeper yellow-brown. Central America and Mexico. Copies some species of *Colaenis* and *Dione*. — In the form *libitina* Stgr. from French Guiana the submedian stripe does not reach *libitina*. the anal angle.

*E. lybia* F. (= *hypsiophile* Cr., *cinereomaculatus* Goeze, *fasciatus* Goeze (80 a). Like *lineata*, but the black *lybia*. terminal border of the hindwings narrower, not frayed out inwardly. Common anywhere from Guayana and Amazonas throughout the eastern part of South America as far as southern Brazil. Generally met with on flowering shrubs, in the company of numerous species resembling it, such as *Colaenis julia* (84 b), *Dione juno* (84 e), *Eresia phillyra* (91 c). — *lybyoides* Stgr. (80 a) has the apical spot which is separated by the subapical band, *lybyoides*. paler than the ground-colour; on the under surface the forewing lacks the red basal line, and the red dots on the hindwing are absent. — *olympia* F. (= *leucomma* Bates) (80 a) has the apical spot quite white on a *olympia*. black ground. Central America and Colombia, together with the Nymphalid *Eresia emerantia* (91 d), which it exactly resembles.

*E. tales* Cr. (= *thalestris* Godt.) (80 b). Forewing red-brown at the base, traversed by black veins; *tales*. some bone-coloured discal spots surrounding the apex of the cell which is black. Hindwing with veins red in the basal half. Found in Guayana with its counterpart *Hel. vesta* (*erilo*); also in Amazonas. — At the mouth of the Amazon we find *pythagoras* Ky. (= *heraldicus* Stich.), distinguished by the stronger yellow markings *pythagoras*. of the forewings: the cell-spot touching the red basal area, and the rays marking the veins on the hindwings are brighter. From Para to Santarem. — In *calathus* Stich. the discal spots on the forewing are united into a *calathus*. semi-band, the lower end of which points towards the base, not outwards as in *Eu. eanes*. — *surdus* Stich. *surdus*. (80 b). Rather larger, the red colour of the forewings much more intense, vermilion or almost purplish red, on the hindwings reduced to a mere trace at the very base. From Obidos on the Amazon and from Guayana. ab. *aquilifer* Stich. represents a transition to the preceding; the yellow spots on the forewing larger, but the *aquilifer*. red colour of the hindwings diminished. Likewise from Obidos.

*E. heliconioides* Fldr. (= *cognata* Weym.) (80 b). Forewing with a large, bone-yellow discal spot enclosing *heliconioides*. the rather small black spot marking the end of the cell; at the base only a few rays of red. Underneath the veins partially red; hindwing with 2 terminal rows of white dots. Colombia and Ecuador. — In *xenophanes* *xenophanes*. Fldr. from Colombia the forewing lacks the yellow spot in the cell, and of the red basal rays but a few traces are left.

*E. eanes*. All the forms belonging to this species have on the under surface of the hindwings the veins red, but only one row of silvery-white terminal spots, not two. The typical form *eanes* Hew. (80 c) has on the *eanes*. upper surface the basal streaks minium-red, and in the discus a pale yellow transverse band. From Peru and Bolivia, where it flies together with *Hel. vesta*, which it resembles so exactly that they cannot be distinguished when flying. — In ab. *farragosa* Stich. from Peru the basal red is diminished; — in *riffarthi* Stich., like *farragosa*. *riffarthi*. likewise from Peru, also from Bolivia, the basal area shows no red at all and the yellow discal band is broken up into single spots. — *eanides* Stich. (80 c) has the rays distinct but brown-red; to the yellow discal band *eanides*. is added a spot at the apex of the cell, marking a sort of yellow star, as in *heliconioides*. It mimics exactly certain forms of *Hel. aglaope*, with which it associates in Bolivia and Peru. — In *aides* Stich. (80 c), from Bolivia *aides*. and Peru, all the red colour has disappeared from the upper surface. Flies in Bolivia with its double *Hel. pluto*. — Also of this species we know a form *pluto* Stich. (80 c), of which we figure the type. Differs from *aides* in the *pluto*. complete absence of the red markings on the base and the rays, and in the rosy-pink tinge of the discal



spot. It flies in Peru in company of the similarly coloured *Hel. melpomene* as well as of some *Actinote* and *Pie-felderi*. *rids* which resemble it. — A transition from the last described form to *canides* is *felderi* *Stich.*, which closely resembles *E. pluto*, but still retains the red rays. None of these forms are scarce, but not easy to recognize among the numerous *Heliconius* flying about; indeed it is only after one has learned to distinguish the *Eueides* from *Heliconius* by the slower motion of the wings, that one may hope to capture larger numbers of them.

*cleobaea.* **E. cleobaea** *Hbn.-G.* received its name from its close resemblance to certain species of *Lycorea*, although *Lycorea cleobaea* itself possibly was not its model. Forewing brown-yellow, intersected by black longitudinal stripes. The type is found in Cuba and Porto-Rico. — *zorcaon* *Reak.*, ranging through Central America as far north as Mexico, differs but little, in having the black apical markings of the forewing increased, in consequence of which the bands, which are somewhat lighter and in the ♀ rather pale yellow, are broken up into several more or less separate spots. — *adusta* *Stich.* (80 g) is an inconstant intermediate form, from Chiriqui and Honduras; hindwings with the band dissolved into a series of spots. Not scarce.

*isabella.* **E. isabella** resembles somewhat the preceding species, but the longitudinal striation of the wings is less regular. The forewings have the apical half more profusely marked with black, often black throughout; on the hindwings the median band is as a rule broken up. All the forms shade quite imperceptibly into one another so that the names given them have but little value. We figure here all the distinct forms, taken for the most part from the original types. As a rule the difference in colour is only due to the fact that in the several localities they have followed different models. The name-type *isabella* *Cr.* (80 d) occurs in the eastern portion of South America from Guayana to Central Brazil, according to reports as far as Bahia (where I found, however, only *E. dianassa*). Before the black apex an isabel-coloured oblique band similar to that we find in much worn or faded specimens of *dianassa*; but it differs from *dianassa* in having the large white or sulphur-yellow subapical spot replaced by a row of 3—4 small, pale coloured, isolated spots. In *dissoluta.* typical *isabella* the hindwings have the median band uninterrupted, whereas in *dissoluta* *Stich.* (80 f), from Peru *arquata.* and Bolivia, this is dissolved into isolated spots. — An intermediate form is *arquata* *Stich.* (80 g), having the median band also divided into spots which, however, are still touching one another; on the forewings the yellow subapical spots larger. Colombia and Panama. — *imitans* *form. nov.* (80 f) approaches *dissoluta*, but the *hübneri.* sulphur-yellow oblique band is absent, being replaced by the ground-colour. — In *hübneri* *Mén.* (80 f) the oblique *dynastes.* band is dissected into 3 spots separated by black; from Colombia. — *dynastes* *Fldr.* from Venezuela *pellucida.* has the band loosely connected, in the ♀ yellow-ochreous, similar to that of *pellucida* *Srnka* (80 f) from western South America, distinguished from the others by having the median band reduced to a row of small oval spots. *seitzi.* — Very similar is *seitzi* *Stich.* (80 f), from Colombia and Ecuador. Upper surface only marked with two colours, *vegetissima.* the oblique band as well as the apical spots being replaced by the ground-colour, whereas in *vegetissima* *Stich.* the sulphur-yellow band and apical spots stand out clearly upon the deeper ground-colour. From Ecuador. — *hippolinus* *Btlr.* (80 e) from Peru resembles *seitzi*, but has the apex of the forewing entirely black, *margaritifera.* without any spots. — The same is the case in *margaritifera* *Stich.* (80 e), which has, however, the median band *personata.* of the hindwing broken up into oval black spots. — *personata* *Stich.* (80 e) resembles the latter, but has on the forewing the black colouring so much increased that it not only covers the entire apical area, but spreads to the *brunnea.* middle of the wing where it confluesces with the black spot at the apex of the cell. Peru. — *brunnea* *Stich.* (80 e) is again like *personata*, but has on the forewing the black apical area interrupted by a chain of spots marked like the ground-colour. Likewise from Peru. — *ab. spoliata* *Stich.* from the Cauca Valley is based upon a ♀ in which the black markings are so much increased that on the forewing the ground-colour is almost completely obscured, and on the hindwing interrupted by an unbroken, heavy median band. *isabella* is, wherever it occurs, very common.

*dianassa.* **E. dianassa** *Hbn.* (80 d). Very much like the preceding; the forewing with a generally sulphur-yellow oblique band which in worn specimens fades to dull ochreous. At the apex a snowy-white, obliquely oval spot, occasionally tinged with yellow or dusted with black and followed (before the very apex) by a few white dots faintly shining through from underneath. Typical *dianassa* exactly copy *Hel. narcaea* (72 a) with which they associate. At Santos where the latter has the costal streak of the hindwings dusted with red, that band *decolorata.* is also in *dianassa* generally tinged with ochreous, and *decolorata* *Stich.* (80 d) which accompanies the similarly coloured *narcaea* f. *satís*. lacks on the hindwing the pale yellow band altogether. In the company of *dianassa* we find, besides *H. narcaea*, a great number of similarly marked butterflies, such as *Protopgonius drurii*, *Melinaea ethra* (33 d), *Mechanitis lysimnia* (34 b) and *nessaea* (34 b), *Ceratinia euryanassa* (35 b) etc., all of which occur in



Southern and Central Brazil near the coast, and it is necessary to be well acquainted in those regions in order to recognize this species among the host of similarly coloured Lepidoptera. It is rather common, but I have never observed it in great masses or swarms.

**E. aliphera** Godt. (80 a). Upper surface bright fulvous, with black terminal border, forewing with black subcostal and median stripes and black oblique band; under surface buff, the veins dark. Widely distributed from Southern Brazil to Central America, along the east-coast, and far into the interior of the Continent to Bolivia and Peru. It is one of the commonest butterflies, varying but little since it exactly copies the very constant *Colaenis julia* (84 b). Only towards the northern limits of its range of distribution we find specimens having the colouring rather buff and with hardly any black on termen and transverse band, analogous to the form *C. julia cillene* (84 b) which also flies there; I call this form ab. **cillenula** ab. nov. (80 b). *aliphera* always associates, aside from *Col. julia*, with the following similarly coloured species: *Dione juno* (84 e), *Megalura petrea*, *Eresia aveyrana* (91 d); undoubtedly also the Erycinid *Lymnas thyatira* of Guayana has adopted the protective pattern. — In Mexico and Central America we find another copy of the narrow, bordered form of *Col. julia* flying there; upper surface brilliant fulvous, the black terminal border narrower, but more sharply defined, the intranervial points stronger: = **gracilis** Stich. — Larva on Passiflorae; white, at the back yellow, marked with brown and armed with black spines. Pupa dirty white, with dark spines and humps, the back and wing-cases marked with brown.

### 3. Genus: **Metamorpha** Hbn.

The only species of this genus, *Metamorpha dido*, was formerly united with *Colaenis*; but the most superficial examination of the shape of the insect and its wings, of the venation and in some respects also the earlier stages, shows us at once that it is an American representative of the Indian genus *Cethosia*. This fact becomes even more evident in the living insect. On approaching in the forests near Rio some larger clearing, one may notice a large, pale-coloured butterfly, flying slowly in a straight line, with a peculiarly slow, dream-forlorn motion, from one end to the other of the open space; suddenly, just before reaching the far end of the clearing, it turns around with a jerk, returning the same way in the opposite direction. This game is being continued for hours, for days, even for weeks, and one may observe its colours which in the beginning were quite fresh, fading and being rubbed off, may see the tears and rents in its wings growing larger after each shower. Sometimes it disappears for an hour or two, to rest on some vine or to sip honey from one of the neighbouring blossoming trees. In larger clearings one may occasionally observe two or more of these butterflies, each enjoying the same game; as soon as they see one another, they interrupt their flight for a moment, circle a few times around each other and then each returns to its post again. If one captures one of them, its place is, after a few days, generally taken by another one. These butterflies are *Metamorpha dido*.

Among Indian butterflies I know none that offers the same spectacle in so characteristic a manner as *Cethosia nietneri*. Anyone who has observed in the open air the two insects which in their outward appearance widely deviate from each other, must be struck with the close analogy in the habits of these two species which are separated by such enormous distances. But also their structure offers a good many analogous features: The broad head, the stout, densely haired palpi, the naked eyes, the long antennae in which the clubs are wanting, the shape of thorax and abdomen, the curved and dentate hindwings, as well as the venation, agree most closely in almost every point. Many have pointed out the difference in the cell of the hindwing which in *Metamorpha* is open, in *Cethosia* closed, but this is more than counterbalanced by the many analogies. Thus *Metamorpha* has on the forewing the first subcostal nervule arising before the end of the cell, just as in most *Cethosias*, whereas in *Colaenis julia* it originates exactly at the end and in *Col. phaerusa* behind it. The caterpillars are armed with spines, one pair of which, placed behind the head, is stronger than the rest; the pupa bluntly angular, the abdominal segments with dorsal prominences. The larva feeds on Passiflora; it grows very rapidly, the entire time required to mature the imago from the egg occupying less than 6 weeks.

**M. dido**. Wings transparent green, bordered with black; black bands crossing the forewings from the apex of the cell to the middle of the termen, the hindwing from apex to inner margin. Under surface with the bands and margins grey-fuscous, shaded with darker. Distributed throughout the northern part of South America and Central America, from Honduras to southern Brazil, Bolivia and Peru. — **ostara** Rüb. (84 a) is by far the largest form, ranging from Colombia to Peru, distinguished by the pale yellow-green colouring. — **diatonica** Fruhst. replaces the preceding in the north, from Honduras to Panama; much smaller than *ostara*, its colouring intermediate between this and the blue-green *dido* L. of Surinam; this is found as far south as Bolivia, but is on the Lower Amazon replaced by **pygmalion** Fruhst., characterized by the broader black bands both of the upper and lower surface; differs from *wernickei* in having the apex crescent-shaped instead of rounded, and on the hindwing the green ground-colour reduced by broader black bands. Ranges to Venezuela. — **wernickei** Rüb. (84 a) has the green ground-colour and the black bands deeper black, underneath the brown-grey bands more uniform and rather narrower than in *ostara*. Southern Brazil and Paraguay. — Larva pale



grey-brown, the markings dark when young, paler when full grown. Some specimens ringed with dark brown like many *Cethosias*. Lives on *Passiflora*. The pupa resembles in general those of *Heliconius*, but lacks the wing-shaped appendages at the head, and the spines are replaced by blunt projections. Its colour is grey, marked with darker, the humps partly black, partly white; segment 1, 3 and 4 with silvery spots. The imago is always met with singly, although it does not anywhere appear to be scarce. It visits flowers, and I have seen it on Monte Corcovado near Rio associate with the quite similarly coloured *Victorina steneles*.

#### 4. Genus: **Colaenis** Hbn.

The three species comprising this genus are all characterized by the fiery orange-red colouring of the upper surface which is bordered and banded with black. Structurally they differ in the course of the subcostal nervules so much that it is impossible to apply a general scheme. They are for the most part extremely common and may be considered as characteristic of the Neotropical Fauna, because they are as a rule the first large, brightly coloured butterflies greeting the new-comer on his arrival in South America. They rather remind us of the *Argynnis* which are connected with this group by the next following genus *Dione*. Their separation from *Dione* is an artificial one, one species displaying on the under surface of the hindwings some traces of silver. The larva closely resembles that of *Metamorpha*, feeding, like these, on *Passiflorae*. Pupa very much like those of our *Argynnis*, with a deep depression at the back, the head ending in a blunt conical point, the abdominal segments with dorsal projections. — The imago has as a rule a very rapid flight, holding the wings wide open when sipping on flowers. They fly the whole year round and often assemble at certain places in enormous numbers.

*julia*. **C. julia** F. (= *alcionea* Cr., *luteus* Goeze) (84 b). From Texas in North America throughout Central and South America to Peru and Paraguay; also in the West Indies. ♂ above brilliant fiery red, typical specimens slightly obscured at the base. From the costa at the middle a black oblique band to the black termen; ♀ with an additional black streak from the base of the forewing through the submedian area to the anal angle. *titio*. Under surface buff, with whitish spots at the anal angle, edged with fuscous. — The Bolivian form *titio* Stich. has according to its author in the ♂ the ground-colour suffused with fiery red, a peculiarity occasionally shared by Brazilian specimens. — *delila* F. lacks on the forewings the black subapical streak, and the ground-colour is frequently more buff. From Central America, the north-coast of Colombia and Venezuela, and the *moderata*. West Indies outside of Cuba. — ab. *moderata* Stich. Dull ochreous, the black markings reduced; found together with the typical form. — *cillene* Cr. (84 b) is the form from Cuba; paler red, the forewing without the black marginal border, the transverse band only indicated at the costa. — *nudeola* Stich. is related to *cillene* in the same way as *moderata* is with the type; ground-colour dull buff. — Larva pale grey or grey-brown, the incisions darker, the fore part of the head marked with darker, the spines blackish; on *Passiflora vespertilionis*, *P. ichtyura* etc. Pupa coloured like the caterpillar, pale grey or pale yellowish-brown, with whitish projections and darker markings. Very common throughout eastern Brazil; in many localities one may see flowering shrubs just covered with these butterflies so that at a distance they appear as if adorned with fire-lilies. Their flight is very rapid; when resting they hold the wings widely expanded.

*phaetusa*. **C. phaetusa** L. (= *phaerusa* L.) (84 c). ♂ fiery red, ♀ greyish red, the black markings as in *dido*. Occurring from Central America to Argentina and Peru, but only locally, and in many places scarce. — *stupenda* Stich. (84 c) refers according to its author to particularly brilliant red specimens (probably only ♂♂?) said to be found in Panama. — In *deleta* Stich. the bands are said to be quite faded. — *lutulenta* Stich. refers to ♀♀ with dull yellow ground-colour; their home is "Paraguay and Dutch Guayana". This species has not developed any good subspecies. In contradistinction to the preceding which frequent roads and dry slopes, it inhabits the moist plains which it never seems to leave. Its flight is quite different from that of *julia*, much slower, the motion of the wings more irregular. Nothing is known of the earlier stages.

*euchroia*. **C. euchroia** Dbl.-Hew. (84 c). Upper surface, particularly in ♂, marked and coloured like the preceding, but underneath the colour resembles that of a dried-up, shriveled leaf, with a slight trace of silver. Widely distributed, and very common, from Venezuela and Colombia to Ecuador, Peru and Bolivia. — Specimens with dull buff ground-colour, especially common at higher altitudes in Colombia and Ecuador, are ab. *mellosa*. *telesiphe*. Stich. (84 d). — *telesiphe* Hew. (84 d), from Ecuador, Peru and Bolivia, has on the hindwing a yellow longitudinal band, on the forewing two bands of minium red. Occurs together with the similarly coloured *Heliconius* *titithraustes*. *telesiphe* (79 c). — *titithraustes* Salv. (84 d), closely resembling the preceding, found together with *Helic. sotericus* (79 c), it has the band on the hindwing bluish instead of yellow. Underneath all the forms resemble one another, but vary much individually and according to the locality. They are not very scarce, but are confined to certain localities, where the corresponding *Heliconius* also abound; at least I have never received any from elsewhere.



5. Genus: **Dione** Hbn.

This genus, formerly known as *Agraulis*, is outwardly characterized by the frequently very rich silverying of the under surface of the hindwings, traces of which we have already found in the last described species of the preceding genus. The venation is not constant and cannot serve to characterize the genus; thus in *moneta* the 1. subcostal nervule is emitted at the end of the cell, in *vanillae* behind it. Neither can the larva or pupa serve to distinguish the two genera; only a slight difference is to be observed in the structure of the antennae and in the palpi, which are distended like those of *Argynnis*. But for that reason to unite it with these, or on account of the open cell in the hindwing to separate it from the *Heliconinae* and class it with the *Argynninae*, I do not judge to be right, considering the many analogies existing between *Dione* and the *Heliconians*, as to their mode of life, distribution, structure, the spines of the larva, the food-plant, the scent-organs, the stink-glands of the ♀♀, the puffed up extremity of the ♂ abdomen, the bottle-shape of the eggs etc. But few, rather closely allied species are known.

**D. juno** Cr. (84e). Above very much like *Col. julia*, together with which it is found. Under surface *juno*. ✓ with numerous silvery spots which, however, are neither so large nor so bright as in *moneta*. Not much is seen of these, when the butterfly is flying or when, the wings flatly extended, it sips honey from some flower, preferably some composite plant. The ♀♀ are often very much larger than the figured ♂, and vary individually as to the extent of the black markings, so that one can at the same time capture specimens with broad and with narrow border. At Santos in South Brazil I have even taken specimens with some fine reddish spots within the black terminal border; the figured specimen which likewise shows these, came from Rio. Specimens taken in Ecuador by HAENSCH during January, are very brilliantly coloured, above bordered with jetblack, on the under surface the ground-colour dark brown, not buff. On the forewing the beginnings of a third, preapical, black band, starting from the costa. Otherwise these specimens agree almost exactly with *andicola* *andicola*. ✓ *Bates*, described from Chimborazo, differing, however, from the form *huascama* *huascama*. ✓ Reak. (84e), occurring from Mexico throughout Central America to Colombia and Ecuador. Here the black markings of the upper surface are reduced, the preapical band is obsolete and on the hindwings the termen interrupted by curved spots of the ground-colour. — Larva, like that of *Colaenis*, on Passiflorae, but living gregariously; at first black, later paler with dark markings and black spines; head without horns, but the dorsal pair of spines on the first segment curved forward over the head. Very common, from Mexico to Argentina and Peru, generally all the year round.

**D. vanillae** L. (= *passiflorae* F.) (84f) may be distinguished from the preceding species by the black *vanillae*. ✓ dots on the upper surface. Under surface richly adorned with silvery spots. Ranges from Virginia in the United States throughout America southward to Buenos Aires, forming such a number of varieties that one might give at least 20 names, but which cannot be geographically defined. Neither is it possible to separate the different broods, for their whole development requires in the Tropics less than 4—6 weeks, so that a great number of broods follow one another throughout the year. In southern Brazil I noticed that the specimens taken in February were largest and lightest, that thereafter they became ever smaller and darker, until in August the ♀♀ were almost black and only 40 mm in expanse, after which time the variation took place the opposite way. The spots on the forewing vary greatly in number, being placed nearer together or farther apart; the veins may or may not terminate in spots. The spots in the cell of the forewings are beneath nearly always, above frequently centred with white, those marking the end of the cell occasionally united into a band. On the hindwing the terminal border as a rule with a chain-pattern (= *catella* Stch.), in northerly specimens, from Mexico and the Antilles, often only with some black anteterminal arches (= *insularis* Magn.). — We only mention one striking form from Peru and Ecuador, copying above exactly the colouring of *D. juno*: = *lucina* *lucina*. ✓ (84e). Forewings spotted only in the cell and on the termen, with an almost complete oblique band before the apex; hindwings with broadly black outer margin, devoid of any larger spots of fulvous. This form is of rather large size, although it does not come up to some specimens I took at Buenos Aires in January, the ♂♂ of which had, moreover, the forewings rather more pointed (= *maculosa* Stch.). Most characteristic is the under surface, where the apex contains on the forewing only one, on the hindwing only a few isolated silvery spots. Larva pale brown, ringed with darker, with orange-yellow lateral stripes suffused with grey above, and yellow-ochreous spines; underside dark brown. Head with two rather long spines. Feeds on Passiflorae, not on Vanilla. Pupa dark red-brown with white lateral and ventral stripes, provided in front with fine ribs or rudimentary teeth of a saw-like appendage such as we distinctly observe in some *Heliconius* (*apseudes*). In their flight and other habits the butterflies resemble our *Argynnis*; they love to visit flowers of various kinds, fly throughout the year, and belong to the commonest Lepidoptera of Tropical America.

**D. moneta** Hbn. Upper surface of both wings at the base, of the forewing in the costal area dark *moneta*. ✓ chestnut-brown, the veins black. Hindwings in the distal half orange-yellow, the marginal border black, spotted with rufous. Underneath the silver spots much larger and closer together than in *vanillae*; also the costa of the forewing silvered in places. From northern South America. — Our figure was made from a specimen



*butleri*. taken in Costa Rica, belonging to the form *butleri* *Stich.* (84 e), described as "generally less brightly coloured". Cuba specimens have the discal area of the forewing lighter; they were separated as *fa. poeyi*. Besides those of Costa Rica, *STICHEL* classes with *butleri* also specimens from Peru and Colombia; these, however, can hardly be distinguished from other South Americans. — *glycera* *Fldr.* (= *moneta* var. *Poey*) (84 e as *moneta*) is above more uniformly fulvous, differing therein, according to *STAUDINGER*, from typical *moneta* which have the base chestnut-brown. Notwithstanding the great difference between the figured specimens, all possible transitions are known; thus in either form the anal dots on the hindwings may be present or absent, and *STAUDINGER* is right in considering the specific separation of the two forms, although differing so much in their extremes, doubtful. Described from Venezuela. — *graphota* *Stich.* refers to the form of Colombia, distinguished by the darker ground-colour and heavier transverse spot in the cell of the forewing. But these characteristics vary very much, especially according to the altitude. The figured specimen came from Bolivia; it stands apparently midway between those of Peru and Venezuela, being paler than the former, and darker than those from Venezuela. The caterpillar which might give us some clue as to the relationship of the forms, is unknown. The species is very common.

## 2. Subfamily: Clothildinae.

Many authors have placed the only genus belonging to this group near *Argynnis*, although attention has repeatedly been called to the superficiality of this arrangement. *FELDER* compares it with the *Satyridae*, *HERRICH-SCHÄFFER* with the *Brassolidae*; both these authors based their classification upon the neururation, arriving, however, at very curious results, and evidently being at a loss to know where to put them. *DIETRICH* and *REUTER* unite them with the *Danaids*. I just wish to point out that whenever this genus has been united with one or the other subfamily, it was not done without leaving grave doubts in the authors' minds, and I therefore favour the establishment of a subfamily of its own, following *HAASE* who regarded it as a *Nymphalid* s. s., although a very peculiar one.

## 1. Genus: Clothilda Blanch.

Butterflies of large size and most different appearance; all scarce and confined to a limited area, inhabiting only Mexico, Central America and the Antilles.

Head rather broad; palpi stout, but not distended as in *Argynnis*, of entirely different structure from that of all other known *Nymphalids*. Antennae of less than half the length of the costa, feebly clubbed; eyes naked; thorax strong; abdomen slender and rather short. Wings broad and large, the cell in the forewing closed, very broad. On the forewing the first subcostal nervule arises before, the second at the end of the cell, the third beyond it. The median nervules far apart. Hindwings large, with deeply dentate termen, only in the *insignis*-group less distinctly scaloped. Precostal bifurcate, arising at the origin of the subcostal. Costal vein very short, ending before or at the middle of the costa. Nothing is known about the earlier stages, little about the habits of the imago, except that they prefer the open country, and that some count among the greatest rarities.

= *Jaegeri* *Bl.*, 1935.

*numida*. **C. numida** *Hbn.* (= *pantherata* *H. Schöff.*) (83 d, e) resembles above somewhat a large *Argynnis*; yellow-ochreous, spotted with black-brown. Termen of forewing with double spots of fulvous. Under surface, especially of the hindwings, marked with dark spots margined with pale lines displaying a resinous, fatty gloss. From Cuba. — *pantherata* *Mart.* (= *briarea* *Godt.*) is somewhat smaller, and has both above and underneath the termen adorned with double white dots. Cuba and Haiti. Scarce.

*insignis*. **C. insignis** *Salv.* (83 d, e). The forewing has both above and beneath the discal area beautifully crimson, spotted with black. On the hindwing the discal area traversed by a band which is yellow-ochreous above, underneath white and broader. From Costa Rica. — *thirza* *Hbn.* (= *euryale* *Klg.*) is a closely allied species, which has been known for some time, occurring in northern Central America and Mexico; forewing likewise with the discus purplish, but the hindwing lacking the pale anteterminal band.

*eubana*. **C. eubana** *Salv.* (= *jaegeri* *H.-Schöff.*) (83 d, e) resembles underneath almost exactly *insignis*. But above it is very different, deep fuscous, the forewing with a white macular band; hindwing with a yellow band. The typical form is only known from Cuba, where it is rather scarce. The Haiti form with which it formerly was united, differs somewhat: = *jaegeri* *Mén.* Nothing is known of the earlier stages. Our figure of the under surface is rather too large, but *eubana* is frequently considerably larger than *jaegeri*.

See *Hall, Entom., LXIII, p. 13, 1930.*



3. Subfamily: **Nymphalinae.**

## Group A: Argynmidi.

Here we meet for the first time with a group of Nymphalids represented also in the Palaearctic Region\*). Therefore I refer to what has been said, in Vol. I, p. 211 ff., about the *Argynninae* under "Tribus\*\*") *Argynnidi*". Also in this, the American part, we combine for simplicity's sake the genera *Phyciodes*, *Eresia*, *Chlosyne*, separated by REUTER as *Melitaeidi*, with the true *Argynnidi*. In the far North of America representatives of the *Argynnis*-group, sometimes separated as *Brenthis* or *Boloria*, not only play the same part as in the Old World, but frequently even belong to the same species, advancing here as well as there among all Diurna farthest to the Arctic North. Farther South we see the *Brenthis* flying side by side with typical *Argynnis*, being more and more superseded by these, which, together with *Melitaea*, prevail in Southern Canada and the United States. Still farther South, in the southern United States, it is *Euptoieta* which, less by the number of species than of individuals, takes the lead, *Melitaea* being replaced by *Phyciodes* and *Chlosyne*. The latter genus prevails throughout Mexico and Central America, and the gorgeous, mostly jetblack *Chlosyne* are, by virtue of their enormous abundance and their almost unique variability, quite characteristic of the butterfly-fauna of the countries lying to the south of the tropic of cancer. Farther South their place is taken by the generically most closely allied *Phyciodes* and *Eresia* which, especially in the tropical forest-zone of South America, have developed an enormous number of forms, being thus the largest American Nymphalid genus. In the far South, in the Argentine Pampas and Patagonia, the *Euptoieta* reappear which in the Tropics had completely disappeared, and finally the ring is closed again in the Chilean Andes by *Brenthis*. Thus we may illustrate the occurrence in America of the principal groups of *Argynnidi* by the following scheme:

60° N. L.	<i>Brenthis</i>
45° N. L.	<i>Brenthis</i> , <i>Argynnis</i> , <i>Melitaea</i>
35° N. L.	<i>Euptoieta</i> , <i>Phyciodes</i>
25° N. L.	<i>Phyciodes</i> , <i>Chlosyne</i>
10° N. L.	<i>Chlosyne</i>
0	<i>Phyciodes</i> , <i>Chlosyne</i> , <i>Eresia</i>
15° S. L.	<i>Phyciodes</i> , <i>Eresia</i>
30° S. L.	<i>Phyciodes</i> , <i>Euptoieta</i>
40° S. L.	<i>Brenthis</i> .

1. Genus: **Euptoieta** Dbl.

Although numbering only 3, perhaps even only 2 species, this genus plays an important part by its enormous abundance of individuals. They closely resemble *Argynnis*, with which they also anatomically agree very well, so that neither DOUBLEDAY nor FELDER or REUTER succeeded in separating them in a natural way. Like the true *Argynnis*, they have the head uncommonly large and thick, so that in regularly set specimens the base of the costa touches the eyes. These latter are on either side of the broad frons enormously distended, naked (i. e. without rough hair); tongue strong, distinctly coloured, the antennae suddenly terminated by a conspicuous club which after drying appears flat. Palpi large and long, porrect, distended, thickly covered with rough, bristly hair. The forewings have the costal margin, especially at the base, strongly curved downwards. All the cells are closed, but in the hindwing the lower discocellular is so feeble that it can hardly be seen and, indeed, has frequently been overlooked; in the forewing the upper discocellular strongly curved inwards. The hindwing is remarkable on account of the almost rectilinear costal margin, in consequence of which the apex is almost as pointed as in *Brenthis*. — Also in the earlier stages it closely approaches *Argynnis*; especially the shortness of the blunt, stout spines of the larva, and the completely rounded anterior part of the pupa remind us of *Argynnis* and *Melitaea*. Its distribution is rather curious. *E. claudia* is found in the northern United States, being replaced farther South by *hegesia*; on the Isthmus we meet, quite locally, *bogotana*, and again, quite in the far South, *claudia* reappears, hardly changed at all; thus we find, advancing from the North to the South, the following species: *claudia* — *hegesia* — *bogotana* — *claudia*.

**E. claudia** Cr. (= *columbina* Godt., *daunus* Hbst.) (85 a). The upper surface fulvous in the outer half, *claudia*. faintly suffused with olive-green in the inner half; through the discus a paler, yellow-ochreous band. The

\*) Only among the *Cethosia* which belong to the *Heliconiinae*, we find one species touching the limits of the Palaearctic Region in the South-East. Cf. Vol. I, p. 343.

\*\*) In Vol. I we divided the *Nymphalidae* into "Tribus", several of which were united into a Subfamily; in that way the *Argynnidi* came, together with the *Vanessidi*, into the subfamily *Vanessinae*. We here drop all further subdivisions, treating the *Argynninae* as an independent subfamily.



name *claudia* should by rights only be employed for the North American form, although the upperside does not show any great constant difference between this and the South American form. On the whole the latter appears clearer yellow than northern specimens, but this is anything but constant, on the contrary, the species varies even in one and the same locality to such an extent that I have taken near Montevideo specimens with completely obscured upper surface. But there is a slight difference on the under surface, where in the North American form the dark basal area widens at the costa, whereas in the southern form it becomes narrower. We figure of the North American form the ♀, of the South American form the ♂, keeping for the latter *hortensia*. the name *hortensia* Blanch. (85 a as *claudia* ♂). Although according to KIRBY *hortensia* refers to a form of *hegesia*, it is still doubtful whether *hegesia* and *claudia* which are nowhere found occurring together, are not altogether different forms of one and the same species. — Larva white or yellowish, with brownish longitudinal stripes and similar prolegs; head and forelegs glossy black; feeds on Passiflora. Pupa light pearly-grey, faintly suffused with pinkish, abdomen and leg-cases tinged with yellowish. The wing-cases have the veins feebly streaked with black, and at the back a few black dots. The imago is very common in the open country, preferring prairie- and meadow-land, visiting clover and yellow composite flowers such as *Leontodon* etc. They fly in late summer, in the United States in July, in Argentina in January and February.

*bogotana*. **E. bogotana** Stgr. This species which on the upper surface can hardly be distinguished from the Argentine form, only perhaps by the slightly smaller black spots, differs greatly on the under surface in having the hindwings uniformly grey-fuscous, but marked with several undulate longitudinal lines of dull silvery white. *poaria*. It seems to be an alpine form, but little known. Southern Central America and Colombia. — **poaria** Schaus (86 f) hardly seems to differ, in having the undulate lines on the under surface of the hindwings not silvery, but only dull white with a resinous lustre. Southern Central America.

*hegesia*. **E. hegesia** Cr. (85 a). Upper surface with dark spots in the outer half of the wings; the paler discal band rather faint, which, being added to the uniformly fulvous colouring of the hindwing from which only the terminal border is excepted, gives this form a rather monotonous appearance. Under surface likewise more unicolorous, but most variable, the hindwing occasionally quite monotonously sandy brown. From Arizona and California, through Central and South America to Southern Brazil, in clearings in the forests; locally not scarce.

## 2. Genus: **Argynnis** F. (= *Brenthis* Hbn., *Acidalia* Hbn., *Boloria* Moore, *Speyeria* Scudd.)

Although on the whole very homogeneous, the *Argynnis* represent one of the largest genera of the great family of *Nymphalidae*; at the same time they have an enormous range of distribution, being found on every Continent and in every Faunal Region. It is true that there are but a few isolated species which thrive in the Tropics and Subtropics; thus we meet of a chiefly Indian species (*hyperbius*) a number of forms all the way from Abyssinia to Australia; a few Ethiopian species occur quite isolated in the Mountain-ranges of Kilima Njaro in Central Africa, and just as much isolated as these we observe a few species in the mountains of Temperate South America. But aside from these few stray forms, by far the greater number of species belongs to the Northern Temperate Zone both of the Old and New World, and it is difficult to decide, whether the Palaearctic or Nearctic Region is to be regarded as their chief centre of distribution.

The large number of forms which in their outward appearance frequently are very similar and for that reason not always easy to distinguish, has tempted a number of authors to split this rather homogeneous genus. Originally founded in 1807 by FABRICIUS, it was separated by HÜBNER into 5 genera based partially on the shape of the wings and palpi, partially on the colouring of the under surface, but including also some species of *Melitaea* and *Agraulis* (*Dione*). It was first OCHSENHEIMER (Schm. Eur. IV, p. 16; 1816), and after him DOUBLEDAY (Gen. of Diurn. Lep.), who took a more comprehensive view of the genus, refusing to recognize a division which, far from simplifying it or adding to clearness, only tends to cause unnecessary confusion, a consideration mentioned already in the Palaearctic Part of this Work (Vol. I, p. 226). Somewhat greater rights one might concede to HÜBNER's genus *Brenthis* which later was renamed *Boloria* by MOORE, for reasons explained in the Indo-Australian Part (Vol. IX, p. 512) in the general diagnosis of *Boloria*; (cf. also Vol. XIII, p. 231). Here we have a group differing from the *Argynnis* s. s. by certain peculiarities of structure. Its main characteristic is the position of the 2. subcostal nervule, which in most *Brenthis* is emitted behind the end of the cell, whereas in the true *Argynnis* it arises more or less distinctly before that; palpi relatively slender; the short median spur which in *Argynnis* is emitted near the base of the forewing, and in the ♂♂ the subcostal tuft of hair which in many species of *Argynnis* s. s. is very distinct, are either completely wanting or only feebly indicated. But since the position of the subcostal nervule is not at all constant in all the species of either group, but varies within rather wide limits, approaching in some species the apex of the cell so much that it is impossible to say which group they should be placed in, and since, moreover, also the other



characteristics seem subject to variation, we here refrain from separating the *Brenthis*, but rather subordinate them to *Argynnis* as a special subgroup.

As already mentioned above, we find in America most *Argynnis* in the northern part of the Continent which has a more or less severe winter-climate; and here it is the mountainous West which has produced by far the greater number of species. It is just these western species that, on account of their frequently very close similarity, offer great difficulties. Regarding this STRECKER writes (Catal. p. 118): "The *Argynnis* of the western mountains and Pacific slope are, besides the *Colias*, undoubtedly among all the day-butterflies of North America the most difficult to determine, being in the most extraordinary manner subject to variation. Thus the species *monticola* Behr and *zerene* Bsd. which had been regarded by BOISDUVAL as identical, form such endless varieties that it seems impossible to determine to which they belong". SCUDDER who tried to distinguish the closely allied species by means of their sexual organs, had to give it up, finding neither these nor the androconia sufficiently reliable.

The American *Argynnis* are butterflies of medium or large size; the colouring is generally fulvous with more or less distinct, black markings consisting of undulate lines and round or sagittate spots, all of which are as a rule somewhat feebly repeated on the under surface of the forewing. Characteristic of the under surface are the silvery spots which are, especially on the hindwings, in nearly all the species more or less distinct, although greatly subject to variation, disappearing even completely in some individuals; as a rule they are also found, although to a much lesser extent, on the apex of the forewings, which altogether rather closely agrees with the hindwings, both in colouring and markings. Also the black markings are rather variable, in as much as the spots and bands may replace the fulvous ground-colour to such an extent that the wings appear almost black. Besides such Melanisms there occur also cases of Albinism, in which the black markings of the upper surface appear almost whitish.

On the whole the sexes do not differ greatly from one another, chiefly in the ♂♂ having the ground-colour of the upper surface more brilliant and more broadly fulvous, whereas the ♀♀ have the black markings heavier and the ground-colour paler. But in some species the ♀♀ differ quite considerably from the ♂♂ (*idalia*, *leto*, *nitocris*, *cybele*, *diana*, *nokomis*); indeed in the latter two the typical ground-colour can not at all be distinguished any longer, a phenomenon which, whether justly or wrongly shall not be discussed — has by some authors been explained by Tertiary Mimicry. Aside from these characteristics, the ♂♂ of the true Argynnids may nearly always be easily told by the tertiary sexual organs consisting of long tufts of hair placed above the subcostal vein on the hindwing.

Head large, eyes naked, very large and prominent; palpi distended, heavily clothed with hair, with the exception of the last joint which is very small and pointed. Antennae moderately long, hardly measuring half the length of the costa, with well defined, flattened, pear-shaped clubs. Abdomen not reaching the anal angle. Legs strong, the middle and hind tibiae armed with spines. The wings are strong, the hindwings as a rule more or less denticulate. Subcostal five-branched, the third nervule always nearer the fourth than the second. In the ♂♂ the second subcostal nervule coalesces with the subcostal stem for some little distance. The cell of both wings is closed by a fine discocellular which on the forewing invariably joins the median vein beyond the origin of the second median nervule, but on the hindwing precisely at that place. The hindwing has a well-defined, incurved precostal nervule.

Of the former stages of the American *Argynnis* we have but an imperfect knowledge. The eggs are conoidal, truncated, slightly depressed at the apex, rounded at the base; ornamented on the sides by straight or slightly undulate, raised ridges connected with each other by smaller raised cross-ridges.

The caterpillar is cylindrical, stout and short, covered at the back with 4 rows of moderately long fleshy spines, and with one row on each side; those on the first segment generally somewhat longer than the rest; the sides of the venter covered with fine tubercles. In colour they are mostly black or brown, more or less spotted with red or yellow. All of the American species, so far as known, feed on violets only at night, holding themselves concealed in day-time. They hibernate when young, sometimes even before the first moult, feeding up in early spring, pupating after completing 5 moults. Pupa angular, with several rows of short, pointed projections; thorax strongly prominent, deeply incised behind. Head occasionally armed with blunt horns, otherwise more rounded.

Many species are, wherever they occur, rather common; preferring meadows bordered by woods, clearings in the forest, and grassy, flower-covered slopes. Their flight is rapid, whirring, that of some of the larger species floating. They visit flowers of all kinds, in preference the blossoms of thistles, *Rubus*, *Asclepiadeae* etc.; most of them are not difficult to capture, especially in the earlier morning hours, becoming much more shy in the hotter afternoon.



Subgroup I: *Argynnis F.**idalia.*

**A. idalia** *Drury* (85 c) is one of the largest and most showy of the American *Argynnis*. The upper surface of the forewings of the ♂ is fulvous, marked very much as in other species of the genus; hindwings with the exception of the basal area almost deep black, suffused with a bluish lustre, with two rows of large pale spots. Whereas the ♂♂ only have the inner, discal row pale cream-coloured, the outer marginal one being deep ferruginous, the ♀♀ are at once distinguished by having on both wings also the marginal row creamy-white. On the under surface the forewings are pale fulvous, with a more or less complete marginal row of crescents displaying a feeble brassy-yellow, resinous lustre, and with a few larger spots of lustrous yellow along the costa. Hindwings dark olive-coloured, with three rows of large irregular spots of a dull greenish-silvery colour and a smaller number of similar spots and stripes at the base. Expanse: 3,0—4,0". — Caterpillar after the last moult nearly 1,8" in length, black, with bands and stripes of ferruginous and orange colour, and with six rows of fleshy spines covered with black bristles, those of the two middle dorsal rows white with black tips, of the lateral rows black with orange base. Like all known *Argynnis*, it feeds on violets at night. — Pupa large, brown, with yellow spots and reddish wing-cases. Occurs in the eastern United states, from Maine to Nebraska and Arkansas, but almost everywhere local; being during some years rather abundant, it becomes rather scarce in others. Especially in the Northern Highlands of New Jersey and in the mountainous parts of the states of New York and Pennsylvania, one often finds large numbers in certain openings in the woods. It flies from the end of June to the beginning of September.

As in many *Argynnid*i, we sometimes observe in *idalia* cases of the most far-going Melanism, where especially the ♂♂ have the upper surface of both wings almost completely black, even the pale macular rows on the hindwings being practically obsolete. In connection with this we often observe a reduction of the silvery markings of the underside, where either only the outer row of spots or all the rows may disappear, only a few spots at the inner margin and base remaining visible. *idalia* was by SCUDDER (Syst. Rev. 23) placed into a genus of its own, *Speyeria*, on account of the somewhat varying neuration, especially the position of the 2. subcostal nervule; but, as we have already pointed out in the general diagnosis, a separation of the *Argynnid* species by means of this characteristic is not practicable, as it would lead to the most impossible results; for which reason one has justly abandoned both the genus *Speyeria* and HÜBNER's *Acidalia* which was by MOORE applied also to *A. hyperbius* (*niphe*).

*diana.*

**A. diana** *Cr.* (85 b) is a classical example of the most highly developed sexual Dimorphism. The ♂♂ have the upper surface of both wings deep black-brown, with a broad marginal border of fulvous, this border being on the forewings interrupted on the nervules by rays of the dark ground-colour, and enclosing on both wings two rows of roundish dark spots, which, diminishing in size on the hindwings, gradually disappear towards the anal angle. The colour of the under surface is pale buff, the forewing marked with dull black at the base and in the inner discal area, and spotted with pale bluish near the apex of the cell. The hindwings have the inner two thirds densely dusted with grey-brown, and adorned with two rows of narrow, elongate silvery submarginal lunules, the inner frequently obsolete at the middle; in addition a few stray silverspots near the base. The ♀ is on the upper side a rich bluish-black, somewhat darker on the forewings which in the distal half have 3 almost parallel rows of large bluish spots, the outer of which sometimes appears almost white. Also on the hindwings we find three more or less complete rows of bright blue spots, the inner almost appearing like a broad band, gradually tapering anally and interrupted on the nervules by rays of the ground-colour, each component part enclosing a circular spot of jet black; the outer, terminal, row is occasionally only indicated. On the under surface the ♀ has the ground-colour deep grey-fuscous, somewhat darker on the forewings, which latter are richly marked with blue and black spots. The gorgeous rows of silvery spots found on the under surface of the hindwings of the ♂♂, reappear in the ♀♀, and are most conspicuous on the terminal margins. Expanse: 3,4—4,0". — Egg greenish-white. Larva, when young, resembles up to the 5th moult those of *A. aphrodite* and *cybele*; thereafter it is velvety-black, grows very much larger, and the spines which are arranged in 6 rows, with their base orange-red, are much longer. Head dull brown. Pupa dark brown with short, pointed, lighter coloured tubercles on the dorsal side. — **diana**, among all the American *Argynnis* the largest and most magnificent, is confined to the southern portion of the Appalachian Region of North America; it is not scarce in the mountainous parts of Virginia and West Virginia, both Carolinas, Tennessee, Kentucky and Georgia, whence it has spread westward to Ohio, Indiana, Arkansas and Missouri. It is extremely wary, rising at the least disturbance and disappearing above the trees. Even on very bright days



they appear rather late in the morning, after the rays of the sun have warmed the ground and penetrate into the mountain-ravines, and they disappear as a rule again towards 4 o'clock in the afternoon. The principal season is July and August, the ♂ appearing somewhat before the ♀, in North Carolina at the end of June; some stray ♀ are still found at the end of September.

In EDWARDS' Butterflies of N. A. we find the figure of a fossil butterfly found in the Miocene strata in Croatia. The similarity between this and the ♂ of *A. diana* is very striking. OSWALD HEER, from whose work (*Die Insektenfauna der Tertiärgebilde von Oeningen und von Rodoboj in Kroatien, 1847—53*) the figure was taken which in the text is named *Vanessa pluto* and whose colours seem in parts preserved, points himself to this resemblance which is, "besides in the shape, especially evident in the black ground-colour and the pale yellow marginal band of spots, the several parts of which are clearly separated by the veins, reaching the termen and each enclosing two black ocelli. Since the fossil is considerably smaller than *A. diana*, perhaps it is more nearly allied to *Vanessa*". Together with *pluto* there were found dragon-flies with spotted wings, similar to those found in the southern United States (EDWARDS).

**A. nokomis** Edw. (86 a). ♂ above uniform fiery fulvous, similar to *A. leto*, with the characteristic submarginal markings, which are rather heavier than in *A. aphrodite*. Basal area but very slightly obscured. Termen bordered by two parallel lines, the outer quite fine, the inner heavier, the enclosed space fulvous like the ground-colour, dissected by the black nervules into isolated spots. The spots in the discal row small, roundish; on the hindwings the submarginal lunules are separated from each other and from the inner marginal line. Under surface greenish golden-yellow, the forewings laved with pink at the base and on the inner margin, the apical portion golden-yellow. The anterior 6 submarginal spots brightly silvered. Hindwings with large silvery spots edged with black, in the outer row all around, the others only on the inside. Abdominal margin and the basal part of the costa slightly silvered. The ♀ has the ground-colour of the upper surface pale brownish-yellow, similar to *A. leto* ♀, slightly shaded outwardly with fulvous; the black markings much broader and not so sharply defined as in the ♂; the nervules are also broadly scaled with black, the whole tending to fuse and run into one another to such an extent that the yellow ground-colour disappears almost completely from base to discal area, leaving in the outer half only some relatively small, roundish or subquadrate spots resembling in shape, distribution and size the blue spots in *diana* ♀ and enclosing, like these, the rounded extradiscal black spots. The under surface like that of the ♂, with all the markings heavier; but the ground-colour is not greenish, but more clear yellow, and the margins of both wings as well as the apex of the forewing much irrorated with black. The hindwing has the basal portion more obscured by greenish-brown tints, less shaded with black. Expanse of ♂ 3.4", of ♀ up to 3.6". — STRECKER regarded *nokomis* as a pale form of *A. cybele*, developed in the arid salt steppes of Utah and Arizona. First described from a specimen received by EDWARDS in 1862 through the Smithsonian Institute at Washington, marked "Bitter Root Mountain". Later, in 1871, Lieut. WHEELER captured on an exploring trip through Arizona 5 ♂♂ 2 ♀♀. But it has ever been very rare. Besides in Arizona, it has also been taken in southern Utah. Nothing is known of the life-history of the species.

**A. nitocris** Edw. (86 a) was treated by EDWARDS as a separate species, whereas other authors regarded it as a form of *A. nokomis*, intermediate between this and *leto*. As in many of the North American *Argynnis*, we find also regarding *nitocris* much uncertainty, the more so since EDWARDS himself addressed STRECKER's figure of *nokomis* ♀ (in Report on the RUFFNER Expedition) as an aberrative form of *nitocris*. The ♂ resembles above *nokomis*; bright fulvous, much obscured from base to middle of disk, except on a portion of the cell in the forewing. The space between the two marginal lines rather wide, uniformly fulvous. The spots in the submarginal row on the forewings sagittate, the anterior ones touching one another and the inner line; the outer discal spots on the forewings irregular in shape and size, on the hindwing minute. Underside of the forewings cinnamon-red almost throughout, on the apex a small ochre-yellow patch enclosing a brown spot. Hindwing from base to beyond the second, outer row of spots, as well as the outer margin, deep rusty redbrown, occasionally dusted with grey-green, and with a broad submarginal band of rufous. The silvery spots as in *nokomis*. ♀ above blackish-brown, darker than *nokomis* ♀. The black markings from base to middle of disk nearly lost in the dark ground-colour. The median rows of spots pale yellow, the submarginal spots whitish, as in *nokomis*. The light spots of the hindwings narrower than in most examples of *nokomis*, owing to the broad edging of brown upon the nervules. Under surface of the forewings somewhat deeper red than in ♂, with the apex clearer yellow. Hindwing darker brown, with the yellow submarginal band divided into spots by the broadly fuscous nervules. Silverspots as in ♂. Expanse of ♂ 3.0—3.3", of ♀ 3.3—3.8". Arizona, Colorado and Nevada. The ♂ type came from White Mts. in N. E. Arizona. Specimens from Colorado differ from those of Arizona, besides by their larger size, by the darker red of the entire under surface of the forewings; the inner half of the hindwings from the base to beyond the second row of spots, which in Arizona specimens is



dusted with greyish green, is here deep fulvous, almost as in *A. aphrodite* ♀. As in *nokomis*, nothing is known of the earlier stages. — *coerulescens* Holl. is a peculiar form from northern Mexico, discovered in 1899 by C. TYLER TOWNSEND, and described by Dr. HOLLAND as a variety of *A. nitocris*; Prof. SMITH, however, upon comparing the genitals, regards it as a separate species. ♂ differs but slightly from typical *nitocris* ♂♂ in having the inner half of both wings more strongly obscured, and the black markings of the upper surface more confluent; on the under surface the base and inner margin of the forewing deeper red, the black markings heavier. But the ♀ differs from typical *nitocris* ♀♀ to such an extent that a casual observer might take them at first for *diana* ♀, on account of the gorgeous blue colouring of the submarginal band of spots on both wings. Upper surface with base and median area deep black, with a faint violet lustre. On the under surface the markings resemble those of normal *nitocris*, but the forewings are darker red. Hindwings with the inner half to the median row of silvery spots deep olive green, the submarginal band yellowish-green; other specimens have the inner half of the under surface of the hindwings deep chestnut-brown; but in every case the colouring of the light submarginal band of spots is more or less greenish, never honey-yellow as in normal *nitocris*. In size it approaches *nitocris*. *coerulescens* is not at all scarce on the Upper Piedras Verdes, in the Sierra Madre (State of Chihuahua, Mexico), in September at elevations of from 7000—7200 ft. — As var. *nitrocaerulea* Cockerell a form was described from southern New Mexico, forming in some respects a transition from *nitocris* to HOLLAND's *coerulescens*. The ♂ differs above but slightly from typical *nitocris* ♂♂; but underneath the basal area of the hindwing is more cinnamon-red, strongly contrasting from the ♀. ♀ above with the inner half deeply purplish-black, the quadrate submarginal spots very pale yellowish, faintly suffused with pinkish. Under surface: Terminal band light green, the subterminal band of spots pale yellow, the base of both wings very dark, with purplish lustre. The type was taken at Beulah, Sapello Cañon (New Mexico) in August. But there exist in New Mexico of this form also ♀♀ which are fulvous: ab. ♀ *rufescens* Cock. — On the earlier stages Prof. SKINNER (Ent. News 1907, p. 318) has given us the following notes: Eggs before hatching reddish, of the same structure as those of other known species; they were deposited on Aug. 24th.; the caterpillars which hatched on Sept. 7th., were at first pale greenish-yellow, with 11 rows of green tubercles, those at the sides covered with long hair; head black. After the first moult there appeared a number of glossy black spines, provided with thick dull black hair. Body yellowish-brown, covered with numerous single bristles. Nothing is known of their further development.

*leto*. **A. leto** Behr (86 b) is closely allied to *A. cybele* with which it was identified by BOISDUVAL; but it might be just as well taken for a separate species as *nokomis*. *leto* replaces *cybele* on the Pacific coast, from California to Washington, and was observed by GEDDES as far north as Fort Macleod in the Canadian Province of Alberta. ♂ above not unlike the ♂ of *nokomis* and *cybele*, but the ground-colour duller and paler fulvous, the basal area much more obscured, the black markings finer. The spots in the submarginal rows on both wings are separated from each other and from the inner line. On the forewing the trans-discal spots rather large, roundish, followed by a zigzag-shaped broken band of spots. Under surface of the forewings bright fulvous, the costal margin and distal border buff; veins and base shaded with brown; the markings of the upper surface are repeated underneath, the marginal spots not silvered. Hindwings with pale straw-yellow submarginal band, as in *cybele*; the silver spots very distinct, but the base of the costa and the abdominal margin but slightly, if at all silvered. ♀ marked like ♂, but the ground-colour is pale straw-yellow, strongly contrasting with the chocolate or deep black-brown markings, especially in the basal area of both wings, where the spots confluence so completely that the inner half appears uniformly brown-black. Beneath it resembles the ♂, with basal area and inner margin reddish-brown; but the dark markings are deeper black, the light portions paler. Expanse: ♂ *charlotti*. 2.4—3.0", ♀ 3.0—3.3". — *charlotti* Barnes refers to a form from Colorado, distinguished in the ♀ by the uncommonly broad yellow band on the under surface of the hindwings. — We have no knowledge of its life-history. *leto* is found from Central California northward to Washington and Alberta. Washington specimens differ from the southern form in the darker colouring of the base of the hindwing. The type of *leto*, like all the other types of BEHR's, was destroyed in the great earthquake of San Francisco.

*cybele*. **A. cybele** F. (= *daphnis* Cr., baal Streck.) (85 c ♀, d ♂). ♂ above resembles that of the preceding species and of *leto*; the fulvous ground-colour shaded with brown at the base, and finely dusted with blackish in both sexes, especially on the forewing. The submarginal crescents on the forewing are joining, but on the hindwing detached. Under surface of forewings yellowish-brown, the apical space yellowish, enclosing a brown patch on the costal margin. Termen near apex bright brown, towards the inner angle yellowish; the anterior submarginal and subapical spots brightly silvered. The black markings of the under surface are more faintly repeated underneath. The hindwing has the basal two thirds to the submarginal row red-brown, more or less mottled with yellow. Distal margin brown, shading into yellowish towards the anal angle. All the silvery spots much larger than in *leto*. The pale brownish-yellow submarginal band between the outer rows of spots is never obliterated by being invaded by the darker ground-colour of the basal and marginal tracts. Abdominal margin slightly silvered. ♀ differs



from ♂ in the paler ground-colour and the deep chocolate-brown, occasionally nearly black, shading of the inner half of both wings. All the markings of the upper surface much heavier than in ♂. On the under surface the sexes differ but little, the colouring of the ♀ being somewhat duller. Expanse: 3,0"—4,0". — Egg conoidal, truncated, shorter than broad, honey-yellow; the vertical ribs partly extending to the apex, partly ending at  $\frac{2}{3}$  of the distance from the base. The caterpillar, when first hatched, is greenish, mottled with brown, later chocolate-brown, after the last moult velvety-black, beneath chocolate-coloured. Head blackish, shaded with chestnut-brown behind. The body is ornamented with 6 rows of shining black branching spines marked with orange-red at the base. In the North the eggs are mostly deposited in August; the young larvae go in lethargy immediately after being hatched from the eggs, hibernating, and feeding to maturity in early spring; in the southern States, however, they often hibernate after several moults; this probably accounts for the early butterflies one occasionally sees, from which a second brood may result; like all the other known larvae of *Argynnis*, they only feed at night. Pupa dark brown, shaded with reddish-brown or slaty-grey, sometimes glossy, sometimes dead leaf-like, a trifle compressed laterally; head and wing cases very prominent. The pupal state lasts about 16 days. — *cybele* ranges over the northern and middle Atlantic States of North America, from Nova Scotia and Maine, where it is rather scarce, southward to Virginia and North Carolina (Macon Co.), westward to Illinois and along the Mississippi Valley to Nebraska. SCUDDER draws the line of its western limits through the middle of Dakota and Kansas. In the North it is rather abundant in June and July, stray specimens appearing already in the middle of May; one meets it until September on blossoming clover-fields, in gardens and along roads, eagerly visiting the blossoms of thistles, *Asclepias tuberosa* and other flowers. *cybele* has often been confounded with *aphrodite*, indeed northern specimens are not much larger, with the under surface, especially of the ♀♀, generally very dusky brown, whereas those from Virginia are very large, with heavy black markings above and the under surface of the hindwings reddish-brown. In the West (Nebraska) its colour is brighter, more red, the under side very light, near to cinnamon-red. — As *A. carpenteri* Edw. we find described a dwarf variety of *cybele* first discovered by Lieut. W. L. CARPENTER on Taos Peak in northern New Mexico, above the limits of tree-growth, at an altitude of about 9500 ft. It is very similar to small-sized specimens found on the North-East coast, in Maine and Nova Scotia, but differs considerably from western specimens, as f. i. those from Nebraska. Since *cybele* has not been observed either elsewhere in New Mexico or in Colorado, it seems as though this really northern species forms an isolated colony in this remote south-western part of the Rockies. In the East, from New York to Virginia, *cybele* is confined to the plains, being replaced at higher altitudes by *aphrodite*. That this tribe which is isolated on Mt. Taos does not descend to a lower altitude in order to migrate farther North, is to be explained either by the difference of the climate or the absence of the food-plant; one may assume that at the time when a change took place in the climate, *carpenteri* was cut off from the main body, very much like *Oeneis semida* which, as GROTE and SCUDDER have shown, were in the East stranded on the summit of Mt. Washington in New Hampshire, where it still exists as an isolated colony, the species being otherwise at home in Labrador and in the Rocky Mts. — *bartschi* Reiff is an interesting aberrative form of *cybele* having all the spots and other markings both of the upper and lower surface confluent so as to form more or less complete bands, all of which, however, aside from the somewhat paler shade of the upper surface, retain their normal colour. This change has mainly affected the distal half of both wings. Here we find at the same time all the veins aborted, in part even completely absent, whereas in the inner half, especially of the hindwing, where the markings are more normal, also the veins are complete and normal (peroneuric aberration). Hand in hand with this reduction of the veins we observe a modification of the shape of the wings, the forewings being much narrower, the hindwings more elongate, and oval than in normal specimens. On the under surface of the hindwings the submarginal band is, in contradistinction to typical *cybele*, very narrow and faded. This aberration has been repeatedly taken in recent years near Roxbury in the State of Massachusetts, where it does not seem to be very scarce. — *baal* Newcomb is the name given to a melanotic form of the ♀.

*A. aphrodite* F. (= *daphnis* Mart., *cypris* Edw.) (85 d) is, like *alcestis*, *cypris* and *halcyone*, by some authors treated as a form of *cybele*; but it is considerably smaller, and easy to distinguish by having the yellow submarginal band on the under surface of the hindwing much narrower, frequently, especially in ♂, even wholly wanting, being replaced by the brown ground-colour. The ♂ is, in comparison with other species of this group, much smaller in proportion than the ♀; its ground-colour is brighter reddish fulvous than in *cybele*, obscured with much less brown at the base of the wings; the markings more delicate; the median band is formed of small crescents, separated by wide spaces and nearly obsolete on the costal margin. Underneath the forewing has the base and inner margin brighter red; the silvery marginal and apical spots are very decided, while in *cybele* they are usually wanting or indicated by a few scales only. Basal area of hindwing mostly brown, the yellow submarginal band more or less encroached upon by the dark ground-colour. ♀



paler than ♂, the basal half suffused with a richer red than in *cybele*. Under surface of hindwings deep ferruginous, the band being almost entirely crowded out. Expanse: ♂ 2,0—2,2", ♀ 2,6". — Egg, larva and pupa closely resemble those of *cybele*. The mature caterpillar has, however, a velvety-black spot at the base of each spine, making 6 longitudinal macular velvety bands. The chrysalis has the tubercles on the back shorter than in *cybele*, the basal segments party-coloured, not unicolorous as in that species. The pupal state lasts 17—27 days. *aphrodite* is common throughout the less elevated parts of Eastern Canada (Quebeck, Ontario, Nova Scotia) and of the Eastern United States, from Maine southward to Pennsylvania, and in the Alleghanies to West Virginia. In the West it is met with as far as Illinois. Very common in the Catskills (State of New York) up to an altitude of about 2000 ft., where it takes the place of *cybele*; flying with *A. atlantis* at the end of June and in July in open woods and on forest-meadows, and easily recognizable, especially in bright sunshine, by the bright red tints. Like *cybele*, it has in the South two broods, in the northern States and Canada only one. It is not found in the White Mountains of New Hampshire, being replaced there by *A. atlantis*.

*cipris*. **A. cipris** Edw. (87 a) is a western, rather variable representative of the *aphrodite* group which it resembles in many respects. But aside from the larger size, the forewings are relatively longer and narrower than in *aphrodite*; the black markings of the upper surface in both sexes finer, the dusky clouding at the base of the wings less pronounced, and the general colouring brighter fulvous. On the under surface the forewing lacks in the ♂ the deep pinkish tinge of the base and inner margin, which distinguishes *aphrodite*. Both sexes have the inner  $\frac{2}{3}$  of the hindwings deep cinnamon-brown, distally defined by a very narrow submarginal band of buff, deeply invaded proximally by rays of the dark ground-colour. Expanse: 2,8—3,2. Colorado, Utah, New Mexico; also Montana (Judith Mountain), Alberta and Assiniboia. Flies in Colorado from the end of June to the end of August. The life-history is not known.

*alcestis*. **A. alcestis** Edw. (87 a) is regarded by some authors as a western variety of *aphrodite*, from which it may be most easily distinguished by the uniformly dark cinnamon-brown ground-colour of the under surface of the hindwings, reaching from base to termen, only interrupted by the silvery spots; the narrow buff submarginal band found in *aphrodite* is entirely wanting, or occasionally faintly indicated by a narrow streak of a paler subcolour. Spots large and well silvered. ♀ above darker, more red and much more obscured at base than ♂; marginal lines broad, on the forewing partially confluent; submarginal spots heavy, as all other markings. Under surface of forewings fiery-red; apical area of forewings as well as the hindwings uniformly and deeply olive-brown or red-brown, very much as in ♂. All the spots large and, like the costa at the base and the inner margin, brightly silvered. Expanse: ♂ 2,2—2,55", ♀ up to 3,0". — Egg conoidal, with about 18 vertical ribs, very much like that of *aphrodite*. The larva takes 25—30 days to hatch and generally goes at once into lethargy; full-grown it is velvety-black, with concolorous spines that are yellow at the base. Head black, yellowish behind. Feeds on violets and the wild pansy (*V. tricolor*). The pupa resembles in shape that of *aphrodite*, but is more slender, reddish-brown or grey, irregularly mottled and striped with black; abdominal segments slaty-grey, marked with black at the edges, which are provided with short, sharply angular points. Pupal state lasts 20 days. The range of *alcestis* comprises the middle West as far as the Rocky Mountains; in the prairies of northwestern Ohio and southern Michigan it begins to replace *aphrodite* which has here its westerly limits, extending to Colorado, Nebraska and Montana. It seems to be rather local and confined to a pretty narrow belt of Latitude, since specimens taken only a few miles farther north, in a timbered region, belong almost without exception to *aphrodite* (WORTHINGTON). Flies from the end of June till the end of August.

*nausicaa*. **A. nausicaa** Edw. (86 a) is likewise closely allied to *aphrodite*, which it replaces in Arizona. From its near allies *aphrodite*, *alcestis*, *cipris* and from the likewise similar *halcyone* it is, aside from the darker ground-colour, easy to distinguish by the much shorter and less prominent tuft of hair above the subcostal nervule in the hindwing of the ♂, which in the other mentioned species is very plain. It is rather smaller in size than *alcestis* or *cipris*, about like *aphrodite*. Upper surface dusky reddish-brown, the submarginal lunules separated, the mesial band on the hindwings not continuous, but broken into separate spots. Under surface of the forewings pinkish-brown, the apex yellowish; submarginal spots lanceolate, the lower ones black, those next to the apex brown, the upper 6, as well as the subapical patches imperfectly silvered. Hindwings beneath cinnamon-brown, mottled with buff in the inner half; submarginal band buff, occasionally thinly scaled with brown, narrow, but pretty clearly defined; the bright silvery spots small, but very distinct; the basal part of the costal margin likewise silvered. ♀ approaching in size the ♂, but with the black markings broader and heavier; the submarginal lunules enclosing on the forewing pale fulvous, sometimes almost white spots. Under surface of the forewings deeper red, the yellow apical area extending farther inwards, covering the outer corner of the cell; the silverspots larger. Expanse: 2,25—2,5". *nausicaa* is quite common in the mountain valleys of Arizona, at an altitude of from 6000—7300 ft., particularly in July and August. Originally it was



described from specimens taken at Rocky Cañon. HULST, who later on collected a larger number in Maple Gulch, about 12 miles to the South of Prescott, Arizona, writes about it: "The ♂♂ appear in the beginning of July, the ♀♀ not until the middle of the month. The whole country is indescribably wild and rough; everywhere deep ravines, the sides often rising 1000 ft. perpendicularly. On the border of the brooks streaming through the cañon there grow large quantities of a white blossoming species of violet, very similar to the eastern *Viola canadensis*, near which one may be certain to find *A. nausicaa*, but only at the very bottom of the cañon and always on the north side of the brooks. Sometimes they would alight on the blossoms of *Asclepias tuberosa*, others would sip the moisture from some damp spot warmed by the rays of the sun, becoming an easy prey. But to capture any on the wing, was almost impossible, in that path- and trackless wilderness covered with thornbushes". We have no knowledge of the earlier stages.

*A. atlantis* Edw. (85 e) replaces in the northern Atlantic states of North America *A. aphrodite* with *atlantis*, which it associates in Central New York and New Jersey, the southern limit of its range of distribution. It is smaller than *aphrodite* and *cybele*, and may be distinguished from them by the relatively longer and narrower forewings, the moderately arched costal margin, the deeper brown colour of the upper surface, especially at the base of both wings, and of the under surface of the hindwings. Both sexes have the parallel marginal black lines broad and very distinct, and, especially on the forewings from apex to lower median, confluent. ♂ has on both wings the terminal spots frequently confluent, and joined to the inner marginal line. The spots in the discal row on the hindwings narrow, united with one another to form a sort of thin, angled band. Underside of forewings reddish, of the hindwings darker reddish-brown than in *aphrodite*, the inner  $\frac{2}{3}$  plainly clouded with greenish- or brown-grey. The submarginal band between the two outer rows of spots pale yellow, holding in extent the middle between *aphrodite* and *cybele*, but mostly sharply defined. All the spots large and strongly silvered, likewise the basal part of the costa and the abdominal margin. ♀ more yellowish, broadly bordered with black. Expanse: ♂ 1,8—2,25", ♀ 2,2—2,8". — Egg conoidal, with 12—14 vertical ribs, honey-yellow; the caterpillars are hatched in fall, hibernating without feeding. When mature, the larva is above velvety blackish-violet, underneath somewhat paler; the spines arranged in 6 rows, black with grey base. Pupa pale brown, mottled with black, the abdominal segments excepted. The range of *atlantis* coincides in the South with that of *aphrodite* and *cybele*, but extends much farther to the North, through Maine to New foundland, Labrador and Hudson Bay, in the West to Winnipeg and the Rockies. MEAD also mentions Colorado, but specimens from thence are described as a separate species *electa* Edw. In the North it is much smaller than in New York and New Jersey. It is rather an alpine species, comparatively scarce in the open country where *aphrodite* is most common. It is particularly abundant in the White Mountains of New Hampshire, where *aphrodite* does not occur at all, at the end of July and in the beginning of August. In Central New York, in the Adirondacks and Catskills, it appears as early as the middle of June, rather earlier than *aphrodite*; common on wooded meadows. Going south, it is found in the mountainous part of Western Pennsylvania and in the Alleghanies as far as West Virginia.

*A. lais* Edw. (86 b) is closely allied to *atlantis*, but of smaller size and paler colour. ♂ above bright *lais*, reddish-brown, slightly obscured by fuscous at the base; the black markings uncommonly faint; the discal band on both wings broken up into irregular spots and streaks. Under surface of forewings light cinnamon-red, grey-yellowish at the apex, and pale red at base and inner margin, lighter toward the inner angle. The upper submarginal as well as the subapical spots silvered. Under surface of hindwings from base to beyond the second, discal row of silvery spots dark brown, mottled with yellow. Submarginal band pale yellow, moderately broad; all the spots small and well silvered. ♀ somewhat paler than ♂, with base more obscured, all the markings heavier, on the hindwings the marginal lines more or less confluent; the mesial band on the forewings broad and continuous; the areas enclosed between the sagittate submarginal spots and the terminal lines in the ♂ paler, almost whitish. Expanse: ♂ 2,0", ♀ 2,2". The earlier stages are not known. — *lais* was first described from specimens captured by Capt. G. GEDDES in the beginning of July 1883 near Edmonton on the prairies of the Saskatchewan River in northern Alberta; mentioned also from the mountains and the lower hills of eastern British Colombia. But while in these localities it seems rather scarce, its centre of distribution lies, according to THOS. A. BEAN, much farther East; for he found it rather abundant near Mc. Lean in eastern Assiniboia, about 500 miles to the East of GEDDES' locality.

*A. oweni* Edw. (87 a). ♂ upper surface dull reddish-fulvous, very slightly obscured at the base; the black *oweni*, markings moderately heavy, the two terminal lines more or less confluent. Under surface of the forewings brownish-yellow from the base to the outer row of spots, sometimes suffused with reddish. Veins reddish-brown. Subapical spots deep brown, enclosing a small, silvered spot; the anterior 5 submarginal spots small and very faintly silvered. The hindwings have the discal and basal areas dark brown, strongly clouded with



yellowish, the termen brown; a rather narrow, greyish-buff submarginal band, strongly invaded by rays of the dark ground-colour. The spots of the outer row generally well silvered, those at the base and termen less distinct. The ♀ has the distal half more or less clouded with yellow above, the black markings very heavy and conspicuous; underneath the spots richly silvered. From *A. behrensi*, likewise of California, *oweni* differs in the much heavier black markings of the ♂, and in that the under surface of the hindwings in both sexes is mottled with yellow at the base, whereas in *beherensi* it is uniformly dark brown. Expanse: 2,25—2,4". *oweni* is pretty common on Mount Shasta in California, at elevations of from 7000—8300 ft. Nothing is known of the earlier stages.

*cornelia*. **A. cornelia** Edw. (87 b). ♂. Upper surface of both wings from base to the median row of spots dark brown, only the far end of the cell of the forewing and the distal area of both wings reddish-fulvous. The dark markings rather feeble, the terminal lines fine, confluent on the veins. Under surface: Forewings from base to the clear yellow submarginal band almost uniformly reddish-brown, only the discal area faintly laved with yellowish. The silvery spots small, but well silvered. ♀ above duller red-brown, with the dark markings heavier, especially in the discal area. The terminal spots on the forewing pale brownish-yellow, the terminal lines confluent towards the apex. Beneath like the ♂, but with the basal area darker and the spots more brilliantly silvered. Expanse: ♂ 2,3", ♀ 2,5". Nothing has been published on the life-history of *cornelia*. It flies together with *A. electa* and *hesperis* in Colorado. The types came from Manitou and Ouray.

*electa*. **A. electa** Edw. (87 b) is found in the mountains of Colorado, spreading northward to Montana, in the South to New Mexico. MEAD and others treated it as a variety of *A. atlantis*, from which it may be distinguished, aside from its smaller size, but the relatively broad forewings and much weaker black markings. ♂ above dull reddish-fulvous; the markings on the forewing moderately heavy, on the hindwing narrow. On the forewings the marginal lines separate, enclosing a narrow band of pale brown spots. The base of both wings slightly obscured. Under surface: Forewings pale cinnamon-brown, with the apex darker. Hindwing broadly deep cinnamon-brown, slightly clouded with yellow in the discal area; submarginal band brownish-yellow, frequently invaded proximally by the dark ground-colour. The silvery spots are mostly very well marked and distinct, only occasionally more or less obscured or quite obsolete (transition to *hesperis*). ♀ very much like ♂, differing only in the somewhat heavier markings. The early stages are unknown. MEAD has observed that freshly captured specimens of *electa* have a strong odour of musk. Its range comprises the mountains of New Mexico, Colorado and Montana.

*columbia*. **A. columbia** H. Edw. (86 b). Closely related to *electa*, but of much larger size. ♂ above pale reddish-fulvous, the spots of the median band on both wings rather large, but distinctly separated. The parallel marginal lines, especially on the forewing, are, in contradistinction to *electa*, united into a solid border, between which and the sagittate marginal spots a series of very pale spots. Under surface of the hindwings light ferruginous, slightly mottled with buff on the disk and at the base. The submarginal band narrow, buff, sometimes almost wholly obscured by the darker ground-colour. The spots small, but brightly silvered. ♀ easily distinguished from ♂ and from *electa* ♀ by the much lighter colouring of the upper surface, from the former also by the heavier dark markings. The spots of the median band angled, partly lanceolate, those of the outer, terminal row almost white. Expanse: 2,25—2,5". Originally described from 4 ♂♂ from Labache Lake in the Caribou District of northern British Colombia; types in HOLLAND's collection.

*hesperis*. **A. hesperis** Edw. (87 a, b) resembles *A. atlantis*, with the forewings in both sexes elongate, rather narrow and moderately arched; the sexes approaching one another in size. ♂ above deep fulvous, shaded with fuscous for a short distance from the base. The black spots of the median band heavy, more or less confluent, the nervules being heavily scaled with black. Under surface of the forewings pale ferruginous, the apex buff, like the termen shaded with dark red-brown. Hindwings underneath pretty uniformly deep ferruginous; the submarginal band narrow, mostly clear buff, but sometimes almost lost in the dark ground-colour, as in *aphrodite*. ♀ above paler than ♂, with the dark markings heavier; the marginal lines confluent towards the apex, and joining the rather heavy sagittate spots of the submarginal row, which are also connected with one another, completely surrounding the often nearly whitish marginal spots. Underneath the ♀ differs from the ♂ in the deeper and richer colouring. In neither sex are the light spots silvered, but dull yellowish-white, only occasionally sprinkled with a few scales of silver. Expanse: ♂♀ 2,3—2,4". Although this species is rather common in the mountains of Colorado, Utah and Montana, nothing is known of its life-history.



**A. hippolyta** *Edw.* (86 c) is a small-sized form from northern California and Oregon, regarded by STRECKER as identical with *bremneri*, which it represents in the South. Upper surface of the ♂ pale fulvous, with the markings heavy, the basal tracts of both wings strongly obscured, this dark clouding reaching on the hindwing almost the inner angle. The forewings on the underside buff, laved with pale red at the base, the termen and apical area ochreous-brown. The subapical and (in a lesser degree) also the submarginal spots silvered. Hindwings deep ferruginous, mottled with buff; submarginal band narrow, light buff, more or less densely dusted with brown. All the spots brightly silvered. ♀ easily distinguished from ♂ by the bright reddish-fulvous tinge of the basal area, and by having the submarginal band on the hindwings almost wholly lost in the deep basal ground-colour. Expanse: ♂ 1,6, ♀ 2,0—2,2". Widely distributed through northern California and Oregon. With the earlier stages we are not acquainted. *hippolyta.*

**A. bremneri** *Edw.* (86 c) is closely allied to the two following species of the Pacific Coast of North America: viz. *A. zerene* and *monticola*, from which it is not always easy to distinguish with certainty. Forewings long, narrow. ♂ above bright fulvous, occasionally with a yellowish tinge; the black markings, especially of the discal area, very heavy. Both wings have the base broadly obscured; on the hindwings the median band confluent. The under surface of the forewings reddish-fulvous towards the base, sometimes cinnamon-red from the base along the inner margin up to median vein; the anterior part of the termen and the outer costal margin greyish-yellow, the subapical and anterior marginal spots generally well silvered. Hindwings with the inner two thirds deep ferruginous, slightly mottled with yellowish. The space between the two outer rows of very brightly silvered spots usually buff, sometimes clear yellow, very rarely invaded near the anal angle by the dark ground-colour. Costal margin near the base, and the abdominal margin slightly silvered. ♀ above paler than ♂, the marginal lines and crescents on the forewings confluent, forming a broad black band enclosing a few insignificant spots of paler colour. Otherwise marked like the ♂. Under surface of forewings deeper red than in ♂, the apex ochreous, with distinct silver spots. Hindwing as in ♂, somewhat more mottled with greenish-ochreous. All the spots large, well silvered. Expanse: ♂ up to 2,4, ♀ 2,8". The early stages have not as yet been described. The species was first described from specimens brought by Dr. BREMNER from San Juan Island (to the South of Vancouver), which he visited in 1871 on the British ship "Zealous". EDWARDS, who later on also collected on Vancouver, captured at the end of June about 60 specimens, flying on blossoming cloverfields near Victoria and Esquimalt; by far the greater majority of these were ♂♂, and it is probable that, as in other *Argynnis*, the ♀♀ appear rather later than the ♂♂. They were not at all shy, and on account of their slow and awkward flight easily captured. In 1873 CROTCH observed great numbers of this species on the Fraser River and on the border of Labache Lake, flying together with another *Argynnis* which he took to be a form of *aphrodite*, but which more likely was *cipris*. *bremneri* inhabits southern British Colombia and Vancouver Island, advancing south as far as Washington and northern Oregon. *bremneri.*

**A. zerene** *Bsd.* (= *hydaspe* *Bsd.*) (86 b) is, like the following *A. monticola*, a rather variable species confined to northern California and the neighbouring States in the East and North; it is smaller than *monticola*. ♂ above deep reddish-fulvous, with heavy black markings, the basal area moderately obscured. The black marginal lunules very distinct, connected on the forewing, separated on the hindwing; median band confluent; also the other markings as in *monticola*, but not so conspicuous. Under side of forewings reddish, often suffused with rosy-pink, the apex buff, enclosing a patch of ferruginous. Marginal spots not silvered, but buff, suffused by the ground-colour at the inner angle. The hindwings have the ground-colour purplish-grey, mottled with ferruginous in the basal and discal areas and on the termen; submarginal band yellowish, much encroached upon by rays projected from the dark border. The spots are almost without any silver, of a delicate greyish-buff colour. The ♀ differs but little from ♂ in having the basal half of the forewings more obscured and deeper red, especially on the under surface, strongly contrasting with the yellow tint of the apex. The spots on the under surface of the hindwings are as a rule well silvered, but only in the outer row, whereas the rest do not differ from those of the ♂, in contradistinction to *monticola* ♀ which has all the spots, also on the forewing, silvered. Expanse: ♂ 2,2—2,3", ♀ 2,4—2,5". Nothing is known of the early stages. *zerene* is found in northern California (Plumas Co., on Mt. Shasta), Nevada and Oregon; whereas *monticola* prefers the higher mountains, *zerene* is found mainly in the lower valleys; it visits flowers and is rather common. — As *irene* *Bsd.* (= *irene* *Streck.*), and *hydaspe* *Bsd.* two forms were described, likewise from California, resembling *zerene* so much that they may be regarded as identical or, according to STRECKER, as varieties of that variable species. — Also *adiaste* *Edw.* is closely related to *zerene*, differing only in the somewhat paler ground-colour and the finer, less distinct markings especially of the under surface of the hindwings. Its home is, like that of *zerene*, California. *irene.*  
*hydaspe.*  
*adiaste.*

**A. monticola** *Behr* (85 e) is in many respects so closely allied to the preceding that some authors have treated it as an alpine variety of the same, inhabiting the higher mountains of California and the *monticola.*



neighbouring states in the East. Both sexes have the upper surface brighter fulvous than in *zerene*, the black markings standing out more clearly upon the ground; both wings with the basal area less obscured by fuscous, the roundish spots in the outer discal area uncommonly large, with the exception of the fourth on the forewing and the upper four on the hindwing, which are relatively very small. Otherwise the upper surface as in *zerene*. On both wings a double terminal line, the enclosed space brownish-yellow, separated by the veins; the submarginal lunules connected with one another and with the inner marginal line. The median spots on the hindwing united to form a broad, angled band. But notwithstanding their similarity, the markings are much more characteristic, sharper and clearer. Under surface of the forewings pale ferruginous, laved with reddish towards the base and along the inner margin; the apex purplish-grey, the end of the cell mottled with yellowish. Hindwings purplish-grey, mottled with dark brown; termen dark-brown; submarginal band pale, much encroached upon by dark shadows projected from the ground-colour on either side. All the spots light buff, mostly without silver, only rarely marked with a few silvery scales. ♀ somewhat paler than ♂, the black markings heavier, the spots enclosed between marginal lines and lunules paler than the ground. Under surface of the forewings bright red at the base, the upper subapical spots of the forewings and the outer row on the hindwings always, the other spots on the hindwings occasionally, well silvered. Expanse: ♂ 2,6'', ♀ 2,8''. Common in the Yosemite Valley and other mountain localities of northern California, Oregon, Utah and Nevada. — *A. purpurascens* H. Edw. is distinguished from typical *monticola* by the intense purplish lustre of the entire hindwings and the apex of the forewings. Rather common in the neighbourhood of Soda Springs in northern California.

*rhodope.*

*A. rhodope* Edw. (87 c) may be regarded as the northern representative of the preceding species. ♂ above fiery fulvous, both wings having the inner half heavily obscured with brown; the black markings very heavy and confluent, particularly the median band on the hindwings. The outer border broadly black, slightly interrupted by a fine pale brown middle line, as in *atlantis*. Under surface of the forewings deep ferruginous, the subcostal and discal areas and a part of the cell dull buff; Between the spots at the end of the cell and the apex several bright straw-yellow spots; the upper spots of the marginal as well as the apical series generally well silvered. Hindwing deep reddish-brown from base to distal margin, somewhat paler on the line of the usual submarginal band between the two outer rows of spots. The spots of the marginal row nearly always brightly silvered, the others mostly pale straw-coloured, only rarely sprinkled with a few silvery scales. ♀ above of a lighter and brighter red than ♂, with the submarginal fulvous spots paler than the ground, and the markings heavy and broad, as in ♂. The under surface does not differ from that of the ♂, except that the forewings have the inner half deep cinnamon-red; the spots as in the ♂. Expanse: ♂ 2,2'', ♀ 2,4''. Originally described from 3 ♂♂ 1 ♀ captured by CROUCH in 1873 on the Fraser River in British Columbia, on the road from Bates Village to Beaver Lake; later MORRISON collected a series near Mount Hood in the State of Washington (ELWES) and on Vancouver.

*sakuntala.*

*A. sakuntala* Skinner is closely allied to the preceding species as well as to *monticola*; but the markings of the ♂ are not so intensely black as in *rhodope*, and the fulvous colour is less brilliant. Underneath the forewings resemble those of *rhodope*, but are likewise duller and paler. On the hindwing the submarginal band very distinct, buff, not obscured by the dark brown ground-colour as in *rhodope*. The 7 spots of the second (submarginal) row larger, and marked only inwardly with black, whereas in *rhodope* they are completely surrounded by black. The outer submarginal lunules not silvered. Basal area brick-red, instead of reddish-brown. ♀ like the ♂, but paler, with the submarginal lunules on the under surface of the hindwings silvered. Described from 4 ♂♂ 1 ♀ from Ainsworth (British Columbia) and Keslo. Types in the collection of the Academy for Natural Science in Philadelphia. GORDON HEWITT has also captured it in the Canadian province of Alberta. Whether and in what way *sakuntala* is related with *rhodope*, or whether it is a species of its own, cannot be decided at present from the available material.

*behrensi.*

*A. behrensi* Edw. (86 c). Forewing narrow, moderately arched. ♂ above dull fulvous, with heavily obscured base and feeble markings of dull black. Forewings bordered by two very fine marginal lines enclosing a series of quite small fulvous spaces separated by the nervules. The submarginal lunules as well as post-discal spots reduced; otherwise marked like *A. hesperis*. On the hindwings the submarginal lunules large, not touching each other, but the postdiscal row of rounded spots feebly developed, and the median spots united to form an uncommonly fine, angled band, much as in *hesperis*. Under surface: Forewings pale fulvous or buff, the basal area and veins ferruginous, apex and termen dark brown. The subapical and upper marginal spots well silvered. Hindwings dark reddish-brown throughout, much as in *aphrodite*, the submarginal band between the outer rows of spots faintly indicated by a narrow streak of pale violet-brown. All the spots distinctly and brightly, the costal margin near the base, and the abdominal margin but feebly silvered. The ♀ does not differ materially from the ♂, except in the somewhat larger size and paler colour of the



upper surface: the marginal lines on the forewings are broadly confluent, leaving no pale space between, and the submarginal lunules as well as the other dark markings somewhat heavier. Underneath exactly as the ♂, the submarginal band, if anything, even less distinct. Expanse: ♂ 2,2", ♀ 2,4". The early stages have not been studied. The types came from Mendocino in California.

**A. halcyone** Edw. (87 c). Forewings produced and narrower than in the preceding species. ♂ above *halcyone*. fulvous, inclining to yellowish, very slightly obscured at base, the black markings sharp and distinct; marginal lines separate, leaving a narrow fulvous space. The median spots on the hindwings confluent so as to form a continuous band. Otherwise the markings of the upper surface correspond to those of the allied species, holding about the middle between *hesperis* and *monticola*. Under surface of the forewings pale reddish-yellow, obscured at the base, pale buff at the end of the cell and on the costal margin before the apex. The subapical and upper marginal spots pale, generally very little silvered. The hindwings have the inner two thirds deep red-brown, clouded with buff. Outer margin likewise dark brown, paler at the anal angle. Submarginal band buff, somewhat invaded by the basal shade. All the spots well silvered, as also the costa near base and the abdominal margin. ♀ considerably larger than ♂, with the black markings heavier. On the under surface of the forewings the base and inner margin suffused with red. On the hindwings the marginal band less distinct than in ♂, sometimes shaded with olive-brown. Silver spots large. Expanse: ♂ 2,5—2,6", ♀ 3—3,3". Early stages not known. *halcyone* has been regarded by some authors as a variety of *aphrodite*; it was first described from 2 ♂♂ captured by Dr. VELIE in Colorado; the ♀♀ were discovered very much later by MORRISON in southern Colorado. The species is also mentioned from the adjoining districts of the State of Utah, but has always been rare in collections. — **A. arizonensis** is the name of a southern form from Arizona, distinguished *arizonensis*. from the Colorado form by the much smaller silvery spots on the underside of the hindwings in both sexes, and the shorter subcostal tuft of hair in the ♂.

**A. platina** Skinner (86 c) takes in eastern Utah the place of the closely allied *A. coronis*; of which it *platina*. is possibly only a variety. ♂ above rather pale buff to brown-yellow; the black markings heavy in the slightly obscured basal half, in the distal half, however, relatively narrow and thin; especially the marginal lines very fine, and the roundish postdiscal spots feebly developed. Under surface of the forewings rosy pink in the inner half, otherwise as in *coronis*, the subapical and upper marginal spots distinctly silvered. On the hindwings the spots large, very brightly silvered, strongly contrasting with the greenish-grey ground. Between the two outer macular rows a rather broad, pale buff submarginal band standing out clearly from the ground-colour. ♀ characterized by the reddish-brown colour of the under surface of the hindwings. Found in Idaho and Utah.

**A. chitone** Edw. (87 c), from California and the adjacent States, has in both sexes the upper surface *chitone*. duff fulvous, obscured by brown at the base, with moderately heavy black markings. Under surface of the forewings from base to outer half pale yellowish-fulvous, the apical area and the nervules shaded with deep ferruginous. Marginal spots buff, without any silver. Under surface: Hindwings of the ♂ pale ochreous-brown, clouded with buff; submarginal band broad, clear buff; outer margin brown. All the spots small and imperfectly silvered. ♀ very much like the ♂, but always with the outer row of spots well silvered, the others only exceptionally with a few silvery scales. Expanse: 2,25—2,5". California, Arizona, Nevada and Utah.

**A. coronis** Behr (♀ = *nevadensis* Edw.) (85 e, 86 a). The ♂ on the upper surface yellowish or reddish- *coronis*. brown, the base slightly obscured with fuscous. The dark markings, especially in the distal half, not heavy, but very distinct. Mesial band rather heavy on forewing, light on hindwing. Under surface of the forewings buff, varying to rufous, with the basal area and median nervules orange fulvous. Subapical and submarginal spots more or less perfectly silvered. Hindwings brown from base to outer third, mottled with reddish, in the discal area with buff; submarginal band narrow, clearly defined, pale yellowish-buff. All the spots large, egg-shaped and, like the costal margin at the base and the abdominal margin, well silvered. ♀ somewhat paler than ♂, with the markings heavier, and the basal area more broadly obscured; the marginal lines confluent on the forewings, the spots enclosed by the submarginal lunules nearly white. Under surface very much as in ♂, only more brownish on the inner half of the hindwings. The colour of the under surface is highly subject to variation: Whereas in southern California (near Gilroy) normal specimens are the rule, specimens from Mount Shasta (in the North), from Washington (Judith Mountain, MORRISON coll.) and Alberta (GEDDES) are much lighter, the ♂♂ cinnamon-red, the ♀♀ pale fawn colour. One ♂ from Nevada captured by MORRISON, has the underside decidedly yellow, mottled with pale grey, while another ♂ from Utah (NEUMOEGEN) has almost no mottling, but is nearly clear yellow over the whole hindwing and all of the forewing, except just at the base. The ♀ figured by EDWARDS in Vol. I of his Work on North American Rhopal-



cera as *nevadensis*, is really a form of *coronis* with very pale under surface, taken by him at Virginia City in Nevada. Later, in 1878, after MEAD and MORRISON had brought from Nevada a goodly number both of *coronis* and of the true *nevadensis*, the error was cleared up. *nevadensis* ♀ is always easy to recognize by the green colouring of the under surface. Expanse: ♂ 2,1—2,5'', ♀ 2,5—3''. The range of *coronis* extends from southern California through Oregon and Washington to southern British Colombia, in the East to Utah, Nevada, Montana and Alberta (Crows Nest, GEDDES); but in Colorado it has not been found so far.

*snyderi*. **A. snyderi** Skinner (86 b) is rather larger than the preceding. ♂ above pale tawny, the basal area slightly obscured by fuscous, the black markings moderately heavy, at the termen indeed very fine, but sharply defined against the light ground-colour. Under surface of forewings with 2 subapical and 5 submarginal spots, all distinctly silvered. On the under surface of the hindwings the greyish-green ground-colour is interrupted by a narrow submarginal band of pale buff; all the spots large and well silvered. ♀ very much like ♂, but on the underside the hindwing has the ground-colour from base to outer third brownish instead of grey-green. Expanse: ♂ 3,0'', ♀ 3,30''. Early stages, like those of the preceding, unknown. Its home is Utah, where it occurs together with *coronis*.

*liliana*. **A. liliana** H. Edw. (86 c) stands about midway between *A. coronis* and *callippe*. ♂ above fulvous, varying from pale to dark, the black markings rather slight. On the hindwings the median spots united into a fine, continuous band; the light submarginal and discal spots generally paler than the ground-colour. Under surface of forewings pale buff, the basal area and inner margin to below the cell light brown, sometimes redbrown, the median interspaces and the end of the cell yellowish; some specimens have also the veins in the discal area dusted with reddish; before the apex a brown patch with 2—3 silvery spots; also the upper 5 submarginal spots heavily silvered. Hindwings brown, but little mottled with buff; submarginal band narrow, brown-ochreous; the spots large and well silvered. ♀ much paler than ♂, with the marginal spots on both wings very pale. Under surface very much like that of ♂, the basal area and the nervules of the forewing more red. Expanse: ♂ 2,2'', ♀ 2,4''. Egg yellow; conoidal, at top truncated and somewhat depressed, the height not exceeding the diameter of the base; with 22—23 vertical ribs which are as in other species of the genus. From eggs that were laid in the first half of July, the larvae emerged in 13 days, going at once into lethargy (EDWARDS); but nothing is known of their further development. — *ab. baroni* Edw. refers to an aberrative form deviating from typical specimens in the abnormally heavy black markings. The two marginal lines on the upper surface of both wings very heavy; the submarginal lunules united into a broad continuous band. Also the round postdiscal spots are united to a band reaching from Costa to upper median nervule, with 2 black spots below it in the median interspaces. On the under surface the submarginal silver spots on the forewing are united into a solid bar, the corresponding lunules on the hindwings being changed in like manner. The 3 anterior costal spots of the second row confluesce into a single large spot. *liliana* is found in northern California (Type from Napa Co.). Specimens from near Los Angeles (GODMAN and H. J. ELWES) greatly resemble *callippe* with which the species generally is found.

*laura*. **A. laura** Edw. (87 b). ♂ above deep reddish fulvous, with both wings slightly obscured at the base and with heavy black markings; the broad marginal lines enclose a few small spots of the ground-colour. The discal spots on the hindwings are lighter in colour than the ground. On the under surface the forewings are reddish-orange, the apex and inner margin buff; the apical and anterior marginal spots mostly well silvered. ♀ much paler than ♂, otherwise very similar. Expanse: ♂ 2,2'', ♀ 2,4''. *laura* replaces *A. coronis* in Nevada; being possibly only a form of that variable species. Outside of Nevada it is found also in northern California, Oregon and Washington.

*macaria*. **A. macaria** Edw. (88 a) is closely related to both *coronis* and *laura*, being even of smaller size than the latter. ♂ above brighter fulvous than *coronis*, the black markings very light. The median spots, especially on the hindwings, dissolved into single short thin striae, the discal spots quite insignificant. Both terminal lines exceedingly fine; but the base of both wings heavily obscured with fuscous. Forewings above orange-red, the apex yellowish-buff; the upper submarginal spots slightly silvered. The hindwings have the distal area yellowish, the discal and basal areas mottled with brown, the submarginal band clear buff. All the spots large and heavily silvered. ♀ paler than ♂. On the hindwings the median spots corresponding to the second silvery row underneath much paler than the ground. The black markings even lighter than in ♂. Expanse: ♂ 2,0'', ♀ 2,2''. The life history is not known. A rare species, confined to California and Nevada.

*callippe*. **A. callippe** Bsd. (85 e). Forewings produced, narrow, moderately arched. ♂ above dull fulvous, with the basal area broadly obscured, both wings at the inner angle, and almost  $\frac{2}{3}$  of the hindwings dusted with blackish; all the nervules broadly edged with black; terminal border black, submarginal lunules heavy, connected with one another



and with the terminal border, enclosing on both wings small, triangular, pale marginal dots which, like the almost quadrate light discal patches on the forewings, contrast vividly with the dark ground; this is even more marked in the oval spots on the discal area of the hindwings corresponding to the row of silvery spots underneath, which are paler buff than the rest. Under surface of the forewings yellowish buff, at the base and on the lower nervules dusted with fulvous. Hindwings dark fulvous to the outer third, with the submarginal band clear buff; the spots large and well silvered. ♀ on the whole paler than ♂, the discal area of both wings as well as the median and submarginal spots on the hindwings nearly whitish; the black markings even heavier than in ♂. Also underneath it resembles the ♂, but is slightly paler. *callippe* is easily recognized by the deep obscuration of the basal areas of both wings and by the striking contrast formed by the uncommonly pale colour of the discal and median spots with the dark ground. Expanse: ♂ 2,3'', ♀ 3,0''. According to Dr. BEHR, *callippe* is very common throughout California, especially in the lower parts of the country. Near San Francisco it is by far the commonest *Argynnis*, flying in June together with the much rarer *liliana* and *semiramis*. About its habits WRIGHT writes from San Bernardino: "*callippe* is found from the sea-coast up to an altitude of about 2500 ft., preferring the dry, deep, sheltered valleys. Its season is rather short, lasting only about 5 weeks, and everything indicates that there is but one brood. The ♂♂ appear about on the 20th of May; they fly restlessly about, only rarely alighting on some flower to sip a little honey. In the beginning of July the ♀♀ appear; these, in contradistinction to the ♂♂, fly but little; one sees them generally near and among the dead twigs and branches of the shrubs growing on the steep slopes, in whose scanty shade certain species of violets thrive in spring, the leaves of which die off already in June; they are never seen to grow on the bottom of the valleys, only on the sloping sides; nor do the ♀♀ ever seek out green, fresh-looking plants, but flutter or crawl about between the dried-up leaves and twigs; as soon as a favourable place is found, they push their body as far as possible into the loose rubbish or half-decomposed leaves, depositing one or more eggs, after which they seek another similar place to repeat the same game. The larvae are hatched after about 12 days and go at once in lethargy, in which state they spend the entire summer and following winter until early spring. In spring-time I never succeeded in finding a single caterpillar".

**A. juba** Bsd. from California is, according to its author, so closely allied to *callippe* that it may be regarded as a local race. Both sexes have the upper surface bright fulvous, but without the blackish tinge characteristic of *callippe* ♂. Underneath it differs very little from that species. EDWARDS, on the other hand, inclines to the belief that it is a form of the highly variable *coronis*, representing a transition to the *callippe* group; LORQUIN again treats it as a separate species. Whichever view is correct, can only be decided by breeding experiments.

**A. nevadensis** Edw. (86 c, d) stands in the markings of the upper surface and in the form and size *nevadensis*. of the silvery spots nearest *edwardsii*. ♂ above pale yellow-fulvous, but slightly obscured at base. Termen bordered by 2 rather heavy black parallel lines enclosing a narrow fulvous streak intersected by the nerves, and joining the rather fine, confluent submarginal lunules. The black discal spots reduced, but very distinct, similar to those of *edwardsii*. The median band on the hindwings confluent. Forewings on the under surface pale buff, the basal area suffused with reddish as far as the cellular spots; the apex and posterior submarginal spots greenish olivaceous, the upper submarginal and the subapical spots well silvered. Hindwings greenish, with moderately broad, but sharply defined, submarginal band of dull buff, and strikingly large, very pronounced silver spots. Abdominal margin and the basal portion of the costal margin likewise silvered. ♀ like the ♂, but larger and somewhat lighter; the outer border of the forewings more broadly black, enclosing some insignificant traces of fulvous spots. The light patches enclosed by the submarginal lunules, and the discal spots corresponding to the second silvered row of the hindwings pale buff. The forewings underneath as in the ♂, pale buff, but with the base and inner margin deep fulvous red. Hindwings underneath like those of the ♂, but the green colouring darker and more lustrous, mottled with pale olive, and adorned with large and conspicuous silvery spots. Expanse: ♂ 2,25'', ♀ 2,4—2,6''. Nothing is known of the earlier stages. *A. nevadensis* is a wide-spread species, being found in the mountainous parts of Utah, Nevada, Wyoming, Montana, Washington and the adjacent parts of British Columbia, but apparently always local. H. EDWARDS was the first who discovered it, near Virginia City in Nevada. "It particularly abounds in the warm ravines (cañons) near Washoe Lake, a lovely mountain-lake 2 miles wide and 7 long, situated 6500 ft. above the level of the sea in the lower mountains, the highest elevation of which is Mt. Davidson, on the slopes of which Virginia City is built. In spring the borders of the lake are covered with the most luxuriant vegetation, in which Compositae, Violaceae and Liliaceae play an important part. Here *A. nevadensis* abounds; but on account of its rapid, restless flight its capture is, like that of most mountain-butterflies of the Rockies, enormously difficult and laborious in that wild and broken country. Just to get to those places, the collector



must often tramp for miles over perfectly arid and, steep hills, where there is neither path nor any trees to afford shelter from the sun; sage-brush everywhere; springs of water are exceedingly scarce, and he may consider himself lucky if during an entire day's climb he finds a few drops of water" (EDWARDS). The species was by Dr. STAUDINGER and MOESCHLER regarded as identical with the European *aglaja*, but the whole appearance, the shape of the wings, the form and arrangement of the silver spots and the colour of the under surface in both sexes differ so much, that they cannot even be classed with the same group (ELWES).

*meadii*. **A. meadii** Edw. (87 c) was by some authors treated as a form of *A. edwardsii*; but the difference between them appears too great and constant; rather one might take it for an extreme, dwarfed variety of *A. nevadensis*. Forewing, in contradistinction to *edwardsii*, but slightly arched, with moderately produced apex. Upper surface rather darker, deeper yellow-fulvous than in *nevadensis*, but little obscured at base, the veins broadly dusted with blackish, and the median band narrow, confluent on the hindwing. Under surface of forewings pale cinnamon-brown at base and along the veins on the disk, the remainder light buff, except the apical area and outer margin which are deep green. The upper submarginal as well as the 3 subapical spots well silvered. Hindwing wholly of a glossy, rather dark golden green, with a strong silky lustre that distinguishes this among all other American *Argynnis*. The submarginal band but faintly indicated by a pale yellow streak between the two outer rows of silvery spots. All the spots as well as the costa at base and the abdominal margin well silvered. ♀, as in the preceding species, very much like the ♂, deviating only in the paler colouring and heavier markings. The sexes are approximately of the same size, about 2.2". The early stages not known. *meadii* is found among the mountains of Colorado (Turkey Creek Jn., June, MEAD), in Utah, Montana (Dr. HAYDEN) and the Canadian province of Alberta.

*edwardsii*. **A. edwardsii** Reak. (= *aglaja* Edw.) (86 d) is, in the same way as *aphrodite* with *cybele* and *atlantis*, closely allied to *nevadensis* and *meadii*, from which it differs above in the brighter ground-colour, the broader obscuration of the basal area, the broader black termen, especially of the ♀♀, and the olive-brown tint of the under surface of the hindwings. On the upper side the ♂ has the submarginal lunules connected with each other and the inner terminal line, enclosing small spots of a paler shade than the ground-colour. On the hindwings the discal spots rather much reduced. Under surface of forewings with the base pale reddish and with similarly tinged nervures; the outer half pale buff, only the apex and inner margin suffused with greenish. Submarginal spots well silvered. Hindwings light olive-brown, mottled with yellowish. The buff submarginal band narrower than in *nevadensis* and *meadii*, strongly invaded by the dark ground-colour. The silverspots distinct. ♀ above even more obscured than ♂, almost resembling *callippe* which it approaches also in the uncommonly pale colour of the submarginal lunules on both wings and especially of the discal spots of the hindwings. On the forewing the apex rather paler than the ground. Underside as in ♂, but the apex and outer border of the forewings as well as the entire hindwing of a deeper olivaceous tint, on which the yellowish mottling of the ♂ appears as a very faint streak; the submarginal band reduced even more than in ♂, not rarely completely absent or but slightly indicated, much as in *aphrodite*. The spots are large, those of the outer row triangular, thinly edged with black proximally. Expanse: 2.8—3.3". Originally described from specimens captured by RIDINGS in August 1864 in the mountains near Empire City (Colorado). The early stages, described by EDWARDS in Can. Entom. Vol. XX, p. 3, are very similar to those of *A. atlantis*. Outside of Colorado it is also found in Nevada and Utah, but apparently always at higher altitudes than *nevadensis*.

*rupestris*. **A. rupestris** Behr. (87 c). ♂: Upperside of forewings deep fulvous, the obscuration of the basal area almost reaching the mesial band, which latter is, like all other markings, very heavy. Under surface buff, at base and inner margin suffused with reddish; near the apex a slight ferruginous patch; the submarginal lunules brown, darkest posteriorly. Marginal spots pale buff, without any silver. Hindwings likewise dull buff, shaded with cinnamon-brown, varying from pale to dark. Submarginal band buff, at the lower end somewhat invaded by the darker ground-colour. None of the spots silvered, only sometimes sprinkled with a few silvery scales. ♀ above resembles ♂, but the marginal and other markings much heavier, the ground paler, in the discal area rather yellowish; the submarginal spots whitish. Under surface brighter coloured than in ♂. Forewings from base to below the upper median nervule and along the veins on the disk uniformly light red, beyond buff. Hindwings as in ♂, only the spots always more or less silvered. Expanse: ♂ 2.0", ♀ 2.2". Nothing is known about the life-history. *rupestris* is not scarce at higher elevations on Mt. Shasta in California, and on Mt. Bradley and the Weber Mountains in Utah.

*semiramis*. **A. semiramis** Edw. (87 d) combines the characteristics of *A. coronis* (under surface) and *A. adiante* (upper surface); indeed some authors regard it as a southern, prairie-form of the former. ♂ above bright fulvous,



the black markings strongly reduced, as in *adiante*, especially on the hindwings. On the under surface the forewings from base to outer half cinnamon-red, beyond that buff. Apex and termen brown; the upper marginal and 2 subapical spots well silvered. Hindwings rusty-brown from base to the brownish-yellow submarginal band, mottled with lighter brown. All the spots well silvered. ♀ above like ♂, with the dark markings somewhat heavier. Under surface of forewings uniformly reddish as far as the apex, only the upper angle of the cell buff. Hindwing generally fawn-coloured with the submarginal band somewhat lighter; some specimens have the ground-colour much darker, with the band very distinct. The silverspots very prominent. Expanse: ♂ 2.6'', ♀ 2.8—3.0''. *semiramis* is quite common in the neighbourhood of San Bernardino in southern California, especially in the mountains separating the S. Bernardino Valley from the Mohave Desert.

**A. inornata** Edw. (86 e) resembles in its markings *rupestris*, but is much larger and somewhat paler. *inornata*. Forewings strongly arched, produced apically. ♂ above bright fulvous, much obscured from base to mesial band; the two marginal lines united to a broad band. The black markings moderately heavy, only at the disk rather thin. Under surface of the forewings cinnamon-brown, the apex buff. Hindwings reddish-brown to the second row of spots, the submarginal area clear buff, slightly shaded with the dark ground-colour toward the anal angle. All the spots large, pale yellow, without any silver. ♀ above rather paler than ♂, the basal area deep orange-red, the outer portion, and especially the discal and marginal spots on the hindwings faded to whitish-yellow. Under surface of the forewings orange-red instead of cinnamon-brown. Hindwings pale greenish-brown, mottled with yellowish. The spots very large, but generally not silvered, only in some exceptional cases sprinkled with a few silvery scales. Expanse: ♂ 2.5'', ♀ 2.7''. Originally described from a ♂♀ from Downieville (California), *inornata* is also found in Nevada (Virginia City, EDWARDS), but is rather rare in collections, being extremely shy and, on account of its rapid, restless flight, very difficult to catch. It never alights on flowers, but settles, in order to rest, on the leaves of trees, never for more than a second at a time, very different from *zerene* and *monticola*.

**A. atossa** Edw. (86 d) closely approaches the following *adiante*. ♂ above bright fulvous, but slightly obscured at the base. The markings all very greatly reduced, almost entirely absent on the hindwings. Outer margin of both wings bordered only by a single fine line, otherwise almost unmarked, only on the forewings we find at the inner angle 3 small spots, being all that is left of the usual submarginal lunules. Under surface of both wings pale buff, suffused with bright red at base and inner margin of forewings; on the hindwings the basal and discal areas very feebly obscured; all markings in cell, at apex and termen obliterated. The spots on the forewing and hindwing without any silver, frequently very faint altogether and hardly recognizable. Expanse: ♂ 2.4'', ♀ 2.8—3.0''. *atossa* is a very rare species, or possibly only an extreme variety of *adiante* Bsd. from southern California. The exact locality where the ♂ type was found, is unknown; but in June 1889 BURRISON captured several ♀♀ near Tehachape, in a little side-valley by the border of a narrow stream, 4 miles from town, at an elevation of about 4200 ft. In June 1905 F. GRINNEL took on Mt. Pinos among a lot of typical *A. eurynome* a specimen of *atossa*, which was by COOLIDGE regarded as an extremely light form of *eurynome*. Since then nothing has been heard of this species.

**A. adiante** Bsd. (= *adiaste* Behr) (86 d). ♂ above bright fulvous, lightly obscured with fuscous at base, *adiante*. the black markings rather slight, especially on the hindwings where the median band has been reduced to a thin, broken line; the submarginal lunules small, not joining the marginal line; the postdiscal spots on both wings minute. Under surface of the forewings pale fulvous, the apex much lighter, the basal area orange-red. The markings of the outer half almost completely obliterated. Hindwings light buff, shaded with pale fawn-colour proximally. Termen brownish, all the spots without any trace of silver, grey-yellow, finely margined with brown proximally, sometimes hardly visible. ♀ very much like ♂, but with the markings of the upper surface heavier, the basal area as well as the inner half of the forewings beneath tinged with deeper red. *adiante* is a very constant form, which, unlike most of the other Californian *Argynnis*, seems to develop neither variations, aberrations or local races (BEHR). It does not occur on the coast, but only in the interior of southern California (near Los Gatos, near Scarsville in Santa Clara Co.); in some years it is rather common, but always local. Its southern limits are not yet known.

**A. artonis** Edw. (87 d) represents a transition from *adiante* to the *eurynome*-group, being the first *artonis*. of a group of forms which are all more or less related to *eurynome*, and are by many authors regarded as mere varieties or local races; whether this is just, cannot at present be decided, on account of our scant knowledge of the life-history of these forms. Only of *eurynome* and *egleis* we know the early stages. ♂ easy to distinguish from *eurynome* ♂ by the entire absence of silvery scales on the spots of the under surface, which are, moreover, not so long nor so much produced as in that species. Under surface without the dark



terminal markings. ♀ very much like ♂, but the markings heavier, standing out very distinctly against the dark ground; the marginal spots enclosed by the lunules very light in colour and relatively large. On the underside the forewings are suffused with red, very much as in *adiante* ♀. Expanse: ♂ 1,75—2,0'', ♀ 2,0—2,15''. Its home is Utah, Arizona, Colorado and Montana.

*clio*. **A. clio** Edw. (87 d) is, after *bischoffi*, one of the most northern representatives of the *eurynome* group. Both sexes have the upper surface more brilliant and deeper fulvous than in *eurynome*, in the ♀ paler than in ♂, with the markings not very heavy and the base moderately obscured. Terminal border fairly broad, especially in ♀, the marginal spots enclosed between it and the submarginal lunules, standing out distinctly from the darker ground-colour. As in *artonis*, the spots on the under surface are entirely devoid of silver. Altogether these two species have so much in common that it is difficult to always distinguish them with any certainty. Expanse: ♂ 1,8'', ♀ 1,8—1,9''. This species or variety is confined to the higher mountains of Montana and Alberta (ELWES, GEDDES).

*opis*. **A. opis** Edw. (87 e) is the form of British Colombia; its size is considerably less than even that of *clio*; from *eurynome* it differs, aside from its inferior size, in the very pronounced obscuration of the base and abdominal margin on the upper surface in both sexes, and in the heavier markings on a duller ground. With the exception of the species of the *Brenthis* group, it is the smallest of all American *Argynnis*. Forewings short and slightly arched; the lower part of the basal area and the inner margin densely covered with brown hair. In the ♂ the under surface of the forewings is very slightly, if at all, tinted with red at the base, and the submarginal spots are nearly obsolete. Hindwings with discal area pale ochreous, faintly mottled with reddish; submarginal band indistinctly marked by a faint pale streak. All the spots pale, dull ochraceous, not silvered. ♀ deeper fulvous, with both wings heavily obscured from base to median band, and all the markings heavier than in ♂. Underside of forewings tinted with red throughout, except at apex which is ochraceous. Hindwings as in ♂. Expanse: ♂ 1,5'', ♀ 1,6''. The type was captured by G. R. CROUCH in 1873 on Bald Mountain, in the Caribou District of British Columbia.

*bischoffi*. **A. bischoffi** Edw. (87 d) represents the *eurynome* group in the far North. ♂ above bright fulvous, the base of the forewings and the inner half of the hindwings deeply shaded with purplish-black, so as to conceal the markings. Both wings bordered with moderately heavy terminal lines enclosing a series of small fulvous spots which may be obsolete on the posterior half of the forewing. Otherwise the upper side as in *eurynome*. Underside of forewings buff, with the basal and discal areas reddish. Hindwings pale buff, the inner two thirds shaded with greyish-green. Submarginal band clear buff; the spots on the under surface in the majority of cases simply buff, without any silver, occasionally almost obsolete; in other cases they are fairly well silvered. ♀ above very pale buff, slightly laved with reddish distally. All the markings deep black and heavy. On the forewings the base, on the hindwings more than the inner half deeply obscured with black; both marginal lines united into a broad, solid black band; between this and the submarginal lunules a series of almost white spots. Besides these and a narrow pale streak in the outer discal area of the forewings and at the apical end of the costal margin, and besides the dirty white spots corresponding to the second row beneath, there remains nothing of the pale fulvous ground-colour. Underside very much as in ♂; also here the spots may or may not be silvered, but the silvering generally predominates. Expanse: ♂ 1,8'', ♀ 1,9''. Its home is Alaska; the types were captured near Sitka in the middle of July.

*eurynome*. **A. eurynome** Edw. (86 e). Forewings slightly arched, feebly produced apically. ♂ above bright yellowish-fulvous, but little obscured at the base. The black markings moderately heavy, the terminal lines frequently confluent so as to form a solid band. Submarginal lunules united, enclosing a series of fulvous spaces of the ground-colour. The rounded postdiscal spots small, the median spots connected by fine lines so as to form a delicate zigzag-band. Underside of forewings pale buff, shaded with cinnamon-brown at base and along the nervules; marginal and subapical spots well silvered. Hindwings yellowish, with the basal and discal areas mottled with light ferruginous or more often with pale olive-green. Submarginal band clear buff; all the spots, the basal portion of the costa, and the inner margin well silvered. ♀ marked very much like the ♂, but paler, with the dark markings, especially those at the margin, heavier. The marginal spots enclosed by the black lunules much paler than the ground-colour, occasionally almost white. The second row of silvered spots beneath is indicated above by a faint pale discal streak. Under surface as in ♂, but the forewings more heavily obscured with deep cinnamon-brown at the base. Expanse: ♂ 1,7—2,0'', ♀ 2,0''. — The egg resembles that of other known species, with 20 strong vertical ribs, intersected by shorter horizontal ribs, and marked with numerous horizontal striae. Colour at first honey-yellow, later on turning into purple. Neither the larva nor pupa are known. *eurynome* abounds in the mountains of Colorado, Montana, British Columbia and Alberta, where according to MEAD it flies on grassy fields along the streams. In Colorado it appears in the first half of June; in Utah, Arizona and New-Mexico it has not been observed so far. — **A. arge** Strecker, from California and Washington, is probably a variety of *eurynome*, connecting this with *montivaga*, but slightly different from *crinna*, or perhaps identical with *erinna* Edw. (86 e) which replaces the latter in the North, in Alberta and British Co-



lombia. Both combine more or less the characteristics of *eurynome* and *montivaga*, which explains that EDWARDS described in 1883 *A. erinna* as a variety of *eurynome*, but in the year following classed it in his Catalogue with *montivaga*.

**A. montivaga** Behr (87 e) was, together with *egleis*, regarded by STRECKER as a variety of *A. zerene montivaga* Bsd., whereas other authors, probably with better reason, treat it as a possible subspecies of *A. eurynome*, which it closely approaches in either sex, differing chiefly in the somewhat darker red of the upper surface, the rather heavier markings, and the absence on the underside, especially of the hindwings, of the olive-green tinge which is characteristic of typical *eurynome*, this being replaced by a mottling of reddish-brown. All the spots more or less perfectly silvered. Expanse: ♂ 1.8'', ♀ 1.9''. Found in the Sierra Nevada of California and among the higher mountains of Nevada (MORRISON).

**A. egleis** Bsd. (♀ = *mormonia* Bsd., *nenquis* Reak.) (86 e). Forewings relatively somewhat longer *egleis*. than in *eurynome*. ♂ above deep fulvous, a little obscured at base, with moderately heavy black markings on both wings and the mesial band on the hindwings continuous. Under surface of forewings pale fulvous, with the apex yellowish buff; base and inner margin as far as the median vein, as well as the median nervules tinged with reddish, the base not seldom quite red. Submarginal and apical spots may or may not be silvered. Hindwings brown as far as the outer third, sometimes mottled with purple; submarginal band brownish-yellow. The spots on the under surface either partly silvered, or pale buff without any silver. ♀ very much like ♂, but the ground-colour paler, occasionally much obscured over the basal areas. Under surface of the forewings deeper red, the purplish-brown shading of the inner half of the hindwings darker. The silver spots are, as in the ♂, greatly subject to variation; occasionally they are clear yellowish buff, without any trace of silver. Expanse: ♂ 2.2'', ♀ 2.5''. — EDWARDS succeeded in breeding it from eggs which he had received from Nevada. The egg is yellowish, following the general type. Very soon after leaving the egg, the caterpillars seek their winterquarters, going in lethargy. Full grown they measure about 1.2''; their colour is grey, mottled with brown, marked dorsally with a black stripe edged on either side with a dirty white line; the spines and bristles comparatively short, those on the back dull whitish, the rest yellowish, all with black tips. Feet pale brown, head black in front, yellow behind, covered with black hairs. Pupa very much as in other species; the wing-cases dark and glossy. *egleis* was first described by Dr. BEHR without a name, being designed as "No. 5" in his paper on Californian Argynnis (1862); he contrasted it then with his "No. 4" which he later named *montivaga*. *egleis* is much more common than the latter. It was not until 1869, that Dr. BOISDUVAL described it as *egleis*, including therein the ab. *irene* Bsd. Regarding *egleis*, its author says that *irene*. after comparing more than 100 specimens, he finds that the species varies to such an extent that even after eliminating all the specimens that passed as *irene*, there still remained a greater number running into one another and representing every possible transition. Specimens from Bradley (California) are mostly very dark, rather brown than fulvous, the ♀♀ generally well silvered. — **A. mormonia** Bsd. was founded on a *mormonia*. ♀ form which, according to EDWARDS, was nothing else but *egleis* ♀. He writes: "The original descriptions, which are in Latin, of *egleis* and *mormonia* afford no means of separating them; they only state that in *egleis* the spots on the under surface of the hindwings may or may not be silvered, whereas in *mormonia* they always are silvered. A comparison of the ♂ type of *egleis* and the type of *mormonia* Bsd. (♀) shows no other difference than can be explained by the difference in sex" (EDWARDS).

## 2. Subgenus: *Brenthis* Hbn.

**A. myrina** Cr. (= *myrissa* Godt.) (86 f). Upper surface fulvous, broadly bordered with black, the black *myrina*. markings, especially on the hindwings, rather light. Under surface of forewings yellowish fulvous, somewhat lighter at the inner margin, with the apex and upper part of the outer margin deep ferruginous. Marginal spots slightly silvered. Hindwings rusty-brown, mottled with buff, and with small, but very distinct and very bright silvery spots. The wide space between the median band and marginal lunules is buff at the middle, under the apex and above the anal angle shaded with dark fuscous. ♀ somewhat paler, otherwise like ♂. Expanse: ♂ 1.4'', ♀ 1.8''. Egg conoidal, about  $\frac{1}{3}$  higher than wide, with 16—17 vertical ribs, between which a number of delicate cross-lines. Its colour is pale yellowish-green. The mature caterpillar is cylindrical, blunt at the upper end, about  $\frac{7}{8}$ '' in length, dark olive-brown, marked with green, and with fleshy spines armed with very sharp points projecting at an angle of 45°, the anterior ones about four times as long as the rest. Pupa yellowish-brown, with darker brown spots, those of the thoracic and the two anterior abdominal segments with pearly lustre. *myrina* has in North America south of the Arctic circle a very wide range, without forming any variations worth speaking of. In this it differs from the European *selene* which in some respects it resembles. It occurs in the United States from the New England States to Montana, and throughout



Canada from Nova Scotia to Alaska; in southerly direction it extends from New England through New York and New Jersey, and on the higher hills of the Alleghanies to Virginia and North Carolina.

*tricularis*. **A. tricularis** Hbn. (= *ossianus* Bsd.) (Vol. I, pl. 67 g) is by many authors treated as a form of *A. aphirape*, from which it differs in the clearer ground-colour, the fine, but very sharp black markings of the upper side and the likewise distinct markings of the under surface of the hindwings which stand out very clearly from the ground. ♂ above pale fulvous, with the base of the forewings and the inner margin of the hindwings densely dusted with black. The dark markings finer than in *myrina*, particularly the outer border quite narrow, joining a series of sagittate spots. The median area of both wings with relatively large and very regular rows of dots, vividly contrasting with the ground. The light spots forming the median band of the hindwings beneath show through above lighter than the ground-colour. Under surface of the forewings fulvous, shaded with ferruginous at the apex, the termen paler. Hindwings rusty-brown, with two bright yellow spots near the base, a strongly curved median band and a patch of pale buff on the outer border at the middle. All the spots without any silver. ♀ mostly paler than ♂, the marginal spots enclosed between the lunules and terminal lines very pale, often almost white. The postmedian row of black dots as in ♂, very distinct, regular and relatively large. On the under surface the markings of the hindwings are even more distinct than in the ♂, representing three sharply defined yellow bands of irregularly shaped spots, one near the base and one on either side of the discal area. The round postdiscal spots of the upper surface reappear also underneath as small ocelli, like the small marginal spots pale yellow, very slightly silvered. Expanse: ♂ 1,5'', ♀ 1,6''. The early stages have not been studied in the American form. *tricularis* inhabits chiefly Arctic North America (Labrador etc.), but is also found, although more rarely, farther south among the higher mountains of the Rockies *ossianus*. in Colorado. — The common Labrador form has been described as *ossianus* Hbst., which is also known from Arctic Scandinavia and Siberia as a very variable form of *aphirape*. The colour above is paler yellow than that of *tricularis*; the markings of the under surface, especially on the forewings, sharper, with the terminal spots larger, more distinct, yellow, slightly silvered.

*helena*. **A. helena** Edw. (87 e) appears closely allied to the Siberian form of *A. selenis* Ev., differing from it in the much paler ground-colour and finer markings of the upper surface. ♂ above dull fulvous, heavily obscured with blackish at the base of the forewings and on the inner margin of the hindwings. The black markings of the upper side, especially the terminal border, much finer than in *myrina*. On the under surface the forewings are pale fulvous, shaded with ferruginous at the apex. Hindwing deep brown-ochreous, with 2—3 small pale spots at the base, a very sharply defined median band, composed of paler spots inclining to buff on the costa and the end of the cell, and with a marginal row of rather small yellow spots. ♀ above very much as ♂, only with the ground-colour paler; the light markings of the under surface, especially of the hindwings, much more conspicuous, bright yellow, standing out more prominently upon the dark ground. *helena* is an alpine species found in the Rocky Mountains of North America from New Mexico to Colorado and Montana. In the South, in New Mexico and Colorado, it rises to elevations of about 12000 ft.; in Montana one meets it already at 6500 ft. above the sea. It is a common species, rather subject to variation, especially in the intensity of colouring and the distinctness of the spotting of the underside. *helena* was in 1899 captured by YOUNG also in Alaska, in the mountains between Forty Mile and Mission Creeks. These specimens are somewhat smaller than typical *helena*, with the colouring rather less bright.

*montinus*. **A. montinus** Scudder (87 f). ♂ above fulvous, quite similar to *A. chariclea* ♂, of which, according to some authors, it probably is a local form separated long ago, but with the ground-colour much darker. Under surface of hindwings deep ferruginous, marked with white lines and spots, the most characteristic of which is a heavy white bar at the end of the cell, and a similar small spot at the base; a marginal row of white spots, slightly silvered. ♀ very much like ♂, but larger, with the upper side paler. Expanse: 1,5, ♀ 1,75''. *montinus* is found in the Eastern United States quite isolated on the desolate barren peaks of Mount Washington and the highest adjacent summits of the White Mountains of New Hampshire. Like the arctic flora of its surroundings, it is probably a relic of the ice-age, being, as STRECKER supposes, a possible descendant of the arctic *chariclea* which through its long isolation was changed to the present distinct form. It resembles most the Wyoming form of *chariclea*.

*chariclea*. **A. chariclea** Schn. (Vol. I, pl. 68 c). ♂ above fulvous, the black markings heavy and both wings strongly obscured at the base with fuscous. Under surface of forewings pale yellowish-fulvous, mottled with ferruginous at apex and outer margin; hindwings purplish-brown, mottled with whitish-yellow, and traversed by a median band of irregularly-shaped, pale yellow spots. Marginal spots as well as 2—3 basal dots white, sometimes feebly silvered, but mostly with resinous lustre. ♀ differs from ♂ in having the black markings, especially of the outer margin heavier and darker, and the uppersurface of both wings frequently heavily dusted with blackish; on the underside the hindwings have the spots more distinct, contrasting more sharply with the ground-colour. Expanse: ♂ 1,5'', ♀ 1,75''. We have no description of the earlier stages. *chariclea* is a circumpolar species of the far North, being found throughout Arctic Scandinavia, Russia and Siberia as far as Novaja



Semlja, as well as in Arctic North America, from Greenland to New Foundland and Labrador, advancing in the West rather far to the south. Whereas in the Eastern Hemisphere it is rather local and not very abundant, it is in America quite common among the highest summits of the Rocky Mountains, in Yellowstone Park, in British Colombia and Alberta (near Banff and Laggan). It is rather inclined to variation: *obscurata* M. Lachl. *obscurata*. is, after *A. polaris*, probably the most northerly representative of the genus *Argynnis*, being found in Grinnels Land and on the adjacent islands up to the 80th degree of northern Latitude, whereas in Greenland near Port Foulke and Ivigtut on the south-west coast, and on the east coast between the 74. and 76. degree we meet with var. *arctica* Zetterstedt (Vol. I, pl. 68 b), which also occurs in Novaja Semlja. Another form, quite identical *arctica*. with the Greenland form *arctica*, was captured by YOUNG in Alaska, in the mountains between Forty Mile and Mission Creeks, in July, together with *A. pales alaskensis* Holl. and *helena* Edw. — The form of Labrador and the Rocky Mountains was described as *A. boisduvali* Dup. — *arctica* from Greenland deviates, according to its *boisduvali*. author, both from *boisduvali* and typical specimens of the European *chariclea* in having on the under surface of the hindwings the silvery spot of the median band in cell 4 uncommonly large, clear white, triangular and produced distally to a sharp point, reaching far beyond the silvery spot in 3, showing a complete analogy with the Novaja Semlja form. — *butleri* Edw., described as an aberrative form of *arctica*, is distinguished by *butleri*. the darker colour of the upper surface and the uniformly fulvous outer half of the under surface of the hindwings. It flies together with the main form in western Arctic America (Kotzebue Sound, 67—68° N. L.) as well as in Novaja Semlja. *boisduvali* Dup. was treated by EDWARDS and others as separate species, but is not always easily distinguished from *chariclea*, chiefly by the darker ground-colour being more heavily obscured at the base and on the outer margin; on the underside of the hindwings the pale streaks are faintly suffused with violet, and the median band is densely dusted with yellow-or reddish-brown. Expanse: ♂ 1,5'', ♀ 1,75''. From Labrador to British Colombia and Alaska.

*A. pales* Schiff. (Vol. I, pl. 67 i) is another circumpolar species, found throughout northern Europe *pales*. and Central and Northern Asia, and discovered within recent years also in America (Alaska). Specimens from north-eastern Alaska (69° 40' N. Lat. and 141 W. Long.) have in the ♂ the ground-colour bright fulvous, with the black markings moderately heavy, the forewings dusted with fuscous at the base, the hindwing broadly shaded with greenish-black as far as the apex of the cell and nearly to the anal angle. Both wings densely clothed with hair in the inner half. Underneath it resembles *eupales* Fruhst. (Vol. I, pl. 68 b), in the uncommonly variegated markings of the hindwings. Forewings light fulvous, somewhat paler distally, with reddish-brown dashes at the apex and on the upper part of the termen, the black markings very faintly showing through from above. Hindwings cinnamon-brown, marked with greenish-yellow spots at the base, a strongly denticulate and deeply notched median band of yellowish-green colour, and the termen similarly shaded at the middle and apex. The median spots of the upper surface reappear underneath in the shape of small black-ringed ocelli; the marginal spots and a few patches in the median and basal areas slightly silvered. ♀ rather paler than ♂, with the black markings heavier and the greenish-black shading more extensive. Under surface as in ♂, but the gaudy markings of the hindwings even more pronounced, the greenish bands and spots contrasting more sharply with the darker ground. Expanse: 1,2''. — A somewhat different form, from Central Alaska, was described as ab. *alaskensis* Holl. (87 e). 1 ♂ taken in July 1899 in the Clondyke District, among *alaskensis*. the mountains between Forty-Mile and Mission Creeks. Differs from the northern form and from typical European *pales* in the extremely brilliant colouring of the upper surface, with the markings very fine and almost obsolete in the discal area. On both wings the black basal shading is much less pronounced, reaching at the most the middle of the cell. Above it resembles most *pales generator* Stgr. from Central Asia; underneath it quite agrees with normal *pales*. Expanse: 1,3''.

*A. freya* Thunberg (Vol. I, pl. 68 c) has an enormous range of distribution, extending from northern *freya*. Scandinavia through Russia and Siberia to North America, without varying to any extent. It is nowhere scarce on peatbogs and in swampy meadows. Specimens from Yellowstone Park differ in no way from those taken in Lapland or Siberia. But its range varies greatly as we go East: Whereas in Europe the species is almost entirely confined to the Arctic Region, hardly descending below Latitude 59°, its northern limits being Lat. 70°, we find it in Eastern Asia still between Latitude 50° and 60°, and in North America it descends at least to the 40th degree of N. Lat. (on the highest summits of the Rocky Mountains in Colorado), its northern limits being here about Lat. 64°, on the Forty-Mile Creek in the Clondyke District (YOUNG). This may only be explained by the more or less similar climate and flora of the more southern ranges of the Rocky Mountains. The upper surface of *freya* is pale fulvous, the forewings at the base, and the hindwings on the inner half deeply obscured with fuscous. All the markings very heavy. Under surface: Forewings very pale fulvous, with the apex yellowish and mottled with rusty-brown. Hindwings ferruginous, shaded with yellow in the inner half, marked with pale yellow or whitish spots and dashes and a series of small terminal lunules,



*tarquinius*. slightly silvered. Expanse: 1,4—1,5". — *tarquinius* Curt. refers to specimens from British Colombia and farther north, differing but little from the main form in their smaller size.

*polaris*.

*A. polaris* Bsd. (87 f, Vol. I, pl. 71 e) resembles the preceding species, but is more variable. Upper surface dull fulvous, the markings on the inner half of both wings broadly diffuse, almost obscured by the dark shading of the basal area. The median area defined outwardly by an irregular heavy undulate band. The submarginal row of spots regular and very distinct; the marginal border marked by black spots at the end of the veins separated by streaks of the light ground-colour. On the under surface the forewings are rather paler fulvous, with the markings almost as distinct as above; the marginal area with a series of yellowish-white streaks placed vertically to the termen. Hindwing deep ferruginous, the bands and spots whitish, with a faint nacreous lustre in the basal half, standing out clearly from the ground. *polaris* which also occurs in Europe, goes among all *Argynnis* farthest north. In America we find it from Labrador to Greenland (to 81° 52' N. Lat.), in Alaska about to Latitude 70°, whereas in Europe Latitude 71 is its northern limit. The Greenland form of which a number of specimens was collected by the second Norwegian Arctic Expedition of the "Fram" (1898—1902) on Ellesmere Land, in June and July, described as v. *americana* Strand, varies considerably in size (from 1,4—1,8"). From the Lapland form it differs, according to its author, on the under surface of the hindwings by the following characteristics: Norwegian specimens have in the median band the white spot in cell 7 more deeply notched on the inside and produced to two sharper points; in the terminal area the pale dash on rib 4 generally is more distinct, and the hindmost of the white basal spots (in cell 1 c) is longer and sharply pointed outwardly, whereas in Greenland specimens it appears bluntly rounded or cut off straight across. Finally the pale streak in the outer interspace seems more distinct in the European form. Specimens received by Prof. SEITZ from north-eastern Alaska (69° 40' N. Lat.) do not differ appreciably from the Palaearctic form.

*frigga*.

*A. frigga* Thunbg. (Vol. I, pl. 68 c) rather closely resembles *polaris* above. Pale fulvous, the markings heavy, rather diffuse; the black marginal lunules are confluent, forming a narrow, diffuse band, parallel with which is a row of submarginal spots. Forewings at the base and the hindwings on the inner two thirds heavily shaded with fuscous. Under surface characterized by the broadly cinnamon-brown apex and termen of the forewings which are otherwise pale fulvous, spotted with yellow at the apex of the cell. Hindwings cinnamon- or rusty-brown, the outer third laved with purplish-grey, especially at the outer angle; the median band dusted with brown, frequently only indicated by a few darkish, irregular spots standing out more or less prominently from the ground-colour. On the costa near the base a large, very conspicuous whitish rhombic spot. ♀ but slightly different from ♂ in that the spots on the under surface of the hindwings are lighter and more sharply defined. Expanse: 1,6—2,0". *frigga* is, like the two preceding species, a circumpolar, rather variable species, occurring as well in Europe (Finland) and Siberia as far as Novaja Semlja as in Boreal America, advancing in the western Hemisphere southward about to Lat. 40° (in Colorado). Several varieties have been descri-

*saga*. bed: *saga* Stgr., the most southern form, extending from Colorado where it is rather scarce, to Lat. 63°, and from the Rocky Mountains eastward to Labrador. It differs from the main form in having the pale whitish or yellowish portions of the underside of the hindwings partially obscured, the large spot at the costa excepted which

*improba*. remains white even in the still darker var. *improba*. — *improba* Btlr. is a much smaller, purely arctic form, found in America and in the farthest North of Siberia (MARKHAM), advancing both in the East and West of the American Continent to 68° N. Lat. (RICHARDSON). From the main form it deviates in having the ground-colour much darker, the markings more diffuse, the median band brighter yellowish, dusted with reddish-brown, and the costal spot on the under surface of the hindwings faintly tinged with bluish. A ♀ from Baffins-

*alaskensis*. land, in the Tring Museum, only measures 1,4"; — another ♀ received by Prof. SEITZ from north-eastern Alaska (69° 40' N. Lat., 141° W. Long.) = fa. *alaskensis* fa. nov. (87 c) is distinguished by its larger size (2,0"), and the much lighter, pale yellowish-fulvous colouring especially of the forewings; the latter have the median band broad, somewhat diffuse, but the base but slightly obscured and the postdiscal row of dots relatively insignificant. On the other hand the hindwings have the inner two thirds almost wholly deep grey-fuscous, with the exception of 3 small transcellular spots of the ground-colour, but the markings of the outer margin rather feeble. The under surface is on the whole somewhat paler than in the allied forms, the markings of the hindwings are more sharply defined, the pale median band of spots likewise distinct, dusted with reddish-brown, very much as in *saga*, and margined distally by a broad, uncommonly dark band of cinnamon-brown colour. Otherwise the underside does not differ from that of normal specimens.

*bellona*.

*A. bellona* F. (87 f) is, in contradistinction to the last-mentioned forms, a purely American species. The forewings have the termen angled and bluntly produced under the apex. Upper surface fulvous, the black markings of the basal half more or less confluent, in the outer half less developed. Under surface of forewings pale fulvous, shaded with purplish-brown at the apex and on the termen. Hindwings rusty-brown, the basal half



mottled with pale and dark, the outer half suffused with purple; two rows of median spots margined with dark ferruginous, a median band of small ocelli ringed with dark brown, and a series of submarginal spots of the same colour. At the costa near the base a large rhombic spot of pale violet. Expanse: 1,7—1,8". The egg and the young larva resemble exactly those of *A. myrina*, but when full grown, the larva differs from the latter in having the spines on the second segment of the same length as the others. According to MEAD it rather resembles that of *A. cybele*, which would be an other proof of the inadvisability of separating *Brenthis* as a genus of its own. *bellona* is very common throughout the United states of North America, from the Alleghanies in Virginia, where it only occurs at higher altitudes, to Canada, and westward to the foot of the Rocky Mountains. It flies together with *A. myrina*, being easily distinguished from it by the absence of the bright silvery spots on the under surface adorning that species.

**A. epithore** Bsd. (86 f) is a close ally of the preceding species, which it replaces in the western *epithore*. States, from Colorado to the Pacific Coast, being possibly even a variety of the same, as STRECKER a. o. have assumed. The forewings are much less excavated below the apex; the ground-colour paler fulvous, the black markings slighter, but the basal half of the hindwings much more heavily obscured with fuscous. The under surface resembles that of *bellona*, but is less brownish purple, mottled more distinctly with yellow, with the markings of the hindwings almost obsolete in the distal half. — var. **kriemhild** Streck. refers to *kriemhild*. a rather paler form from the arid, waterless mountains of Utah and Arizona.

**A. alberta** Edw. (87 f) is among all the other species of *Argynnis* easily recognized by the faded, *alberta*. dull reddish ground-colour; the markings resemble those of *helena*, but are much paler and partially almost obsolete, appearing as obscure, dark shadowy spots and streaks. On both wings the median bands dissolve into single short striae, barely visible on the hindwings. The under surface even more monotonous than the upper surface, pale red-brown, the hindwings rather paler in the outer half, slightly clouded with yellowish in the discal area, with yellowish-white terminal spots. The ♀ on the whole darker than the ♂, varying from slaty-grey to dark brown, both wings with a peculiar greasy lustre. Expanse: 1,6—1,9". Of the early stages only the egg and the young larva are known; the former pale yellow, conoidal, almost as high as broad, marked by about 40 vertical ribs; it takes 10 days to hatch the larva, which, like most American *Argynnis*, hibernates when quite young. *alberta* is not scarce on the higher mountains around Laggan in the Canadian province of Alberta, close to the boundary of British Columbia; it flies together with the much less common *A. astarte*, *Col. nastes*, *Chrys. snowi*, on the steep upper slopes of the mountains, the ♀♀ generally higher than the ♂♂. Whereas the ♀♀ fly about slowly, alighting frequently on flowers such as Dandelion etc., the ♂♂ spend most of their time racing restlessly up and down the slopes, flying so close to the ground that they appear to glide on the surface (EDWARDS).

**A. astarte** Dbd. and Hew. (= *victoria* Edw. 1891) (86 f). Upper surface bright fulvous; forewings slightly *astarte*. obscured at base, hindwings broadly shaded with fuscous, the dark area covering nearly half the wing. The black markings on both wings very heavy; on the hindwing the terminal border rather broader than on the forewing, slightly laved with paler between the nervules. The submarginal rows of spots small, rather obscure, the roundish discal spots as well as the dentate median band heavier on the forewings than on the hindwings. Underside of forewings pale fulvous, the inner part of the cell shaded with brownish, the subcostal spaces enclosing some small spots of faint orange-red. Underneath the markings of the upper surface are repeated, but reduced. The under surface of the hindwings a lovely orange-red, gradually getting paler toward the termen. Two blackish terminal lines, preceded by a series of yellowish-white spots separated by the nervules; in the outer portion of the disc a row of small roundish black dots indistinctly edged with white proximally. But the best characteristic is a broad band composed of irregular, whitish-yellow patches faintly margined with black, traversing the middle of the hindwing, strongly contrasting with the dark orange-red ground. ♀ very much as ♂, but with the markings even heavier, rather more diffuse outwardly. *astarte* approaches in size the true *Argynnis*, but, judging from the nature of its markings, belongs to the *Brenthis* group; expanse: ♂ 2,0", ♀ 2,2". The type of which DOUBLEDAY figured the less characteristic upperside as that of a new species of *Melitaea*, without, however, giving any description, is in the British Museum; although captured some time ago by Lord DERBY's collectors, probably in the mountainous part of British Columbia, it was later on mentioned in KIRBY's Catalogue as coming from Jamaica, for which reason it was not mentioned in STRECKER's Catalogue. It was not until, some time afterwards, that T. E. BEAN rediscovered it near Laggan (Alberta), close to the British Columbian border, in Lat. 51", in the valley of the Bow River. It is always found singly on the highest mountain peaks, not below an altitude of 8600 ft., away above the timber-line, at the end of July and during the first days of August. It is exceedingly shy and difficult to catch; its flight, especially that of the ♂♂, very swift; rushing and racing about on the desolate rocky slopes, with the wings in constant whirling motion, alighting but rarely



and only for a moment, it is scared by the least disturbance, and even the most careful approach of the collector seems sufficient to drive it to precipitate flight. *astarte* seems to occupy among the American *Argynnis* a rather isolated position, having no closer affinities except with *A. amphilocheus*, *elatus*, *erda* of the Amur Region (cf. Vol. 1, p. 233). It is a most constant species which varies neither individually nor sexually to any extent.

*youngi*. **A. youngi** Holl. ♀ above pale fulvous; the basal area of the forewings as far as the middle of the cell, that of the hindwings to its apex and to the tornus dusky greyish-brown. On the forewings the space between the spot in the middle of the cell and the K-shaped spot at its end, as well as the space surrounding the submarginal row of spots uncommonly pale, nearly white. Hindwing with broadly black median band which near the origin of the second median nervule gradually shades into the deep blackish-fuscous basal colour. Beyond the apex of the cell, between the median band and the dark basal area two strongly faded quadrate spots. Fringe white, on the veins fulvous. Under surface of the forewings uniformly pale fulvous with the markings rather slight. Hindwings in the inner half reddish ochreous, the median band only indicated by a faint pale streak; every spot margined by a delicate reddish line. From the origin of the 3. median nervule to the inner margin behind the median band a brown shade. Outer half very pale ochreous, almost whitish, with the discal and submarginal rows of spots but faintly indicated. Along the costa a regular fine silvery line. None of the spots are silvered, only the upper one in the median band, which is shaped like an hour-glass, is slightly silvered where it touches the silvery line. Abdomen and antennae blackish above, reddish underneath, legs evenly fulvous. Expanse: 1,2". Only 1 ♀ known, which was captured by YOUNG in north-eastern Alaska between Forty Mile and Mission Creeks.

The now following species belong to a rather isolated group of South American *Argynnis*, which, being entirely separated from their allies in North America, are confined to the temperate region of Western South America. Great uncertainty prevails as yet as to the synonymy of the forms belonging here; and it is probable that the greater number of the species established by BOISDUVAL, REED, BLANCHARD &c. a., may be synonymous or varieties of one and the same species.

*cytheris*. **A. cytheris** Drury (= *cytheris* Reed, *signa* Hbn., *lathonioidea* Blanch., *dexamene* Bsd.) (87 f). A most variable species ranging from Fireland to Northern Chile, and distinguished by the most highly developed sexual Dimorphism, both as to the shape of the wings and to the colouring and markings of the under surface of the hindwings. Therefore it is not to be wondered at that not only the forms which vary in colouring and markings, but also the different sexes were repeatedly described as separate species. In shape it resembles *A. lathonia*; the forewings, especially of the ♂, are distinctly and bluntly projected below the apex, and both wings are strongly denticulate; this appears less conspicuous in the ♂♂, but both sexes are distinguished by having on the hindwings the costal margin strongly concave. The upperside of the ♂ varies from dull brown to fiery fulvous, with the basal area but slightly obscured, the black markings of the forewings moderately heavy and sharp. Both wings with two terminal lines, the outer exceedingly fine, the inner one rather strong, broadly confluent in their upper portion. The median band of the hindwings is composed of small, isolated, crescent-shaped streaks, the marginal markings mostly greatly reduced. The under surface of the forewings pale cinnamon-red, with the black markings less distinct than above, and, especially in the apical area, almost obsolete. Apex deep cinnamon-red, only with a very distinct white costal streak. The colouring of the under surface of the hindwings is generally a more or less uniform deep red or cinnamon-brown, shading outwardly into a peculiar brownish-pink and being faintly suffused with yellowish at the anal margin. The black markings of the upper surface are very faintly repeated underneath in the inner half. In the middle of the wing a curved longitudinal streak of whitish or brownish-yellow follows the upper median nervule toward the termen; in addition a small pale yellowish-white cross-bar on the costal margin close to its extremity. The length of the median streak varies greatly, it being not seldom quite short and rudimentary. Some ♂♂ from Ushuaia (Fireland) have the under surface of the hindwings much paler, brownish-yellow, with a dark postmedian transverse band above which there are two, below 3 obsolete spots obscurely margined with fuscous. These ♂♂ represent in the less monotonous markings of the under surface a sort of transition to the much more varied underside of the ♀♀. These have the forewings strongly incurved below the apex, and both wings distinctly denticulate, the basal area very faintly obscured with fuscous. Forewings with the markings moderately heavy; the median band composed of isolated spots, the postdiscal spots relatively large and very regular, preceded at the costa by a white angular spot. The black terminal lines broadly confluent, joining at the apex the submarginal and postdiscal rows of spots. On the hindwing the markings much slighter, especially in the basal half; the median band barely indicated by very fine, curved striae. The submarginal spots on both wings are rhombic, distinctly separated from one another and the terminal border. On the under surface the forewings resemble those of the ♂, light cinnamon-red, much paler towards the termen, with the black markings rather diffuse, and obsolete in the apical area. Apex grey-fuscous, with a white dash on the costa and a clouding of ferruginous which also appears on the outer border at the middle. On the under surface the colour of the hindwing is greatly subject to varia-



tion. The inner half pale buff, yellowish-brown, fuscous-grey to cinnamon-brown, mottled with paler tints. The short white costal streak of the ♂♂ is enlarged in the pale-coloured ♀♀ to a narrow median band of whitish-purple reaching the inner margin, and accompanied proximally as far as the median vein by a dark narrow fascia, distally by a broader and somewhat darker band with 5 pale, dark-edged ocelli. Between this and the pale greyish-brown termen a narrow and strongly dentate, buff submarginal band, intersected in a most characteristic manner by the pale silvery white longitudinal streak which we also find in the ♂♂, and which is continued toward the base by another, paler, elongate triangular spot within the subbasal band. Occasionally we find in the basal area also a few obsolete dark dots. Fringe whitish, on the nervules black. The ♀♀ with dark brown under surface present a very different appearance, and if one compares the most extreme dark specimens with the lightest, one might easily take them for two different species. Specimens taken at Ushuaia (Fireland) in November and December are on the whole rather smaller than the more northern specimens from Puntas Arenas, measuring only 1,25" as against 1,8" in the latter; the smaller specimens (♂♂) are above more dull brown, with the under surface of the hindwings dark violet-brown. One ♀ from Puerto Toro (Navarin Island, February 1906) is likewise quite dark. A ♂ captured by Dr. OHLIN on the Rio Grande (East-Fireland) has the underside of the hindwings as well as the apex of the forewing quite dark, dull brown-grey, differing greatly from the violet-brown colouring of all other ♂♂ of that region; all these specimens are another proof of the variability of the species. — An *Argynnis* larva found by Dr. MICHAELSEN in Fall 1892 at Puntas Arenas probably belonged to this species; in length it measured 1,2", its colour was fuscous-black, underneath pale brownish; above with 4 rows of spines densely covered with brownish bristles, those on the first segment longest, on the second 4 mm, on the remaining ones 2—2½ mm in length; it most resembles the larva of *A. aglaja*, but has the spines longer, with stiffer and longer bristles. Head glossy black, covered with thin hair. Prof. BERG gives in „Anales de la Sociedad Científica de Argentina“ a synopsis of *cytheris* Drury and *dexamene* Bsd. which he treats as two separate species, without, however, entering into further detail. From the imperfect description of BOIS-  
DUVALS it is not possible to recognize in his *A. dexamene* (from the Argentine Republic) any more than in *lathonioides* Blanch., anything but *cytheris* ♀♀ with pale and feebly marked undersides. Also *A. montana* *montana*.  
*Reed* from the Central Cordillera of Chile, which was by BERG considered as identical with *dexamene* Bsd., appears in the figure as a similar, rather smaller *Cytheris* ♀. — *lathonioides* Blanch. is above pale fulvous, slightly obscured in the basal area; the markings of the forewings somewhat broader and heavier than in normal *cytheris*, the median spots united to a strongly tortuous band. The postdiscal spots on both wings heavy, likewise the submarginal row which consists of uncommonly large rhombic spots. On both wings the terminal lines are broadly confluent on the nerves, in the interspaces interrupted, representing a series of fairly large spots placed on the extremities of the veins. But in the inner half of the hindwings the markings are quite slight. Underneath the forewings are more yellowish-brown than in typical specimens, on the hindwings the portions which in those are fulvous, are paler, greyish-brown with greenish tone. 1 ♀ (type) from Sa. Rosa, in the Museum for Natural History at Paris. — *anna* Blanch. (= *anna* Reed) appears, from several ♂♂ from Ushuaia in the Paris Museum, rather smaller than normal *cytheris*; on the upper surface they can hardly be distinguished from them except by the more conspicuous obscuration of the basal area which on the hindwings reaches beyond the middle of the cell. Underneath the forewings are quite as in typical specimens, the hindwings fiery cinnamon brown, very densely scaled with yellowish, but without any markings whatsoever outside of the two pale streaks. It is found, according to EDMONDS, from the Straits of Magalhaens to the Atacama Desert in northern Chile, up to altitudes of 6000 ft. Dr. STAUDINGER writes concerning these forms: „Among the many hundreds of specimens I received from Chile I have never been able to discern more than one very variable species, *A. cytheris*, with which surely also the form from Fireland must be classed“. — *sigla* Hbn. refers to the northern, alpine form of *cytheris*, which, however, does not vary constantly from the typical form, either in size or colouring. — As *valdiviana* Phil. we find described a form from Central Chile (Valdivia) deviating from ordinary *cytheris* in the unusually prominent and heavy markings on the inner margin of the forewings; also on the hindwings the postmedian row of dots is always very distinct, whereas in the more southern forms it is quite rudimentary.

*A. darwini* Staud. was described from specimens taken by Dr. NORDENSKJÖLD near Puntas Arenas in November and December 1895 (♂♂, 32—34 mm), and by Dr. OHLIN in February 1896 on the Rio Grande in East Fireland (♀♀, 30—32 mm). It probably is closely allied to the following *A. modesta* which it seems to connect with the preceding group. The original description of Dr. STAUDINGER's is as follows: „*darwini* is about as large as the smallest Antarctic *cytheris* (30—34 mm). The ♂♂ above paler and brighter than those of *cytheris*, rather golden brown. The ♀ has the upper surface of the forewings and the inner margin of the hindwings suffused with greenish-grey, in consequence of which the bright brown ground-colour is here hardly noticeable. The black markings as in most *Argynnis*, but heavier than in *cytheris* and partially confluent, forming below the discal cell near the inner margin invariably a sharp outward angle touching the median vein; in all the forms of *cytheris* with the exception of *valdiviana* this mark is very slight, often almost completely absent. The first transverse row of black spots beyond the cell forms in *darwini* a narrow, contiguous, strongly curved and dentate band, which is not observed in the southern-



most forms of *cytheris* found in the same localities. The forewings have in the outer half the nervules distinctly black also in the ♂♂, whereas in *cytheris* this is only observed in the ♀♀ and even there in a rather lesser degree. *darwini* ♂♂ have the fringe whitish-yellow, the ♀♀ yellowish-white, sharply checkered with black, the dark spots being united with the black spots at the extremities of the nervules into roundish patches not found in any form of *cytheris*. On the upper surface the hindwings, which are golden brown, have the outer half marked and coloured as on the forewings, having in the place of the postdiscal rows of black dots, which in *valdiviana* are always very distinct and in the southern forms of *cytheris* quite rudimentary, a black dentate transverse band which, however, is not always complete between the costa and submedian vein, being in some specimens above the cell interrupted or aborted. On the under surface the forewings are of a duller colouring than above, the costal edge and apex yellowish, with the black markings almost obsolete, occasionally even completely wanting, only the 3 lower spots in the inner terminal row making an exception. From the costa near the end a short, narrow, brownish semi-band to the lower radial vein, enclosing two small, obsolete ocelli filled with yellowish; this band is outwardly indistinctly defined, proximally very sharply set off against the lighter area (in ♂♂ yellowish, in ♀♀ whitish), the light inner band corresponding to the whitish costal streak of *cytheris*. Fringe more distinctly and broadly mottled with black than in the largest specimens of *cytheris*. The termen which, especially in *cytheris* ♂♂, is strongly indented, is in *darwini* feebly excurved, occasionally almost straight. On the under surface the hindwings, although resembling the paler ♀♀ of *cytheris* in the markings, differ from them in colouring, being in ♂ very pale, in ♀ darker fuscous. The nervules all more or less pale, almost whitish. The basal area as far as the apex of the cell marked with dentate spots, darker brown, edged with whitish; following these a broad, paler transverse band outwardly margined with darker beyond which a light area; hereafter 5 dark, light-centred ocelli, two in the upper, three in the lower portion, separated on the median vein by a whitish streak sharply angled towards the termen; beyond the ocelli a narrow, yellowish or whitish, dentate band, with the points very sharp, breaking through the dark terminal band joining the dark spots in the fringe. These terminal markings distinguish *darwini* from all other *Argynnis*, also from *inca* in which the nervules, although much clearer white, are on the dark terminal border not marked with sharp points. Antennae as in *cytheris*, with the shaft dark brownish, the club blackish above, edged with brown at the end, in ♂ pale grey beneath. Palpi of ♂♂ rufous, of ♀♀ whitish ochreous, covered with long hair. Breast and legs as well as the lower side of the abdomen light coloured; the latter above in the ♂♂ covered with brown, in the ♀♀ with grey hair. Puntas Arenas and East Fireland.

*modesta.* **A. modesta** Blanch. (Type in the Museum of Natural History at Paris, locality not given); a very small form, taken in the mountains of southern Chile at elevations of from 7800—9800 ft., possibly identical with "*A. dioides*, of the terres magellaniques" mentioned by BOISDUVAL in his description of *A. dexamene*, but about which I have not been able to find anything in the literature. From *cytheris modesta* as well as the following forms may be easily distinguished by the shape of the wings; forewings elongate, oval, not in the least excavated; the hindwings almost wholly round, the costal edge distinctly convex, not concavely excavated. The colouring much lighter than in *cytheris*, pale reddish-yellow, the basal area faintly obscured on both wings. The black markings on the whole feeble, in the inner half greatly reduced, the postdiscal row in both wings composed of quite minute dots; only the median spots are relatively heavy and prominent, being almost united into a band, the submarginal spots roundish, isolated. The terminal lines marked by distinct spots placed upon the ends of the nervules. Underneath both wings are a monotonous pale buff, marked as above, but even more faintly and monotonously, the forewings with a few almost obsolete rows of terminal dots, the hindwings without any trace of markings outside of four very indistinct rows of minute dots of pale olive colour, the nervules paler than the ground; fringe yellowish-white, sharply mottled with black on the veins, joining the terminal spots, very much as in *darwini*, from which, however, it is easy to distinguish by the markings of the under surface and by the absence of the black dentate line on the hindwings above.

*inca.* **A. inca** Stgr. (S7 f) was discovered by GARLEPP in Bolivia and taken in larger numbers near Malaga, Huallatani, at an altitude of about 13 000 ft. above the Sea. Although the upper surface shows the general markings of the group, resembling somewhat *A. pales*, the underside is quite different, also from *A. sobrina* Weym. which was taken by Dr. STÜBEL at Sicasia in Bolivia at about the same altitude (only the ♀ known); with this it shares the rounded shape of the hindwings and the peculiarity that the ♀♀ are above chiefly pale red-brown, the ♂♂ always dark greyish-green, which is the very opposite of *A. pales*. Expanse: 1.0—1.3". The peculiarly greenish-grey colouring of the upper surface of the ♂ is much more decided than f. i. in *A. pales* ♀ fa. *napaea* or in *A. paphia valesina* Esp., only the macular row just preceding the termen is brownish. Both wings have the basal area slightly obscured by fuscous, with the black markings moderately heavy, varying but slightly in the size of the spots, and chiefly composed of isolated dots and streaks. The median band especially of the hindwings indicated by very fine striae. One ♂ has the upper surface darker than the rest, heavily dusted with blackish; in several others it is faintly suffused with brownish. The ♀♀ have the upper surface brown-yellow, in the basal area greenish; only quite rarely we find a faint greenish suffusion to beyond the middle of the wing. Both sexes have the fringe mottled with dark and pale, occasionally marked



with darker on the nervules. The under surface of the ♂ a peculiar yellowish-grey, with the veins clear white, the termen of both wings, as well as the basal area and, to a lesser extent also the median band, of the hindwings dull chocolate-brown, more rarely somewhat deeper fuscous. In most ♂♂ the brownish median band is almost obsolete, only the inner blackish edge remaining very distinct. The black markings as above, only more faint. ♀: Under surface of the forewings, on the hindwings the basal area, a postmedian band and the termen chocolate-red, the intervening parts of the hindwings pale fulvous; the median row of spots diffusely black. The head dirty brownish, in the ♀♀ clothed with red-brown hair; palpi above covered with red-brown, beneath with yellowish-brown hair. Antennae above blackish, towards the base whitish-grey, the clubs short, spoon-shaped, brownish beneath, blackish above. Thorax clothed with dusky greyish-green hair, abdomen dark above, dirty brownish-yellow underneath (STAUDINGER).

**A. cora** Lucas. One specimen (type), taken by GAY in the Cordillera of Peru, in the Natural History *cora*. Museum at Paris. In size approaching the smallest specimens of *inca* (1,0''); the wings similarly formed as in this and *modesta*: forewings elongate, pointed, oval, hindwings almost round. Upper surface pale greyish-brown with greenish tone, only the terminal portion suffused with cinnamon-brown; both wings have the basal area pretty broadly obscured with fuscous; the markings faint and diffuse, formed in the inner half of the forewings of isolated striae of pale blackish-brown; the postdiscal spots small, pretty regular; the submarginal spots oval, almost united to a band, the terminal lines barely visible. On the hindwings the markings of the inner half almost obsolete, in the distal half as on the forewings, if anything even fainter and more indistinct. The colour of the under surface brownish-buff; on the forewings the cell and discal area delicately marked with brownish; the apical area and the upper portion of the termen dark ferruginous, cut up into broad arrow-shaped spots by the whitish veins. Also on the hindwings the pale ground is in a most characteristic manner interrupted by more or less complete dentate macular bands of dark ferruginous made up of sharply sagittate spots which are deeply notched at the outer end and pointing towards the base, separated by the veins which are, especially in the outer half, broadly white. The cell is almost completely filled with them, only the apex and a small patch in the middle remaining white; toward the base a number of similar spots. The median and postdiscal rows are, between the upper median and lower radial, interrupted by streaks of the ground-colour, whereas the marginal band is complete. Fringe very long, yellowish-white, on both sides marked with black on the nerves, the black spots united with the blackish extremity of the veins. From near Cuzco (Guamanga), Peru.

There remains to be added that there still are a few other forms of American *Argynnis* that have received separate names, and which we regard as accidental colour-aberrations. Thus *A. letis* Wr. from the Western United States, a form of *A. leto* (86 b), has the apex of the forewings and the entire outer half of the hindwings uniformly fulvous, without hardly any markings. — *A. laura* (87 b) ab. *laurina* Wr. lacks on the under surface the silvery spots, being related to the main form somewhat as *cleodoxa* is to *A. adippe*.

### 3. Genus: **Melitaea** F.

This genus is confined to the northern temperate regions of the Earth, being quite equally distributed over the Eastern and Western Hemisphere, each of which is inhabited by about 30 species. If in Vol. 1, I have enumerated as many as 170 Palaearctic forms, that is ever so many more than are known from America, it is only due to the fact that in the Palaearctic species every Melanism and every variation of the bands gave rise to a new name; following this method, it would indeed be easy to equally increase the number of American *Melitaea* forms.

In structure the genus in some respects closely follows *Argynnis*, having, like this, the clubs of the antennae flattened, slightly concave; but the palpi are not swollen, but instead densely clothed with tufts of hair underneath, with the middle joint somewhat distended, still on the whole rather slender. Less important seems the venation; it is generally stated, that *Argynnis* has the cell of the hindwings always closed, whereas *Melitaea* has it open; but a close examination will reveal also in many *Melitaea* traces of a lower discocellular vein closing the cell.

From the very similar group of *Phyciodes* s. s. *Melitaea* cannot be distinguished by any constant characteristics, even the most painstaking anatomical examination or even their biology revealing such. From *Eresia*, however, they deviate in that the species belonging to that genus probably without exception are mimetic forms, copying Heliconids, Danaids or Acraeids, whereas not one species of *Melitaea* is known to copy any other butterfly; even in *Melitaea acraeina* Stgr. which received its name from a most superficial resemblance to an *Acraea*, Mimicry seems out of the question, as I have already shown in Vol. 1, p. 218.



On examining, however, on Pl. 91, our figures of *Eresia*, one might indeed take them to be a group of Heliconids, Acraeids and Ithomiinae. American *Melitaea* are distinguished by having the palpi very finely pointed, the second joint being rather stout, but not swollen; in structure they resemble those of *Phyciodes* (REUTER). It may be stated that the definition or limitation of these two genera is not at all the same with all writers, in consequence of which a number of intermediate genera have been created, such as *Thessalia*, *Charydras*, *Cinclidia* etc., which in part contain species belonging to either genus. I consider as true *Melitaea* all the more robust forms found in temperate North America, whereas the *Phyciodes* which being very numerous all the way from Texas to Patagonia, are represented in the North by but a few forms, may be regarded as their southern representatives.

As of *Argynnis*, thus we also find of *Melitaea* the largest species in America. In the Old world the largest forms are those observed in Eastern Asia; but even these are, especially as regards the volume of the body, far surpassed by the gigantic American forms, such as we have represented on Pl. 88 a, notwithstanding the fact that the original from which the *phaëton* ♀ was figured, was artificially bred at Francfort, that is under rather unfavourable conditions. The differences between the Old and New world *Melitaea* are exactly those existing between the European and American Lepidoptera in general, which I may sum up in these words: In North America we find the species on the whole larger, less variable and much richer in individual numbers. What the European collector on that continent is most forcibly struck by, is the astonishing number of butterflies assembling in many localities, the like of which may in Europe only be found in certain favourable places in the higher Mountains. The larger size and more brilliant colour of the Nearctic butterflies renders moreover a day's catch a much more imposing and conspicuous sight than is the case in Europe or Western Asia. But on close examination one finds that very often it contains but few diurnal species; indeed in most places in North America it would be no easy matter to gather in one day say from 30 to 40 different species, a result which in Central Europe would, in favourable localities, be attained without the least difficulty.

The genus *Melitaea* ranges in America from Canada to Mexico, but does not by far advance as far north as *Argynnis*. In the Eastern States only two species are known, all others inhabit the South and West, mostly California. Many species are, where they are found, among the commonest butterflies, occurring occasionally in dense swarms, a fact never observed in Eastern species. Some few species were bred in Europe from imported material.

Head large, thick, eyes distended, palpi long, porrect or upturned, heavily clothed with bristly hair beneath, with the second joint larger but not swollen, the third finely pointed. Antennae about half as long as the costa, occasionally somewhat less, ringed, thin and straight, with an oval, concave, rather spoon-shaped club. Forefeet almost (*gabbii*) or quite naked (*phaëton*), the mesothoracic and hindlegs stout and short, with the tibiae moderately or quite feebly armed with spines, occasionally without them. Forewings bluntly triangular, the termen slightly curved, the apex rarely projected (*leanira*); the middle cell broad; subcostal five-branched, the first nervule arising before, the second immediately behind the end of the cell, the third beyond the middle of the wing; hindwings with the inner margin quite feebly concave; round, with rounded apex, and acutely angled anally. Abdomen of some ♀♀ unusually stout and heavy, especially in *phaëton* and *chalcon*. — Egg subcylindrical, truncated above and below, delicately fluted. Larva with short heavy fleshy spines covered with short, bristly diverging hair; many species are gregarious when young, separating when older into troupes of 2—3; they feed upon Castilleja, Diplopappus, Chelonia, Lonicera, Mimulus, Scrophularia and other lower plants; mostly whitish or bluish marked with darker.

*phaëton*.

**M. phaëton** Drury (= phaetana Hbn., phaetoneta Godt., phaeton H.-Schäff., superba Streck., phaetusa Hulst, streckeri Edw.) (88 a). Black, with orange-brown spots in the cell and before the termen and with marginal rows of lemon-yellow spots; all the spots heavier underneath. The above-mentioned synonyms refer mostly to quite unessential variations in the extent of the spots. — Larva blackish, head and anal segment deep black, the middle segments clouded and tinged with reddish-brown, the spines and head glossy black, venter rufous; hibernates in a common web, which is larger than a hand, but frequently is found at some distance from the foodplant (Chelone, Lonicera ciliata, Viburnum dentatum, Mimulus ringens, Gerardia pediculata), so that one must assume that they wander about. After hibernating they disperse and pupate in May. Pupa cream-white, of a bluish iridescence, finely dotted and spotted with black and orange. Imago flies from the end of May to July; but since stray specimens are found also in August and even September, it seems that in certain localities a second or exceptionally a fall-brood exists. It frequents the proximity of moist meadows, especially those near some woods, and is in certain localities exceedingly common; its flight is slow, and it alights more frequently on leaves or on the ground than on flowers. ♀♀ deposit their red eggs in dense clusters, often 400 or more. — *phaëton* is the only *Melitaea* found in the Eastern States. A remarkable fact is that several other species of butterflies superficially resembling *M. phaëton*, such as the Pierid *Eucheira socialis* (18 g) and the Nymphalid *Morpheus ehrenbergii* (93 a) likewise live in a common web.

*chalcon*.

**M. chalcon** Dbd. and Hew. (88 a) is of the same, equally variable size as *phaëton*. Upper surface



black with numerous larger spots of sulphur-yellow, only at the apex of the forewing some small fulvous spots. Underneath the forewings are fulvous, the hindwings banded with brown and yellow. — Egg at first pale yellow, later on darker; caterpillar full grown black, finely speckled with white, with single black spines, shaded with orange-red (dorsally) or blackish-blue ringed with orange, but longer than in *phaëton*; head bifid, black, flat. Pupa pearly-white, shaded with yellow, marked with fine black dots and streaks; abdomen ringed with chains of small orange tubercles. The caterpillar feeds on *Scrophularia*, also on *Dipsacus*, *Castilleja* and *Lonicera*. Imago from April to the middle of July, forming two broods gradually passing into one another, but in the northernmost part of its range only one brood. ♂ is a strong flier; it has the habit of chasing and driving away other butterflies; quite common in the Pacific States, especially in northern California. The clumsy ♀ flies but little; the species, especially the ♀, is very variable, some specimens being altogether black, others quite yellow. These variations were described as *fusimacula* and *mariana*; also cases of aberrative colouring are known, as f. i. *dwivellei* H. Edw., which has either the ground-colour of the forewings or the spots coloured ochreous-brown.

**M. cooperi** Behr. (= *perdiccas* Edw.) (88 a) is considerably smaller than typical *chalcedon*, which it greatly resembles above; but underneath the ivory-yellow spots of the basal area on the hindwings are arranged in a more regular band confluescing with the yellow spot which in *chalcedon* stands isolated within the redbrown subbasal band; this spot is in *cooperi* larger. On the hindwings the ferruginous band before the outer third is more strongly curved, and the yellow spots on the under surface of the forewings are reduced. California.

**M. olancha** Wright (88 b). This form which, like the preceding ones, occurs in the western United States, has the spots of the upper surface resembling those of *chalcedon*, but whereas those in the basal area are reduced in size, those of the disk and marginal area are enlarged. The usually yellow spots are, moreover, in either sex both above and underneath much paler, nearly ivory-white; also the under surface, especially the fulvous bands of the hindwings, paler.

**M. macglashani** Riv. (88 b) is even larger than *chalcedon*, exceeding all other *Melitaeas* in size. Similar to *chalcedon*, but easily distinguished by the large reddish-brown marginal spots on both wings. Also in the discal area we find between the pale yellow markings of the black bands brick-red spots. California; apparently not scarce in certain localities.

**M. quino** Behr. (88 b). Like *chalcedon*, the spots above smaller, but more sharply defined; differs especially on the under surface, where the entire markings are more varied, tho spots largely divided by darker stripes, with more distinct blackish borders, only a small central spot of fulvous remaining. On the forewings the terminal pale spots are smaller, but sharper, nearly white in colour, the cell on the under surface more extensively marked with black. California.

**M. colon** Edw. (88 b) very closely resembles the preceding species, from which it represents a passage to *colon*. *chalcedon* in having the brick-red marginal spots greatly reduced. Also the pale yellow spots may be much smaller and paler, some of them almost white, approaching *taylori* from Vancouver. Like the preceding, probably only a form of *chalcedon*. From the Columbia River District, Washington and Oregon.

**M. taylori** Edw. (88 b) is even smaller than the preceding, intermediate between it and *baroni* which it replaces in the North; the spots are much brighter and more brilliant red than in the preceding; it somewhat resembles the European *aurinia*, which is the more remarkable since the larva likewise lives on *Plantago*. Vancouver.

**M. anicia** Dbl. and Hew. nec Scudd. (88 b). Like the preceding ones closely allied to *chalcedon*, but much smaller; the yellow bands above narrower, duller, occasionally slightly interrupted; but the marginal borders entirely fulvous, and also the black ground-colour is largely replaced by fulvous. In western North America, from British Columbia to Montana and Colorado. — **beani** Skinn. (88 b) from the mountains in Alberta is as a rule even smaller and darker, the markings more dull.

**M. colonia** Wr. ♂ with alternating brick-red and ivory-yellow rows of spots on black ground, very closely resembling the European *Mel. maturna*, but differing in the position of the bands, as is seen in our figure of the ♀ which latter deviates from the ♂ in the reduction of the black ground-colour. Also the under surface of this species which is entirely confined to the west-coast of North America, strongly reminds us of *maturna*. Apparently local and not far distributed.

**M. nubigena** Behr (88 c) is generally larger than *beani* and redder, the much more brilliant brick-red colouring crowding out not only the black ground-colour, but also the yellow which is preserved distinct only in the narrow macular rows in the costal area of the forewing, and in and behind the cell. Rocky Mountains; quite common. — **wheeleri** Hy. Edw. (= *capella* Barn.) (88 c) is the fiery-red Californian form, frequently distinguished by a complete, pale macular band before the outer third of the forewings. — A close ally is **editha** Bsd. (= *anicia* Scudd. nec Dbl. and Hew.) (88 b), which is the other extreme. The red of the upper surface is replaced by a dull blackish-grey, the yellow macular bands oblique, dull and pale, but well developed; altogether the upper surface resembles that of a pale specimen of *taylori*; underneath



the ivory-yellow bands of the hindwings are separated by rows of cinnamon-brown spots, which in *wheeleri* are a very brilliant brickred. On the whole *nubigena* is related to the dull *editha* and the fiery-red *wheeleri*, as *aurinia* is to the dull *merope* and the fiery *iberica*. *editha*, probably a species of its own, comes from Southern California, where the caterpillar feeds on *Erodium cicutarium* and *Viola*. — *hermosa* Wr. is marked very much like *nubigena*, but the colouring is more dull, more extensively spotted with white, the antemarginal black band of spots on the forewings above much deeper and broader than in typical *nubigena*; California.

*augusta*. *M. augusta* Edw. (SS c) seems to be a combination of forms, having the fiery-red ground-colour of an extreme *wheeleri* interrupted by numerous yellow macular bands such as we find in *editha*, the result being a pattern very similar to that of *aurinia sareptana* (Vol. 1, Pl. 65 d). Southern California; altogether one of the loveliest butterflies of North America. — *augustina* Wr. has the black bordering of the coloured bands obsolete.

*baroni*. *M. baroni* Hy. Edw. (SS c). The yellow spots of the upper surface as in the preceding, but the vivid brick-red of that species is replaced by a deep red-brown which gives it a distant similarity to a small-sized *chalcedon*. From this it is easily distinguished by the pale spots of the under surface of the hindwings, which in *chalcedon* are yellow, in *baroni* pearly or silvery-white. The caterpillar resembles that of *chalcedon*, velvety-black with fine white dots upon the tubercles, the dorsal spines honey-yellow, the rest black; feeds on *Castilleja*, hibernating in webs; pupates in May. Pupa bluish-white, thickly and finely dotted with black, marked with a few yellow spots. Imago from end of May till July.

*rubicunda*. *M. rubicunda* Hy. Edw. (SS c). Of the same size as the preceding, with which it flies in the same localities. The red and yellow spots on the upper surface bright and concise, just as in *colon*; but whereas in that species the outer of the yellow bands of the hindwings is the sharpest and most distinct, it is in *rubicunda* either wholly absent or only just recognizable. The caterpillar according to BARON quite different from that of *baroni*, but is said to live on a different food-plant, although *Castilleja* is also mentioned here. The imago was taken at considerable elevations in the pine-wood region, locally apparently common. It likes to rest on sandy spots, like *Oeneis iduna* with which it associates. In the net it clutches itself very firmly with its claws (BEHRENS). California.

*acastus*. *M. acastus* Edw. (SS d). This is the first of a series of *Melitaeas* with brilliant, uniform red upper surface, of a brownish brick-red shade reminding one somewhat of *Mel. cynthia* ♀ or a very brilliant red *Arg. pales*. The under surface of the hindwings resembles that of the European-Asiatic species of the *athalia*-group, having parallel rows of broadly confluent spots crossing the hindwings, corresponding in colour to the apex of the forewings, whereas the disk of the latter remains red. Utah, Nevada and Montana. The ♀ has the colour of the upper surface paler.

*palla*. *M. palla* Bsd. (SS d). ♂ resembles the preceding species, but may easily be distinguished above by the median band of the hindwings which is paler, contrasting strongly with the more fiery ground-colour. Underneath the cinnamon-brown portion of the outer band does not reach the costa of the hindwings, but leaves the upper two cells (above and below the 1. subcostal nervule) free, of the same colour as the yellow bands. The ♀, quite similar underneath, but more strongly shaded with red-brown, is above very much more black, with dull reddish and yellowish spots. Larva on *Castilleja*. Western states of North America, from British-Columbia to California, almost everywhere common.

*whitneyi*. *M. whitneyi* Behr. (= *palla* Bsd.) (SS d) is easy to tell by the fatty or feebly silvery lustre of the outer macular row on the under surface of the hindwings; above, especially in ♂, the spots are paler fulvous. From California to Nevada.

*hoffmanni*. *M. hoffmanni* Behr (SS d) may be at once distinguished by having the basal half of both wings black, only slightly spotted with yellow, forming a vivid contrast with the outer half which in ♂ is almost clear fulvous, in ♀ paler. The black colour may, particularly on the hindwings, extend more or less far towards the termen, encroaching upon the fulvous colour, creating thereby a long series of greatly varying aberrations, one of which, of most curious appearance, is figured in HOLLAND's Butterfly-Book (Pl. 17, fig. 14); many of these have been given names, as f. i. ab. *abnormis* Wright, which has the forewings almost uniform rufous, thinly banded with black, the hindwings with the exception of a broad fulvous outer band almost uniformly black. From the Western United States; an alpine form from the Rockies was separated under the name of *helcita* Bsd.

*sierra*. *M. sierra* Wright (SS e) recalls even more strongly than the preceding species, *M. aurinia-iberica*, having the bright brick-red ground-colour strongly interrupted by ivory-yellow macular bands and chains; the basal area of the hindwings is marked with large spots of ivory-yellow. ♀ above with alternating yellow and brick-red bands, as in *aurinia-sibirica* or *desfontainei*, but differently located. Western United States.

*gabbii*. *M. gabbii* Behr (= *sonorae* Bsd.) (SS e) resembles above somewhat the preceding, but is easy to distinguish by the lovely silvery lustre of the three pale bands of the under surface of the hindwings, very much as in the *Argynnis* species. Occurs in the Pacific States as far as Utah and Colorado.



**M. harrisi** Scudd. (SS e). Underside somewhat like that of *M. cinxia*, particularly on account of the *harrisi*. presubmarginal row of dots enclosing the central dots characteristic of that species. ♂ deep fulvous above, with darker markings, the terminal area nearly wholly black; both wings traversed by a band of pale rufous. ♀ lighter coloured and of rather larger size, otherwise altogether like ♂. — Caterpillar reddish-brown with black dorsal stripe, and dark rings at and behind the base of the spines, the spines themselves black. On *Diplopappus umbellatus*. Pupa pearly white, marked with black or fuscous. Found throughout the Eastern States from Canada to Illinois.

**M. dymas** Edw. (= *larunda* Strck.) (SS f). This species, mentioned by DYAR as *Cinclidia*, is probably *dymas*. best classed with *Phyciodes*. It closely approaches *Ph. elada* Hew. (SS f), but is lighter, pale rufous, usually very slightly marked; also the under surface shows some little difference. Southern Texas.

**M. perse** Edw. (SS f). Almost exactly like the preceding, also underneath, but the ground-colour deeper *perse*. golden yellow above, with the numerous dark undulate lines fine, but more sharply defined than in *dymas*. From Arizona.

**M. chara** Edw. (SS f). Very much like the two preceding species, of somewhat larger size, the black *chara*. undulate lines and lunules more distinct; from the costa, before its outer third, a pale oblique dash, representing the commencement of a pale yellowish-brown fascia ending at the inner margin before the anal angle. Underneath, this fascia more distinct and continuing also on the hindwing in the shape of a narrow, pale yellow band. Arizona. Like the preceding, a stunted desert-form.

**M. anomala** Godm. a. Salv. Of this species only one specimen seems to be known which used to be *anomala*. in the STAUDINGER Collection with which it most likely came to the Berlin Museum. In size hardly approaching *M. chara*; blackish-fuscous, forewings with a white costal semi-band and 4 white spots in the terminal area; hindwings with yellowish-brown disk and a white punctate row in the black terminal border; cell spotted with black. Underneath resembling *hepburni*, but with the ground-colour of the forewings blackish, not yellow-brown. Mexico: Colima.

**M. hepburni** Godm. a. Salv. Closely allied to *dymas*, but more gaudily coloured both above and beneath, *hepburni*. the ground-colour deep greyish fuscous, the discal and marginal row of spots yellow, the intermediate, submarginal one rufous. Under surface almost like that of a small-sized *Mel. merope* or *varia*. Chihuahua (Mexico). — The species must of course not be confounded with the Erycinid *Apodemus hepburni* which outwardly resembles a dwarf *Melitaea* and which we figure with the Erycinids on plate 142.

**M. alma** Strck. (SS e) equals in size the preceding species, upper surface rufous, marked with black *alma*. at apex and outer border, but lacking the numerous dark undulate cross lines which are replaced by several rather pale transverse macular bands. Under surface of hindwings yellow, with dark border and veins and a double black transverse band before the outer third.

**M. thekla** Edw. (SS f). Upperside likewise rufous, but the black markings heavier. On the under surface *thekla*. of the hindwings 2 curved bands of pale fulvous on ivory-yellow ground, the markings approaching those of the closely allied *Phyc. theona*. ♀ very much like ♂. Texas. — **bollii** Edw. differs from typical *thekla* only in *bollii*. having the paler median band of the upper surface of the hindwings somewhat broader, its border narrower, and its continuation upon the forewings almost completely wanting. HOLLAND, however, upon a close examination of both types, asserts that there is no possibility of sharply separating both forms. Arizona. — **definita** Aar. *definita*. likewise closely resembles *thekla*, being also found in Texas.

**M. leanira** Bsd. (SS f). Upper surface blackish-brown, both wings with 3 pale yellow blotches, the outer *leanira*. of which complete, the middle one interrupted on the forewings and the inner broken up in several scattering spots which may even be quite obsolete (= ab. *obsoleta* H. Edw.). The blackish ground colour is interrupted *obsoleta*. before the termen and in the discal area by redbrown spots, which produces the same pattern we find in *colon*, *taylori*, *rubicunda*; but the species is easily recognized by the shape of the wings which resemble those of *Araschnia prorsa* and many *Phyciodes*, in as much as on the forewings the termen is produced at the end of the 3. radial so as to produce a blunt angle, above which the apex appears cut off and below which the termen is slightly excavated. Also the underside differs materially. Widely distributed throughout the Western States, from British Colombia to southern California. — **leona** Wr. seems to be a form of *leanira* in which the yellow *leona*. spots above are so much reduced that the hindwings often are wholly black, with just a few ivory-white dots. — **mirabilis** Wr. is an accidental aberration having the pale spots in the outer half of the wings both above and *mirabilis*. beneath drawn out in the direction of the intranervial spaces, a phenomenon not infrequently met with in European Melitaeas (f. i. *didyma*). — **cerrita** Wr., on the other hand, is an entirely constant form in which the rufous *cerrita*. and ivory-white areas are often indistinctly separated from one another or quite feebly indicated; like the preceding, it occurs in either sex. All these forms are closely allied to *cyneas* and *theona* which are described under *Phyciodes*, another proof of how unnatural and untenable is the separation of the genera *Melitaea* and *Phyciodes*.



- eremita*. **M. eremita** Wright is usually much larger than *leanira*, appearing, like that species, superficially somewhat like *Araschnia prorsa*, but having the spots on the upper surface much closer and brighter. Underneath the forewings brick-red, especially in the median area very brilliantly spotted, and on the hindwing the ivory-yellow median band of spots very broad. California.
- wrightii*. **M. wrightii** Edw. (88 f) resembles exactly the preceding above, but the yellow-brown blotches, particularly at the base of the forewings, are larger. Underneath, however, the dark intermediate bands are almost completely wanting on the forewings, which thus represent an ivory-yellow space only interrupted by the black veins and a dark macular band. California; closely allied to *leanira*.
- minuta*. **M. minuta** Edw. (88 e). DYER formed of this species, together with the two following forms, the genus *Schoenis* Hbn., i. e. he only used this little group to preserve HÜBNER's name, for its oldest representative was only discovered in 1861. *minuta* is above uniformly brilliant reddish-brown, marked with rows of spots, lunules and striae of a darker colour. Beneath it so exactly resembles a small-sized, pale *didyma*, that it may be considered to be the American representative of that group and cannot possibly be mistaken for any other American butterfly. From the Rocky Mountains. — **arachne** Edw. (88 e) seems to be founded upon the low-land form; from Texas; also Colorado. It does not differ very essentially from the main form, but both seem to gradually pass into one another; our figure (a ♀) was taken from HOLLAND, who considers *arachne* as only synonymous.
- nympha*. — **nympha** Edw. (88 e) is at once distinguished from the preceding by having on the upper surface of both wings a pale yellow band which gives it some similarity to certain *phoebe*-forms of Europe. Also the upper surface is more heavily marked with black. But underneath it so closely resembles certain specimens of *minuta* that its specific rights can only be established by breeding it from the larva which at present is not known. From Arizona.

The following forms are in part rather scarce or represent species or subspecies founded on single specimens, not found even in the largest collections such as those of the Washington Museum. Some seem even difficult to connect with the above described groups, and many are only known from the original descriptions; the types being destroyed, they may not be identified with certainty; others again refer to mere aberrations, only the types of which have become known.

- brucei*. **M. brucei** Edw. is nothing more or less than a form of *anicia* Dbl. a. Hew., established by EDWARDS in 1888, but not referred to by him later on in his "Butterflies of N. America". Also **maria** Skinn. is closely allied to *anicia* which it seems to replace in the central and western States. From Utah. The same holds good of *gilleti* Barn., described from Wyoming, but not mentioned by HOLLAND in his Work on butterflies of the United States. — **helvia** Scudd. from Alaska appears closely related to *taylori*, the type of which was destroyed in the great Chicago fire; but HOLLAND assumes that specimens having the median band on the upper surface of the hindwings less distinct, and the ground-colour paler, such as are known from White Horse and Eagle City in Alaska, belong here. — **sterope** Edw. seems to be closely related to the lost *helvia*; established in 1870 by EDWARDS, it was not mentioned in his later Work on American Diurna, no more than by HOLLAND.
- neumoegeni*. From Oregon. — **neumoegeni** Skinn. seems, like *maria* Skinn., to be a form of some other species, perhaps *beckeri*. **palla**, changed by the peculiar geological conditions of its home, the District of Salt Lake in Utah. — **beckeri** Godm. a. Salv. (88 h), from Northwestern Mexico, is possibly only a southern form of *hoffmanni*, which it almost exactly resembles above, but with the basal half and terminal borders darker; underneath the ivory-yellow lunular spots are not separated from the border by a rufous terminal stripe. — **schausi** Godm. a. Salv. (88 h), although allied to the preceding form, shows on both sides essential differences; especially the under surface of the hindwings has the ferruginous bands much larger, and the dark lines traversing the hindwings are approaching closely; from Paso de San Juan in Veracruz (Mexico). — **approximata** Streck. undoubtedly belongs, like the former, to the same group as *gabbii* and *hoffmanni*, being possibly intermediate between these and *beckeri*. Described from Texas, but unknown to me. — **albiplaga** Char. is, like *approximata*, not represented in the collections of the National Museum in Washington; a dwarf species, resembling rather a *Phyciodes*, closely allied to *perse* and *chara*, but not so monotonous in colouring. Texas. HOLLAND does not mention this form.

#### 4. Genus: **Phyciodes** Hbn.

This genus is distributed throughout South and Central America, with a few representatives in the United States. The greater number of species are found in Central America and in the northern part of South America. In accordance with SCHATZ and KIRBY, we unite the *Eresia* species with *Phyciodes*, since no fundamental difference exists either in structure or in the shape of the larva and chrysalis, not even in the most extreme forms. Indeed it cannot be sharply separated even from *Melitaea*, which it completely resembles in the shape of both caterpillar and chrysalis. The less well known forms may be easily recognized as *Phyciodes* by the open cell in the hindwings.



To *Phyciodes* in our sense, there belong about 160 species, of which those that resemble *Melitaea* frequent, like these, flowery, open meadows, whereas the mimetic forms prefer the woods. Our figures show the enormous diversity of species, a large number of which represent the best known examples of Mimicry. The *Melitaea*-like species are, however, connected with the so-called mimetic ones by all kinds of intermediate forms, which, although differing quite considerably from typical *Melitaea*, cannot be considered as mimics either; for which reason it is not possible to separate the species into regular groups, whereas they furnish an excellent means for gaining an insight into the phenomenon of mimicry by showing the manner in which ordinary, plain forms have been changed into mimetic ones. Thus we are justified in considering *Phyciodes* as one of the most interesting lepidopterous genera. The respective similarity of the mimetic forms to species of some other family will appear in the descriptions of the different species. The caterpillars, as far as known, were found on Compositae, f. i. *Diclipa* and *Actinomeris*.

**Ph. *liriope*.** Of this species we know quite a number of local forms, some of which cannot be sharply separated. — ***liriope* Cr.** (= *morpheus* F.) (89 a), from the Amazon, is the most gaudily marked form. Ground-colour deep brownish-yellow, on the upper surface of the forewings the subapical band well developed, on the hindwings, outside of the broadly blackish-fuscous border, a narrow submarginal band and, in addition a series of spots which in ♂ is partly obliterated. — ***lirina* Stgr.** i. l., from Bolivia, is a dwarf form distinguished by the dark terminal markings both above and beneath. — ***claudina* Esch.** (89 a), from southern Brazil and Argentina has fewer, but more sharply defined markings, in ♂ the subapical band on the forewings often quite rudimentary; both sexes lack on the hindwing the third dark macular band, and in the ♂ the submarginal band is frequently only just indicated. — ***flavia* Godt.** (89 a), from *Chiriqui*, is even less marked than *claudina*, having in particular the subapical band on the forewings reduced or only indicated by a few spots. — A somewhat more strongly marked form, of paler ground-colour, is ***flavina* Stgr.** i. l. (89 a) from Peru. — ***fragilis* Bates** (89 a), from Cayenne, is characterized by the broad, dark borders of both wings, outside of which the markings are greatly reduced, especially also on the underside. — ***guatemalæ* Bates** (89 b), from Guatemala and Honduras, has the markings of the upper surface very much reduced and faded, those of the under surface quite insignificant. — ***pastazena* Bates** (89 b), from Ecuador. Ground-colour deep brownish-yellow; upper surface almost devoid of all markings, with the exception of a narrow terminal border. Under surface pale, but sharply marked. — ***anieta* Hew.** (89 b), from Venezuela, has the marginal and subapical markings very distinct, aside from these the upperside quite unmarked. Underneath the ground-colour yellowish, with pale brownish markings. — ***orobia* Hew.** (89 b) from southern Brazil and Argentina has the outer area of the forewings heavily marked, otherwise quite monotonous. Probably *anieta* or *orobia* is identical with the following *thymetus*. — Larva bluish greenish-black, with a pale lateral stripe; venter greenish-yellow, head brown-yellow striped with black. Lives gregariously on *Cyrtanthera*, when young on the underside of the leaves, of which it only gnaws the epidermis. According to Dr. SEITZ, the South-Brazilian form flies throughout the year, and is exceedingly common; pupa very much like that of *Araschnia prorsa*, brownish-grey with violet lustre, very prominent dorsal projections, and short, partly silvered points at the back. Imago flies on forest-roads and in gardens, is very common wherever it occurs, and has the jerking, swimming flight of our *Araschnia levana*.

**Ph. *cluvia* Salv. a. Godm.** closely approaches *anieta*, but the forewings are much more broadly black at the base; under surface much darker, forewings with 2 ochreous spots, a larger one near the median nervule, the other in the shape of a postdiscal band. A mountain form from Guatemala, occurring at altitudes of from 4—6000 ft.

**Ph. *thymetus* F.** The original description of this species reads: "Wings complete (i. e. with smooth margins), yellow, with brown outer border. Habitat unknown". Dr. A. G. BUTLER remarks in his "Catalogue of Diurnal Lepidoptera described by FABRICIUS in 1869" that this species is well figured in JONES' unpublished "Icones", without, however, giving any further description. From the author's entirely insufficient description it appears to be some feebly marked form of *liriope*. KIRBY's Catalogue mentions Brazil as its home.

**Ph. *amazonica* Bates** (89 b) from the Amazon has the wings much more rounded, both wings broadly bordered with blackish-fuscous above, with 5, partly incomplete rows of black spots on pale brown ground. Under surface greyish-yellow, with deep black, pale margined rows of spots.

**Ph. *ursula* Stgr.** (89 c), from Bolivia, is a small-sized, brown-yellow species, marked with a delicate network of black lines on the forewings above, from which the black subapical band stands forth very clearly. The ♀ has the black markings much broader. On the yellowish, sparingly brown-marked under surface of the hindwings a very distinct brown median longitudinal stripe.

**Ph. *nycteis* Dbl. a. Hew.** (89 c) is found in the United States of North America, from Maine to North Carolina, and westwards to the foot of the Rockies; it is the largest among its near allies. — Egg half as high as broad, with 16 or 17 vertical stripes above, forming at the middle hexagonal figures; its colour is green. The caterpillars undergoes 4 moults. Full-grown it is velvety black, with a dark orange streak along



the back and purple ones at the sides. Its body is marked with whitish spots, each of which gives rise to a delicate black hair, and with rather short black bristle-like spines. Pupa pearly grey, spotted with dark brown. — *pascoensis*. WRIGHT also mentions a form *pascoensis* from the west-coast of North America, distinguished by weaker dark markings and paler under surface. It is, however, doubtful whether it belongs to *nycteis*.

*ismeria*. **Ph. ismeria** Bsd. a. Lec. (= *carlota* Reak.) (89 c) ranges from Canada to the southern States, and westward to the Rockies. It is easily recognized by the most curiously marked under surface of the hindwings. ♀ resembles ♂, but larger and paler in colour. Larva yellowish, with blackish spines and 3 blackish longitudinal stripes. Head, legs and venter black, prolegs yellow. Pupa light grey with pale spots and short white lateral humps; lives on *Helianthus* and *Actimeris*. — Mr. CHAS. D. A. COCKERELL (Boulder, Col.) kindly sent us an exact description of the caterpillar (of *P. carlota*). The food-plant was *Helianthus annuus*. Of the caterpillar two different forms are known: 1. with a row of large, nearly square, orange dorsal spots, the subdorsal portion black, mottled with cream-white; sides paler, with a broadly reddish band; stigmata contained in elongate, angular, greyish-black, white centred spots; underside darker, with the dorsal and subdorsal spines black, the lateral ones pale; head glossy black. The other form is altogether orange-red, with black spines and dull subdorsal and lateral stripes, the latter directly above the base of the feet; head glossy black. Imago appears in the first days of September.

*vesta*. **Ph. vesta** Edw. (89 c), from Texas and Mexico, closely resembles a small-sized *Melitaea*. ♀ like ♂, but paler in colour.

*graphica*. **Ph. grafica** Fldr., from Mexico (Huahuapan, September), is described by its author as follows: "Allied to *pallascens*, but the wings broader; forewings shorter, the apex less produced; ground-colour above blackish-fuscous, both sexes with a great number of basal spots, in the cell 2 small bands, the first one enclosing two inner spots, followed beyond the cell by 2 interrupted macular bands (the outer one dusted with ochreous-brown containing 6 irregularly arranged outer spots several of which dusted with ochreous-yellow) and submarginal lunules, the 5. of which, placed between 2. and 3. median, unusually small, obsolete in ♂, more or less dusted with ochre-yellow. Hindwing with a rather large blotch in the outer half of the cell, 2 discal bands much broader in ♀ than in ♂, the 3. outer band composed of distinctly separated, black centred lunules, in another ♀ specimen these are dusted with yellowish-brown before the termen; otherwise somewhat resembling *pallascens*, but with the discal band ochreous-yellow, edged anteriorly on the inside by very narrow blackish spots. Under surface of the hindwings broadly clouded with fulvous behind the cell and at termen; base, the spaces between the discal bands, apex of wings and space between 2. and 3. median dusted with whitish at the edge. — According to SALVIN and GODMAN this form is completely identical with *vesta*.

*phaon*. **Ph. phaon** Edw. (89 c) is one of the smallest species of this group. ♀ like ♂. Found in the Gulf States of North America, occasionally met with also in Kansas.

*tharos*. **Ph. tharos** Dru. (= *pulchella* Bsd., *morphea* Cr., *tharossa* Godt.) (89 d), the "Pearly crescent spot" of the Americans, ranges from southern Labrador to Florida and throughout the entire United States, with the exception of the Pacific Coast of California. It is very common. *marcia* Edw. (= *packardii* Saund.) has the

*marcia*. ground colour rather paler, with less dark markings. — *morpheus* F. (= *cocyta* Cr. *pharos* Harr.) is only a summer form of *tharos*. — Egg pale greenish-yellow. Larva on various compositae, particularly Asters. Dark brown after the third moult, dotted with yellow on the back, with short black bristly spines with yellow base.

*pedrona*. Pupa grey-white with dark spots and lines. — *pedrona* Moulton, from Brazil (Minas Geraes) I consider as a separate species; differs from *tharos* in the smaller size, the smaller dark spots on the upper surface of the hindwings, and the lack of some of the dark basal spots on the same wing. Forewings with 5 instead of 6 submarginal spots, arranged in an irregular row; moreover the pale oblique stripe above the cell and the broken line at the inner margin as well as the 3 darkest spots on the under surface of the forewings are lacking, only a brown submedian mark being visible.

*batesi*. **Ph. batesi** Reak. (89 d). "BATES' Crescent spot" occurs from New York to Virginia and westwards to Ohio. ♀ resembles ♂; the earlier stages not known.

*pratensis*. **Ph. pratensis** Behr (= *epula* Bsd.) (89 d) from California closely resembles *Melitaea*. ♂ rather gaudily coloured, ♀ large, pale rufous, with uniform markings. Under surface marked with paler tints.

*thebais*. **Ph. thebais** Godm. a. Salv., distributed from Mexico to Guatemala, differs from the following *orseis* in having the upperside spotted with pale instead of reddish-yellow, and in the hindwings lacking almost every vestige of rufous colouring.

*orseis*. **Ph. orseis** Edw. (89 d) is found from Washington to Mexico. ♀ very much like ♂, but with all the dark markings larger, the light ones still paler. The earlier stages remain to be worked out.



**Ph. camillus** *Edw.* (89 d) "Camillus Crescent-spot" of the Americans, ranges from British Colombia *camillus* as far as Colorado, Montana, Kansas and Texas. Under surface quite monotonous, but the hindwings peculiarly marked with distinct fulvous lines and dots. Early stages unknown. The paler or darker forms which have repeatedly been named (*emissa*, *pallida* *Edw.*, *mata* *Reak.*) are no local forms, being not restricted to any particular locality.

**Ph. mylitta** *Edw.* (= *collina* *Behr*, *callina* *Bsd.*, *epula* *Bsd.*) (89 e) occurs from Washington to Arizona, *mylitta*. eastwards as far as Colorado. ♀ like ♂, but lighter in shade. The eggs are deposited in bunches on thistles. After the 4. moult, the larva is black, yellowish beneath, with a dull yellow, narrow dorsal line and similar lateral lines. The black spines are arranged in 6 rows, those of the 4.—6. segment yellow. Pupa deep wood-brown. Larva on various species of thistle.

**Ph. barnesi** *Skinn.* (89 e), from Colorado, is larger than *mylitta*, with the forewings narrower and smooth-edged, and the markings of the upper surface greatly reduced. *barnesi*.

**Ph. montana** *Behr* (89 e), from the mountains of California and Nevada, is more heavily marked *montana*. than *camillus*, with the ground-colour chiefly brilliant fulvous. The colouring of the ♀ is more dusky, but is interrupted by a pale median macular band on the upper surface of the hindwings. The earlier stages unknown.

**Ph. picta** *Edw.* (= *canace* *Edw.*) (89 e) from Nebraska, Colorado, New Mexico and Mexico, is one *picta*. of the smallest and most gaudily coloured species of this group. Underside of hindwings very light and slightly marked. Egg yellowish-green. — The caterpillar undergoes 5 moults; full-grown it has 7 main rows of short spines, which in the different broods have a different colour, pale brown in the June brood, greenish-yellow in October. The prevalent colour is yellowish or greenish brown, with darker or lighter spots. Pupa yellowish-brown. Larva on various species of Asters.

**Ph. frisia** *Poey* (= *gyges* *Hew.*) (89 e) from the Antilles, Mexico, Central and South America and *frisia*. Florida, is presumably a form of *tharos* or some other closely allied species. Large-sized, with pale markings both above and beneath. Earlier stages unknown.

**Ph. boucardi** *Godm. a. Salv.* (89 e), from Mexico (Guerrero, October), probably is a subspecies of some *boucardi*. North American species. ♀ not known.

**Ph. saladillensis** *Giacom.* (89 f), from the Argentine Republic, was only discovered two years ago; *saladillensis*. common in the hills around Saladillo and Sa. Cruz. Underneath the forewings resemble *tharos*, but the ground-colour is lighter, with a striking median band of pale yellow spots. Under surface of hindwings pale yellow with a few brownish striae and the typical terminal spots. ♀, according to a picture sent by the author for our use, much larger; hindwings very slightly marked in the inner half. Underneath the hindwings have a reddish transverse band.

Also **Ph. simois** *Hew.* (89 f), from Brazil and Argentina, belongs to the *tharos*-group. It is of small size, *simois*. with the black markings of the forewings partially united to larger blotches; underside nearly unmarked.

**Ph. elada** *Hew.* (89 f), from Mexico, one of the smallest species of the genus, shows above a network *elada*. of black and yellow; ♀ has the middle row of pale spots almost white. Underneath marked like typical *Melitaea*. — **socia** *Fldr.*, if not synonymous with *elada*, is surely only a seasonal form, but slightly differing in *socia*. the markings.

**Ph. imitata** *Streck.* (= *ulrica* *Edw.*) differs from *elada* in the black basal spots on the hindwings beneath. *imitata*. Texas to North Mexico.

**Ph. variegata** *spec. nov.* (89 f), from Uruguay (1 ♀) is a dwarf species; forewings marked with black *variegata*. and white on yellow ground, hindwings with black only. The markings of the under surface greatly resemble those of the upper surface, but the hindwings have a median row of white spots, and a few white spots on the outer margin.

**Ph. pallescens** *Fldr.* (89 f), from Mexico, of which we figure the type, would seem to be the ♂ of *pallescens*. *variegata*, if the localities where they were found, were not too far apart. Underneath it resembles *tharos*, but the colouring, especially of the hindwings, very pale, with slight markings.

**Ph. pelops** *Dru.* (= *anocaona* *H.-Schäff.*) (89 f), from Jamaica, St. Domingo and Porto Rico, is the *pelops*. smallest species of the genus; the wings unusually broad, yellowish-brown above, with black markings. Under surface of forewings pale yellow-brown, marked with black; hindwings greyish-fuscous, paler at the base, with delicate blackish-brown markings and a submarginal row of white ocelli. — **aegon** *F.* of Jamaica has the wings *aegon*. smooth margined, black-brown above, with several irregular yellowish-brown macular rows. Hindwings ashy



grey underneath. — Only known to me from the original description. According to BUTLER a local form of *pelops*.

*fasciata*. **Ph. fasciata** *Hpffr.* (= *pearcei* *Druce*) (89 f), from Peru, is distinguished by the broad yellow band on the upper surface of the hindwings. The forewings are yellowish brown, with a rich network of black lines. Hindwings with blackish-fuscous base and termen, the latter enclosing 2 yellow lines. Underside yellow, with faint yellowish markings. — **fasciatella** *subsp. nov.* from Huancabamba (1500 m) has the median band narrower and on the hindwings only one yellow terminal line.

*theona*. **Ph. theona** *Mén.* (89 g), from the southern States of North America, Mexico, Honduras and Nicaragua resembles above *Melitaea*, but differs underneath in the regular, sharply defined bands. — **perlula** *Fldr.* (= *hondana* *Weym.*) (89 g), from Venezuela has the markings quite indistinct above, and underneath the brown subbasal band of the hindwings reduced to a large spot. The forewings lack underneath the black median marks. — **yorita** *Reak.* (89 g), from Honduras, is intermediate between *theona* and *perlula*. — **ezra** *Hew.* (89 g) has the pale, often quite white spots on the upper surface of the forewings produced and the reddish brown bands on the underside less brilliant. Chiriqui (Panama).

*cyneas*. **Ph. cyneas** *Godm. a. Salv.* (89 g, h), from Arizona. Ground-colour above yellowish-brown to blackish-grey, with 2 rows of light spots greatly varying in size. ♀ of a lovely fulvous tint, with the outer band of pale spots bordered with black on the outside. Under surface of forewings fulvous, with pale, black-margined spots; hindwings whitish-yellow, the black nervules, the deep black termen and double black median band forming a sharp contrast.

*cynisca*. **Ph. cynisca** *Godm. a. Salv.* (88 h), from Mexico, is closely allied to *cyneas*. Upper surface without any ferruginous spots on the hindwings, the yellow band enclosing the apex of the cell much broader, forewings with rufous spots at base and along termen underneath.

*taeniata*. **Ph. taeniata** *spec. nov.* (89 h) from Tarapoto resembles on the upper surface of the forewings *ursula*, differing, however, in the heavy markings of the hindwings above. Underside yellowish, feebly marked with pale fuscous, from which on the forewings the blackish-brown double band, in the middle confluent, placed near the termen, stands forth very clearly.

*teletusa*. **Ph. teletusa** *Godt.* (89 h), from Brazil, has brownish-yellow markings on blackish-brown ground, namely a large spot in the outer half of the forewings reaching the inner margin, a subapical band divided by a dark streak, a minute spot at the apex of the middle cell and a few small apical dots on the forewings, on the hindwings a median band, tapering towards the inner margin, and a submarginal band composed of fine lunules. The colour of the under surface is yellowish, with brownish, resp. greyish-black markings, strongly contrasting with a submarginal row of ocelli appearing on the hindwings. — **peruana** *subsp. nov.* (89 h), from Peru, has the brownish-yellow markings of the upper surface greatly enlarged, the underside, however, much more monotonous. — In **boliviana** *subsp. nov.*, from Bolivia, the pale markings are, especially on the hindwings, greatly reduced, and the under surface is more heavily marked than in *peruana*.

*burchelli*. **Ph. burchelli** *Moulton* has a very wide range, since it is found, according to its author, in the province of Goyaz, in Chapala, South Brazil, Peru, Ecuador and in Nauta on the Upper Amazon. From the very lengthy description it appears to resemble *teletusa*; the broad yellow median band on the forewings has about the same shape, the forewing has at the termen between submedian and third median 3 yellow spots, and the yellow band displays on its outer extremity some lunules of the ground-colour, both on the fore and hindwings.

*pollis*. **Ph. pollis** *Godm. a. Salv.* (88 i), from Mexico, comes closest to *orthia* from Brazil and Paraguay.

*orthia*. **Ph. orthia** *Hew.* (89 h) resembles *velica*, but has the forewings more elongate and all the light markings of the upperside much narrower. Also beneath it is like *velica*; possibly both belong to one and the same species. Some specimens have the pale markings almost white, with all detail obliterated: = ab. **evanescens** n.

*berenice*. **Ph. berenice** *Fldr.* (89 i), from Peru, advertised by STAUDINGER under the name of *telemachus* i. l., greatly resembles *orthia*, but differing in the presence on the hindwing of a yellow submarginal line, very distinct especially in ♀, in addition to the submarginal row of lunules. Underside much more yellowish, but hardly differing from *orthia* in the markings.

*sejona*. **Ph. sejona** *Schaus* (89 i), from southern Brazil (f. i. St. Catharina and Rio grande do Sul), is much lighter coloured than *orthia*, from which it also deviates in the markings

*velica*. **Ph. velica** *Hew.*, habitat unknown, has, judging from the figure supplied by the author, the brown spots on the upper surface much larger, being therefore much lighter than *dictynna* *subsp. nov.* (89 k) from



South Brazil and Argentina which closely resembles above the Palearctic *Melitaea* bearing the same name; Prof. Dr. SEITZ who frequently captured this species in the Gardens of Agriculture at Palermo in Argentina, reports that it also possesses the low, jerking and whirring flight of that species.

**Ph. geminia** *Hpffr.* (89 i), from Peru, has a blackish-brown upperside, with a white subapical band *geminia*. on the forewing, in which the posterior spot stands by itself; on the hindwings 3 yellowish submarginal lines. Underneath the forewings are as above, but lighter, the hindwings with the usual brown markings on a greyish-white ground. — **nana** *Druce* (89 i), likewise from Peru, has the white band on the upper surface of the fore- *nana*. wings complete, the underside more yellowish.

**Ph. jana** *Fldr.* As no specimens are available, I just give the original description: "Bogota (Colom- *jana*. bia)". ♂ deep fuscous, forewings with an oblique, shortened, excavated median band of dark brown, hindwings with 2 indistinctly mottled, and a third indistinctly undulate parallel stripe of ochreous brown. Forewings dark brown underneath, with the basal third, a spot at apex and on inner margin ochre-yellow, indistinctly margined with black, and with 2 rows of brilliant bluish-white subapical lunules; hindwings ochre-yellow, shaded with dark brown on the outer subcostal, the small basal and discocellular fasciae as well as 2 other bands confluent at the middle bluish-white, followed by rows of curved spots margined with reddish-brown, and a few slightly silvered, confluent submarginal spots, edged with bluish-white and outwardly ringed with black. In size it approaches *hera* *Hbn.* Forewings not angular, hindwings short along the inner margin, but elongate at the costa". — Seems to be closely related to *elaphiaea*.

**Ph. carigia** *Schaus* from Colombia is described by the author as follows: "Forewings: Basal half deep *carigia*. brown with black basal fascia and a double, black, inwardly oblique, undulate line, an oblique ochre-yellow spot at the apex of the cell, margined with black; outer half black, spotted with ochreous, a large spot starting from vein 3, a trifle beyond 2; an oblique row of spots from costa to 4, a large subterminal spot before the inner margin, another, minute, between 4 and 5, and a third, small, curved spot at the costal margin, an irregular terminal line interrupted by the veins and enlarged between 3 and 4, obsolete between 5 and 6. Hindwing: Cell and the space beyond heavily brown, costa and terminal margin black, a broad ochre-yellow median band beyond 7; inner margin brown dusted with yellow, an ochreous outer line from inner margin to 4, followed by a similar marginal line from anal angle to apex. Under surface: On the forewings the spots yellowish-white and larger, terminal border deep reddish-brown, crossed by a fine dark line, slightly grey at apex; basal half yellowish-white, with a large, irregularly ring-shaped mark, at inner margin and between the large spots black. Hindwings: Basal half whitish, with large buff blotches margined with reddish-brown; a brown median line, followed at the costa by a small dark area; a reddish-white space between 2 and 6, terminal border broadly grey, mottled with tulous, the extreme border reddish-brown, with a dark double marginal row of lunules. Size as that of *sejona*".

**Ph. elaphiaea** *Hew.* (89 i), from Ecuador and Peru, is above blackish-brown; forewings with a brownish- *elaphiaea*. yellow median band widening towards the termen. Hindwings dusted with yellow, with 3 yellowish submarginal lines. Underside of forewings like upper surface, but with the dark markings paler; hindwings dirty yellow, with 6 rows of pale, brown edged lunules. — **elaphina** *Stgr.* i. l. (89 i), from Bolivia, has on the forewings the *elaphina*. median band lighter, on the hindwings the lines more distinct and reddish. Underside paler. — **abrupta** *abrupta*. *subsp. nov.* (89 i) is of smaller size; forewing with the median band much narrower and appearing as if torn off between 1. and 2. median, accompanied by a prominent small round spot of similar colour. On the forewing in addition a yellowish subapical spot, and the underside much paler.

**Ph. nussia** *Druce*, from Peru, is about as large as *crithona*; upper surface dark brown, forewing *nussia*. with a white subapical spot and, near the inner margin, a submarginal one of equal size. Hindwings dusted with yellow, with the termen dentate and marked with 3 ochreous stripes. Underside as in *nana*.

**Ph. nazaria** *Fldr.* (= *mazaria* *Ky.*). Of this species we only can give a translation of the original *nazaria*. description, as follows: "Bogota. ♂ wings blackish-brown above, with the base dark and very faintly marked; In the cell of the forewing a spot; small subapical bands followed by 3 spots, the inner broad and excavated, ending at the costa, with a distal spot close by. Hindwing with a broad band, frayed out at the middle, divided by dark brown scales on the outside, inside with 2 fine stripes outside of the cell, and, joining them posteriorly, very long, darkbrown lunules. Under surface ochreous brown, surrounded distally by similar submarginal lunules; forewings with broad pale bands and spots, margined distally by a blackish border, with a small pale basal band in the cell; hindwings with basal rings and stripes, partially confluent; in the middle a curved streak from which another, quite faint shadowy stripe of dark brown goes to the costal area; in addition some minute blackish-brown lunules, and before the fringe an undulate slightly silvered stripe. Belongs



to the *thymetus* group, the forewings being slightly curved below the apex, the hindwings nearly angular at the middle termen".

*otanes*. **Ph. otanes** Hew. (88 h), from Guatemala resembles *crithona* both in size and shape of wings. ♂ forewings dark brown above, with a small fulvous spot at the apex; hindwings faintly purplish, only the termen tinged like the forewings. Underside of forewings fulvous, paler at base, with some black spots, one at costa, a triangular one at apex, and a third one reddish-white at termen. Hindwing grey and fulvous, with a few large fulvous spots.

*cyno*. **P. cyno** Salv. a. Godm. Like *otanes*, but the forewings with larger discal spots above, underneath almost unicolorous all but the apex; hindwings more grey, with the spots as in *otanes*, though less distinct. Mexico.

*sopolis*. **Ph. sopolis** Godm. a. Salv. (88 i), from Guatemala, is closely related to *otanes*, differing chiefly in the very pregnant spotting of the forewings. The description reads: "♂ like *otanes* ♂, but the forewings spotted with yellow. ♀ like ♂, but resembling in the spots on the forewing *ptolyca*; hindwings suffused with rufous above".

*aceta*. **Ph. aceta** Hew., from Colombia, resembles a small-sized *Eresia*. Upper surface deep brown, the forewings indistinctly spotted with fulvous near base, and with 2 similar spots in middle. On both wings a band of rufous ocelli centred with dark brown, followed by a row of similar lunules, and preceded on the forewings by 2 larger spots of fulvous divided by the nervules. Underside yellowish-grey, with similar, although more faded markings as above. — *delphia* Fldr. (89 k), likewise from Colombia; our figure was taken from the type kindly lent us by Dr. K. JORDAN. *delphia* must be considered to be the typical form, differing from HEWITSON's *aceta* by having the markings of the upper side reduced, and the ground-colour beneath paler, more yellow.

*acesas*. **Ph. acesas** Hew. (= *sydra* Reak.), from Venezuela. A rather large species, with moderately excavated termen of forewings. Upper surface dark brown, with larger pale spots at middle, and a submarginal row of dark yellow spots on the forewings. Hindwings with 3 rows of deep yellow spots and 2 obsolete, similar streaks near base. Under surface with a large spot at base, two smaller ones in middle and an orange spot at termen; apex grey with a white lunule. Hindwings grey and fulvous, with paler spots and lunules and a submarginal row of brownish crescents.

*ezba*. **Ph. ezba** Hew., from Colombia, is, according to the author, closely allied to *acesas* and *abas*. Described as follows: ♂ dark brown, forewings with a spot in the middle cell, a macular median band, a few spots near the apex and an undulate submarginal band fulvous, the apical spots white. Hindwings from base to beyond middle paler, with 2 terminal rows of lunules. Underside of forewings brownish-red, darker towards the termen, with 1 spot in cell, a band below the median nervure, a macular band beyond the middle, composed of a large triangular spot and 3 round ones the last of which is black; the posterior part of the termen yellow; at the apex 2 larger white spots; along the termen a black undulate line. Hindwings pale reddish-grey from base to middle, with 2 basal lunules, and beyond the middle a pale yellow band, followed by 4 black dots and a submarginal row of white lunules.

*crithona*. **Ph. crithona** Salv. (89 k), from Chiriqui, closely resembles *elaphiaea*, but with the termen of the forewings more sharply dentate; the upper side of both wings marked with fulvous at base, on the hindwings the 3 yellowish lines farther apart. Also beneath it resembles *elaphiaea*, but with an unusually large yellow spot in the middle of the hindwings. — *stenotaenia* subsp. nov. (89 k). From Juan Vinas. Of this form we know a ♀ taken in February. On the forewing the band much lighter, broader in front, although not reaching the termen, but suddenly breaking off at the 3. median nervule and continuing, gradually getting thinner, almost to the submedian. At the apex a few white dots. The yellow spot between 3. median and lower radial isolated, at the apex of the cell 2 yellow dots, and the yellow spot at the inner angle greatly reduced. Hindwings with only one yellowish submarginal line. Underside lighter than in *crithona*, with the markings corresponding to those of the upper surface.

*verena*. **Ph. verena** Hew. (90 a), from Bolivia and Peru, resembles *crithona* in size and shape, also in colouring, but has on the forewings a yellowish-brown band, growing broader posteriorly and reaching the inner margin, its continuation on the hindwings taking up about one third of the wing, in consequence of which the hindwings appear largely yellowish-brown. At the termen of the forewings, and the base of both wings yellowish-brown spots, and a black submarginal line before the black border of the hindwings. Underside of forewings yellow, spotted with brown and streaked with black; hindwings with a broad, pale yellow median band, reddish-grey base streaked with brown, and brown termen, containing 2 dark undulate lines.

*levana*. **Ph. levana** sp. nov. (88 h), from Costa Rica (Orosi 3800 ft., collection of A. H. FASSL). Wings rather elongate. Underside of forewings yellow, with brownish base and a large spot at the apex of the cell; se-



veral white spots before the apex, termen brownish. Underside pale yellow, with the usual *Phyciodes*-pattern somewhat obsolete.

**Ph. diallus** Godm. a. Salv. (90 a), from Guatemala, has nearly the same shape as *fulviplaga*. Upper surface blackish-fuscous, with few yellowish marks in the middle of forewing and at the outer margin of hindwing. Under surface: Forewing greyish brown, with yellowish terminal spots, hindwing yellowish-grey, with the usual *Phyciodes* markings.

**Ph. chromis** Godm. a. Salv. is possibly only a form of *diallus*, from which it does not differ at all in ♂, *chromis*. whereas the ♀ has the spots on the forewing paler than typical *diallus*. Panama.

**Ph. cassiopea** Godm. a. Salv. (90 a) has the upper surface blackish brown, with blurred yellowish markings. Hindwings with a yellow submarginal line and an incomplete row of black, yellow margined ocelli. Underneath the forewings are greyish-brown, with yellowish spots at termen, the hindwings yellowish-grey, marked with brown. Costa Rica. — **obscurata** Fldr. (90 a), from Mexico, the typical form, the type of which was lent by Dr. K. JORDAN, is rather smaller, the white subapical dots are absent, and the underside is paler and more devoid of markings.

**Ph. fulviplaga** Btlr. (90 a), from Costa Rica and Chiriqui is distinguished by the unusually broad wings. Upper surface black-brown, with a more or less extensive subapical blotch of brownish-yellow and several similar spots at the termen. The forewings are blackish-brown beneath, with the same brown-yellow subapical spot and yellow termen as above. Underside of hindwings mottled with brown and reddish on a yellowish ground.

**Ph. niveonotis** Btlr. a. Druce (90 a), from Costa Rica resembles *drusinilla*, but has the markings of the upper surface very feebly yellowish, almost white, and the ground-colour of the underside whitish.

**Ph. drusinilla** Stgr. i. l. (90 a), from Argentina, has the upper surface blackish fuscous, with a large yellow discal spot and 2 small subapical spots on the forewings, and a yellow median band on the hindwings. Under surface dirty yellow, with broadly blackish costal margin and black subapical band on the forewings, and the markings of the hindwings brownish as usual, but almost obsolete.

**Ph. subconcolor** spec. nov. (90 b), from Arizona, has numerous obsolete yellowish-brown spots on brownish-black ground. Underneath the basal area of the forewings dirty yellowish, with black stripes, the outer area marked as above. Underside of hindwings reddish-white along costa, in the posterior half brownish-grey, with brown markings, particularly a large spot near costa and a smaller one in the middle.

**Ph. ptolyca** Bates (90 b), from Guatemala and Venezuela has the markings of the upper surface broader than in *minima*, varying from darker to lighter. Under surface marked with fuscous on whitish or yellowish ground.

**Ph. faustus** Godm. a. Salv. Very much like *ptolyca*, but the spots on the forewings are different: The lower of the two central ones larger, almost round; two others before the apex, the lower of which minute, the upper elongate. Median band of hindwings coherent, the submarginal band obsolete. Panama: Chiriqui.

**Ph. phlegias** Godm. a. Salv. (90 b as *plutytaenia*), likewise resembles *ptolyca*, but has the outer margin more deeply excavated, the spots larger, brilliant rufous, on the hindwings a brilliant ochreous yellow median band, growing broader towards the apex, tapering towards the inner margin. Honduras.

**Ph. drusilla** Fldr., from Venezuela and Colombia, resembles *orthia* above, but has the forewings even more profusely spotted with yellow, and on the hindwings 2 yellow submarginal lines. Under surface more richly marked, but with the terminal eye-spots on the hindwings only just indicated. ♀ above marked with pale yellow, almost white. — Whether **albofascia** nov. form. (90 b), from Guatemala, of which we figure the ♀, is a form of *drusilla* or a species of its own, cannot be decided, until further material is available. It lacks on the hindwings the median band which is only indicated by a pale, obsolete line; forewings with a broad white fascia extending to beyond the 1. median. Under surface paler than that of *drusilla* ♀, otherwise hardly different.

**Ph. tuncis** Bates (= *punctata* Edw.) (90 b, c), from Guatemala, Panama and the southern United States, is distinguished by the sexes greatly differing in size, the ♂ being very much smaller than the ♀. Uperside likewise blackish fuscous, with pale yellow markings, especially a very prominent median band on the hindwings. Underneath both wings with yellowish base.



- flavimacula.* **Ph. flavimacula** *spec. nov.* (90 c), from the Cauca Valley (Colombia) has the upper surface blackish-brown, marked with fulvous in ♂ and with pale yellow in ♀. Underneath the markings of the forewings are as above, hindwings marked with the usual *Phyciodes* pattern on yellowish ground. — **conflua** *subsp. nov.*, from Peru (Chanchamayo) is somewhat smaller, with the yellow median bands broader, that of the forewing coherent. Under surface rather grey than yellow forewings with a complete yellow median band.
- stesilea.* **Ph. stesilea** *Bates*, from the interior of Guatemala, resembles *tulcis* in size and shape as well as in the colour of the upper surface. Only the ♀ has been described which the author inclined to regard as the ♀ of *tulcis*, but desisted on account of the larger size and the markings of the under surface. Hindwings beneath a rusty yellowish brown, with darker, oblique undulate lines, a broad ashy-grey basal stripe and a fine, dark, undulate submarginal line.
- dracaena.* **Ph. dracaena** *Fldr.* (90 c). Our figure was taken from the type. Under surface: Forewings much paler than above, with the light spots larger, nearly white; hindwings smoky grey, with faded, pale broad median band, but the other markings reduced.
- brancodia.* **Ph. brancodia** *Schaus*, from South Brazil (São Paulo) I only know from the description: "Wings brown, sprinkled with fulvous scales at base, forewings spotted with pale fawn-colour. A small discal spot in the cell, a much larger one at its apex, and behind each of these above the submedian another spot; a red-brown stripe on the discocellulars, 4 spots between vein 4 and submedian, the two posterior ones smallest; two others before the inner margin, before and behind vein 2; 2 subterminal spots between 4 and 6, a minute one at the costal margin and a marginal spot between 3 and 4. Hindwing: A basal spot at the costa, one in the cell followed by another one, a large spot at the apex of the cell followed by a fulvous lunule, 4 small spots between vein 4 and costal margin, a broad band from near inner margin to vein 7, intersected by the nervules and followed by a dark irregular line which likewise is intersected by the veins, and a row of lunules; fringe white, spotted with brown at the veins. Underside: Basal half of forewings whitish, crossed by a broad inner and median band of yellow partially edged with fuscous, outer half black, the spots as above, but larger and white; between vein 2 and 4 a pale space, a few bluish and brownish spots at the apex, and a fine, dark, undulate terminal line. Hindwings dusted with whitish fulvous, a double inner undulate and reddish brown double fine outer line, above which a brown spot at the costal margin; a small brown spot above the cell, subterminal black spots between vein 2 and 5 which may, however, be also fulvous, a double lunular terminal line, partly bluish and shaded with pale brown. Allied to *tulcis* *Bates*". About as large as *sejona*.
- alexon.* **Ph. alexon** *Godm. a. Salv.* resembles somewhat *aequatorialis*, having the spots arranged in similar manner, but those in the median area of the forewings partly orange-brown instead of ivory-yellow, on the hindwing the basal spots, in ♀ also the terminal ones, dull orange. Underneath like *Ph. nebulosa*. Mexico (Sierra madre del Sur).
- aequatoria-*  
*lis.* **Ph. aequatorialis** *Stgr. i. l.* (90 c), from Ecuador, is distinguished above by numerous yellowish spots partially united into bands, on black-brown ground. The colour of the under surface is yellowish, the markings like those of the upper surface, only the *Phyciodes* pattern at the outer margin of the hindwings excepted. — **gisela** *Stgr. i. l.*, from Brazil (Matto Grosso), differs in having the ground-colour darker, the yellowish spots being absent.
- texana.* **Ph. texana** *Edw.* (= *smerdis* *Hew.*, *cincta* *Edw.*) (90 c), from Texas and Mexico. Upper surface delicately marked with white, both wings with brown basal spots, occasionally almost obsolete. Under surface of forewings in the inner half brilliant yellowish-brown, hindwings traversed by a white median band, forewings with an angled postmedian row of white spots.
- sitalces.* **Ph. sitalces** *Godm. a. Salv.* (88 i), from Guatemala, resembles *texana*, but has the wings shorter; hindwings with the white median band barely indicated, underneath deep ferruginous, without the white cross line.
- drymaea.* **Ph. drymaea** *Godm. a. Salv.* (90 c), from Honduras, has the upper surface blackish-fuscous, forewings spotted with pale yellow; 2 yellow submarginal lines and a median row of yellow spots on the hindwings. *sosis.* Under surface greyish-yellow with the usual markings. — **sosis** *Godm. a. Salv.* (90 d), from Chiriqui has on the hindwings in the place of the median row of yellow spots a line formed of yellow lunules. Under surface somewhat more yellow.
- ardys.* **Ph. ardys** *Hew.* (90 d) from Mexico is larger than *texana*, which it resembles above, but with broader white markings. But the underside much more monotonous, since the forewing has the base not yellow-brown, but corresponds in colour and markings with the rest of the wing.



**Ph. subota** *Godm. a. Salv.*, from Guatemala, resembles *ardys*, but the submarginal lines on the hind- wings are nearly obliterated, the base of the hindwings uniformly deep blackish-fuscous, and the hindwings are purplish grey beneath, not laved with ferruginous. *subota*.

**Ph. lelex** *Bates* (90 d). Like *ianthe*, but of smaller size and with the markings of the upper surface yellowish; on the forewings a few more pale spots, and on the hindwings 2 pale submarginal lines. Underneath the hindwing lacks the white median band, and all the pale markings are reduced, rendering the general appearance much darker. Panama. *lelex*.

**Ph. annita** *Stgr.* (90 d), from Venezuela. Upper surface blackish brown with a few nearly obsolete marks on the forewings and 3 yellowish lines on the hindwings. Underside dirty yellowish, with the usual markings. *annita*.

**Ph. morena** *Stgr. i. l.* (90 d), from Peru (Cuzco). Wings with smooth margins; upper surface with a yellowish submarginal line and a subterminal row of black, yellow margined eye-spots on the hindwings. On the forewings only traces of a yellowish terminal line. Underside greyish-black, devoid of all markings. *morena*.

**Ph. atronia** *Bates* (88 i); from Guatemala. ♀: Wings broad, dark brown; forewings with a curved blackish-fuscous stripe at base, hindwings with a submarginal row of short, curved light brown lines. Forewings with blunt apex, and termen deeply excavated about the middle, hindwings distinctly so at apex and with termen denticulate; forewings with a small brown spot between several of the veins behind the middle. Under surface dusky brown in the middle, paler at the margins, the dark lines as above, the interspaces lighter than the ground. Hindwings paler, with some almost imperceptible marks. *atronia*.

**Ph. argentea** *Godm. a. Salv.*, from Guatemala and Nicaragua, is closely related to *atronia*, but both sexes display on the under surface of the hindwings a silvery lustre. *argentea*.

**Ph. nebulosa** *Godm. a. Salv.* (88 i), from Guatemala, has the hindwings dark brown, the forewings spotted with ferruginous, as also the base of the forewing, the latter with a submarginal row of lunules. Under surface of forewings yellowish, hindwings pinkish-white, dusted with yellowish-fulvous, with an irregular, delicately tinted blotch reaching the costal margin. Closely allied to the *atronia* group. *nebulosa*.

**Ph. alethes** *Bates*, from Central Guatemala and Ecuador, is related to *ardys*, *lelex* and *ptolyca*. ♂: Forewing with termen moderately excavated, but the anal angle not perceptibly produced. Dark brown, with the yellowish spots moderately large. Hindwings with a few oblique reddish marks at base, the median stripe moderately broad, the 2 submarginal lines fine and pretty much contiguous. Underneath the hindwings differ from those of *lelex* in the presence of dusky brown and reddish spots, two of which are united to a broad, almost coherent, median band. The submarginal lunules not very distinct. *alethes*.

Of **Ph. archesillea** *Fldr.*, from Mexico (Cordoba, taken in January) we only can furnish the original description, which reads as follows: "Allied to *alethes* *Bates*, but with the wings shaped as in *stesilea* *Bates* marked with a dense cluster of dirty yellow basal spots, a pale ochreous band in the cell and a submarginal row of pale ochreous lunules; on the forewings the 5. lunule much the larger, the rest quite minute or blurred; on the hindwings the lunules are followed by a series of pale ochreous striae which toward the vein (costa?) are of decided yellowish tint; otherwise as in *alethes*, with which it corresponds also on the under surface, only the forewings have two apical lunules, the hindwings a basal spot and discal fascia, both much clearer white". *archesillea*.

**Ph. conferta** *Fldr.* (90 d), from Bahia, of which our figure represents the type, displays the same markings on both sides, only the ground-colour of the underside is much lighter. *conferta*.

**Ph. ianthe** *F.* (90 d, e) from Brazil and Bolivia. Upper surface blackish-brown, with white markings, as seen in our figure. Under surface characterized by the yellowish tint of the inner half of the forewings which otherwise reproduce the markings of the upper surface. Underside of hindwings with a row of submarginal lunules, followed by a series of eye-spots. The white median band of the upper surface is reproduced also beneath, and the basal area shows a brownish design on white ground. — **Ph. atra** *Ky. i. l.* (90 b, c), from Argentina, has the white markings reduced, both above and beneath, and the yellowish basal area of the underside of the forewings more brilliant and extensive. *ianthe*.

**Ph. abas** *Hew.* (= *fellula* *Schaus*) (90 e), from Colombia, where it ascends to altitudes of 6000 ft., differs from *ianthe* in the narrower wings and reduced white markings of the upper surface of the forewings. Also beneath it resembles *ianthe*, but the hindwings have the submarginal row of lunules not white, but dark, occasionally quite black. *abas*.

**Ph. hera** *Cr.* (90 e), from Surinam, is distinguished from *ianthe* by the much broader white median band on the hindwings and the much larger and differently shaped white spots on the forewings. Underneath the *hera*.



markings are very much as in *ianthe*, but likewise broader, and the basal area of the forewings is of a paler tint.

- myia*. **Ph. myia** Hew. (90 e), from Mexico and Central America, differs from *ianthe* in the narrower wings and reduced white markings of the upper side of the forewings. Also beneath it resembles *ianthe*, but has the submarginal row of lunules dark, sometimes black, never white. — *griseobasalis* *form. nov.* has the middle cell of the forewings underneath which in normal specimens is fulvous, grey.
- hermas*. **Ph. hermas** Hew. (= *genigueh* Reak.), from California, I only know from the description and figure furnished by the author. Upperside of ♂ dark brown, forewings with 12 or more distinct white spots, termen feebly excavated, hindwings with 2 white spots near the base, a broad median macular band, and 2 submarginal rows of fulvous spots. Under surface of forewings orange at base, then brown, with the white spots of the upperside reproduced; hindwings brownish-white, with a few indistinct white spots and a submarginal row of white lunules, termen fulvous, with one spot each at costa and middle termen.
- ofella*. **Ph. ofella** Hew. (90 f), from Colombia and Chiriqui; wings very elongate, with broadly white median band reaching from inner margin of hindwings to middle of forewings. Under surface very much as in *ianthe*.
- leucodesma*. **Ph. leucodesma** Fldr. (90 f), from Colombia and Venezuela. Wings very broad and rounded, with the bands and spots so broad that the greater portion of the upperside is white. Also underneath the white ground-colour prevails: forewings with base yellow, and terminal markings dark brownish: hindwings with a subterminal row of white lunules and, following it, a series of dark ocelli.
- coela*. **Ph. coela** Druce (91 c), from Costa Rica. ♂ forewings black, with a triangular white spot behind the middle of the costa cut up into 4 by the veins, a small spot at the apex, a submarginal row of 6 white spots the third of which is smallest, and a large, round, white spot at the outer angle. Hindwings fulvous-orange, base and termen black, with a white subapical spot and a submarginal series of yellowish lines. Under surface like upper side, but with all the white markings larger, a yellow streak at the base of both wings, and a yellowish spot partially entering the cell of the forewings.
- nigrella*. **Ph. nigrella** Bates (88 i), from Central Guatemala. A small sized species. ♂ wings very long, forewings pointed, termen gently and evenly curved outwards. Abdomen protruding beyond the wings. Upperside smoky brown, with 3 or 4 pale brown spots in the middle of the forewings and a pale brown median band on the hindwings. Under surface: Forewings brown with several dusky lines, darker in the middle, with a large triangular spot at the middle of the hindmargin and 2 pale spots near the apex; hindwings light brown, darker from middle to termen, with a series of short curved dark striae and a row of black spots parallel to the termen.
- lutescens*. **Ph. lutescens** Godm. a. Salv., from Guatemala, approximates to *nigrella*, ♂ and ♀ resemble *nigrella* ♀, with the spots on the hindwings always distinct, those on the forewings and the band on the hindwings, especially in ♀ much more prominent, resembling in this respect *anieta*. Probably it is only a form of *nigrella*.
- cerquita*. **Ph. cerquita** Dogn., from Ecuador (near Loja); only known to me from the description: "Both wings dirty white above, dusted with fine black scales; forewings bordered with black throughout, hindwings with an even black border along costa and terminal band, which latter is much broader than on the forewings, and encloses at the apex a white point, abdominal border ferruginous. The under surface resembles the upper, but all the white portions are scaled with black, and the terminal band contains a row of white dots on both wings." Size like that of *lansdorfii*.
- flavida*. **Ph. flavida** Hew., from Ecuador, approaches in size *flavina*, but is pale yellow above, the forewings broadly, hindwings narrowly bordered with blackish-brown. The colouring of the under surface is paler, and devoid of all markings.
- albescens*. **Ph. albescens** spec. nov. (90 f), from Ecuador (1 ♀), differs widely from all other species. Upper surface dirty whitish-yellow, with the border of the forewings broadly greyish-black, that of the hindwings narrow. Underneath the forewings have in addition to the dark, somewhat faded termen a few brownish striae in the cell, the hindwings fine greyish-fuscous markings on dirty yellowish ground.
- albipunctata*. **Ph. albipunctata** spec. nov. (90 f), from Mexico. Upper surface deep greyish-black, with a submarginal



row of white spots on each wing, on the forewing a subapical row of larger white spots and several similar spots near the base. Underneath like above, but paler, hindwings with a broad light median band and the usual *Phyciodes* pattern on the termen.

**Ph. fulgora** *Godm. a. Salv.* (90 f), from Costa Rica. ♂ Wings very narrow. Upper surface blackish-brown, *fulgora*, with large yellow spots on the forewings and a narrow similar median band on the hindwings. The markings of the under surface as above, but much less dark. Hindwings marked as usually.

**Ph. selene** *spec. nov.* (90 f), from Tolima (Colombia, 5200 ft.), captured in January 1910 by FASSL, *selene*. has the upper surface black-brown, with large brownish-yellow, band-shaped spots. Under surface of forewings yellowish, with feeble blackish subapical spots and brownish marks at the inner half of the costal margin. Under side of hindwings greyish-yellow, with a submarginal row of whitish-blue lunules, and numerous similarly coloured spots in the inner half.

**Ph. etia** *Hew.* (90 g), from Ecuador and Peru. Upper surface blackish fuscous, with feeble bluish lustre. *etia*. forewings with a large median blotch of fulvous and a similar subapical streak. Underside yellowish, hindwings with brownish scalloped lines, forewings with brownish basal, median and subapical markings.

**Ph. calena** *Hpfrr.* (90 g), from Peru and Bolivia. A delicate species, above black-brown, slightly marked *calena*. with white. Under side paler, marked as above, but with the median band of the hindwings broader, and the greyish-brown termen enclosing a submarginal row of whitish lunules followed by black, pale margined ocelli.

**Ph. catula** *Hpfrr.* (= *abasina* *Stgr.* i. l.) (90 g), from Peru and Bolivia, resembles above a small-sized *catula*. *Dynamine*. Upper surface marked with pale yellow on blackish-brown ground; underneath the forewings have a paler tint, but the same markings. Hindwings with distinct brown spots on both sides of the pale median band. — *extincta* *Stgr.* i. l. (90 g), from Peru, has the markings of the upper surface white instead of yellow, *extincta*. and those of the hindwings very indistinct, particularly the median band.

**Ph. minima** *spec. nov.* (90 g); from Salta. Upper surface black-brown, forewings with 6 yellow small *minima*. spots, hindwings with a yellow median band and 2 similar submarginal lines. Underneath the forewings as above, but with the ground-colour brown, hindwings marked as usually. Closely resembles *catula*, but of smaller size and different shape, the forewings being narrower and the hindwings forming at the inner angle a sharp point.

**Ph. orticas** *Schaus.* from Brazil (Castro in the State of Paraná), described by the author as follows: *orticas*. "5 forewings: A small light spot near the end of the cell, a short oblique whitish band from vein 4—6, a large whitish spot from the base between 2 and 3 (ground-colour?). Hindwings: A broad oblique whitish band from inner margin to 7, slightly yellowish between 6 and 7 and at inner margin, a fine greyish-brown submarginal lunular line. Under surface: Basal half of forewings reddish-brown, discal spot larger, partially margined with reddish-brown, the oblique band reaching the costal margin, preceded by a broad black shade which surrounds the large spot before the inner margin; termen brown, with a fine dark terminal line, faintly white at apex. Hindwing: The basal two thirds whitish, intersected by fine, irregular brownish lines, partially double and filled with whitish-blue, the outer third pale brown, the subterminal dots small, darker brown, followed by a fine reddish-brown line and, parallel with it, a grey terminal lunular line". As large as *sejona*.

**Ph. dicoma** *Hew.* (90 g), from Rio Grande do Sul and Sa. Catharina. Wings very long, marked with *dicoma*. blackish-brown on fulvous ground. Hindwing with the median fulvous band very broad. Under surface fulvous, feebly marked with fuscous.

**Ph. angusta** *Hew.* (82 h) seems to be very widely distributed, our material comprising specimens from *angusta*. Colombia, Jurimaguas and Huancabamba, that show very slight, probably individual differences. On the very narrow, above deep blackish-fuscous forewings a fairly large yellow median spot, preceded by 2 partially incomplete rows of yellow dots. Under surface much paler, but the forewings marked in the outer half as above, hindwings with the usual *Phyciodes* pattern, in addition to a yellow median band.

**Ph. polina** *Hew.* is the first in the series of species which approach the so-called mimics. As may be *polina*. seen from the figures, it differs greatly from *nauplia* not only above, but also on the under side: In the cell of the forewings the brown basal spot is separated from the yellow discocellular spot by a black streak, the yellow spots in the outer half of the forewings are no larger than above, on the hindwings the black subbasal bands are placed more obliquely, the pale marginal band is about four times as large, the black band bordering the



brown one on the inside is increased by another one separated from the former by a white line, and the apex is adorned by large spots of mother-of-pearl. Ecuador and Colombia. — **encina** *Fldr.*, likewise from Ecuador and Peru (Chanchamayo) is somewhat larger and darker above, with pale yellow markings. On the forewings the middle submarginal spot produced distally in the shape of a comb. Underneath the colouring is more brilliant, the apex of the forewings, as well as the light coloured portions of the hindwings bright silvery white. — **intermedia** *form. nov.* (92 g erroneously marked *polina*), from Bolivia, is intermediate between the two preceding forms, both in colouring and size. On the under surface the apex of the forewings less brightly silvered than in *encina*, the hindwings with large, pale yellow, indistinctly defined spots on silvery white ground.

**Ph. clio** *L.* (92 h) is found from Central America to Colombia, Ecuador and Peru. ♀ with broader, more rounded wings than ♂.

**Ph. laias** *Godm.* (90 g), from West Colombia (Rio Aguaca Valley, 6000 ft.) (1 ♂ in FASSL's collection) Upper surface blackish-brown, with yellowish brown markings. Underneath it resembles *perna* (92 g), but the hindwings with 4 black stripes and 2 silvery white semi-bands.

**Ph. perna** *Hew.* (92 g), from Rio de Janeiro, has in both sexes, especially the ♂, the wings very long and narrow. — **alma** *Stgr.* is distinguished by larger spots. Sa. Catharina.

**Ph. sestia** *Hew.* (90 g, h) from Ecuador. ♀ varies very much, from pale straw-yellow (type) to yellowish-brown = **saturata** *Roeb.* (90 h).

**Ph. nauplia** *L.* (92 h), from Surinam, is smaller than *clara* *Bates* (92 h), of Central America and Venezuela which has, moreover, the white spots and bands larger. BATES treated *clara* as a separate species. — **plagiata** *form. nov.*, from southern Peru (upper Madre de Dios, 1500—3000 ft., A. H. FASSL), has the white markings broader, and lacks the posterior black band in the subapical spot on the forewings. Underneath marked as above, but the dark portions are heavier and deeper black.

**Ph. eranites** *Hew.* (92 c, d erroneously spelled *evanides*), from Chiriqui and Colombia. ♂ differs from ♀ (pl. 92 c) in having the markings of the under surface reduced, especially the white lunules at the termen of the hindwings only just indicated. The ♀ varies much in colouring as well as in the markings. — **mejicana** *subsp. nov.*, from Mexico (Presidio) is less black above, underneath more yellow.

**Ph. bella** *Ky.* (= *mylitta* *Hew.*) (88 i), from Ecuador has a close resemblance to *Eueides aliphera* (80 a), being, however, somewhat smaller, with black inner margin of the forewings and on the hindwings, besides the black border, a similar subterminal band, with the intervening space corresponding to the ground-colour.

**Ph. casiphia** *Hew.*, from Ecuador, is larger than *bella*, otherwise resembling it closely, but with a small white apical spot. Forewings black, with a red-brown band at the inner margin, a similar median and a somewhat lighter subapical band, the two latter dissected by the veins. Under surface rather paler, with a submarginal row of white spots on both wings.

**Ph. carme** *Dbl. a. Hew.* (92 d), from Venezuela (San Esteban) differs from **oblita** *Stgr.* (92 d) in the brighter colouring and sharper markings. Under surface nearly sulphur-yellow, marked as the upper surface, but with a row of yellow spots at the outer margin of the hindwings, and the middle one of the yellow terminal spots on the forewings reaching the termen.

**Ph. aveyrana** *Bates* (92 d as *aveyrana*), from Surinam, Venezuela and the Amazon, has straw-yellow underside marked as above.

**Ph. emerantia** *Hew.* (92 d), from Colombia, bears a general superficial resemblance to certain *Eueides*. Underneath the white apical markings broader, and the hindwings are adorned with a series of large yellow terminal spots. ♀ not known.

The species now follow resemble *Eueides*.

**Ph. eunice** *Hb.* (92 a), from southern Brazil (São Paulo, Rio de Janeiro), greatly resembles *Eueides esora isabella*, but is smaller. Underside like the upper surface. — **esora** *Hew.* is said to differ from *eunice* in having the black median band on the under surface replaced by a row of black spots. In consideration of the variable nature of *eunice*, we cannot accept this slight difference as sufficient to base a new form upon. — **pella** *Hew.*, from the Amazon, cannot, however, be taken as synonymous with *eunice*, as KIRBY proposed. Forewings with a large yellow apical spot and with the yellow median band tapering anteriorly, on the hindwings the black median band broken up into spots, and the black border is divided by a nearly 1 mm wide band of ferruginous.

**Ph. pelonia** *Hew.* (♀ = *ithomiola* *Salv.*) (92 b), from Ecuador and Peru, differs from *eunice* in the absence



of the yellow longitudinal band in the middle of the hindwings and in having the black median and terminal bands on the same wing broken into spots. Under surface, especially of the hindwings, uniformly brown, marked as above.

**Ph. olivencia** *Bates* (92 a, b), from the Upper Amazon, lacks above the clear yellow bands; on the forewings the black markings vary greatly, as may be seen from our figures of **gudruna** *form. nov.* and **brunhilda** *Stgr.* i. l. (92 b). — **polymnia** *subsp. nov.*, from Eastern Colombia (Medina 1600 ft., FASSL's collection). ♂ has on the forewing the black median band broader and the subapical band clearer yellow and interrupted; in the ♀ this yellow band broad and uniform. *olivencia.*  
*gudruna.*  
*brunhilda.*  
*polymnia.*

**Ph. mechanitis** *Godm. a. Salv.* (90 h), from Costa Rica, has narrower wings than *olivencia*, hindwings with pointed apex. The species bears a general resemblance to various species of *Mechanitis*. The underside is like the upper surface. *mechanitis.*

**Ph. drypetis** *Godm. a. Salv.*, ranging from Guatemala to Colombia, resembles *mechanitis*, but has on the forewings the termen fulvous proximally, not black, the yellow apical spot smaller, and on the hindwings the black transverse band narrower. *drypetis.*

**Ph. pardalina** *spec. nov.* (90 h), from Pebas on the Amazon, is like *murena*, but with the black colouring of the hindwings reduced on account of the subcostal brown longitudinal band being much broader, and the posterior portion of the outer margin is taken up by a brown subapical band. On the forewings the apex black, with two rows of yellowish small spots, and a larger similar one on the termen between 2. and 3. median nervule. The black median stripe goes about as far as the 1. median. The underside is like the upper surface, but the hindwings have at the termen a submarginal row of fine white spots. — **apicalis** *subsp. nov.* (90 i), from Rio Chuchurras, has the apex uniformly black, and on the hindwings the white terminal spots of the under surface quite minute, and barely visible posteriorly. *pardalina.*  
*apicalis.*

**Ph. quintilla** *Hew.* (90 i), from Ecuador has a superficial resemblance to *Ithomia panamensis*. Under-side somewhat lighter than the upper surface. *quintilla.*

**Ph. datis** *Hew.*, from Colombia, the ♀ of which was described and figured by the author, has the upper surface of the hindwings scarlet and on the forewings an unicolorous, very long triangular basal spot. In the black outer half of the forewings 5 elongate dark yellow spots, a similar spot at the end of the cell, and 2 white dots at the apex. Hindwings with termen black, containing a row of small white spots. Under-side like upper one, but the forewings with a submarginal row of white spots and on the hindwings the veins brown. *datis.*

**Ph. murena** *Stgr.* (92 c), from Peru (Cuzco), resembles *Heliconius bicoloratus*, but is much smaller. In the ♂ the black area on the hindwing dissected by a brown streak near the costal margin. Underside as above, only paler. — A lovely form taken at Pebas in Dezember (1 ♀) is **heliconina** *subsp. nov.* (= *pelonia* *var. B. Hew.*), distinguished by a sulphur-yellow apical band on the forewings formed of 5 elongate spots behind which, between 3. median and upper radial, a roundish spot of similar colour; moreover it has, like *murena* ♂, the black area of the hindwings divided by a brown stripe. *murena.*  
*heliconina.*

**Ph. callonia** *Stgr.* (88 i), from Peru, resembles *heliconina*, but has the apex of the forewing less yellow, in the place of which the median band is yellow. On the under surface of the hindwings a series of triangular white terminal spots. *callonia.*

**Ph. eutropia** *Hew.* (92 b), from Panama, looks like certain *Ithomiidae*; under surface like the upper side, with a row of white terminal spots on the hindwings. *eutropia.*

**Ph. nigripennis** *Salv.* (90 i), from Costa Rica. Only the ♀ resembles certain *Ithomiidae*, whereas the ♂, on account of the shape of the wings and monotony of markings, can hardly be counted among the mimics notwithstanding its other resemblance to the ♀. The underside corresponds to the upper surface, but in the ♂ the yellow spots which above appear as dots, are produced into yellow stripes. — **dismorphina** *Btlr.*, likewise from Costa Rica, is a paler (aberrative?) ♀ form, having all the yellow spots larger, the black border of the hindwings narrower, in consequence of which the yellow marginal spots are not edged with black inwardly, and the median area of the hindwings beneath whitish. *nigripennis.*  
*dismorphina.*

**Ph. prisca** *Hpffr.* (92 e), from Peru, bears a deceptive resemblance to certain *Dircenna* species. The markings of the upper surface are repeated beneath, but the median areas of both wings very pale, almost white. *prisca.*

**Ph. ildica** *Hew.*, from Ecuador, differs from **fassli** *subsp. nov.* (90 e) from East Colombia (Upper Rio Negro, 2500 ft., A. H. FASSL coll.) in the reddish-grey forewings and orange-red hindwings, which latter have the

*ildica.*  
*fassli.*



black outer margin sharply defined. Both forms are marked on both sides alike, but the basal area of the forewings is slightly yellowish.

*celemina.* **Ph. celemina** *spec. nov.* (90 k), from Colombia, resembles *Ithomia celemia*. Underneath the hindwings with very large terminal spots.

*ithomoides.* **Ph. ithomoides** *Hew.* (90 k), from Colombia. The ♀ mimics *Hirsutis hecalesina*, but is much smaller. The under surface exactly corresponds to the upper side, but somewhat paler. The ♂ is distinguished by the very narrow wings and the broad yellowish-brown longitudinal band on the hindwings.

*poecilina.* **Ph. poecilina** *Bates*, from Veragua closely resembles *ithomoides* (90 k). ♀ with broader wings, dark brown; forewings with an ochreous-yellow discocellular spot and a large number of similar spots beyond the cell arranged in rows: One row of 6 spots separated only by the dark nervules, from the costa at the middle, with 2 spots behind the median nervure; 2 parallel rows conforming to the termen, but not reaching the apex in which there only are 3 spots. Hindwings deep brown, in the middle and at the inner margin a large rounded blotch of orange, with a row of yellow submarginal spots and 3 others placed proximally to these near the outer angle. Underside like upper surface; hindwings with an orange spot at base of costa, but, aside from the submarginal row, without any yellow spots. Antennae pale ochreous, black at base. Abdomen yellowish-brown.

*alsina.* **Ph. alsina** *Hew.* (90 k), from Nicaragua, differs from *mimas* *Stgr.* (92 c) in having the bands contiguous, broader and deeper yellow, also the terminal spots larger, occasionally broadly spread out and united with the first yellow band. Typical *mimas* ♂♂ have the spots much smaller than would appear from the figure. The specimen which was figured on pl. 92 c as *mimas*, came presumably not from Rio Dagua, the home of the typical form, but from some other part of Colombia. We name this form **subfasciata** *subsp. nov.*

*philyra.* **Ph. philyra** *Hew.* (= *ezorias* *Hew.*) (92 c), from Mexico (and Santa Catharina ??) resembles in general certain *Heliconius* and *Dione*, all of which are protected species. Underneath as above, only somewhat paler.

*letitia.* **Ph. letitia** *Hew.* (91 a), from Ecuador and Colombia, has the general habitus of an Ithomiid, without, however, resembling any particular species. The markings of the underside are the same as those of the upper surface, but narrower, those at the termen of both wings yellowish-brown; the ground-colour lighter. — **ocellata** *subsp. nov.*, from Peru (Chanchamayo), with deeper, nearly black markings above and the median band of the hindwings narrower, yellowish-white, not sharply defined distally. On the forewings the white submarginal spot at the inner angle enlarged, centred with black scales, like a regular ocellus. In the upper outer margin of the forewings some sharply defined white spots. The markings of the underside chestnut-brown, not fulvous as in *letitia*. — **leucophaea** *Weym.* (91 a), from Huancabamba, differs from *ocellata* in the paler ground-colour of the upper surface and the blurred markings. Also beneath the terminal markings are paler brown.

*lansdorfi.* **Ph. lansdorfi** *Godt.* (92 a), from southern Brazil, closely resembles, especially beneath, *Heliconius phyllis* and *besckei* which fly in the same localities. Larva and Pupa do not deviate from the general type. — **jacinthica** *form. nov.* (90 k), from San Jacintho, has on the forewing the ferruginous area increased, with a broad, but short terminal band of ferruginous from the anal angle.

*acraeina.* **Ph. acraeina** *Hew.* (92 f erroneously as *amoenides*) is the first in the series of species that mimic *Acraea* (*Actinote*). A ♀ from FASSL's collection is larger than the figured ♂, with the base of forewings and the hindwings paler and the median band of the forewings more yellow, the yellow subapical marks reduced. The typical ♀ form is the ♂-like form figured by Dr. STAUDINGER (Exot. Schmett. pl. 36). The aberrative form figured on pl. 91 a, we name ♀ fa. **aberrans**. — A common form is **hilarina** *form. nov.* (92 e as *acraeina*); forewings with shorter red median band and black hindwings. Very similar to *Actinote hilaris* (82 e). Peru, Colombia, Bolivia (2400 ft.).

*neria.* **Ph. neria** *Hew.*, from Ecuador, is described by the author as follows: "Stands nearest *acraeina*. ♂ upper surface dark brown, forewings with a large triangular orange spot divided by the nervules, discocellular black. Under surface fulvous, veins and lines black, forewings with the basal spot as above, hindwings dusted with yellow, base yellow and two red spots. — **crina** *Schaus*, from Ecuador. Hindwings black, scaled with dark grey in the basal half; underneath the pale border seems to be absent since the author does not mention it. — **microdryope** *form. nov.* (92 e), from Colombia, is smaller, the red median band on the forewings different and the hindwings with reddish-brown lustre. Very similar to *Helic. dryope* (78 b), but much smaller.

*actinote.* **Ph. actinote** *Salv.* (= *acraea* *Hppfr.*) (92 f), from Peru, is distinguished by the narrow rusty-red terminal bands of the under surface. — **limbata** *subsp. nov.*, from Bolivia has the markings of the upper surface paler ferruginous, on the forewings the subapical spot smaller and narrower, and the ferrugous terminal band beneath very



moreover the median area of the hindwing beneath is much lighter. — *rosina* Dogn., likewise from Bolivia, *rosina*. has the upperside of the hindwing black, the markings of the forewing redder, and the rust-red marginal bands of the under surface are almost obsolete.

**Ph. fallax** Stgr., from Peru (Chanchamayo), is very similar to *actinote*, but instead of the rust-red *fallax*. marginal band on the under surface of both wings it has only a row of brown submarginal spots on the hindwing.

**Ph. hopfferi** spec. nov. (92 f, erroneously as *acraea*), from Peru, is very similar to *actinote*, but the *hopfferi*. rust-red marginal bands on the under surface are absent.

**Ph. erebia** spec. nov. (91 b), from Peru (province of Huanuco, 1900 m.), has the forewing red-yellow *erebia*. with only the following black markings: a broad apex, a large rounded discocellular spot and an oblong spot at the inner margin. The hindwing is unicolorous black. The under surface is marked like the upper, but of paler colour.

**P. actinotina** Stgr. i. l. (91 b), from Bolivia, is characterized by the red basal part of the forewing *actinotina*. and a narrow white stripe at the costal margin of the hindwing. It is sharply distinguished from the other similar species by the under surface of the hindwing, the ground-colour being here whitish. In addition to the dark brown veins and interneural stripes there are present a broad grey-brown band at the distal margin, 5 black-margined spots of the same colour near the base of the hindwing and 2 red-brown spots in the middle of the wing at the costal margin.

**Ph. vanessoides** spec. nov. (91 b), from Colombia (Bogota), differs from the preceding species in the *vanessoides*. *Vanessa*-like shape of the forewing. The upper surface is black with the basal part of the forewing red. The under surface is much lighter and the dark veins and interneural stripes stand out sharply against the ground-colour.

**Ph. elaea** Hew., from Ecuador, has the wings almost the same shape as in *vanessoides*. The upper *elaea*. surface is black-brown and the forewing has a scarlet band reaching to the submedian and becoming broader posteriorly, divided by the black veins into 4 patches. The under surface corresponds to the upper, the apex of the forewing is grey-brown and the veins and interneural stripes black, two spots near the base and a part of the distal margin scarlet.

**Ph. nebrites** Weym., from Bolivia (Cochabamba), is similar to *Actinote bycia*. This species has the *nebrites*. wings shaped as in *vanessoides* and is also similar in the style of markings, but has besides the vermilion basal area a subapical band of the same colour, which is divided into 7 spots by the dark veins. The ground-colour of the upper surface is brown. The hindwing is also brown, and has darker veins and interneural stripes and a white costal margin. The underside of the forewing is similar to the upper, but the red colour in the basal part is extended to the costal margin and the last spot of the outer band is distally white in cellule 3. In addition the apex and the distal margin are lighter brown and traversed by the dark brown veins and interneural lines. The ground-colour of the hindwing is white, traversed throughout by the brown veins and brown longitudinal lines between the veins. The distal margin is dusted with brown for a breadth of 4 mm., but this becomes indistinct towards the costal margin. At the base are placed 5 spots margined with red-brown, 2 of which are in the cell, in addition there are 3 red spots within a large dark brown spot on the middle of the costal margin in cellules 5 to 7 and further some brownish yellow spots close to the distal margin in cellules 2 to 5. Body brown, only the abdomen beneath with ochre-yellow median stripe. About the same size as *vanessoides*. Only 1 ♂ known.

**Ph. eleates** Weym. (91 a) from Colombia has the same shape as *vanessoides*, but, as the figure shows, *eleates*. is quite differently marked and coloured. Only 1 ♀ is known.

Of **Ph. epione** Godm. & Salv. (91 b), from Colombia (Bogota), 1 ♂ is before us. Upper surface steel- *epione*. blue, with the rather broad red inner margin of the hindwing standing out sharply. The under surface is black, dusted with yellowish at the base of both wings and with reddish at the inner angle of the hindwing.

**Ph. styx** Stgr., from Colombia, is very similar to *Actinote neleus* (figured on pl. 81 c), except that *styx*. it has the body black instead of red. The under surface is grey-black, the veins and interneural stripes are black, the base of the hindwing yellowish.

**Ph. aurora** spec. nov. (91 b), from Ecuador (Zamora, 3000—4000 ft.), of which 2 ♀ are before us, *aurora*. is perhaps further ♀-form of *castilla*. The under surface is lighter than the upper and the veins and interneural stripes stand out sharply on account of the dark scaling. The red anal spot of the upperside of the hindwing is absent beneath.

**Ph. aricilla** Hdffr., from Peru (Chanchamayo), is only known to us from the author's description *aricilla*. ♂ similar to *castilla*, wings narrower, forewing behind the apex "strongly excavated", red band of the forewing much broader, under surface entirely unicolorous brown-black, without markings.

**Ph. castilla** Fldr. (♂ 92 e, ♀ 91 b), from East Colombia, has the ♀ very different from the ♂. It is *castilla*.



considerably larger and has a broad light yellow median band on the forewing, while the hindwing is red with broad black margin and black rays; on the under surface the red colour is wanting. — A further ♀-form is

*virilis*. **virilis form. nov.** It is extraordinarily like the ♂, only differing from it in being somewhat larger, with the ground-colour more brownish and the red median band somewhat longer and broader as well as a shade lighter. *occidentalis*. The ground-colour of the under surface is only a shade lighter. — **occidentalis** Fassl (91 c), from West Colombia (2000 m.), has in the male a somewhat narrower red band and the ♀ is fairly similar to the ♂, except that the red band on the forewing is more washed-out and at the inner margin of the hindwing there are some washed-out red streaks. According to the observations of Herr FASSL *castilla* is found in company with the similar species of *Actinote* and the likewise similar day flying Geometrid *Sangala gloriosa*.

*mundina*. **Ph. mundina** Druce, from Peru (Huiro), is similar to *castilla*. The red band of the forewing extends from the costal margin to the inner angle and is nearly twice as broad. The forewing has at the base of the costal margin a red stripe, which reaches the end of the cell, the hindwing is brownish white beneath with black veins.

*corybassa*. **Ph. corybassa** Hew. (= *cornelia* Stgr. i. l.) (92 g as *cornelia*), from Bolivia, and the 3 following species belong to the mimics of *Actinote antea*s (83 d). In many specimens of *corybassa* a complete row of small white marginal spots is present on the hindwing. The under surface of the forewing resembles the upper, but the hindwing has in the middle a large black spot, and the veins are broadly dusted with black.

*perilla*. **Ph. perilla** Hew. (92 f), from Ecuador and Bolivia, has the underside of the forewing like the upper, *lugubris*. that of the hindwing, however, is dark with red-brown stripes on the basal part. — **lugubris subsp. nov.** (92 f, erroneously called *actinotina*), from Peru, also occurs in much darker specimens than the example figured. The apex of the hindwing beneath is yellowish.

*pellenea*. **Ph. pellenea spec. nov.** (91 c), from Brazil (Reyes), is extremely similar to the *Actinote* of the same name. The under surface is similar to the upper.

*fenestrata*. **Ph. fenestrata spec. nov.** (91 e), from Peru (Huayabamba, 3500 ft.), has on the forewing a median band of transparent spots. The under surface is but little paler than the upper.

*levina*. **Ph. levina** Hew. (92 e), from Colombia, although also *Actinote*-like in habitus, cannot be regarded as a mimic, since no blue-banded *Actinote* species is yet known. The under surface is black, in the middle of the costal margin of the forewing is placed a broad light yellow half-band, at the inner margin of the hindwing there are some light yellow stripes, at its distal margin some small red spots and in the apex and at the inner angle of the forewing as well as on the hindwing some small blue spots. The female, of which only one specimen from the collection of Herr FASSL is before us, is almost like the male; it is merely somewhat larger and with the anterior part of the blue band whitish. — Specimens which, like the one figured in Dr. STAUDINGER's *decorata*. Exot. Schmetterl. (pl. 36), show blue spots also on the hindwing, may be designated **decorata form. nov.** — The specimen figured by Dr. STAUDINGER l. c. is certainly not a ♀ but a ♂.

*margaretha*. **Ph. margaretha** Hew. (91 b) from Colombia has only a distant resemblance to certain *Heliconius* species. The under surface is quite similar to the upper, but in addition a subapical row of white dots is present at the distal margin of the forewing.

The North American species described as *hanhami* Fletcher, *lira* Bdv., *pelopsa* Godt. and *selenis* Kirby are not cited by recent North American authors under these names, which must consequently be regarded as synonyms.

Concerning *Ph. adoxa* Ersch., *castimaria* Godm. & Salv., *catenarius* Godm. & Salv., *durnfordi* Godm. & Salv., *erysice* Hbn., *flavocincta* Dogn., *goujoni* Dogn., *heliconoides* Btlr., *klagesii* Weeks, *moesta* Salv., *mirjam* Dogn., *northbrandii* Weeks, *phaedima* Godm. & Salv., *proclea* Dbl. & Hew., *pusilla* Salv., *tayleni* Godm. & Salv., *tissa* Hew. and *trimaculata* Hew. we are not able to say anything, as we have not access to specimens of these species or the descriptions. Some of them are probably identical with some that we have described and figured above.

## 5. Genus: **Chlosyne** Btlr. (Coatlantona Ky.).

This genus is nearly allied, to *Phyciodes*. It only shows trifling differences from the latter in neuration, the cell of the hindwing is also open. Only in the shaggy-haired, little inflated palpus, which has a very pointed terminal joint, does *Chlosyne* differ from *Phyciodes*, yet even this character is not reliable, as the two genera are connected by transitions. Also the shape of the larvae and pupae is *Melitaea*-like. *Chlosyne* is likewise closely allied to the Palearctic *Araschnia*, from which it only differs in not having the eyes hairy. The principal area of distribution of the genus is Mexico with Central America, but offshoots occur in the south of the United States and in Peru, as well as on the Antilles. The species, like those of *Araschnia*, occur in several genera-



tions, which in some species are as different as *Araschnia levana* and *prorsa*. As the figures show, very diverse forms are included in the genus. — Egg oval, truncate at the tip and somewhat compressed, rounded at the base, the lower three-fifths with slight impressions, the upper part with about 24 obtuse-angled ribs. The eggs are laid in clusters on *Helianthus*. Larva of *crocale* varying in colour, usually black or dark red or brown, with spines like *Melitaea* larvae; it moults four times. Pupa shaped like those of *Melitaea*, light-coloured and with dark brown or black spots and lines. — The butterflies fly at the edges of woods and are fond of resting on flowers.

**Chl. saundersii** *Dbl. & Hew.* (91 d), from Venezuela and Colombia, is rather variable in the female, *saundersii*. the ground-colour on both surfaces being sometimes lighter, sometimes darker, and the light spots at the distal margin and on the basal part of the wings larger or smaller; occasionally also whitish spots occur in the light median band of the forewing. The under surface corresponds to the upper in the scheme of markings but the submarginal rows of white spots are always more distinct than above. — **paupera** *Fldr.*, from Colombia, is *paupera*. according to Dr. STAUDINGER only a nearly black aberration. — Herr WERNICKE of Blasewitz asserts positively that he has also received *saundersii* in large numbers from Rio Grande do Sul (through MABILDE). We cannot find any differences between the 2 pairs before us from this locality and specimens from Colombia, Venezuela and Chiriqui.

**Chl. mediatrix** *Fldr.* (91 d), from Colombia, of which we figure the type, is according to the latter very *mediatrix*. similar above to *tellias*, but beneath to *saundersii*. This species (assuming that we are really dealing with a separate species, which we doubt), however, varies extraordinarily above and beneath. Thus we have before us a form from Colombia in which the proximal half of both surfaces is uniform black-brown; the upper surface has on both wings a red-brown median band, in which on the forewing some yellow spots are placed anteriorly; distally to this band there is on the forewing a curved row of white dots, in the middle of the distal margin some yellow-brown spots, and the wings have a submarginal row of yellow-brown spots. On the under surface the median markings are strongly reduced, but both wings have complete rows of yellow submarginal spots and the hindwing has a curved median row of white dots. We name this form **felderi** *form. nov.* (91 e). *felderi*. — **fassli** *form. nov.* (91 e) from East Colombia (Medina, 500 m.) is much more gaily coloured, as light yellow *fassli*. spots are present not only on the uninterrupted median band but also in the dark basal part and at the distal margin of the forewing, while the proximal part of the hindwing is not darkened but unicolorous red-brown. The under surface has the ground-colour yellow on both wings. — **fruhstorferi** *form. nov.*, from Bolivia, has the upper surface of the forewing almost entirely black, traversed by a sharply defined dark red-brown submarginal band. — Probably *saundersii*, *mediatrix* and *fassli* are local or seasonal forms of one and the same species.

**Chl. lacinia** *Hbn.*, distributed from the south of the United States to Bolivia, is usually black-brown *lacinia*. above with white spots, but specimens not infrequently occur with more or less broad red-brown median band on the hindwing and sometimes also on the forewing. The under surface is likewise extraordinarily variable, some specimens having unicolorous black underside and only very slight white macular markings on the forewing, while others are very strongly marked, with a yellow and a red-brown median band, yellow basal and marginal spots on the hindwing and similarly marked forewing. Between these two forms occur transitions of all sorts. — When the red-brown colour of the hindwing is so much extended that only the distal margin remains broadly black, we have **tellias** *Bates* (91 e), from Guatemala and Honduras. — **ardema** *Reak.* *tellias*. from Mexico and no doubt also from other localities, is one of the intermediate forms. — **crocale** *Edw.* (91 f), *ardema*. from Mexico, has a white median band on the hindwing, but on the under surface is as variable as the other *crocale*. forms. — **nigrescens** *Wr.* (91 e), from the south of the United States, has a unicolorous dark upper surface to *nigrescens*. the hindwing, whilst **rufescens** *Wr.* and **californica** *Wr.* are also only intermediate forms. — **pretona** *Bdv.* also is *rufescens*. *californica*. a not constant intergrade. *pretona*.

**Chl. melanarge** *Bates* (91 f), from Guatemala, is black-brown above and has a whitish yellow macular *melanarge*. median band on the forewing and the fringes are chequered with white. The under surface is like the upper, but the hindwing has also the vestiges of a submarginal red macular band and yellowish marginal spots.

**Chl. janais** *Druce* (91 f), from Texas, Mexico and Honduras, is a pretty species, in the female also *janais*. of considerable size. This species is very constant, varying only slightly in the number and size of the yellow marginal spots of the hindwing beneath. — **adjutrix** *Scudd.* (91 f), from Texas, is merely a form with slightly *adjutrix*. less markings.

**Chl. hyperia** *F.* (91 f, g), from Mexico, is a beautiful species with pure black upper surface, on which the *hyperia*. pure white spots and broad fringes show up effectively. The under surface, in addition to the markings of the upperside, shows on the hindwing a dark red median macular band, yellow marginal spots and a submarginal row of white dots. — **hippodrome** *Hbn.*, said to be from Mexico, of which we have before us 1 ♀ from the *hippodrome*. collection of Herr FASSL from East Colombia (Medina 500 m.), does not differ from *hyperia* above. The under surface shows larger yellow marginal spots, a broader red median band and yellow spots on the basal part of the hindwing, as well as yellow marginal spots on the forewing. — **quehtala** *Reak.*, from Mexico, is probably *quehtala*.



only an aberrant form of *hyperia*, in which the red median spots of the hindwing beneath are replaced by yellow spots, while in place of the yellow marginal macular band only some white spots are present. —

*adelina*. **adelina** Stgr. (91 g), from Chiriqui, Mexico and Panama, is smaller and has the upper surface black spotted with white, but on the underside of the hindwing instead of the red median band only a red spot at the inner

*marianna*. margin. — **marianna** form. nov., from Mexico, is as large as *hyperia* and very similar to it, but the black colouring is duller, the white subapical spots of the forewing above are not larger than the submarginal white spots and the hindwing also bears a median row of white dots, sometimes almost rudimentary. The red band on the hindwing beneath is anteriorly abbreviated, more obsolete, and the individual red spots are not so sharply

*misera*. separated as in *hyperia*. — **misera** Fldr., from Mexico, is probably also only an aberrant form of *hyperia*, in which the red median band of the hindwing shows through somewhat on the upper surface, so that the hindwing above appears powdered with red.

*marina*. **Chl. marina** Hbn. (91 g, h), from Mexico, forms a transition to the following group of species. — The under surface is like the upper, but the basal part of the forewing shows red-brown spots and the basal part of the hindwing whitish striation.

*melitaeoides*. **Chl. melitaeoides** Fldr., from Mexico, is similar to *erodyle* (91 h), but the palpus is whitish instead of black with white sides. The hindwing is very yellow beneath, the black being reduced to very small spots; also the forewing has large yellow spots beneath.

*poecile*. **Chl. poecile** Fldr. (91 g), from Guatemala, Mexico and Colombia, of which we have figured the type, differs from

*fasciata*. **Chl. fasciata** spec. nov., from Mexico (Guerrero), in having a large yellow spot in the cell of the forewing, moreover the yellow colour of the hindwing reaches nearly to the base, while in *fasciata* this colour is reduced to a median band. In the ♀ of *poecile* the yellow colour has the same tone as in the ♂, whilst in that of *fasciata* it is ochre-yellow. — In most specimens of *poecile* there is only a red spot in the anal angle of the hindwing; these specimens are also smaller, but have somewhat larger yellow spots on the forewing; the examples

*rubrigutta*. before us come from Colombia and Costa Rica. We name this form **rubrigutta** form. nov., but must leave it to the future to settle whether it is a seasonal or a local form.

*erodyle*. **Chl. erodyle** Bates (91 h), from Colombia, Chiriqui and Honduras, is very similar to *poecile* on the hindwing, but on the forewing it has white spots instead of yellow markings. The under surface is likewise very similar to that of *poecile*.

*narva*. **Chl. narva** F. (= bonpland Latr.) (91 c, d), from Venezuela, Peru, Colombia and Mexico, is very constant. The markings on the under surface correspond to those of the upper, but the yellow ground-colour is somewhat paler. — **brunhilda** Stgr., from Chiriqui, is larger and has the basal half of the hindwing yellow-brown, only bearing in the middle a narrow, mostly interrupted, black half-band.

*gaudialis*. **Chl. gaudialis** is before us in 2 forms: **gaudialis** Bates, from Guatemala, with yellow median band on the hindwing, the forewing only with restricted red colouring, which in the cell does not extend so far at the base

*laeta*. as in **laeta** subsp. nov. (91 h), from Nicaragua (Cap Gracias, June), and otherwise only occurs in a small spot between the origin of the 1st median vein and the submedian; also in *gaudialis* there are only 4 small white spots on the hindwing instead of the complete row. On the under surface, in addition to the differences of the upperside, *laeta* is distinguished by larger yellow spots at the middle of the costal margin of the forewing and by a row of yellow marginal spots on the forewing. The ♀ (ex coll. FASSL) is much rounder-winged and the red part of the forewing more extended.

*perezi*. **Chl. perezi** H.-Schäff. (91 h), from Cuba, has mahogany-brown ground-colour on the upper surface with black markings and a subapical row of white spots on the forewing. The under surface is similarly marked to the upper, but the hindwing has a submarginal row of small white spots, a row of red dots behind it and a large yellow spot in the cell, the rest of the wing being black.

*tulita*. **Chl. tulita** Dew., from Porto Rico, is similar to *perezi*. As this species is unknown to us we reproduce the description. The forewing is long and narrow, rounded at the apex, the distal margin fluxuose, with very short black fringes, between which some tufts of white fringe are very feebly marked. The distal margin of the hindwing is undulate, likewise adorned with short black fringes; in the incisions of the undulate marginal line, however, we again see weak whitish tufts. In *perezi* the white marginal tufts are much stronger and hence more noticeable. — Upper surface: the ground-colour of the wings above in *tulita* is black with red spots. The red is of almost exactly the same tone as in *perezi* H.-Schäff. HERRICH-SCHÄFFER there calls it blood-red, which description does not seem to me suitable; I would rather say rust-red. Only these two colours are found on the upper surface, that is if we except the white marginal tufts (fringes), which in single examples are almost entirely suppressed. The distal margin of the forewing is accompanied by a double row of red spots; whilst those of the proximal row are rounded, those of the distal are more crescentic in shape. The total number of



the dots in each of the two rows is 8; but the first dot of the distal row (counting from the costal margin) on the upper surface is either not at all or only faintly visible, in the proximal row the second is mostly much reduced and never equals the others in size. The two spots of the last three of these 8 pairs of spots (i. e. those placed next to the inner margin) are more or less fused together. On the hindwing there is only one row of red spots (6 in number) running parallel with the distal margin; the distance of these spots from the distal margin is the same as that of the proximal row of spots on the forewing. The 3rd, 4th and 5th spots counted from the costal margin are in the ♂ either reduced or entirely suppressed. Between the marginal spots and the bases of the forewing and hindwing are placed in the black ground rust-red spots and bands, often interrupted. On the hindwing 2 such bands are especially prominent: whilst, however, in the ♀ these are placed independently of one another, being separated by the black, in the ♂ they are confluent towards the costal margin, as the black runs in a wedge into the red and does not entirely break through it. — Under surface: on the underside of the forewing we likewise see the black ground-colour with the red spots showing through from the upper surface. The lunules at the distal margin are enlarged towards the latter and are divided into a double series by a black line running parallel with the distal margin. The black of the hindwing has a slight steel-blue reflection. Here also the markings of the upper surface are reproduced, but between the rust-red marginal spots and the distal margin there are white lunules, of which on the upper surface nothing at all is visible in the ♂ and at most traces in the ♀. Most of the other spots on the underside of the hindwing have a light yellowish white colour and they are much more numerous, particularly in the ♀; in the ♂ these light spots and bands of the under surface also occasionally assume the dark colour of those on the upper. Both the under and the upper surface of the forewing are almost entirely alike in both sexes. The body is black, with red hairs on the breast, on the ventral side and between the segments reddish; of the same colour are the legs and palpi, the antennae black with the club much thickened, slightly reddish on the underside. — “The butterfly occurs very commonly from October to January in the mountains of Quebredella, but has hitherto been observed nowhere else”. — The butterfly is of the same size as *laeta*.

**Chl. seitzii spec. nov.** (91 h), from Jamaica, is similar to *tulita*, about the same size, but has much lighter ground-colour than this and *perezi* and the marginal spots on the upperside of the forewing are entirely absent, on the other hand *seitzii* has a rather broad black border to the forewing. The under surface is similar to that of *tulita*, but the distal margin of the forewing is not light but, as above, rather broadly black, before it is placed a row of red-yellow spots running parallel with the distal margin and in the black apex there are 3 small crescentic white spots.

**Chl. judith Guér.** This species, which was described in the year 1844 and said to be from Colombia, does not seem to have been found again. As it is only known to us from the description we can merely give a translation of this. It runs: “*Cethosia judith*. Wings oblong, dentate, forewing with strongly concave hindmargin (= distal margin), apex prolonged and cut off almost straight, brown-yellow with 3 broad black longitudinal bands and black apex. Hindwing of the same colour with black borders and a black transverse band in the middle, the fringes alternately black and yellow. Under surface of the forewing black from the base to beyond the middle, with broad red longitudinal band, distally brown-yellow, varied with blackish, with 2 large triangular yellowish spots, which are marked with brown at the costa and at the apex. The hindwing entirely varied with blackish brown, smoke-brown and yellowish colour, with 2 dentate black lines at the hindmargin, separated by a grey interspace, which is broader at the apex. Body black. Wing-expanse 7 cm. This species is rather nearly allied to *Cethosia bonpland* Latr., but is sufficiently distinct. — According to the shape of the wings this seems to belong to the genus *Chlosyne*, but it is an enigmatical insect on account of the complete difference of the underside of the hindwing from those of the rest of the genus. Perhaps GUÉRIN was dealing with an aberrant and at the same time discoloured specimen of *narva*.”

## 6. Genus: **Microtia** Bates.

This genus is only represented by one species, which is likewise nearly allied to *Melitaea*, but differs in a good structural character, the upper radial being long-stalked with the subcostal; hence the upper discocellular is wanting. In this character *Microtia* differs from all the other Nymphalids.

**M. elva**, from Mexico, Guatemala, Nicaragua and Colombia (Bogota), is a small butterfly, which occurs in very various forms. The best-known form is *elva* Bates (88 h), with black-brown upper surface and brown-yellow bands. The under surface only differs from the upper in having the median band of the hindwing whitish. — **horni** Rbl. (88 h) is smaller and has the upper surface yellow with a black stripe at the basal half of the costal margin, black apex and a black spot in the posterior angle of the forewing; on the hindwing only the margin is black. — **draudti form. nov.** (88 h), from Mexico, of which we have specimens before us from



the collection of Professor DRAUDT, is likewise small; forewing black with broad yellow subapical band and large yellow triangle at the inner margin of the forewing. The hindwing is black on the distal half, yellow on the proximal half, and at the costal margin there is a black basal stripe.

## 7. Genus: **Gnathotriche** Fldr.

Of this genus only 2 species are yet known, both of which occur in the high mountains. As regards the build of the body the genus stands between *Phyciodes* and *Chlosyne*, but it is distinguished from both by the upper discocellular, which is as long as the middle discocellular and has the same direction; the cell of the forewing is likewise open. The club of the antenna is pear-shaped. The butterflies fly in lonely, shady places and are fond of drinking at running water.

*exclamationis.* **G. exclamationis** Koll. (88 g), from Colombia and Venezuela; the ♂ is similar above to the Satyrid *Eteona tisiphone*, figured at pl. 52 a, but the under surface is essentially different, as in *exclamationis* ♂ it is quite similar to the upperside, only paler. The ♀ (according to the material kindly placed at our disposal by Herr A. H. FASSL) occurs in two very different forms. One is similar to the ♂ and has the upper surface black-brown with a yellow transverse band on the forewing. This form may be considered as the typical one. The second, which we name *eresia* form. nov. (88 g), is deceptively like a *Phyciodes* of the *Eresia* group both above and beneath. The under surface of the forewing corresponds to the upper, but the apical part is lighter and has dark veins and stripes. The under surface of the hindwing is grey with dark veins and stripes and 3 red-brown spots near the base. The distal margin of both wings is narrowly red-brown. It is fond of drinking at running water in quiet, shady places.

*sodalis.* **G. sodalis** Stgr. (88 g), described from specimens from the Cauca Valley in West Colombia, but also occurring in other parts of Colombia, is of the same size as *exclamationis*, with dark smoke-grey ground-colour and much more indistinct greenish yellow markings. In the cell of the forewing stands a larger basal spot and a smaller, very obscure one in the middle, then follows a similar, but much more indistinct macular band and behind it there is a further row of 5 or 6 small, distinct, round spots. On the hindwing are placed at the end of the cell 3 larger yellowish spots and some indistinct smaller ones, directed anteriorly, so that an almost rectangular band is formed. In addition there are in the distal part 2 very obscure bands composed of greenish spots. On the under surface of the forewing the large yellow spots stand out distinctly, the spot at the inner margin being especially large, and the basal spot in the cell is elongate. The apex is whitish grey with black veins. The under surface of the hindwing is yellow-grey with dull brown-grey marginal stripes; at the end of the cell is placed a spot, before it an orange shade and behind it are whitish yellow spots, corresponding to those of the upper surface; at the base there is a red spot.

## 8. Genus: **Morpheis** Hbn.

The only butterfly in this genus, which is more often called "*Anemeca*", is extremely near *Chlosyne*. It is a moderately small black butterfly with red legs, and shows a biological resemblance, which is difficult to explain, to some likewise black butterflies of the same size from quite different families. *Morpheis*, namely, like the Pierid *Eucheira socialis* and the Erycinid *Hades noctula*, is very local and also closely restricted geographically, but occurs gregariously, sometimes in swarms. It is very striking that the wing-pattern also — black with light vein-stripes and beneath red base — is reproduced in the *Hades* species.

Head of *Morpheis* large with thick, strongly prominent eyes, palpus long, middle joint swollen, 3rd long. Antenna short with strong, suddenly thickened club, which consists of 15 segments, whilst the antenna itself is composed of 22. Thorax thick and stumpy, forelegs hairy, the others naked and red. Wings of normal shape, without angles and teeth, moderately broad. The butterflies are common, but have quite definite and limited places of flight. The flight itself is heavy and resembles that of *Chlosyne hyperia*.

*ehrenbergii.* **M. ehrenbergii** Hbn. (93 a). Black above with distinct bone-coloured vein-streaks before the apex, especially on the forewing. Beneath the hindwing has the veins yellowish throughout and the forewing towards the apex, and the base is red. Only known from Mexico: Mazatlan, Oaxaca, Mexico, la Soledad and other places, common locally.

## B. Group **Vanessidi**.

The Vanessids are the commonest butterflies almost all over the world. In the northern temperate zone they are chiefly represented by the genera *Vanessa* (Europe) and *Polygonia* (North America), in the tropics by *Precis*, in the southern hemisphere principally by *Pyrameis* and *Hypanartia*. The butterflies are mostly the earliest in the year and even in very



cold regions they often hibernate as imagines. They are distinguished by having strong angles or teeth at the distal margins, between which the wings are often deeply emarginate. The palpi are long and strong, but not inflated, the antennae long, strong and straight, with the clubs spindle-, not spoon-shaped, the head and body in the species which hibernate as butterflies, at least in the autumn brood with thick, furry hair. The colours are nearly always very bright, with fiery red or variegated bands or margins. They are all good fliers, rivalling birds in the rapidity of their movements. They are protected by no internal fluids, but the butterfly when at rest is mostly concealed by the bark- or leaf-like under surface. Many species are fond of flowers, while numerous others do not touch them, but frequent the flowing sap of wounded trees, syrup, fruits, rotten substances, etc. The larvae are all spined, the spines harder, longer and more pointed than in the preceding group; also the pupae mostly have stronger and more pointed angles than those of *Argynnis* and *Melitaea*, often with silver or gold tips. In America the species extend from Alaska to Patagonia and ascend in the mountains to very considerable elevations.

### 9. Genus: **Polygonia** Hbn.

Here belong about 50 forms distributed over the northern hemisphere, which are all very similar. They were formerly referred to the genus *Vanessa* and are even now better known under KIRBY's generic name *Grapta*. They are easily distinguished from the true *Vanessa* by their larvae, which are not gregarious but solitary and bear spines on the frontal hemispheres, which are commonly designated "eyes." From *Pyrameis*, to which they likewise approximate, they differ in that the larvae live free, not in spun-up leaves. The eggs are also differently shaped from those of *Vanessa* and *Pyrameis* and are mostly not laid in clusters but piled up one upon another into chains. Attempts to separate *Polygonia* anatomically from *Vanessa* in the imago have not thus far been successful and even the anatomical investigation of the palpal scaling, the genitalia of the ♂, etc., have failed. Superficially, however, the genus is easily distinguished by the more deeply excised margins of the wings, the almost absolutely unicolorous upper surface (brown, with dark spots) and by the very great similarity of the butterflies where the larvae often differ greatly. The latter live principally on Urticaceae and are very strikingly coloured. The butterflies are met with at almost every season of the year, even on warm winter days, and they fly both in the gardens of the towns and also at the edges of woods and on the open fields. Almost all the species of the genus are at least locally common.

**P. interrogationis** F. (= *fabricii* Edw.) (93 a). The largest form of the genus and the one with the strongest sexual dimorphism. The forewing has below the apex a long tooth, pointing downwards, and the hindwing in the distal margin a tail, as long as that of a *Papilio machaon*. At the end of the cell of the hindwing beneath there is a bright metallic *c* or *g*, sometimes interrupted. — **umbrosa** Lintn. (93 a) is the summer form, with a shorter tail, the teeth below the apex of the forewing also shorter, but especially distinguished by the almost entirely black-brown upper surface of the hindwing, which is only relieved with red-brown in the basal and costal part, and by the somewhat more confused markings of the under surface. — Egg green, either laid singly or in chains of 4—8. Larva dirty white or light flesh-coloured, isabelline yellow or whitish grey, also even blackish with brownish or yellow red, thick, almost knob-like spines; on nettles, elms, hops, etc. Pupa wood-coloured grey-brown with very long dorsal tubercle and small silvery points on the back of the abdomen. The butterfly lives from the autumn until May and again, as *umbrosa*, in June and July. There is not, however, such a constant distinction between the two generations as in *Araschnia prorsa* and *levana*; often eggs laid at the same time produce half one and half the other form, much as in the European *c-album* (on the other hand in the East Asiatic *c-aureum-pryeri* a constant alternation takes place in the species, the hibernated specimens always belonging to the form *pryeri*). Common almost everywhere in the United States, only wanting in the western states; throughout the year, even in the earliest spring on sugar-maple.

**P. comma** Harr. (= *barrisii* Edw.) (93 a). Mostly smaller than the preceding, the under surface much more variegated, usually traversed by a rosy white, light violet or fleshy reddish irregular median band, which in the disc of the forewing sends out light stripes along the veins. On the upper surface the hindwing may be red-brown with dark spots or (in the summer form) entirely suffused with dark black-brown; the latter is the form **dryas** Edw. (93 b), which stands in the same relation to *comma* as *umbrosa* to *interrogationis*. — Larva very variable, black with white spines, grey, tinged with greenish, or entirely snow-white, with similar or variegated spines. Like the preceding, all the year round on elms, hops, nettles, etc. Pupa with somewhat shorter dorsal protuberance but very strong points on the back of the abdomen. Like the preceding widely distributed over the east of the United States from Canada to Texas, but wanting in the west. Common.

**P. satyrus** Edw. (93 b). This species differs from the preceding in the lighter yellow-brown upper surface, on which the dark marginal markings are reduced, particularly on the hindwing. Under surface more unicolorous, more yellow than dark brown, shaded with dark brown across the middle of the wings and at the distal margin between the teeth. — **marsyas** Edw. (93 b, c) is the lighter form, in which the hindwing has mostly only traces of dark shading towards the distal margin. — Larva black with yellowish or reddish spines; from the 3rd segment onwards runs along the dorsum a broad, greenish or greyish white saddle-stripe. Like the preceding on nettles, etc. From Ontario westwards, over the Rocky Mountains to the Pacific coast, but more sparingly and more local.



*zephyrus*. **P. zephyrus** Edw. (93 b). This butterfly about corresponds to the eastern *c-aureum*. The distal part of the upper surface is very light red yellow, scarcely dark-shaded, the *c* on the underside of the hindwing finely marked but large and wide open. — Larva very similar to that of our *c-album*, anteriorly red-brown, posteriorly with white saddle; has been found on *Azalea occidentalis*. The butterfly is common in places, flies all the year round and is distributed from the Rocky Mountains westwards to the Pacific Ocean.

*chrysoptera*. **P. chrysoptera** Wr. (93 c). In this form, which nearly approaches the preceding, the hindwing is of a fiery yellow-red, with all the brown shading of the distal part wanting, being replaced by dull orange-red splashes and clouds. The ♂ has a deep black-brown distal border to the forewing and very dark spots; under surface wood-coloured, the *c* thin but very widely opened. California.

*faunus*. **P. faunus** Edw. (93 c, d). Judging from both butterfly and larva this is the American *Polygonia* form which corresponds to the European *c-album*. Upper surface much darker yellow-brown than in the preceding, more strongly and darkly spotted and both wings broadly margined with black-brown. Beneath the silvery *c* of the hindwing, exactly as in the European species, is short-curved, compact, strong; the under surface itself very variable individually. The autumn brood with the wings more strongly dentate. — **rusticus** Edw., which seems to be near the Californian form *silvius* Edw. (unknown to me), is more intensively coloured, as the somewhat lighter red-yellow ground-colour contrasts with the dark spots and margins, especially on the hindwing; west coast of the United States. — Larva of *faunus* almost exactly like our *c-album*, but strangely enough is said to live on willows. EDWARDS, who did not at the time know the larva, argued in a long article against the supposition of a close relationship between *P. faunus* and *c-album*.

*gracilis*. **P. gracilis** Grt. (= *c-argenteum* Scudd.) (93 d). This form, which belongs in the same group with *progne* and the small *hylas*, forms the continuation of the East Asiatic *agricola*, which is not (as vol. I states) only a local form of *c-album*, but in places occurs together with this, just as in parts of Europe *egae* flies together with *c-album*. *gracilis* may be easily known by the very dark black-brown margins, before which (on the forewing) or in which (on the hindwing) are placed small light yellow spots. The under surface resembles that of *agricola* or *hamigera* (cf. vol. I, pl. 64 a), whilst the upper, which is very similar to *faunus*, more recalls *c-album* (cf. vol. I, pl. 63 e). The larva is not known, the butterfly is essentially Canadian and only penetrates into the north of the United States. Westwards it extends to Alaska and specimens which have been taken beyond Behrings Straits in Kamtschatka scarcely deserve a separate name. On the other hand in Alaska occurs together with this species also the smaller *progne*, which may possibly represent merely an offshoot of *gracilis*.

*progne*. **P. progne** Cr. (= *grogne* F.) (93 d). This very variable species is distributed over an enormous area and extends almost through the entire continent of North America from the Atlantic coast to Alaska. Southwards it extends in the eastern states as far as Pennsylvania. Above the wings have small but sharp spots and dark margins; before the distal margin a chain of small light yellow spots. The under surface marked as in *gracilis*, but the distal part more sharply separated from the basal, lighter, more strongly contrasted. Larva more uniform yellow-brown, mostly without distinct white saddle, with variegated spines, on currants and gooseberries, also on elms. Pupa grey-brown, with a shorter, more obtuse dorsal protuberance, as in *faunus*. In the southern part of its range the butterfly is to be met with almost the whole year round, hibernating, the generations not differing sharply, but occasionally occurring in a slightly different form (*l-argenteum*) and an aberration corresponding to the European *f-album*, sometimes with more brown (south-east) or grey (north-west) under surface. Common in places, although not every year.

*oreas*. **P. oreas** Edw. (93 d). Similar to the preceding species, but mostly larger, the yellow spots before the dark distal margin, especially on the hindwing, larger, lunate, the under surface of both wings usually more unicolorous, dark brown, though varying strongly and in the smaller form *oreas* Edw. sometimes almost unicolorous black-brown with small, dull *c*. The black spots on the upper surface are usually much more extended, commonly the ground-colour itself deeper and duller red-brown. The larger, proximally bright tawny form is **silenus** Edw. (9 e, d, e), which is easy to recognize by the light yellow submarginal lunate spots of the upper surface standing out strongly from the ground-colour. In both forms the wings, particularly the hindwing, are very deeply dentate. Only in the west of the North American continent, from Washington and Oregon to Alaska. Locally common.

*haroldi*. **P. haroldi** Dew. (93 e). This is one of the southern species of the genus, from Mexico. May be known by having the dark basal part of the wings distinctly defined against a lighter distal part, which again is distally dark-margined. The hindwing above very little spotted. Hitherto very rare in collections; our figures are drawn from the type in the Berlin Museum; I have seen one specimen in coll. SCHAUS.

*g-argenteum*. **P. g-argenteum** Dbl. & Hew. (93 e). A large species, and only in size resembling *interrogationis*, with which GODMAN and SALVIN not very happily compare it. It is probably more nearly allied to *faunus* and *zephyrus*, and is thus not very far from the European forms. It is, however, much larger, the upper surface, especially in the distal part, more yellow-red than brown-yellow, the light yellow spots before the marginal band very large and light, before the distal margin dark lunules. Mexico, not common: Oaxaca, Popocatepetl, Guerrero, in the highlands.



**P. l-album** *Esp.* (= *v-album* *Schiff.*) (vol. I, pl. 63 d). As large as the largest *interrogationis*; the typical form not occurring in America but in the Old World, where it flies in eastern Europe and as *samurai* *Fruhst.* in Japan. The American form, **j-album** *Bdv.* (93 f), is as a rule larger and the upperside of the hindwing much lighter (clay-yellow instead of dark brown) than in examples from the Old World. The species may be at once distinguished from all the other *Polygonia* by the whitish or bone-yellow spots at the costa of both wings. *ab. aureomarginata* *Cock.* is lighter, more gold-yellow, and the distal margin of the wings unspotted. In America, as in the Old World, aberrations occur with irregularly confluent blackish spots: *ab. chelone* *Schultz.* — Larva iron-grey or earth-brown with clay-yellow spines, on willows. More in the north, from Labrador to Alaska, southwards as far as the central United States, singly and not common. — The Japanese form (*samurai* *Fruhst.*) (vol. I, pl. 63 d) is intermediate between the European and that of North America. The species forms a distinct transition to the genus *Vanessa*, but the imago has the stronger teeth in the wing-margins and the hook-shaped white median marks on the hindwing beneath and the larva the spines on the head which characterize *Polygonia*. *aureomarginata. chelone.*

### 10. Genus : **Vanessa** *F.*

The „spring-heralds“ of the eastern hemisphere, with one exception (*io*), are represented in America by forms which correspond with those of the Old World. Thus *californica* corresponds to *xanthomelas* or *polychloros*, *milberti* to *urticae*, *cyanomelas* to *canace*; *antiopa* is common to both hemispheres. Wings broad, strongly angled, above very brightly coloured, beneath protectively resembling bark. The larvae have no spines on the head itself, on the other hand back and sides are strongly spined. They live in nests on nettles, willows, fruit-trees, birches, elms, etc., and mostly remain near together almost to pupation. The butterflies live both in the plains and the mountains, are good fliers, lively sun-loving insects and hibernate; most species are very common.

**V. californica** *Bdv.* (93 e). Similar to *Pol. j-album*, but without the white median mark on the hindwing beneath; the costal spots of the forewing more sharply defined, the distal margins broadly blackish brown. The larva likewise similar to that of *Pol. j-album*, blackish with variegated spines, venter lighter, without true spines on the head; on *Ceanothus thyrsiflorus*. The butterfly flies in the west of the United States and is common. *californica.*

**V. milberti** *Godt.* (= *furciliata* *Say*) (93 e). Basal half of both wings black with red cell-spots; distal part red-yellow. proximally, especially in the ♀, lighter yellow; margins of the wings blackish, spotted with yellow and blue. Under surface somewhat recalling that of *V. urticae*, but the disc of the forewing less yellow, while the whole distal part of both wings is lighter. — Larva more brownish than that of the European *V. urticae*, with yellow spots and spines; on nettles. Butterfly distributed in the whole of northern North America, from Newfoundland to the Pacific coast, almost everywhere common, but mostly far less abundant than is *urticae* in central Europe. — The lighter form, *subpallida* *Cock.*, is that of the Rocky Mountains; its larva lives on *Urtica gracilis*. *milberti. subpallida.*

**V. cyanomelas** *Dbl. & Hew.* (93 f). Under surface almost as in *polychloros*, to which (like the Asiatic *canace* group) this species approximates; above black with blue margin and washed-out blue submarginal band. Mexico, very rare, only a few specimens known; I figure it from an example in *FRUHSTORFER*'s collection. *cyanomelas.*

**V. antiopa** *L.* (= *morio* *L.*, *grandis* *Ehrm.*, *hippolyta* *Lyman*) (93 f, vol. I, pl. 63 b). The „Mourning Cloak“ is black-brown, wings with yellow margin and blue dots before it. Distributed over the entire northern hemisphere except North Africa, becoming rare in the south but occurring as far as Venezuela; there small and confined to the mountains. — *ab. hygiaea* (vol. I, pl. 63 c) has the margin broad and the blue dots reduced or entirely absent. — *antiopa* shows no constant variation, as was formerly believed, in the form from the United States (to which the name *lintneri* *Fitch* was given), but only in the extreme north, in Alaska. From there a specimen lies before me with very bright red-brown upper surface, white (not worn) margin slightly tinged with violet and on the under surface a light band across the middle of both wings; I figure it under the name **hyperborea** *form. nov.* (93 f). — Also from the extreme south of its range a form has been named: **thomsoni** *Btlr.* It differs in the yellow margin, which is twice as broad on the hindwing as on the forewing, occupying nearly 1/3 of the whole hindwing, and in having the subapical spot of the forewing followed by a chain of smaller yellow-white spots arranged in an angled row. Described from a specimen in the Tring Museum, but probably scarcely constant. — Larva black with red prolegs, on deciduous trees, such as willows, birches, pears, poplars, elms. Whilst in Europe the species is mostly not very common and has only one generation, in North America it is in many places abundant and has often two generations. The larva is very easy to rear and changes *antiopa. hygiaea. hyperborea. thomsoni.*



into a grey-brown pupa with very strong teeth on the anterior part. The butterfly appears after 3 or 4 weeks and is not protected, but when its powers of flight are fully developed is not pursued by birds; newly emerged specimens, on the contrary, are eagerly seized upon by insect-eaters. Of over 100 freshly emerged *antiopa* which I released all, even to the very last one, were caught by a number of *Muscicapa grisola*. The butterflies do not visit flowers, but drink at bleeding trees and at fruit (on which they always rest head downwards), as well as at wet places in the road. The flight is quiet and graceful. The pupa is nearly always attacked by small ichneumonids, which pierce it at the moment when the larval skin is shed, so that only about 10% of all the larvae that pupate in the open produce butterflies.

### 11. Genus: **Pyrameis** F.

The species of *Pyrameis* have not the sharp teeth on the forewing which characterize the preceding genera. The apex of the forewing is always spotted with white. The larva has no horns on the head and does not live free and gregariously, but singly and in a habitation formed of leaves drawn together. Most species of the genus are very common; some, however, are confined to islands, while others are true cosmopolitans. Very striking is the prevalence of the *Pyrameis* species on certain islands: while on the continents in most places 2 species occur, or at most 3, there are 4 on the Canary Islands and 4 in New Zealand, which is otherwise very poor in butterflies; on Teneriffe *P. vulcanica*, *atalanta*, *virginiensis* and *cardui*, in New Zealand *itea*, *gonerilla*, *atalanta* and *kershawii*. The largest and most beautiful species — *P. tameamea* — inhabits the remote Sandwich Islands.

*atalanta*. **P. atalanta** L. (= *admiralis* Retz.) (94 a and vol. I, pl. 62 c). Deep velvety black-brown; forewing with black, white-spotted apical part, preceded by a scarlet band; hindwing with red, black-dotted marginal band. Europe, Asia Minor and North Africa; accidentally introduced into New Zealand; in America everywhere in the United States, from there southwards to Guatemala and on Haiti. North American specimens differ from European in the somewhat narrower band of the forewing, African are about intermediate between the two. — Larva black-grey, yellow-brown or red-brown, strongly chequered and marked with yellow; on *Urtica*, *Boehmeria* and hops. The butterfly from July to the autumn, in warmer regions hibernating regularly, in colder only exceptionally. It is especially fond of grape and beer sugar or the sap of wounded trees. Only rare in the south.

*cardui*. **P. cardui** L. (= *carduelis* Cr.) (vol. I, pl. 62 d). Apex of the forewing similar to that of the preceding species, disc fleshy red to tawny, spotted with black. Separate names have been very unnecessarily given, small specimens being called *minor*, pale ones *pallens*, those with few spots *inornata*, very strongly spotted *elymi*; cf. vol. I, p. 199 seq. In the Old World everywhere; either common and endemic, or (in the north) annually as an immigrant, and only temporarily sedentary as a summer brood. In North America it is much rarer than in the Old World and by no means generally distributed; southwards it certainly extends to Central America; its reported occurrence in South America is probably due to some mistake; a form known from Australia and New Zealand, *kershawii* McCoy, has been erroneously reported from Central America. In addition to the blue-pupilled eye-spots on the hindwing above, this form has also a quite different under surface, which in the examination of the alleged American *kershawii* was not taken into account. Except in *kershawii* no distinct racial variation at all can be detected; neither the East Asiatic nor the African specimens allow of separation as subspecies. Cf. FRUHSTORFER in vol. IX, p. 525 of the „Macrolepidoptera of the World“. — The larva is iron-grey or yellow-brownish, the ground-colour mostly similar to the earth on which the infested thistle stands, with short, strong spines, which urticate somewhat when touched; marked with light, fine, more or less interrupted lines, spots and dots. Chiefly on thistles, the leaves of which it draws together loosely into a tent in which it lives. But it also occurs on nettles; and in certain years in which it multiplies enormously (as in South Germany in the summer of 1879) the huge swarms of larvae sometimes destroy the nettles over wide areas. The migratory instinct of the butterfly is wonderfully developed. The ♀♀ appear sometimes to migrate alone or separated from the ♂♂, at least the numerous specimens which I took where the insects had assembled or during their journeying proved without exception to be ♀♀. SKERTCHLY in Africa observed the simultaneous emergence of whole swarms of *cardui*, which directly their wings were dry started on their travels. *Merops apiaster* has been noticed as a bird that preys upon *cardui*. — *cardui* appears singly in the spring in migrated (north) or hibernated (south) specimens. The larvae are full grown from July to September, the butterflies appear in the north chiefly in August. The ♂♂ dash rapidly along on mountain-summits and high roads and love flowers of all sorts; they rest on the ground nearly always with the wings closed, but occasionally with them spread quite wide and play with *Pyrameis* of their own or other species, by preference with the ♂♂ of the *atalanta* group; on these occasions the *atalanta*-like butterfly always rests head downwards on a rock or stone, but *cardui* sits before it horizontally on the ground with its head turned towards its playmate. This relation I have observed between *atalanta* and *cardui* in Europe, *indica* and *cardui* in Japan, *vulcanica* and *cardui* on Teneriffe and *itea* and *kershawii* in Australia. — It may be assumed that *cardui* will spread more widely and become commoner in America.



**P. carye** Hbn. (= *charie* Blch., *muelleri* Letch., *caryae* Holl.) (94 a). Similar to the preceding, as also *carye*. on the under surface, easy to distinguish by the light subapical band on the upperside of the forewing, which in American *cardui* is indeed occasionally somewhat clouded, but in European nearly always quite pure white, never of the tan-yellow ground-colour typical of *carye*. The eye-spots on the hindwing, as in *kershawi*, pupilled with blue above also. — Larva blackish with small light spines and spots, on Malvaceae and thistles. Widely distributed, a true prairie butterfly, frequenting wide grassy plains and resting with closed wings on heaps of earth or prairie tracks. In North America more in the west, in hot regions (Mexico) preferring the highlands and mountains, in temperate South America again descending to the plains, where I met with it commonly in February near Montevideo. At Buenos Aires still common on corn-fields, in Patagonia often the only common species; the larvae there sometimes in enormous numbers and when they become excessively abundant taking to cannibalism (C. BERG). I took the species especially in compaigny with the South American form of *Pyrameis huntera*. Northwards of South Brazil I no longer found *carye* in the plains.

**P. huntera** F. (= *hunteri* Hbn., *belladonna* Pet., *iole* Cr.) (94 a, b). This species, which occurs in the *huntera*. yellower form *virginiensis* Drury (94 b) in North America and on the (Palearctic) Canary Islands, may be at *virginiensis*. once distinguished from the preceding by the two large eye-spots in the distal part of the hindwing beneath. South American specimens in fresh condition are a wonderful rose-colour, especially those that I took in Bahia and at Rio. In both places the butterfly flies together with *Pyram. myrinna*, which it somewhat resembles in flight, though differing in its smaller size and in having less black on the hindwing. These splendid rose-coloured Brazilian specimens are sold under the name *rubia* S'gr., but the colour withstands the influence *rubia*. of light very badly and soon changes to brownish, such as is shown from the first by typical *huntera*, like those I took on the lower La Plata. Old specimens in collections may even fade to such an extent as to resemble the pale North American specimens known as *fulva* Dodge. — In *braziliensis* Moore, from Brazil, the black *fulva. braziliensis*. spots on the upper surface are enlarged, so that the insects, especially when taken fresh, give a darker impression. — *altissima* Rosenb. & Talbot, from Peru and Ecuador, approximates to the preceding and like them, *altissima*. has the black increased; the markings of the under surface white, not tinged with yellow; a mountain form. — Larva iron-grey, with weak spines and black head; on the back of each segment is placed a velvety black transverse spot, which bears red dots and small, light subdorsal spots. On Gnaphalium and Antennaria. The larvae of the South American form I do not remember to have seen so brightly coloured as it is represented in the figures of *virginiensis* given by ABBOTT, BOISDUVAL and HOLLAND. The butterflies fly much more slowly than those of *cardui* and *carye*; they are nearly always found only on flowers; they do not favour the open steppes, but places where there is luxurious vegetation, and in Brazil they are sometimes met with in clearings in the middle of the primeval forests; in the hot districts they fly all the year round and are common.

**P. terpsichore** Phil. (94 a). Similar to the preceding species and probably only its representative in *terpsichore*. the trans-andine south-west. On the hindwing above only 2 separated ocelli, which are sharply cut off from the little marked disc by a black curved stripe. Also the reddish-coloured disc of the forewing less spotted than in the preceding. Beneath the bark-brown ground-colour of the hindwing is transversed by an irregular yellow median band, with silver-white spots and margins. Chile; common.

**P. myrinna** Dbl. (94 b). Similar to the two preceding, but easy to distinguish by the straight, regular, *myrinna*. deep black postmedian band of the hindwing. On the under surface this band is sepia-brown and encloses the two large eye-spots. The ground-colour of the upperside is a magnificent rose-red (ab. *incarnata*) so that the insect is in life one of the most beautiful butterflies that I know, though specimens in collections give no idea of it. Even in papers the colour fades in a few weeks after death, in set specimens after only a few days, and changes into the dull rose-colour which is shown in our figure. — Full-grown larva red-brown, with small white transverse bands on the posterior part of the segments and a light lateral band below the spiracles and with black spines; on *Achyrocline flaccida*, the leaves of which it nibbles in order to spin itself a domicile from the chewed fragments. The pupa reddish white or with a dull yellow gloss, with washed-out grey markings and more distinct longitudinal stripes on the back of the abdomen and above the stigmata; the tubercles blackish. The butterfly flies in Brazil and in a scarcely different form in Ecuador. Whether this form is the *aequatorialis* Wagn. which WAGNER mentions as a „representative species of *cardui*“ from Chimborazo, *aequatoria- lis*. but does not recognizably describe, or whether this is identical with the form of *huntera* passing as *braziliensis*, or only a synonym of the preceding species, I cannot determine; WAGNER only records it as a „still undescribed species“ in his collection, without giving any precise distinctions. It would be well to strike out this „i. l.“ name entirely.

## 12. Genus: **Hypanartia** Ky.

This genus was formerly made to include a number of African forms which, however, were afterwards rightly separated by ROTHCHILD and JORDAN as *Antanartia* and are dealt with under this name in vol. XIII, p. 227 of the „Macrolepidoptera“. It is so near to the preceding genus that many species, e. g. the small *H.* (now *Antanartia*) *abyssinica*, until quite recently oscillated between the two genera. The species which concern



us here are characterized by a tooth, mostly long, at the end of the upper median vein. The apex of the forewing in many species is exactly as in *Pyrameis*, and the coloured bands on the wings in some species also show the position of the analogous bands in *Pyr. atalanta*. — The larvae are rather short and thick with short fleshy spines and rough, but not horned head. They live until pupation in cases formed of leaves and change after the 5th moult into smooth pupae with quite short conical horns on the head and strong saddle across the middle of the back, somewhat compressed laterally with weak dorsal carination.

*lethe*. **H. lethe** F. (= *daemonica* Hbn. ♂, nec ♀) (94 b). Above tan-yellow, the apex of the forewing yellow and spotted with white; a rather straight transverse band runs from the end of the first third of the costa to beyond the anal angle; it is separated from the more strongly brown-yellow disc by a faint black nebulous streak. Under surface light ochre-yellow with red-brown reticulate markings, the costal part of the hindwing lighter. Brazil, especially on the east coast, at Rio Janeiro, on the Corcovada, at Santos in the lowlands towards São-Vicente, everywhere in the Serra do Mar, in Sta. Catharina, at Blumenau, particularly in moist valleys. Northwards to Texas. — Larva very variable, at first blackish with small white dots, when full-grown nearly white, before pupation becoming yellow; the spines after the moults white but most of them afterwards become black, only one here and there remaining white. On *Boeberia* in leaf domiciles. Pupa light-green, with dark green oblique streaks and some silver spots. It is very mobile and even after a slight touch it keeps wriggling for a long time. The butterflies fly over the forest-paths and rest on the branches of trees or bushes overhanging the road, the head directed towards the road, mostly at a height of 2—3 m., in exactly the same way as the Old World *Symbrenthia* and many *Polygonia*. When disturbed they persistently return to the same place or settle on a neighbouring branch, so that they can be caught without any difficulty. They sometimes leave their posts of their own accord, fly rapidly several times up and down the road without quitting it and return again to their resting-places. In South Brazil a large species of Mantis takes advantage of this habit and, concealed by its leaf-like appearance, lies in wait at the ends of the branches and catches the butterfly; numbers of examples of this species daily fall victims to it. The species is common.

*godmani*. **H. godmani** Bates (= *atropos* Fldr.) (94 c). Similar to the preceding, but quite considerably larger; the whole apical half of the forewing black, only quite at the apex sparingly spotted with white, not yellow. Under surface quite different to that of the preceding, very brightly marked with white, bluish and yellow. Mexico, through Central America to Colombia; not rare.

*bella*. **H. bella** F. (= *zabulina* Godt., *daemonica* Hbn. ♀) (94 c). Likewise similar to *lethe*, not larger than the latter, the apical half of the forewing with 2 rows of spots, as in *lethe*, but these are white, not of the yellow ground-colour. The under surface is quite different, recalling *Pyrameis* in the scheme of markings, the border with a distinct tooth below the apex, whilst in *lethe* the border of the forewing is quite feebly dentate or only somewhat undulated and in *godmani* nearly straight, slightly crenulate. Very common in Brazil, at Rio and Santo, habits and localities exactly as in *lethe*, so that the two species are mostly captured together.

*paullus*. **H. paullus** F. (= *tecmesia* Hbn.) (94 c). Somewhat recalling a light coloured *lethe* or *bella*, but the black light-spotted apical part of the forewing is here entirely of the tan-yellow ground-colour, only dark-margined and sparsely spotted with black; hindwing with 2 points. From the Antilles.

*kefersteini*. **H. kefersteini** Dbl. (94 c). Both wings strongly dentate, the hindwing almost tailed. Upper surface copper-brown, forewing without the yellow oblique band of *lethe* and *bella*, the apical part black, with bright vitreous white spots. Venezuela, Colombia, parts of the Amazon region, and reaching as far as Bolivia. — In *lindigii*. **H. lindigii** Fldr. (94 c) the forewing is less sharply angled, the apex not so strongly produced, the colour more copper-red and the transparent white bands and spots in the apical part of the forewing are much enlarged, producing a superficial resemblance to *Anartia amathea*, which flies with it in the same districts (the north of South America). This northern or western form seems to be considerably rarer than the more southern *kefersteini*.

*dione*. **H. dione** Latr. (94 c, d). This common form inclines in its superficial appearance towards certain *Megalura* species, as *lethe* does towards *Pyrameis* and *kefersteini* towards *Anartia*. Thus the hindwing is produced into a long point; the upper surface velvety brown, with 6 or 7 parallel transverse stripes, between the median veins a hyaline comma-shaped spot, and often in addition some small hyaline dots on the forewing, which look like pin-pricks. Throughout the north of South America, distributed from Venezuela to Bolivia and mostly not rare. It also occurs in Guatemala, although rarely. Between this locality and Colombia, however, it seems to be wanting and to be mostly replaced by the next species.

*arcae*. **H. arcae** Godm. & Salv. (94 d), near the preceding species, as is already evident from the long point of the hindwing and the hyaline comma-spot in the middle of the forewing, and representing it in Panama, where the true *dione* is wanting. *arcae*, named after its discoverer ARCÉ, is larger than *dione* and the forewing has an orange wedge-shaped band in the distal third of the forewing. This is due to the fact that in the haunts of *arcae* the commonest *Megalura* is not *Megalura chiron*, the model of *dione*, but a species of the *M. marcellus* group, which bears a wedge-shaped orange band beyond the middle of the forewing. Costa Rica and Panama, apparently not common.



*H. splendida* Rothsch. (94 d), from Peru, seems to be a rare species and was only recently discovered. *splendida*. In it the brown-yellow is extended over the entire upper surface, which produces a certain similarity to *Me-galura peleus* (= *petrea*, 96 f). This is heightened by the straight, stalk-like tail of the hindwing, the length of which is further increased by a sinus in the distal margin near the extremity of the radials. This gives the hindwing a somewhat distorted appearance, which renders misidentification impossible.

### 13. Genus: **Precis** Hbn. (*Junonia* Hbn.)

The *Precis* species are characteristic butterflies of the hot regions and like *Catopsilia* are the first to meet the traveller in a tropical country; only *Anartia* is equally prominent in America. In Africa and East India *Catopsilia* and *Precis* play much the same role as *Pieris*, *Gonepteryx* and *Vanessa* in the north of Europe. The egg is almost spherical, with longitudinal ribs, the larva short and strongly spined; horns on the head may be present, but are sometimes wanting. The larvae live free on Labiatae and Acanthaceae, on *Justitia*, *Vitex*, *Antirrhinum*, *Achyrrhantes*, etc. The pupae have the anterior part rounded and differ from those of *Vanessa* in the absence of large points on the head; so far as I remember, they have no metallic spots. In the butterfly the distal margin of the forewing is feebly angled at the end of the upper radial, the subcostal 5-branched, the branches at their origin almost equidistant. The lower discocellular is wanting on the forewing, so that, as the hindwing also has no transverse vein, both cells are open; on the hindwing the costal is strongly curved. The shape of the wings varies in the Old World species to such an extent that even the course of the veins is somewhat modified by it; with the fall of the leaf the under surface begins to become leaf-like, the large eye-spots disappear and are replaced by leaf-like markings: the midrib of the leaf is copied by a stripe from the costal margin of the forewing to the anal angle of the hindwing, which is produced like a leaf-stalk (cf. figure of the underside of *P. almana*, vol. I, pl. 62 a, also many figures in vol. IX, pl. 116—117, as well as vol. XIII, pl. 51 \*). The size of the eye-spots on the upper surface varies quite considerably even in specimens taken at the same place and on the same day, and there is also great variability in other directions. The butterflies are without exception common, except at the extreme limits of their range; they migrate, sometimes gregariously. 175 forms have been described hitherto, of which only 14, which perhaps are all only forms of one species, are from America. The former separation of the genus *Junonia* has not been found tenable.

**P. lavinia.** In America it is possible that only one, but very variable, species of *Precis* occurs, which again is merely the western representative of the Old World *villida*, while *villida* itself is nearly related to many forms of *orithya* which are distributed over the whole of South Asia (vol. I, pl. 62 b). Of the American forms many are geographical, such as a small form with the upper surface entirely orange-yellow, which the dealers call *livia* Stgr. (94 d) and in which I think I recognize FELDER's *vestina*; for this no locality is given, but it is *livia*. *vestina*. described as not unlike a small *vellida* (= *villida*). This similarity also holds if we compare it with one of the *villida* forms distributed in North Australia and in many of the South Sea Islands, which are likewise predominantly yellow-red above. It occurs in Bolivia and seems to be a mountain butterfly. — The North American *coenia* Hbn. (94 e) also is nothing more than a form of *lavinia*, with the band of the forewing very *coenia*. pale, very unevenly forked, and the upper eye-spot of the hindwing unusually enlarged. *coenia* is a very common butterfly in the south of the United States, extends northwards to New England and southwards over the whole of Central America and the larger West Indian Islands to Colombia. — *lavinia* Cr. (94 d) has been split up *lavinia*. into a large number of forms, which, however, for the most part represent nothing more than accidental and individual aberrations. The typical *lavinia* Cr. (= *evarete* Cr., *flirtea* F., *larinia* F., *csra* F., *cortez* Hbst.) is characterized by blue-green, but dull reflection on the upperside, particularly in the ♂, in which the band of the forewing shows all degrees of development and which differs constantly from *coenia* in the smaller peacock eye-spot between the radial veins. Out of a swarm of this butterfly which I met with at Palermo, on the La Plata, I caught many hundreds of examples, from which the most diverse series of forms can be picked out, ranging from those with the upper surface entirely dull brown (= *genoveva* Cr.) to those with the *genoveva*. wings almost uniformly blackened above and beneath (= ab. *infuscata* Fldr.) (94 e). — ab. *negra* Fldr. is larger *infuscata*. *negra*. than the North Brazilian form, occurs as far as Guiana and has the wings broader and more rounded; it is also found, however, in the extreme south, where in Uruguay together with small, pointed-winged specimens larger, broad-winged examples occur almost at the same season. — ab. *zonalis* Fldr. has the forewing more produced *zonalis*. and the reddish submarginal band on the upperside of the hindwing is almost entirely obsolete. — ab. *pallens* *pallens*. Fldr., from Venezuela, is almost exactly like a dull-coloured *genoveva*, but has more distinct gloss on the upper-side of the hindwing, and on the forewing the spots of the band placed in the cell are very much lighter than in Surinam *lavinia*. — ab. *divaricata* Fldr. is likewise very near to *genoveva*, especially on the under surface, *divaricata*. but is there paler, more yellowish in tone, and the band in the distal part is strongly constricted below the fork. — ab. *incarnata* Fldr. is similar, but the band of the forewing, on the contrary, is much widened and *incarnata*. somewhat reddish in tone. — ab. *constricta* Fldr. has the forewing grey-brown, the distal band narrowed, con- *constricta*. stricted in the middle, the proximal arm of the fork narrower than in *genoveva*, the lower eye-spot of the hindwing enlarged; from Colombia. — *hilaris* Fldr., from Paraguay, is probably the nearest to typical *lavinia*, *hilaris*.

\*) Concerning the seasonal dimorphism of *Precis* cf. AURIVILLIUS in vol. XIII, p. 227 of the "Macrolepidoptera."



the ♂ above almost identical, but with stronger metallic gloss, the band in the ♂ slightly constricted below the fork, the antimarginal stripe lighter and broader, and also on the hindwing the submarginal band is widened and ochre-brown. The ♂ on which this form was founded was taken together with a ♀ of the typical *lavinia* \*). *occidentalis*. A sharp separation of the western form, such as FELDER attempted under the name *occidentalis*, is scarcely tenable. ♀♀ of this form are said to differ constantly in the broader forked band of the forewing. This band, *basifusca*. however, also varies very strongly in eastern specimens even from the same district. — In ab. *basifusca* Weym., from Ecuador, the area from the base of the forewing to the large eye-spot, which stands in a light patch, and the entire hindwing as far as the pale submarginal band are unicolorous dark coffee-brown. The form is merely an aberration, extremely near to *infuscata* Fldr. (94e), and flies among the type-form, but apparently only in certain definite localities. The under surface varies even more than the upper, but there seems to be no regular contrast, as in India, between specimens with the under surface variegated (of the rainy season) and those in which it is unicolorous or leaf-like (of the dry season). — The larva is rather stumpy with short, thick spines, dark brown or iron-grey with light longitudinal stripes, some of which are interrupted, the horns on the head directed forwards, of moderate length; common on *Plantago*, *Gerardia* and *Antirrhinum*. It occasionally occurs in swarms on stubble-fields, commonly resting on the bare earth or on sand-heaps. The pupa is light wood-brown, somewhat concave ventrally. In the tropics the butterfly flies throughout the year without interruption. In the north and south it is a summer species, and sometimes congregates and migrates like *Pyrameis cardui*; these migrations take place in the United States in July, in Argentina in February.

#### 14. Genus: *Napeocles* Bat.

Of this genus only a single species is yet known, which varies little and is very restricted in its range. The body is strongly built, the palpus unusually long, the antenna strong, distinctly clubbed at the end, the wings shaped like leaves, the forewing below the apex produced into a posteriorly directed tooth, incurved below this and projecting above the anal angle. The hindwing shows a uniformly curved margin and strongly produced anal angle. Characteristic is the very strongly curved costa, which leaves a comparatively broad space between it and the subcostal, and also the very broad cell, which on the hindwing is open.

*jucunda*. **N. jucunda** Hbn. (95 a), the only known species, is black above with small, whitish, blue-edged subapical spots and broad, abbreviated, metallic blue median band, often lighter proximally. Under surface brown with leaf-like markings. Amazons to Bolivia.

#### 15. Genus: *Anartia* Hbn.

Medium-sized butterflies, in habitus strongly recalling our *Vanessids*, with angled wings and mostly with bright white spots or bands on the upper surface; head small, with strongly protruding, hemispherical eyes and pointed, elongate palpi; antenna with flat, spoon-shaped club; thorax strong, abdomen slender; wings broad, forewing as a rule, hindwing always angled; brightly coloured. Legs long and thin. Worthy of note is the anastomosis of the 1st and 2nd subcostals with the costal, also the open cells of both wings. Four species are known, all very common in their respective haunts. The egg is spherical in shape, beneath flat with 9—11 narrow longitudinal ribs, which disappear towards the pole; the eggs are laid singly on the upperside of leaves. The adult larvae are black, moderately spined; the larva of one species (*jatrophae*) was represented as densely haired, but without spines, which is no doubt to be traced to an error.

*jatrophae*. **A. jatrophae** L. (94e). White with slight mother-of-pearl gloss and sparse grey markings \*\*), which are chiefly confined to round the base of the forewing, on the cell-bands and at the distal margin. In the disc of the forewing one, on the hindwing two punctiform eye-spots of very varying development. The under surface is dull white with fine rosy-red and orange-yellow markings. *jatrophae* was described from northern South America, but is distributed over most of the warmer part of South America, strongly variable individually (but little geographically), and in South Brazil is still one of the commonest butterflies. The flight is different from that of the other *Anartia* species. The insect darts along with the wings spread out (swimming flight) and gives exactly the same impression as the Indian *Precis atlites* (vol. IX, pl. 117 a). — *saturata* Stgr. is the West Indian form, characterized by the broad yellow distal margin and the stronger markings. — *luteipicta*. **picta** Fruhst., from Central America, has the yellow of the distal margin of the hindwing sometimes extended proximally across the middle of the wing, occasionally covering the whole upper surface. — The larva is said to live on *Jatropha manihot* and in SEPP's figure, which seems to have been prepared with the assistance of MERLAN's sketch, more resembles that of a moth. *corone* Gosse, *jamaicensis* Möschl. and *luteipicta* Fruhst. are names for forms from the Antilles or Honduras, according to the amount of the yellow suffusion.

\*) The specimen of *lavinia* figured from the underside at 94 d forms a transition to *hilaris*.

\*\*) The specimen figured at 94 e is a ♀ with unusually copious brown markings.



*A. lytrea* Godt. (= *chrysopelleia* Hbn.) (94 e). Only known from Cuba and in a similar form also on *lytrea*. others of the Antilles. The Cuban *lytrea* has a broad, straight white band on the forewing and an oval white discal spot on the hindwing, so that it is unmistakable. — *eurytis* Fruhst., from Antigua and perhaps also *eurytis*. some of the Greater Antilles, inasmuch as it possibly approximates to *dominica* Skinn. from Haiti, has the *dominica*. oval discal spot of the hindwing produced into more of a band and the band of the forewing is narrower on the under surface. The species is not rare where it occurs.

*A. amathea* L. (= *amalthaea auct.*) (94 e). The typical form of this species, which is easily recognized *amathea*. by the blood-red disc of the hindwing, comes from Guiana and is distributed over the whole north of South America and the greater part of Central America. The forewing has the disc black-brown with scattered red spots varying in number and across the middle as well as before the distal area run chains of disconnected white spots, which are sometimes continued on the hindwing also. The under surface similar to the upper, only paler. — *sticheli* Fruhst., from Bolivia, seems to be a very local form with the white and red markings *sticheli*. much reduced; but transitions also occur, particularly to the preceding form. — *roeselia* Eschh. (94 f) is the *roeselia*. South Brazilian form, and is extraordinarily abundant at Santos in Sao Paulo; it may be recognized by the much broader white spots of the forewing, which are united into an oblique band. — *thyamis* Fruhst. is said *thyamis*. to occur in Santa Catharina and São Paulo (where I, however, only found the preceding form); the ♀ is said to have darker red margins, the submarginal spots of the hindwing narrower, more curved and the upper ones darkened. All the apical and median spots and dots of the forewing reduced. The median dots in the ♀ scarcely recognizable. — The adult larva is black with moderately strong black spines and has been found on various species of Acanthaceae. The pupa resembles that of *Victorina* in shape and colouring, but has no points on the head nor on the 2nd, 6th and 7th segments. In place of these points there are sometimes dots.

*A. fatima* F. (94 f), allied to the preceding; distinguishable by the more strongly produced apex of *fatima*. the forewing, the broader oblique band of the forewing, which is continued as a broad, straight stripe on the hindwing, and the reduction of the red, which on the forewing is entirely suppressed, on the hindwing only represented by a small, narrow, dull band behind and below the cell. Only known from Central America, where it occurs from Honduras to Costa Rica. — Whilst in typical *fatima* the oblique band of the forewing above is distinctly tinged with bone-yellow, in the form *venusta* Fruhst. it is white and the light band of the hindwing *venusta*. only extends to the lower radial. The red discal patches of the hindwing are somewhat broader and darker in *venusta*. Mexico, Guatemala.

## 16. Genus: *Victorina* Blch.

Rather large butterflies of extremely striking colouring with rather long, broad wings, sometimes angled or tailed, rather large head with strong palpus, somewhat curved inwards at the tip. The antenna more than half the length of the costa, strong, with flat club. The legs long and strong, the thorax powerful, the wings broad with dentate distal margin. The cell broad, open on both wings. On the forewing the first subcostal vein arises close before the end of the cell, the 2nd at the end, the 3rd behind it and the 4th shortly before the apex. On the hindwing the 1st and 2nd subcostal veins arise before the end of the cell, the 3rd, 4th and 5th are stalked. The hindwing is strongly dentate, the tooth on the upper median often prolonged into a tail. The larva is only known of one species.

*V. steneles* L. is dark black-brown above with green oblique band and spots of the same *steneles*. colour; beneath the green is more extended, traversed by silver-white bands margined with orange. *steneles* L. is the form from Guiana and the Amazons, and is distributed westwards to Ecuador and southwards over the whole of Brazil. In it the green oblique stripe is broad, there is only one spot in the cell and the under surface is very lightly marked. — *pallida* Fruhst., from Texas, Florida and Mexico to Honduras, has in the cell of the *pallida*. forewing two large light green spots, of which the anterior is almost triangular. — *bipunctata* Fruhst. (= *meri-* *bipunctata*. *dionalis* Fruhst.) (95 a), from Espirito Santo and Rio Grande do Sul, has two small dots in the cell of the forewing and on the under surface of the hindwing a narrower silver-grey distal border. — *sophene* Fruhst., from *sophene*. Ecuador, has in the cell of the forewing only one small yellow-grey dot, the light markings are much narrowed and the median band is reduced. — *lavinia* F., from the Antilles, has only one spot in the cell of the forewing, *lavinia*. but a distinct orange-yellow anal spot on the upperside of the hindwing. — *biplagiata* Fruhst. (95 a) has two *biplagiata*. quadrate cell-spots on the forewing and the bands of the under surface, which separate the green spots, are very broadly margined with deep orange. — An interesting aberration is *stygiana* Schaus (95 a), in which on *stygiana*. the forewing the green band only reaches from the inner margin to the lower median vein, all the rest of the wing being black-brown without markings. — The butterfly is very common, but its early stages are not yet known. It shows a remarkable similarity to forms of *Metamorpha dido* (84 a), which extends not only to the colouring and markings, but also to the flight and habits, so that it is sometimes difficult to separate the two species, which I have seen flying together round the same bush. When resting, however, *V. steneles* mostly closes its wings over its back, while *M. dido*, like its red relatives, commonly keeps them spread out.



*sulpitia.*

**V. sulpitia** Cr. (= *symachia* Godt., *elissa* Hbn.) (94 f, as *sulpicia*), although very variable in size, is considerably smaller than the preceding species, the median band is not green but white, the colouring of the upper surface somewhat recalling many Old World *Pantoporia*. Under surface predominantly whitish, traversed by dark-margined, rust-coloured bands. The band varies greatly in breadth, the oval and the subapical spot on the forewing in size; the small white spot in the end of the cell, which is always distinct beneath, sometimes shows through above much more than on our figure, but may also be entirely absent and the dull band between the white median band and the distal margin may be much more conspicuous and tinged with rust-yellow. The species is distributed over the whole northern part of South America and occurs scattered but not rarely westwards to South Peru.

*epaphus.*

**V. epaphus** Latr. (= *epaphia* Godt.) (95 b). As large as *steneles*. Black-brown; distal half of the forewing red-brown, divided from the dark proximal half by a white band; hindwing with straight white half-band from before the apex to before the small tail. Very variable; the white band of the forewing may be narrower, broader or posteriorly widened. The band of the hindwing may terminate in a point between the median veins, but also at times bends round and reaches the inner margin as a thin streak. Here it sometimes terminates in a white subanal spot, but the latter may also be isolated or even absent. On the under surface the apical part of the forewing may be concolorous or traversed by a broad light band; this light band is sometimes split up into two by a dark longitudinal dividing line, but is also sometimes absent or replaced by irregular clouding. On the hindwing the narrow (proximal) white band is not invariably present, but may be absent or incomplete; also on the upper surface the pointed white band of the hindwing may be abbreviated or posteriorly broken up into spots. The species is distributed from Mexico southwards to Brazil and Peru, in many localities common, sometimes in only one form, sometimes several of the forms described above fly together.

*trayja.*

**V. trayja** Hbn. (95 b) is the southern representative of the preceding and scarcely specifically different. It flies in Central and Southern Brazil and is like *epaphus* except that the distal part of the forewing is not rust-brown but dull black-brown, like the rest of the wing. The species is rarer than the preceding, but quite as variable; in addition to the possible variations mentioned for *epaphus* there is frequently a whitish subcostal spot before the apex of the forewing and the under surface is often marked with ochreous before the distal margin of both wings or with red before the band of the hindwing. — Eggs spherical, white, with 9–11 sharp longitudinal ribs; they are laid singly on Acanthaceae. Adult larva velvety black with orange or light yellow spines, head black with 2 red horns. Pupa rather smooth, without projecting carinae, on the head, on the middle of the thorax and on the back of the first 2 or 3 segments of the abdomen with small, short points; dull light green, somewhat transparent. — The butterfly flies on clearings, at the edges of woods and on open places overgrown with bushes.

*superba.*

**V. superba** Bates (= *aphrodite* Btlr.) (95 b). Differing from the preceding chiefly in the shape of the wings. The distal margin of the forewing forms a tooth between the extremities of the radials, the hindwing is much more deeply dentate and the tooth in the middle of its distal margin is produced into a long spur. Colouring and markings similar to those of *trayja*; the white band extraordinarily variable, sometimes twice as broad as usual. Apical part of the forewing sometimes spotted with bright orange. To give names to these aberrations is as unnecessary as it is unsafe, as for instance concerning the breadth of the bands, the red admixture, etc., nothing at all is said in the original diagnosis, and it cannot be decided whether the type belonged to the broad-banded, the unicolorous, or other form. Central America and Mexico. — This and the two preceding species have been separated from the true *Victorina* under the generic name *Amphirene*, principally on the ground of differences in the male genitalia.

## 17. Genus: **Didonis** Hbn.

Black-brown butterflies with scarlet band on the hindwing, of medium size, body rather slender; head small, but the palpus in the ♀ very long. Wings rounded, forewing entire-margined, distal margin of the hindwing undulate. Especially striking is the costal of the forewing, the basal part of which is strongly inflated. The ♂♂ have a peculiar scent-organ, which I described and figured as long ago as 1889. There are 2 stellate, extensile hair-pencils at each side of the middle of the abdomen, which, however, are usually retracted and invisible. In spite of the quite different aspect of the species, *Didonis* corresponds to the *Ergolis* of the eastern hemisphere and has also like the latter a characteristic floating and swaying flight, as they glide along with the wings spread out flat and moving but little, much like a *Liminitis* or *Neptis*. 7 forms have been distinguished, which are distributed from Mexico to Paraguay.

*biblis.*

**D. biblis.** Black-brown, with brilliant scarlet band at or before the distal margin of the hindwing. From Mexico through the whole of South America to Paraguay and South Brazil, on open places overgrown with brushwood, common throughout the year. — Egg white, oval, flattened at both poles, with fine white down, arranged like a rosette above. Adult larva grey-brown with light oblique streaks and small, thin green tubercles, on the 7th segment a light band. The spines moderately long, on the head two somewhat curved



horns crowned with a star at the end; on *Tragia volubilis*; when at rest it keeps the anterior and posterior parts raised. Pupa green or grey-brown, with a slight rosy admixture, compact, with the edges of the wings projecting as in *Ergolis*, but otherwise not so smooth as the latter. The butterfly has an elegant but not rapid flight and very commonly rests on bushes; in Bahia I frequently found the insects enmeshed in the horizontally placed webs of a large spider, in which numbers perish. — As no district is known where more than one form of *Didonis* occurs, all are probably merely representatives of a single species. The most northerly is *aganisa* Bdv. (94 f), with the forewing uniform dark brown; the scarlet band runs in a zigzag from the apex *aganisa*. to the anal angle of the hindwing and cuts off the distal-marginal part of the hindwing; from Mexico to Central America. — *pasira* Dbl. & Hew. has the scarlet band placed nearer to the distal margin of the hindwing and *pasira*. broken up into separate red spots by the very thick veins. The distal part of the forewing is much lighter. It flies in Guiana and is only to be regarded as a transition to the typical *biblis*. — *biblis* F. (= *hyperia biblis*. Cr., *thadama* Godt.) (94 f) likewise has the forewing lighter at the distal margin; in it the scarlet band follows throughout the curve of the distal margin of the hindwing, leaving only a narrow black border free. This is the usual form, is distributed from Colombia to beyond Central Brazil and is still very common in Rio Janeiro and São Paulo. — *nectanabis* Fruhst. has the scarlet band darker red above, beneath the band of the hindwing *nectanabis*. is much narrower than in North Brazilian specimens: Rio Grande do Sul. — *sisygambis* Fruhst. is said to be *sisygambis*. larger than Brazilian specimens, the red band of the hindwing beneath is more strongly narrowed and sprinkled with black scales than in the preceding form. — *laticlavata* Thieme, which R. HAENSCH discovered on the upper *laticlavata*. Rio Negro, has the broadest scarlet band of the forms; this becomes quite especially broad in the middle of the distal margin, where it extends so far basal that its proximal edge becomes convex towards the base, whilst otherwise it is concave. — The species belongs to the Ergolidi.

### C. Group: Ergolidi.

To this group, which is typically represented in Asia and Africa by *Ergolis*, *Eurytela* and *Biblis*, and which has been variously called *Ergolidi*, *Eurytelini* or *Biblini*, belongs already the genus *Didonis* just dealt with, and only by mistake this paragraph stands after instead of before that genus. According as the habits, the neuration or the life-history is put in the foreground, the group is somewhat differently defined. The 3 American genera which certainly belong here (*Didonis*, *Vila*, *Cystineura*) have also been further separated as „*Didonidi*“. AURIVILLIUS gives first importance to the inflated base of the veins of the forewing (especially the subcostal), according to which a further series of American genera should be included e. g. *Bolboneura sylphis*, named from this peculiarity and formerly merged in the genus *Temenis*. *Libythina* and *Antigonis*, concerning whose life-history we still know almost nothing, would connect the group with *Eunicea* and *Lunicea* with the *Epicaeli*-*idi*. Until we know the larvae, which will no doubt here prove quite characteristic, it is useless to waste many words on the affinities of these groups. Whilst on the one hand the entire agreement in the habits of *Ergolis* and *Didonis* and the striking similarity of *Cystineura teleboas* and *Neptidopsis* (which is not only superficial) argues in favour of a union of the Old World genera into one subfamily with the corresponding genera of the New World, on the other hand REUTER separates the two and advocates a closer association of *Ergolis* with the *Vanessidi*. It is, however, very striking that all the larvae which are known of *Byblia* (Africa), *Ergolis* (Asia) and *Didonis* (America) live on one and the same food-plant, the evil-smelling *Tragia*. When in conjunction with such unusual morphological conditions as the swelling at the base of the costal, the nature of the larval spines (spines on the head very long, a crest of spikes at the end of the spines, etc.) and the like, we find further agreement in an otherwise unusual food-plant, a close systematic connection between these geographically remote genera seems very probable.

### 18. Genus: *Vila* Ky.

As *Vila* is one of the comparatively few butterfly genera of which I have never observed an example in the open, I am not in a position to say anything as to its bionomics. According to its affinities (it is closely connected with the *Ergolis-Didonis* group) one would expect a darting or sailing flight with the wings held horizontally; but on account of an unmistakable tendency to mimic certain Ithomiids it would appear that an alternately fluttering and jerky flight, so as to complete the illusion, would be more advantageous for the insect. — The genus consists of 6 rather nearly allied forms, which all (except one) have the upper surface of the wings predominantly dark with vitreous white patches and bear an orange-coloured arcuate line on the under surface. All the species seem to be rather rare and are only received in Europe in single specimens. Their proper habitat is the watershed of the Amazons, from which they extend northwards to Guiana and southwards to Peru. — The *Vila* species have a moderately broad head with thick, naked eyes, palpus about the length of the head, with the 2nd segment thickened and the 3rd somewhat hollowed; antenna half the length of the costa, gradually and slightly thickened at the end; the body is slender, on the thorax are whitish bands and spots, as in a *Pantoporia*; wings entire-margined, broad with rounded distal margin. The neuration similar to that of *Cystineura*, on the forewing the cell is closed, the subcostal in the ♂ swollen at its base into a thick cyst. Cell of the hindwing open. — Concerning the early stages nothing is known.

*V. azeca* Dbl. & Hew. (95 c). Forewing with broad white cell-wedge, subapical oblique band and white *azeca*. streak between the median veins; hindwing with hyaline white costal area. Under surface with orange-yellow, dark-edged marginal stripe. Bolivia and Peru.



- caecica*. **V. caecica** Sigr. is quite similar above, but the cell-wedge cut through before its apex, the oblique band split up into 2 spots; spots before the apex, and between the median veins diffuse white spots; hindwing with uniform light band. From Ecuador.
- stalachtoides*. **V. stalachtoides** Bates. A very easily recognized species, resembling a *Stalachtis phaedusa* (pl. 143) or *Leucothyris egra* (39 b), or again a *Pseudoscada exornata* Hsch. (41 b). The forewing is variegated with light, dull yellow spots, the hindwing has transparent disc, black costal margin and, what is most striking, an orange-red stripe before the black distal margin. From the Lower Amazon.
- caecilia*. **V. caecilia** Cr. (95 c). Forewing with a broad, white, oval or band-like apical spot, white discal spot and small whitish blue band, which cuts off the basal part of both wings. Hindwing sometimes with whitish median band. From the Upper Amazon.
- emilia*. **V. emilia** Cr. is quite similar to the preceding, but the large white spots on the forewing are broken up into smaller ones. The hindwing shows always beneath, often also above, a median band intersected by the veins. Guiana and the Amazons.
- mariana*. **V. mariana** Bates is quite similar to the preceding above, but has on the hindwing white marginal markings and fringes; the forewing is somewhat more strongly spotted with white, and in the apex itself stands an obscure white line. The underside of the hindwing lacks the small white subbasal band, distinct in *caecilia* and *emilia*. From the Upper Amazon. Rare.

N. p. 630 *caecilia* form *caecilia* - v. T.

### 19. Genus: **Cystineura** Bsd.

This genus is composed of 12 forms, 11 of which approximate very closely, but the 12th is remarkably different and both structurally and in habitus approaches an African species. The genus, at least as concerns the first 11 forms, cannot be confused with any others, it consists of extremely delicate, broad-winged, rather small butterflies, the forewing elongate with the costal margin straight, the distal margin long and the inner margin either quite straight or even slightly concave. Noticeable in the venuration are a thick, ampulla-like swelling at the base of the subcostal, the very broad, closed cell of the forewing and the open cell of the hindwing. The colouring, with the exception of the 12th species, which scarcely belongs in the genus, is white or grey with a somewhat orange tinge. Concerning the early stages nothing definite is known. The geographical distribution extends from the most southern part of the United States to Paraguay. A correct separation of the species and arrangement of their forms is attended with great difficulty and the intergrading of the different forms leads us to suspect that we are only dealing with quite a few variable species, which all vary in a similar direction.

- hypermnestra*. **C. hypermnestra** Hbn. (= *hersilia* Godt. p. p., *tokantina* Bates) (115 e, 97 a under surface). Already in my „Lepidopterologischen Studien“ (Zool. Jahrb. System. 4, p. 912) I have called attention to the extreme variability of this species, which was noticeable even among the numerous specimens which I took at the same place and almost at the same hour in Bahia. The ♂♂ may be almost unicolorous grey above, but have mostly a rather broad light discal band across the forewing, which is widened below the cell and is continued on the hindwing, but considerably narrower. The under surface in the ♂ has mostly a rather weak ochreous tinge, principally in the distal area, and shows a white subbasal band on the hindwing, which is at least as broad as the discal band or even surpasses it. In the ♀ also the ochreous tinge of the under surface may be strong or weak. The species is only known from Bahia, where it flies throughout the year. — Further to the south, from Rio to Paraguay, flies a form with the apical part of the forewing broadly orange-yellow, which *apicalis*. STAUDINGER calls **apicalis** and in which he already suspected a southern local form of *hypermnestra*. This form is figured at 115e as the last figure but one, but has by oversight been given the incorrect name *bogotana*, while the name *apicalis* has slipped under the preceding figure, which represents a *C. corviana*. Of this local form, whose yellow colouring is subject to great variation in extent, MOULTON now describes a further subvariety *burchelli*. from Brazil, which he calls **burchelli**.
- bogotana*. **C. bogotana** Fldr. in certain forms nearly approaches the preceding species, thus e. g. in the form *cana* *Ericks.*, which on the upper surface has like *hypermnestra* hardly any yellow and only differs from the dark-dusted examples of the latter in its smaller size and darker margins and on the under surface in the considerably narrower subbasal band of the hindwing; other specimens again are almost entirely white, but nevertheless belong no doubt in the *bogotana* series of forms. But that *semifulva* Fldr. (97 a) can be specifically identical with *bogotana* seems to me to be precluded by the fact that in addition to other differences the latter shows a narrow subbasal band on the underside of the hindwing. Colombia and Venezuela.
- semifulva*. **C. semifulva** Fldr. (97 a), likewise from Colombia, has the basal half of the forewing and the whole hindwing shot with dull ochre-yellow, the apical part of the forewing densely covered with white longitudinal spots. Not rare.



**C. amymone** Mén. (115 e) differs from the preceding species in that the median band on the under- *amymone*. side of the hindwing, although broad at its commencement at the costa, is narrowed beyond the cell into a chain of small, round white spots. The forewing resembles that of *hypermnestra* above, but the hindwing has the distal part ochre-yellow. Found from Texas through Mexico and Central America. — In Florida occurs a form with unicolorous ♂♂ suffused with grey, = **floridana** Streck., which according to MENGEL resembles *cana*, but *floridana*. differs from it in the shape of the band on the underside of the hindwing; probably, however, it is nearly allied to a form from the island of Trinidad with the ♂ unicolorous dark brown-yellow **corviana** Btlr. (115 e *er-corviana*. roneously called *apicalis* which name belongs to the figure on its left).

**C. aurantia** Weeks (115 c) has the upperside in the ♂ white, only at the distal margin of the forewing *aurantia*. quite narrowly tinged with yellow; we figure the under surface. It is characterized by the discal band on the hindwing beneath which consists of a chain of rounded white spots placed in a brown-grey. Bolivia.

**C. dorcas** F. (= *hersilia* F., *mardiana* Cr.) (97 a) cannot be confused with any other species. Both *dorcas*. wings above are bright yellow-red in the distal part, the proximal part is white with dull greyish markings. From Jamaica.

**C. teleboas** Mén. (97 a). This species differs structurally from all the other *Cystineura* in having the *teleboas*. palpus even more elongate, the distal margin of the hindwing more strongly dentate and that of the forewing undulate, the markings also quite unlike this genus, bearing a remarkable resemblance to those of the African *Neptidopsis ophione* (vol. XIII, pl. 49 d). Not only the elongate palpus, the inflated base of the costal and the black and white colouring unites the two, but also the markings of both surfaces, particularly the peculiar double row of eyespots beyond the white median band, are common to both. *teleboas* only occurs on the Antilles.

#### D. Group: **Marpesiidi.**

As we hesitated to separate *Idionis*, *Bibliis*, *Eurytela* and *Ergolis*, in spite of their very different habitus and widely separated localities, in the same way the sole American genus belonging here — *Megalura* — approximates very closely to an Asiatic-African group, which consists of the genera *Cyrestis* and *Chersonesia*. The larvae of the genera in this group have no true spines, but in addition to two long horns on the head bear only isolated, not paired, rather soft appendages, one placed on the 5th and one on the 11th segment, sometimes also one on one or two of the intervening segments, in that case usually shorter. — In addition *Megalura* is associated with *Cyrestis* by the common food-plant; as a rule the larvae are found on *Ficus* or allied plants. — Finally, the butterflies almost all show in the anal angle of the hindwing a small lobe, which hangs down when the insect is resting with the wings spread out. — Both in the Old and the New World the *Marpesiidi* are represented by 20—25 species and almost entirely confined to the tropics; they differ in that the tail in the American species is long, in those of the Old World short.

#### 20. Genus: **Megalura** Blch.

This genus, which was formerly referred to *Timetes* and *Marpesia*, is as isolated and independent in the American fauna as its nearest relative, *Cyrestis*, in the Old World. These two genera exactly correspond in the spines of the larvae and the shape of the hindwing, which bears a peculiar, somewhat curved, small anal lobe. The *Megalura* species have a rather broad head with broad front and protruding eyes. Palpus long, particularly the 2nd joint, the 3rd also long and pointed; the palpus with appressed scales, the antenna moderately long, with well developed, elongate club, into which it gradually swells. The subcostal of the forewing 5-branched, the 1st branch arising almost at the middle of the cell, the 2nd at its end, the 3rd to 5th stalked; the lower discocellular wanting on both wings, so that the cells are open. Usually the forewing is produced or pointed at the apex, the distal margin undulated, the inner margin quite straight. The hindwing shows a pointed tail traversed in its entire length by the upper median vein and mostly in the anal angle a small, somewhat distally curved, sometimes brightly coloured lobe.

The larva shows a great reduction in the spines. The lateral spines are almost entirely suppressed and there are only unpaired soft spines on the back, thus showing an approach to the form of the *Apaturidi* larvae. On the whole they probably approximate most nearly to *Chlorippe*. Most species are very common where they occur, feed both on the honey of flowers and also the moisture of wet places on the roads, and from their head-quarters, northern South America, scarcely a consignment of butterflies reaches Europe which does not contain one or more representatives of this group. Their range extends from the south of the United States (Texas and Florida) to Paraguay and northern Argentina in the east and Peru and Bolivia in the west. Single species show analogy with butterflies of other groups, together with which they fly, but it does not amount to actual mimicry, while on the other hand the under surface is frequently adapted to their environment. About 25 forms are known.



- coresia.* **M. coresia** Godt. (= *cerynthia* Hbn., *sylla* Per.) (96 a). Dark chocolate-brown above, with the distal margin lighter, beneath the basal half of the forewing is satiny white, the distal half brown. In Texas, but there mostly still rather rare, through Central and northern South America southwards to Peru and southern Brazil. The popular name „Waiter“ alludes to the upper surface (dark, long-pointed frock-coat) and the under surface (white waistcoat).
- norica.* **M. norica** Hew. (96 a). Mostly smaller than *coresia*. The forewing black-brown, with single light stripes running off from the inner margin towards the median. The hindwing lighter brownish with dark longitudinal stripes. The under surface quite different from that of *coresia*, brown with dark dentate lines and a small transverse band, mostly somewhat lighter, from the inner margin of the hindwing to the upper median vein; the distal margin of the forewing mostly frosted with whitish. Ecuador and Peru.
- themistocles.* **M. themistocles** F. (96 a). Wings pretty uniformly striped with yellow-brown and black-brown, under surface similar to that of the preceding species. The difference is that in *themistocles* the light stripes traverse the entire forewing, in *norica* they are only distinctly visible at the inner margin. Brazil.
- chiron.* **M. chiron** F. (*chironias* Hbn., *cinna* Swains. nec Cr.) (96 a). The commonest and best known *Megalura*. As in the preceding, the wings are striped with yellow-brown and black-brown above, but the stripes are quite straight, not curved as in *themistocles*. The under surface entirely different, with slight mother-of-pearl gloss, mostly dark grey-brown in the distal part, light dusty grey in the proximal part; the two parts divided by a straight, white, dark-edged band traversing both wings. In typical *chiron* there are 5 or 6 distinct white punctiform spots before the apex of the forewing above. The species has an extraordinary range, occurring from the Antilles and Mexico through the whole of Central and South America far towards the south. On Cuba, together with typical specimens, others occur in which the apical dots of the forewing above are absent, and which also mostly differ in the ground-colour from typical *chiron* and often have the under surface more unicolorous tan-yellow, little opalescent. These have been distinguished as ab. **chironides** Stgr. I have before me quite a number of transitional forms from Cuba, so that I cannot agree with STAUDINGER's opinion, also shared by FRUHSTORFER, that *chironides* is a distinct species. **insularis** Fruhst. (= *marius* Stoll nec Cr.), described from Jamaica, presents such a transition. — The larva of *chiron*, like most *Megalura* species, probably lives on *Ficus* and *Morus*; according to MÖSCHLER it has been found in Porto Rico on *Maclura tinctoria*.
- merops.* **M. merops** Bdv. (96 b). Dirty grey-brown above, apical half of the forewing black, copiously dotted with white; beneath dull silver-white with brownish parallel transverse lines. From Costa Rica through the whole of northern South America to Bolivia. In the south of its range the species alternates with *egina* Bates. Common.
- alcibiades.* **M. alcibiades** Stgr. The upper surface of this butterfly exactly resembles *chiron*, the under surface *berania*. It differs from both in the absence of the anal lobe on the hindwing. The butterfly must be very rare or be seldom taken on account of its similarity to the very common *chiron*. Central America: Chiriqui and Veraguas.
- egina.* **M. egina** Bates. This species, which is very common on the Upper Amazon, though very like *chiron* or *themistocles* above, is at once distinguished by the light, glossy under surface, in which it approaches *M. merops*.
- harmonia.* **M. harmonia** Dbl. & Hew. (96 e). This species also has the light, satin-glossy under surface, traversed by parallel lines. Above it is bright orange-yellow, almost exactly like *berania* ♂, but the apex of the forewing is much more pointed and the distal-marginal line bright black. The ♀ is also on the upperside dull white, with a yellowish tone. Mexico.
- tutelina.* **M. tutelina** Hew. is marked almost like *harmonia* on the upper surface, but the apex of the forewing is even more pointed, the ground-colour more fiery red-yellow; it chiefly differs on the under surface, the red-brown having a violet gloss, traversed by 3 small, linear brown bands, so that the underside resembles *themistocles*. Amazons; apparently very rare.
- berania.* **M. berania** Hew. (96 c). ♂ above fiery red-yellow, but with rounded apex, beneath dull yellow, with white satiny gloss and 6—8 yolk-yellow transverse bands. The ♀ is dull grey-brown above, whitish beneath, but marked quite like the ♂ except that the bands on the upperside are broader and more distinct. The typical ♂♂ have a black distal margin to the forewing, dark border at the apex and dark, on the hindwing almost black lines (= *crassilineata* Fruhst.). FRUHSTORFER is quite right in calling attention to the difference of this form from the Honduras specimens, which have a dark yellow transverse line; but these latter are the non-*fruhstorferi*. typical and must be renamed (= **fruhstorferi** nom. nov.) (96 c).
- livius.* **M. livius** Kirby (= *berania* ♀ Hew.) (96 b). Upper surface black-brown with dark transverse bands not unlike *norica* (96 a), but the under surface is like white satin, with fine brown lines. Ecuador, Bolivia and Peru.



**M. crethon** F. (= *erithon* Godt.) (96 b). Under surface very similar to the preceding species, likewise *crethon*. satiny white, but with a peculiar rosy violet tinge. Above the wings are earth-brown with white median band and 6 small white spots in the distal area, of which the one in cellule 5 is displaced proximally, that in cellule 6 distally. Before the distal margin often white dots. Probably distributed over the whole of northern South America, sometimes occurring with broader, sometimes with narrower white band, but seems to be often rather rare.

**M. catulus** Fldr. is quite similar to *crethon*, but the median band is very narrow, the hindwing before *catulus*. the distal margin with stronger stripes and at the anal angle with more distinct orange spot; on the forewing only the upper white dots are clear and well developed. Ecuador.

**M. orsilochus** F. (= *cinna* Cr.) (96 b). Likewise resembles *crethon* above, but in the distal area of the *orsilochus*. forewing instead of the row of dots a second, narrower, white band runs about parallel to the proximal one. Under surface, however, quite different; this is not traversed by fine grey lines, as in *crethon*, but by broad brown bands tinged with gold-yellow. The tails of the hindwing very long and pointed. Northern South America, especially Venezuela; in many places rare.

**M. corinna** Latr. (96 c). Brown, forewing with rather narrow orange band, hindwing with violet *corinna*. reflection on the disc. Under surface distinctive, showing besides other silvery markings a silver median band (quite straight on the hindwing). The ♀ has on the upperside of the forewing a white band, according to STAUDINGER sometimes light yellow. Colombia to Amazons. — *lazulina* Fruhst. (96 c) are specimens of the *lazulina*. smaller Peru form, such as are obtained in numbers from Chanchamayo; they are quite like *corinna*, but have the proximal boundary of the orange band of the forewing irregular and the tails of the hindwing brighter red-yellow.

**M. marcella** Fldr. (♀ = *valetta* Btlr. & Druce) (96 d). In this common butterfly the whole disc of the *marcella*. forewing in the ♂ is orange, and in addition the apical part of the hindwing. The under surface is almost exactly like that of *corinna*, so that the two were for a long time regarded as forms of one species. Central America and northern South America.

**M. corita** Ww. (= *theonis* Bdv.) (96 d). Upper surface almost exactly as in *marcella*; the apex of the *corita* forewing perhaps somewhat more pointed, the hindwing before the tail with beautiful violet metallic crescents, which in *marcella* are at most only indicated. Quite different is the under surface, where a dark brown band, only shaded with silver, runs through the middle. Mexico to Central America. Common in the woods of Vera Paz, on river-beds. — *phiale* Godm. & Salv. is said to be quite like *corita* in the ♂ upperside, but differs in the *phiale*. more red-yellow under surface. The ♀, which in *corita* is dark brown with ochreous band on the forewing, is in *phiale* much paler, with narrower ochre band, but with lighter, yellow-grey transverse bands and stripes. From the volcano Atitlan in Guatemala.

**M. hermione** Fldr. (= *heraldicus* Bates, ♀ = *funebis* Btlr.) (96 d). In the ♂ the larger inner-marginal *hermione*. half of the forewing is bright orange, the distal part of the wing black-brown; the ♀, which BUTLER described as *funebis*, is reddish yellow-brown, with ferruginous transverse bands. The species is distributed from Guatemala to Peru and Bolivia and varies strongly, but more according to habitat and elevation or individually than geographically. The ♀♀ in particular are very inconstant and the ♂♂ vary with regard to the delimitation of the orange basal part; many show violet-blue reflections at the proximal edge of the black distal part, but never so strong as in *iole*. — KIRBY's Catalogue cites with this form an **M. poeyi** Sagra from Cuba; this is un- *poeyi*. known to me, but the following species, *iole*, has been occasionally recorded from the Antilles, as by CRAMER and DRURY.

**M. iole** Drury (= *furcula* F., *zosteria* Hbn.) (96 e). The colours of the ♂ as in the preceding, but *iole*. the red-yellow on the basal part restricted, often only visible on the forewing, and behind it on the black disc a very intensive, glorious violet-blue reflection. The ♀ is distinguished from the more grey-brown ♀ of the preceding species by the red-brown tone and rust-yellow oblique band, yet both species vary strongly in this. From Central America through Colombia and Venezuela to Ecuador and Peru. Common.

**M. peleus** Sulz (= *petreus* Bates) (96 e). Fiery fox-red with black (southern form) or brown (northern *peleus*. form) transverse stripes. Recognizable by the tooth of the forewing below the apex, which projects far distal, the long, quite straight, somewhat spatulate tail at the median of the hindwing and the shorter (but always several mm in length) tail at the anal angle. Costal and distal margins, especially in southern specimens, strongly blackened. — Larva violet-reddish, white on the venter, the abdominal segments sulphur-yellow above. The head bears 2 horns, the 5th, 7th, 9th and 11th segments each an erect, soft filiform process on the back. The pupa dull white with small black spots and long spines on head, thorax and abdominal segments and distinct dorsal carina. The larva on Cachou (*Anacardium*). The butterfly is common; in consequence of the strongly produced forewing it much resembles *Colaenis julia*, *Dione junio* etc., with which I took it on the same flowering shrubs.



When I started the butterflies up by beating and they flew round the bush before settling again, it was scarcely possible to distinguish *peleus* in flight from the swarm of *Colaenis* etc.

*eleuchea*. **M. eleuchea** Hbn. (= *pellenis* Godt.) (96 e). Pretty similar to the preceding, but darker fox-red, more strongly marked with black, and abundantly distinct in the shape of the forewing, which is much shorter and has a short tooth below the apex. From the south of the United States (Texas, Florida) and the Antilles; not rare on Cuba.

#### E. Group: **Hypolimnadidi**.

If the Hypolimnadids are not reckoned directly to the *Vanessidi*, but are separated from *Anartia* and *Victorina*, which nearly approach the Vanessids, they have scarcely to be considered in the American fauna, as their sole representative has certainly been accidentally introduced. We therefore place it here by itself.

#### 21. Genus: **Hypolimnas** Hbn.

The only species found in America is *H. misippus*, which is here rare, but in Africa and South Asia quite common and mimetically adapted to the Danaids occurring there. Hence it is dealt with fully elsewhere (vol. IX, p. 545, and vol. XIII, p. 212) and, as it has also reached the Palearctic Region in Syria, it is figured in the first part of this work.

*misippus*. **H. misippus** L. (vol. I, pl. 60 c). The reader is here referred to what has been said in vol. I, p. 195, vol. IX, p. 547, and vol. XIII, p. 213. ♂ black with white discal area with blue reflection on both wings; the ♀-form found in America is the one figured in vol. I, pl. 60 c, as the typical ♀-form of *misippus*, *diocippus* Cr., a mimic of *Danaüs chrysippus*. The butterfly is still rare in America and has been found in quite isolated localities; thus in widely distant parts of North America (New York-Florida), on the Antilles and in northern South America. No doubt pupae have been repeatedly imported, and as the larva lives on field-produce (Batatae) and the species runs through the whole cycle from egg to imago in only some 4—5 weeks, it has succeeded in gaining a firm foothold. The flight of *H. misippus* is quite unlike that of other Nymphalids, which often have a darting or sailing motion, on the contrary it resembles the irregular flight of the Danaids, which the female mimics, just as the other mimetic *Hypolimnas* that of *Euploea*.

#### F. Group: **Gynaeciidae**.

This group of butterflies approximates in some degree to the *Vanessidi* and at the same time to the nearly allied *Hypolimnadidi*. As far as they are known the larvae are strongly spined, the pupae have points on the head and often also peculiar teeth on the dorsum, the butterflies are most conspicuous by the peculiar scheme of markings on the under surface, where this is not softened into a leaf-like pattern. There are scarcely a dozen forms, which are divided into 6 genera, all confined to America, there often common and sometimes so general that they may be described as characteristic butterflies of a South American landscape. Sometimes butterflies of this group are seen flying along at great elevations, all in the same direction, apparently migrating.

#### 22. Genus: **Historis** Hbn.

To this genus is assigned a large butterfly, common in almost the whole of South America, which about corresponds with *Doleschallia* of the Old World. The sole species is so characteristic that a description is almost superfluous.

*orion*. **H. orion** F. (= *danae* Cr.) (104 e). Very large, forewing produced at the apex and hindwing at the anal part. Above black-brown with orange disc to the forewing, this orange colour beyond the cell reaching nearly to the distal margin, before the apex of the forewing a white costal spot, the hindwing light-margined. Under surface leaf-like. From the south of Florida, where, however, it is probably only an immigrant, the species is distributed over the West Indies and Mexico through Central and South America as far as Argentina and it extends from the Atlantic to the Pacific coast. — The larva is thick and firm, with short branched spines and two short spinose clubs on the head, yellow-brownish to greenish with dark brown transverse markings on the segments. The pupa is laterally much flattened with sharp dorsal ridge, likewise yellow-brownish to wood-coloured, and has two long horns on the head. The butterfly does not visit flowers, but drinks at wet places on the road and especially at sugar, sap and fruit, where it rests head downwards, always with the wings closed, but when in danger dashes away with very powerful, though not very elegant flight



(about like a *Charaxes*). Probably it owes its constancy to this great power of flight, so that in its enormous range no permanent races have been developed. Specimens which lie before me from Bolivia and Ecuador differ in nothing from those coming from Colombia or South Brazil. Only in Haiti the orange area of the forewing is said to be somewhat broader and the distal margin of the hindwing brighter white. For this form FRUHSTORFER reserves the name *odius* F., otherwise treated as a synonym. Very common in tropical America, *odius*, and by preference keeping near the Indian huts, on heaps of refuse and in fruit-gardens; at Rio de Janeiro it begins to get rarer and occurs very irregularly. The larvae live on the Embauba and rest very high up, mostly on the upperside of the lobed leaves.

### 23. Genus: **Coea** Hbn.

The sole butterfly which belongs in this genus I only place here provisionally, as its larva is unknown to me; but as the butterflies of the two groups agree very exactly not only in shape, colouring, neurulation, etc., but also in the finer structure (REUTER's basal spot of the palpus), I follow REUTER and W. MÜLLER and introduce it there. It is probably very near the Old World *Kallima* and has doubtless nothing to do with *Charaxes* of the Old and *Prepona* of the New World.

**C. acheronta** F. (= *cadmus* Cr., *pherecydes* Cr.) (104 d). Similar to the preceding, the disc of the *acheronta*. forewing duller orange-ochreous, before the apical part of the forewing an oblique chain of white spots; before the apex a small, shining white vitreous costal spot, exactly as in *Hist. orion*. Hindwing with a tooth or small tail; beneath marked more like bark than leaves, rather variable and in many specimens recalling certain *Charaxes*. As, however, nearly every specimen is different beneath I do not regard this variability as constant, and treat *cadmus* as a synonym. Distributed from Mexico over the Westindies and Central America to South Brazil, where it is still common at times; it rests on tree-trunks head downwards, often with the wings spread out wide, comes to sugar and flies very rapidly. I have no doubt that the unknown larva has short, thick spines and lives on *Cecropia*. The butterfly is uncommonly variable in size and together with specimens as large as the figured *H. orion* others occur like a small *Pyrameis atalanta*.

### 24. Genus: **Smyrna** Hbn.

Large butterflies with the upper surface golden brown in the ♂, dark brown in the ♀, and with 3 light subapical spots in the black apical third of the forewing, which is separated from the disc by an oblique band, dull golden yellow and not sharp in the ♂, sulphur-yellow and sharp in the ♀. Very characteristic is the under surface of the hindwing, where a confusion of blind or pupilled eye-spots surrounded by rings and with small spots and bands placed between them makes the genus unmistakable.

**S. blomfildia** F. (= *proserpina* F., *blomfildii* Hbn., *bella* Godt., *pluto* Westw.) (104 e). ♂ gold-orange *blomfildia*. above, darker in the basal part, the 3 subapical spots white, as also in the ♀, the latter with dull yellow oblique band. On the underside of the hindwing there are 4 or 5 dark brown, yellowish-margined spots between the pupilled eye-spot and the base; before the pointed anal angle an obtuse but distinct tooth. In specimens from South America, where the species extends from the north coast southwards to Paraguay and Peru, this tooth is rather strong. — *datis* Fruhst. (104 d) designates specimens from Mexico and Central America; *datis*. these have this tooth weaker, the wing-contour on the whole more rounded, the upperside of the ♂ lighter, more glossy yellow, and a narrower, darkened oblique band on the forewing in the ♀. Beneath the hindwing is darker and the grey-white band, which in *blomfildia* extends from the upper cell-wall between the radials to the distal margin, is wanting. — The larva is strongly spined, the dorsal spines much as in the following genus, with whorl-shaped secondary points; the head with thick, short, tuberos horns terminating in a five-pointed knob. The butterflies are common almost everywhere in tropical America, fly in many districts throughout the year, rest on walls and tree-trunks and by preference frequent fruit-gardens and refuse-heaps.

**S. karwinskii** Hbn. (104 d) is quite similar to the preceding species, but in the ♂ the subapical spots *karwinskii*. are often (not always) strongly tinged with golden brown; the hindwing has no tooth before the anal angle and its under surface is much more indefinitely marked; in particular the marking between the pupilled eye-spot and the base of the hindwing is much finer, the brown spots narrowed into streaks, giving more the effect of a chasing. In Mexico and Central America, locally and at times common.

### 25. Genus: **Pycina** Wtw.

The two very closely allied butterflies belonging here somewhat recall *Smyrna*, but the forewing is considerably more pointed. The eyes are densely haired; on the forewing the 2nd subcostal vein arises nearly



at the end of the cell, the upper discocellular is short and recurved, the middle long and sinuous, the lower closing the cell obliquely; the submedian slightly thickened at the base. Early stages unknown; the butterflies, in contrast to the preceding genus, rare and the genus much less widely distributed.

*zamba*. **P. zamba** Dbl. & Hew. (104 e). Above almost like *Coea acheronta*, beneath superficially recalling a *Pyrameis*, especially the underside of the hindwing, which shows a complicated grey-brown pattern. The yellow-red of the upper surface varies somewhat in extent, but is never so restricted as in *zelys*. From Colombia and Venezuela to Ecuador and Peru, apparently everywhere rare.

*zelys*. **P. zelys** Btlr. & Drc. Very similar to the preceding and formerly regarded as a form of it, but probably a separate species. The hindwing is much more black, in the whole distal part, not only in the anal part, as in *zamba*; the yellow marginal spots are wanting. In addition the whitish costal spots are in *zelys* very much smaller or even only rudimentary. Costa Rica and Panama, especially on Mt. Chiriqui.

## 26. Genus: **Megistanis** Wtw.

As the larva of these species is unknown the position of the genus remains uncertain. Of a *Charaxes* larva one need think so much the less that even *Coea*, which except for the points on the hindwing is deceptively like a *Charaxes*, has been placed here by most systematists on the assumption that it has a spined larva. The butterflies are very powerfully built, the abdomen, as in *Charaxes*, in the ♂ — and hardly any but ♂♂ are known — sometimes only hanging as a small appendage to the robust thorax; the cell of the hindwing open, the closing vein of that of the forewing extremely fine, scarcely perceptible. The hindwing bears 2 or 3 pairs of points and its distal margin is dentate; the under surface very strikingly marked, but with a scheme of markings which brings the genus near to *Smyrna*, *Gynaesia* and *Callizona*, also very singularly marked beneath. We know 4 forms from the Amazon region; opinions still differ as to their relationships.

*baeotus*. **M. baeotus** Dbl. & Hew. (= rayi Voll.) (104 d). ♂ black with dull blue-green reflection and metallic blue median band, transverse spot of the same colour beyond the cell and row of bluish dots in the distal area. Very characteristic is the under surface, dull white with closely crowded row of small black spots and 4 large ochreous spots proximally to and above the anal angle. Amazon region and Colombia. — *deucalion* Fldr. (104 e), which was long regarded as the ♀ of *baeotus*, is according to STAUDINGER certainly a good species; beneath quite similarly marked, but the ochreous spot of the forewing strigiform, and on the upper-side the median band is not blue but yellow, and on the forewing often somewhat shorter; flies likewise in the Amazon region and Colombia. As a matter of fact the ♀ *baeotus* is also almost like *deucalion*, with yellow bands, but may be recognized by the crescentic (not band-like), more strongly blue-marked transverse spot beyond the cell of the forewing and by the absence of the light dots in the distal area (FRUHSTORFER).

*japetus*. **M. japetus** Stgr. (104 c). Almost exactly like *baeotus* above, but distinguishable beneath by the smaller ochreous spots and the generally finer markings, and especially by having two lines in the cell of the hindwing instead of 4 thick dots as in *baeotus*. From the Upper Amazon, Peru. — Here belongs a lost species, passing as *aclus* F. (= *aclus* Cr., aile Hbn.), in which the band on the upper surface is wanting. If, as has been assumed, this was a damaged specimen in which the band had been obliterated by chemical influences, it would be best to cancel the name, since „artificial products“ — and we are probably dealing with such, as several specimens are said to have been altered in a similar way — should bear no names. If it should prove that it is a definitely recognizable and but little modified specimen, or even an actually occurring aberration, then *aclus* F. should be regarded as name-type and *japetus* Stgr. as „subform“. The species is rare.

## 27. Genus: **Gynaecia** Dbl.

The sole species of this genus is common, widely distributed and equally striking in wing-form and under surface. The most remarkable feature is the almost rectilinear, scarcely appreciably curved distal margin of the hindwing. The antenna is long, the eyes naked and large, the palpus thick, pointed, obliquely directed upwards, the body moderately strong, the legs, especially the middle tibiae, very long and thin. The larva is black, with branched horns on the head and yellow spines, the pupa is very peculiar, shaped and coloured like a splint of wood. The butterflies fly throughout the year, by preference in open country, and rest on tree-trunks.

*dirce*. **G. dirce** L. (97 a). This butterfly may be at once recognized by the under surface. It is widely distributed in South America, extending from Honduras over the Antilles and the whole of warmer South America to Paraguay and South Brazil. It has an irregular, fluttering, but at the same time rapid flight, in which, curiously,



it resembles the otherwise quite dissimilar long-tailed *Hypna clytemnestra*. But it mostly flies a little higher and likes to rest 2—3 m high on the trunks of trees, with closed wings and head downwards. I have never seen it visiting a flower. — The larva is also to be found the most frequently of all the butterfly-larvae. It is black with yellow spines, yellow transverse bands and yellow, mostly black-pointed horns on the head that are not straight (as in SEPP'S illustration), but slightly tortuous. In another form — *dircoides* Sepp (97 b) — *dircoides*, which is said also to produce smaller butterflies, the front spines are not yellow and the lemon-yellow transverse bands are missing. At first it lives gregariously on the Embauba tree and Cassia, but seems to drop down very easily, for it is often found creeping on the road. The pupa is wood-coloured and resembles exactly a splinter of the plank on which it is usually hanging. The front is quite straight, the head has two short points, but the back of the abdomen has a number of prongs turned upwards, as if the small piece of wood the pupa feigns to represent were splintered here. The butterflies are common; before sitting down on the trunk of a tree, they often use to circle round the chosen resting-place for a long time. KAYE states that the butterfly is stridulating when flying, like the *Ageronia*-species; I have never heard such a stridulation in *Gynaecia*.

## 28. Genus: **Callizona** Dbl.

Very similar to the preceding genus, the larvae, however, with shorter horns on the head and pretty short spines, the pupa with long antler-like appendages on the head, and on the back of the abdomen instead of the splinter-like continuations there are short spikes; the butterflies have more obtuse forewings and rounded hindwings, the latter without the straight distal margin and without the anal-lobe. From Costa Rica throughout Colombia to Guiana and Peru.

**C. acesta** L. (97 a). Beneath almost like *Gynaecia dirce*, but smaller and above orange-coloured with *acesta*, a similar oblique band of the forewings and little white spots before the apex. Central America to Guiana. Specimens from the Upper Amazon were described as **fulvescens** Btlr. (97 a); their orange-coloured transverse *fulvescens*, band commingles here and there with the orange-coloured base-half, and with **latifascia** Btlr. (97 a) from the *latifascia*, more southern Peru (Chanchamayo) and Bolivia the oblique band is broader and lemon-coloured. — Larva light green, often tinged yellowish, with light green lateral stripe, beneath darker coloured, head and spines black; on cocoa (*Theobroma*). Pupa greenish-yellow, red-toned with branched wing-like continuations on the head, small white points, green spikes and black markings. Not rare.

## G. Group **Epicaliidi**.

By far the most varied group to which most of the neotropical Nymphalidae belong. They show decidedly the characteristic markings of the tropical American butterflies: bands and oblique spots of brilliant metal blue, orange-colour or hemochrome on jet-black ground. There is hardly any retrogression noticeable with respect to the spines of the larvae in comparison to the copious branched spines of the *Vanessidi*, *Hypolimnadidi* or *Gynaeciidi*. In the genuine *Epicalia* there is a very remarkable sexual dimorphism prevailing; in the *Eunica* and homogeneous species it is by far less, mostly only reflection in the ♂, white spots in the ♀; finally in the *Catagramma* and their homogeneous species, the *Pyrrhogyra* etc. it is almost totally missing. The animals are absolutely tropical, and of the whole great number of butterflies belonging to this group, only 2 *Eunica* and one *Callicore* reach the very utmost southern extremity of the United States. Nor did I discover near Buenos Ayres any more species, although in the forests of the hinter-land the last remainders of this branch of the Nymphalidae may still be found.

## 29. Genus: **Pyrrhogyra** Hbn.

The 6—8 species of this genus reaching from Honduras to Paraguay, which are, however, sometimes missing even in woody districts \*), are very similar to each other, especially on the under surface. Above they are black with a white or light green subapical spot and a similar median band; the lower surface is preponderantly white with broad dark distal margin and a hemochrome dark-edged line very characteristic of the genus, surrounding the light inner part and often also the apical spot.

Head strong with thick bare protruding eyes and strong palps sometimes prolonged like a nose. Antenna thin, gradually quite slightly thickened. Body tender, abdomen very slender. Wings broad, margin of the forewings curved, of the hindwings dentated or undulated, in the centre angled. On the forewing the costal and median are thickened at the base, but not properly inflated. Cells of all wings closed.

The larvae are still very little known. Their spines bring them in close contact with *Eunica*, *Temenis* and *Epiphile*; they have well and uniformly developed dorsal spines, but as much as is to be seen from the illustrations, the lateral spines are less developed. The pupa shows the same peculiar attachment as that of

\*) As for instance near Rio de Janeiro.



*Myscelia*, because it is attached to the upper surface of the leaf and stands upright or lies right across the leaf. — The butterflies are always met single, but in many districts they are not rare; they fly especially early in the morning and drink from wet places on the road. Their flight somewhat resembles that of *Dynamine* and *Adelpha*. There are about 25 forms known.

a) Upper surface black and white.

**P. neaerea.** This species, denoted in collections as „*typha*“ is, in its typical form up to now, known only from Surinam. The species, however, ranges from Mexico to Paraguay and reaches far to the west in the Amazon region. The most northern form — **hypsenor** *Godm.* and *Salv.* (= *ollius Fruhst.*) (95 d) from Central America, which came over in great numbers, especially from Honduras, is recognizable by the pointed forewings, the straight band of the hindwings and especially by the white subapical spot of the forewings terminating, downwards and distally, into a pointed tip. — In typical **neaerea** *L.* (= *typha Ky.*, *docella Möschl.*) this spot is below more rounded off, the bands generally a little broader, those of the hindwings quite slightly bent; from Guiana. — **juani** *Stgr.* (95 d) has considerably broader bands, these rounded and not entirely white, but with a greenish tinge; from Colombia. — **kheili** *Fruhst.*, likewise from Colombia, but according to FRUHSTORFER probably from another district, leans with respect to the breadth of bands to the type of the species; they are narrower, proximally more convex than in *juani*, the band of the forewings cut off straighter and therefore more rectilinear; the lower tip of the subapical spot downwards not so obtuse as in *juani*. — From the Upper Amazon three forms are described. The subapical spot of the forewings is oval, the bands very much broader, but nevertheless varying, so that the forms **cuparina** *Bates*, **amphira** *Bates* and **argina** *Fruhst.* are scarcely constantly different. From the northern form *amphira*, which is mostly to be noticed by the white submarginal dots on both its wings, differs *argina* *Fruhst.* by its smaller size, the band of the hindwings distally sharper defined and a very bright hemochrome spot in the anal-angle of the hindwings, *cuparina* by very broad bands inwardly somewhat blended; this form comes from the southern part of the Amazon and will occur similarly in Para. — In Central Brazil as far as Bolivia and Peru, moreover, flies **ophni** *Btlr.* (95 d) in which the subapical spot of the forewings is far separated from the inner marginal spot by the black ground-colour what is especially striking in Bolivians. — **susarion** *Fruhst.* from Pernambuco is said to approach the *ophni* from Espiritu Santo as well as the *neaerea* *L.* from Surinam, being, however, smaller and with a white band especially broad in the ♀, and at the under surface with a light red line. — The most southern form, **arge** *Stgr.* (95 d) from Southern Brazil and Paraguay, has by far less pointed wings, the subapical spot of the forewings is very obliquely, almost transversally placed and the middle median band very broad (more than double as broad as in *hypsenor*), therefore the ground-colour-bridge which separates both is not so broad as in *ophni*, but much longer. — The larva is rosy red with a light yellow saddle-streak edged in brown across the dorsum and a reddish head shaped a little like a heart, the spines of which are the longest and have fine accessory spines. It quite certainly does not occur on coffee, as stated, but probably lives on Paullinia; the pupa towers almost vertically above the upper surface of the leaf and turns itself towards the light; green with obtuse anterior part; from the back of the thorax projects a green securiform continuation; the partings of the wings and the dorsal carina are tinged with purple-brown. The butterflies fly single, but are not rare, especially in the morning, when they are seen drinking from wet stones and mud-holes on the road.

**P. typhoeus** *Fldr.* This species is quite similar to the preceding, but the forewings are more obtuse, the hindwings less angled, more rounded in the anal part; the median band is very broad and in the distal area of the forewings there are two small light spots. Colombia.

**P. catharinae** *Stgr.* (95 e) is one of the largest forms. STAUDINGER knows only ♀♀ and BUTLER who describes his *ophni* from the same district, states only the ♂ of it. I believe that both belong together, but BUTLER's description is so insufficient that one cannot say anything without examining the type. As in many *Pyrrhogyra*, the *catharinae* — ♀ has above chains of white antemarginal spots; they are, however, on the under surface of the hindwings, not flown together to a white cloud, but remain separated, each being surrounded in dark. Sa. Catharina to Bolivia.

b) Bands more or less light green.

**P. stratoniceus** *Fruhst.* This species, unknown to me, is said to be in close contact with the *typhoeus*, but has more greenish white bands, and the little hemochrome band before the distal area of the under surface of the hindwings runs quite straight. The forewings show a little roundish subapical spot, an oblong spot above the cellule and a high narrow median spot. Upper Amazon.

**P. edocla** *Dbl.* and *Hew.* (95 e). At once recognizable by the beautifully Nile-green bands, a smaller spot in the apex of the forewing, apical from the larger subapical spot and the hemochrome median of the forewings below. The costa of the hindwings, however, which in all *neaerea*-forms is hemochrome below, is here



only red at the base, otherwise white. Typical *edocla* come from Colombia. — In *aenaria* *Fruhst.* (95 e) from *aenaria*. Central America, the apical spot is larger, the subapical spot smaller than in the typical form, so that both the spots do not differ so much in size. — *athene* *Fruhst.*, without exact habitat, perhaps only a temporal form *athene*. of *edocla*, is smaller, with narrow, very pale bands which, on the forewing, are distally deeply notched by the ground-colour. — *lysanius* *Fldr.* from the Upper Amazon is immediately to be recognized by the more obtuse *lysanius*. forewings and the pale-green double as broad band of the wings. — *maculata* *Stgr.* (95 e) showing all the transi- *maculata*. tions from *lysanius* is exactly like this, but has rows of white-green spots before the distal margin of both the wings; Peru, especially known from the Chanchamayo. — *anthele* *Fruhst.*, discovered by R. HAENSCH in Ecua- *anthele*. dor, is darker and smaller, without the dotting in the distal area, or only with remains of it, the light margin of the wings on the under surface being narrower. Seems not to be so frequently occurring as *neaerea* is in its district.

**P. otolais** *Bat.* (95 c). Mostly much smaller than the preceding, almost the whole upper surface of *otolais*. the wings taken up by the very much broadened, pale Nile-green band, differing thereby from the long-palped *nasica* which has a narrower darker band not reaching as far as the inner margin of the hindwings; on the upper surface very similar to the *crameri*, but below immediately discernible by the median of the forewings being white-green, not hemochrome. From Central America. — *neis* *Fldr.* from Mexico is a little larger and has broa- *neis*. der bands.

**P. crameri** *Auriv. (neaerea Cr. nec L.)* (95 c). This is the only *Pyrrhogyra* in which the lower cell-margin *crameri*. on the undersurface of the forewing does not separate the cellule by a little hemochrome band bordered in dark. Above almost like *otolais*. Guiana. — *hagnodorus* *Fruhst.* from Peru has a narrower black margin and *hagnodorus*. on the upper surface a brighter apical spot of the forewing, and *nautaca* *Fruhst.* from Colombia and the Upper *nautaca*. Amazon is larger, the bands narrower and deeper green, and the distal margin of the wings clouded in a brighter violet. — The larva seems extraordinarily similar to that of *neaerea* *L.*, with only a little more black markings, and the pupa is quite equal to the pupa of that species; there may, however, also have occurred a mistake in so far as, owing to the homonymy, indeed a larva of that species was taken for this species.

**P. nasica** *Stgr.* Similar to the preceding, but at once recognizable by the very much elongated palps *nasica*. and by the green very broad median band not reaching as far as the inner margin of the hindwings; this is, on the contrary, of a brownish black. Colombia. — In *olivencia* *Fruhst.* (95 d) the green area is as broad as in the *olivencia*. typical form, but the red band of the hindwings is distally bordered in brownish black, to such an extent that the bone-yellow in the distal area is diminished to a little narrow band. — *seitzii* *Fruhst.* (95 d) from Bolivia *seitzii*. has narrower and darker green bands; the band on the hindwing is tapering behind and shows with this point in the direction of the red anal dot.

### 30. Genus: **Lucinia** *Hbn.*

Little yellow butterflies with insignificant black markings on the upper surface, but below richly decorated hindwings with big metallic eye-spots. Head broad with broad front, palps a little elongated, but pretty slender and bent upwards; antenna curled with well deposited clavola. The body slender, the forewings triangular, with smooth or scarcely undulated margin and a little below the apex quite slightly drawn in. The hindwings in the anal part dented, the costa of the forewings weak at the base, the median strongly inflated, the cellule broad. On the Antilles. Only four forms probably belonging to one species, interosculating a great deal and hardly to be maintained as subspecies.

**L. sida** *Hbn.* (97 b) from Cuba and Haiti, is sufficiently recognizable from the figure. The animals *sida*. vary considerably in the size of the eye-spots on the under surface of the hindwings, and big-eyed specimens with broad dark wing-margin were separated as subspecies and named *cubana* *Fruhst.* — *cadma* *Drury* from Jamaica *cubana*. *cadma*. is larger, the upper surface of the hindwings has a greyish brown ground instead of white, and the metallic violet-white line before the margin of the hindwings on the lower surface, being distinct in *sida*, is absent. — *torrebia* *Mén.*, a form hardly differing from *cadma*, occurs in Haiti. *torrebia*.

### 31. Genus: **Peria** *Ky.*

The little species forming this genus I have never seen alive nor do I find anywhere an indication as to its habits. The species known as *Peria lamis* occurs in many places of northern South America and it differs only with respect to its size. The head is moderately large, the palps short, the eyes naked. Antenna gradually thickened to a thin clavola. Wings entirely bordered, the cells of all the wings closed. Cell of forewing very broad, rather short, the subcostal with 4 veins. The first vein branches off close in front of the end of the cell, the second one considerably further back, the third one terminates into the costa, pretty far before the apex. Precostal of the hindwings bifid, branching off towards the deflection of the subcostal.



*lamis.* **P. lamis** Cr. (= *laphria* Godt.) (97 b). Upper surface without any markings brownish black, under surface honey-yellow, quite slightly strewn in dark; on each wing a straight dark streak runs from before the apex to behind the middle of the inner margin, and before the margin there is an irregular dark line.

### 32. Genus: **Pseudonica** Ky. (*Nica* Hbn.)

This genus likewise contains but one species, which had been first described by GODART as *Nymphalis flavilla*, and been figured and placed in the genus of *Nica* by HÜBNER. It is a little animal, almost unicolorously honey-yellow, distributed in 4 forms over a great part of Central and South America. The markings on the under surface show pretty much the same design as in *Peria*. Head medium-sized, palps strong, antenna of more than half the costa-length, finely curled, at the end scarcely thickened. Cells of all the wings closed, those of the forewings rather broad. Margin of the forewings almost smooth, that of the hindwings scarcely undulate. Nothing is known of its early stages. The butterflies fly single on forest-roads and like to rest with half-opened wings on leaves close above the ground.

*flavilla.* **P. flavilla** <sup>Godt.</sup> ~~Hbn.~~ The Brazilian form has bright orange-coloured upper surface, brown margin of the forewings. The markings of the under surface shines distinctly through to the upper surface. — *lunigera* Fruhst. is the form from the utmost south of the range, Paraguay in the east and Peru in the west. Its forewings are extensively bordered in black; the black margin extends far into the anal angle. At the cell-apex a broad reddish-brown transverse spot. The hindwings have above, at the margin, a complete chain of moon-spots distally bordered in violet. — *sylvestris* Bat. (97 b) from Colombia and the Amazon has in the dark apex a little light dot; *canthara.* the under surface is less marked than in *flavilla*, but still more than in the fourth form *canthara* Dbl. (97 b) from Venezuela and Central America, which is very fallowly ochreous and so faintly marked at the under surface that the markings do not shine through above.

### 33. Genus: **Temenis** Hbn.

The little species *sylphis* having been taken out of this genus and established in the genus of *Bolbo-neura*, there are only 2 *Temenis* left one of which, however, has an extreme geographical variation. They are medium-sized butterflies with wings of a honey-yellow or hemochrome colour and are spread over the greater part of tropical America. Head pretty stout with strongly protruding eyes, the palps long and strong, antenna gradually thickened to a quite delicate clavolet. Thorax strong, abdomen very slim in the ♂. The forewings in one of the species are angled below the apex, in the other they are of a normal shape; the cellule is very short, at the end broad and straightly clipped. On the forewing the first subcostal vein branches off just before the cell-end, the second close behind, the third, however, far beyond. The larvae are green with a cordiform head bearing two long horns furnished with rosettes of accessory spines; the dorsal spines are reduced in number, somewhat irregular, those on the 3. and 11. segment thickened in the shape of a clavola; the pupa is green with fine red markings and two points on the head; the butterflies fly single, but are not rare.

**T. laothoë.** This common butterfly varies a great deal, so that 16 forms have been named. It occurs *liberia.* from Mexico to Paraguay and Peru. The most northern form, *liberia* F. (97 c), is above unicolorous of a dull orange colour, with a hardly darker apex of the forewings. — Slightly different from it is *hondurensis* Fruhst. from northern Central America; it resembles also the *ariadne* Cr., but the hindwings are lacking the reddish distal margin, the apex of the forewings is of a pale reddish colour as in *agatha*, with a light apical spot before it. — *agatha* F., flying like *liberia* and *hondurensis* also in the West Indies has a more brown apex of the forewings. — *columbiana* Fruhst. from Colombia approaches very much the Central American form, but it is larger than *hondurensis*, and the ochreous ground-colour as well as the apex of the forewings are a shade darker, especially also the under surface. — *ariadne* Cr. (= *merione* F.) is the longest-known form from Guiana, in which all the forewings have a dark distal margin. — *ottonis* Fruhst. (= *merione* Hbn. pt.) (97 c) has quite ochre-yellow wings in the ♂, but the apex of the forewings is cut off by an oblique subapical band, the lower end of which runs along the distal margin to the anal angle; Surinam. — *violetta* Fruhst. (97 c) from Rio Waupes which occurs to the south as far as Bolivia, has broad blackish brown apex of the forewing and the ♀ almost quite dark hindwings which are coloured in yellowish red only at their apical area. But in Bolivia flies also the *ottonis*-form with ochre-yellow hindwings in the ♂. — In the Amazon district fly furthermore the forms *pseudolaothoë* Fruhst., forewings with broad dark apex like in *laothoë*, but the hindwings not dark, but yellow, and *pseudoariadne* Fruhst., in which the ground-colour is paler ochreous and more fallow, the apical area of a duller colour, and in the ♀ the inner border of the dark apical area is quite slightly obtuse-angled. *laothoë.* This form was described from Obidos. — *laothoë* Cr. is the form having a blackish brown apex of the forewings, its inner margin being uniformly rounded, the forewing-discus of a bright yolk colour, the hindwings above preponderantly blackish-brown. This design of colouring very much reminds us of that of *Epiphile lampe-hübneri*. *thusa* with which the species flies together in different places. — *hübneri* Fruhst. (= *merione* Hbn. pt.) is simi-



lar, but here only the inner margin-half and the margin of the hindwings are blackish brown, the costal half, however, golden-yellow: from the interior of Brazil (Minas-Geraes). — *bahiana* *Fruhst.* is a little form, intensely ochreous, forewings with subdued violet apical margin and the same oblique band with angled inner margin. — *santina* *Fruhst.*, from South Brazil to Paraguay, has the apical area of the forewings more pregnantly marked in violet; the ♀ larger than *bahiana*, the light zone behind the cell broader and paler. — *pedaina* *Fruhst.* from Pernambuco approaches *santina*, but differs from it by the narrow, sharply delimited blue margin of the hindwings. The hindwings of the ♀ with a smoke-brown tinge suffused with a slight blue reflection, before the blue transverse band of the forewings a large pale-red spot. Has not come to my hand. — *korallion* *Fruhst.* likewise unknown to me, is said to be the most beautiful form of the species. „Forewings with red apical area and red cellule and the same broad subapical oblique band. Cellule, however, sometimes overflown in blue, as well as the transverse band on the forewings. Hindwings of a magnificent violet blue with the exception of a red sharply delimited distal margin.“ — Larva green with head marked in white, dark longitudinal line and blackish transverse saddles, the thorax-rings quite blackish. Venter albescent, with dark markings; feet albescent, as well as the spines on the 12th ring, otherwise the dorsal spines black, those on the 3rd and 11th ring claviformly thickened; on *Paullinia seminula* and *Serjania meridionalis*. Pupa light green, with dark green and with some red markings, at the head two short wings. The butterflies are seen on forest roads in company of the similar *Pseudonica*; they usually fly only short distances and especially rest on branches of bushes hanging over the road.

**T. pulchra.** Above black with intensely hyacinth-blue reflection which, however, becomes only visible when observing the butterfly from the direction of the origin of the light. Forewings with red base-third and oblique band, hindwings with large red spot in the anterior discus; under surface brown, often with some blue metallic dots. As in *laothoë* the colouring changes according to the other butterfly flying with it (*Pseudonica canthara*, *Epiphile lampethusa* etc.), the apportionment of the red colour in *pulchra* depends on the companion-butterfly from the genera *Catagramma* and *Siderone* together with which it flies; the former belong to the *pitheas*-group. In the typical *pulchra* *Hew.* (97 c, d) from Colombia the red oblique band of the forewing is narrower, the base-red not so extended as in the Peru-form; on the under surface base-red and oblique band are separated by a black band (like on the upper surface). — In *dilutior* *Fruhst.* (97 d) from Peru the separating band between base-red and oblique band on the under surface as well as the apical area is overlaid in red, so that the hindwing seems almost unicolorous red in which the black appears but like a mere shadow. — *amazonica* *Fruhst.* from the Upper Amazon has still less base-red than *pulchra* and the red forewing-band stands more steep. — As a ♀ form of *pulchra* *STAUDINGER* describes a butterfly which he denominates *melania* (97 d) and which we illustrate according to a specimen in *FASSL*'s collection. The forewings have an orange oblique band, the hindwings a large, subanal blue-silver spot; from Colombia, taken near Muzo. — On the whole, *pulchra* is the same Proteus as *laothoë*, and we could construct still more names for it than for the latter; of all the 14 specimens I have at hand, there are not two fully alike on the upper surface, everywhere there is another distribution of the red colour; the most constant is still the under surface of the hindwings, with mostly 2 blue little eye-spots in the discus, but there are also specimens with 1 eye-spot and even without any at all.

#### 34. Genus: **Bolboneura** *Salv. and Godm.*

Only one little Mexican butterfly forms this genus. Formerly placed to the *Temenis*, it was separated from this genus by *SALVIN* and *GODMAN* chiefly owing to the structural differences of the veins and legs. Indeed its proper position might be near *Epiphile* with which genus also its colouring and markings are somewhat harmonizing. By the basally inflated costal and median it approaches, however, the *Cystineura* as well as certain *Eunica*. But the shape of the wings immediately differentiates it from *Cystineura*: the apex of the forewings is obliquely clipped. Furthermore the under surface shows intense metallic markings, which are never found in *Cystineura*. Like in *Epiphile* the 1st and 2nd subcostal veins originate before the cell-end; the upper discocellularis is short, the lower discocellularis meets the median close behind the origin of the 2nd vein. The front legs are very slightly haired, the middle and hind legs without spines, with short strongly curved claws. The palps are similarly prolonged as in *Cystineura*, especially the terminal joint and rather more in the ♀ than in the ♂. The middle joint is thick and inflated.

**B. sylphis** *Bat.* (97 d). Not to be confounded with any other species. Above the forewings are interiorly overflown by magnificent blue reflection, the distal area black with 2 ochreous bands, the hindwings of blue iridescent colour, before the dark marginal band orange. At the marginal band itself a blue metallic line. The under surface yellow, on the forewing two black oblique bands with metallic-blue centre. The butterfly is local but not rare.

#### 35. Genus: **Epiphile** *Dbl.*

The range of this genus extends from Mexico to Paraguay. Of the 18 species there are about 14 occurring in Colombia, Venezuela and Central America where the genus consequently has its principal range; the



animals live preponderantly in the mountains. They are characterized by their exterior and a marking peculiar of all species: on the under surface of the hindwing there is a light triangular costal spot contrasting with the ground-colouring. As *Epiphile* is hereby already well discernible from all the other genera, it is unnecessary to give a description of the formation of the veins etc.

According to W. MÜLLER the shape of the eggs of *E. oreá* and the way they are deposited, is like in *Mysele. orsis*. The larva lives on *Paullinia seminuda* Rod. and *Serjania meridionalis* Cambes. It has at each side of the head a horn as long as the face, furnished with very little additional spines; at the head there are beside the two white stripes coming down from the horns another white spot above the mouth and another white one between the horns; the back part of the head and of the horns is pale red, body velvety green, the region beneath the stigmata lighter; there are the following yellow dark-edged lines: 2 dorsal lines running rather distant from each other, 2 lateral lines approaching each other at the sectional border and margining the spines there, a stronger yellow line along the stigmata interrupted in the region of the stigmata, and an undulating line between the lateral and stigmata-lines, on each section there stand 2 lateral spines which in their turn have again very short spines. When at rest, the larva is in a defensive position pressing itself flat on the leaf with protruded horns, as well as in an offensive position resting like the *Sphingidae*-larvae with raised head, while its horns are raised as if threatening. The larva, as far as to the 3rd stage sticks fecal lumps to the browsed ribs of the leaves. The pupa is likewise similar to that of *Myseleia orsis*; ground-colour above beautiful velvety green, beneath pale whitish-green, above beyond the 5th segment as if covered with a thin layer of wax, both the regions sharply separated by a line running transversally across the 5th section and being composed of 3 anteriorly open arcs; a narrow brown line runs along the edge of the wings; on the base of the wings and on the head there are spots of a bright mother-of-pearl gloss; its reaction upon luminous effects is like in *Mysele. orsis*, though rather sluggish.

*oreá.* **E. oreá** differs from the similar species by a little rounded spot on the upper surface of the forewings near the base of the wings which has the same colouring as the two bands of the forewings. — **oreá** *Hbn.* *iblis.* (97 e) from Brazil (to the south of Rio de Janeiro) is but little different from **iblis** *Fldr.* from Colombia in which the yellow bands of the forewings are only a little broader. The ♀ of *oreá* is, as the figure shows, rather different and has no reflection. The ♀♀ of *iblis* usually have a yellow, exceptionally an almost white band of the fore-  
*albifasciata.* wings; this form we call **albifasciata**.

*ptusios.* **E. plusios** *G. and S.* (97 e) from the Chiriqui, regarded by the said authors as a form of the *oreá*, has a white subapical spot of the forewings, the bands of the forewings are composed of differently shaped spots and the hindwings are opalescent green (not blue).

*negrina.* **E. negrina** *Fldr.* (97 e) from Rio Negro and Colombia has 3 yellowish brown subapical spots and differently shaped median bands of the forewings.

*epimenes.* **E. epimenes** *Hew.* (97 e) from Colombia has a magnificent greenish blue reflection on the upper surface, with the sole exception of the apex of the forewings and the costal margin of the hindwings.

*kalbreyeri.* **E. kalbreyeri** *Fassl* (97 e) from Western Colombia (Aguaca valley, 2000 m) has more of a blue than green, but very intensive gloss and the band of the forewings is strongly reduced.

*plutonia.* **E. plutonia** ~~*G. and S.*~~ <sup>*Bolivia*</sup> <sup>*Guatemala*</sup> (97 f) from Central America, has beside the blue spot on the wings no blue reflection. This species differs also by the more compact shape of its wings.

*electra.* **E. electra** *Stgr.* (97 f) from the Venezuelan mountains (Merida) is remarkable for its magnificent reflection and differs from all the similar species by a light band of the hindwings.

*dilecta.* **E. dilecta** *Stgr.* i. l. (97 f) from Bolivia has a beautiful violet reflection of the whole upper surface except the apex of the forewing; the band of the wings is straight and uniformly broad.

*dinora.* **E. dinora** *Fassli* (97 g) from Western Colombia (Aguaca valley, 2000 m) is the largest species of the *boliviana.* genus. Only on the light falling upon it in a very acute angle, a slight blue reflection is noticeable. — **boliviana** *form. nov.* from Bolivia (Coroico, 1200 m) has a distinct white subapical spot on the forewings, a little narrower and lighter yellow bands and in the anal angle of the hindwings a distinct yellow eyespot. The under surface is lighter brown and less marked.

*epicaste.* **E. epicaste** *Hew.* (97 g) from Colombia has its ♀ entirely different from the other *Epiphile*-♀♀, since its band of the forewings shows a greenish-blue colouring with a metallic glimmer; similarly coloured is the distal margin of the hindwings. It was discovered by Mr. A. H. FASSL in the Aguaca valley at an altitude of 2000 m. *bonplandio-* Another ♀ form is called **bonplandioides** *Fassl*; it has sulphur-yellow under surface of the hindwings with hardly *ides.* any markings and the same apices of the forewings. — The form from Bolivia (Coroico, 1200 m) which we call *latifasciata.* **latifasciata**, shows a little broader and lighter yellow bands of the forewings and a straight band of the hind-



wings of the same colour, but about double as broad and reaching almost to the distal margin of the wings. The under surface of the hindwings is lighter (more yellowish) and the yellow spot on the costal margin has almost double the size as in *apicaste*.

**E. fassli** Weym. i. l. (97 f) from Peru (Pozuzo) is similar to the *apicaste latifasciata*, but smaller and *fassli*. it also lacks the black spots near the base of the forewing. The under surface resembles that of *dinora*, but it is lighter.

**E. hübnéri** Hew. (98 a) from Brazil and Southern Brazil differs from the similar species by the rather *hübneri*. light basal area of the hindwings as well as by the sphenoidal spots near the wing-base on the upper surface of the forewings.

**E. chrysites** Latr. (97 g) from Colombia and Venezuela resembles *hübneri*, but differs by the dark basal *chrysites*. part of the hindwings; the under surface is much more marked than in the latter form. The ♀♀ discovered by Mr. A. H. FASSL have a white band of the forewings and almost entirely dark hindwings.

**E. adrasta** Hew. (97 g) is distributed from Mexico to Panama. It is distinguished by the straight *adrasta*. yellow bands; in many ♂ specimens there is a little white spot in the apex of the forewing; this spot is much larger in the ♀ which has also a light yellow median band of the hindwings. — **bandusia** Fruhst. from Guatemala, *bandusia*. from the volcano Chiriqui and from Eastern Mexico is smaller and has broader black bands. The ♀ shows a more extensive rusty brown basal part.

**E. grandis** Btlr. (98 a, b) from Costa Rica, as shown in the figure, is an entirely different form. Whether *grandis*. it belongs in this genus, we cannot ascertain, because we were unable to procure a specimen of this species.

**E. eriopis** Hew. (98 a) from Colombia also shows like the following species a divergent feature. No *eriopis*. other species has in the ♂ a white band of the forewings. The ♀ discovered by Mr. A. H. FASSL is of an insignificant appearance.

**E. lampethusa** Dbl. and Hew. (98 a) from Colombia and Bolivia differs by the style of its markings *lampethusa*. from all the other species. The ♀ discovered by Mr. A. H. FASSL has a duller colouring and 2 sphenoidal subanal blue spots on the hindwings.

### 36. Genus: **Catonephele** Hbn.

The species of this genus which is distributed from Mexico to Paraguay, without exception show such a great sexual difference that it is often difficult to find out the sexes of the different species. By their exterior all the species, in spite of the sexual dimorphism, are so well characterized that the ♂♂ are without exception, the ♀♀ mostly, easily to be recognized as members of this genus; only the ♀♀ of the smaller species resemble the ♀♀ of certain *Myscelia*-species. — The forewings have five subcostal veins of which two are branched off before, the 3rd vein soon after the end of the middle cell; the precostal of the hindwings is furciform, the legs are of a tender structure and sericeous. Eggs, larval form and development are similar as in *Myscelia orsis*. The larvae of *Cat. acotius* and *numilia penthia* live on *Alchornea iricura* Cas. and *cordata* Müll. Arg., the most frequently on the former.

Prof. Dr. THIEME has given the following description of the habits of the butterflies: „The species of this genus live in the densest neotropical primeval-forest; we shall never find them in the plains or on cleared land. Humid soil, an extremely rich vegetation together with ozonic air seem to be absolutely necessary to them. They are, like many of the very most iridescent Nymphalidae, decided gourmands. Their fondness for dainties, however, is mostly turned upon filthy food. They disdain the banks of rivers and brooks; but further up on the wooded terrace where the little Indian hut lies hidden, in which our mules are stabled and where, on the barn-like square the poured out yeast of the national sugar-cane drink and other refuse are drying in the sun, — that is where you will be sure to find them during the hot noon-tide, intermixed with innumerable specimens of the *Callicore* and *Catagramma* species, among which they shine through afar owing to their size. And should we not find them here, we will discover them behind the house where, in the midst of heaps of all kinds of refuse, there are still more malodorous temptations which the careless Indians use to deposit here. We easily notice their delight in relishing their fetid meal, running to and fro round the lure and flapping with their wings as if desirous to balance themselves, so that the magnificent golden spots of the upper surface are now sparkling in the sunshine, while, when at rest, they seemed to resemble a faded leaf. In spite of the filthy surroundings we strike out with the butterfly-net and are glad to succeed in taking the animals without having seriously befouled the instrument. But even so we notice the remains of the disgusting meal on the surfeited animal, and with a feeling partly of loathing partly of pleasure we drop the butterfly into the bag. When opening it in the evening, however, our olfactory nerves once more remind us of the joy and sorrow of catching butterflies in the tropics.“ — According to A. SEITZ the butterflies are fond of being on the top of high trees.



- nyctimus*. **C. nyctimus** Westw. (98 c) is distributed from Mexico to Venezuela and Ecuador and apparently not rare.
- salacia*. **C. salacia** Hew. (98 c) from the Upper-Amazon (and Brazil?) differs from the preceding in both the sexes by another shape of the wings, in the ♂ by the median band of the forewings running almost rectilinearly, in the ♀ by the absence of the rusty red spot near the apex of the forewings and by the rusty yellow colouring in the anal angle of the hindwings and beneath by the exterior bands having the same shape as on the upper surface.
- sabrina*. **C. sabrina** Hew. (98 d) from Brazil and Southern Brazil is remarkable for the style of colouring in the ♀ which does not repeat itself in this genus.
- antinoë*. **C. antinoë** Godt. (98 d) from Brazil and the Amazon region is considerably larger, the ♂ having far protracted apices of the forewings. Although the ♀ is very similar to the ♀ of *acontius*, it has in the middle of the discocellularis of the forewing, close to the subcostal, a rusty red spot which is missing in the ♀ of *acontius*, whereas the latter shows more rusty red markings near the apex of the forewings. Beneath the ♀♀ of the two species are very different, as in the ♀ of *antinoë* the brown colouring is prevalent.
- chromis*. **C. chromis** Dbl. and Hew. (= *pierreti* Dbl. and Hew.) (98 d, e) from Honduras to Bolivia is more stoutly built and has narrower golden-yellow bands. The ♀ has a broader yellow median band of the hindwings. —
- columbana*. ab. sex. ♀ **columbana** Stich. (from Colombia) has yellow spots on the forewings and white spots on the hindwings.
- godmani*. **C. godmani** Stich. (98 e) from Northern Colombia and Central America (specimen before us from Chiriqui) has a similar shape as *chromis*, but a broader and shorter golden-yellow median band. In our ♀ the markings on the hindwings and the two spots in the middle of the costal margin of the forewings are yellow, the other markings of the forewings, however, are white. The figure shows that, compared with the ♀ of *chromis*, the median band of the hindwings is considerably narrower, while the submarginal spots are broader.
- salambria*. **C. salambria** Fldr. (98 c) from Colombia, Peru and Bolivia has still more broadened golden-yellow bands which fill up the whole interior area of the hindwings, except a black spot at the base of the wings. The ♀ resembles the ♀ of *godmani*, but has in the apex of the forewings larger and more strongly expressed spots all of which are yellow; the submarginal yellow spots of the upper surface of the hindwings are narrower, something like in the ♀ of *chromis*.
- numilia*. Of **C. numilia** 4 forms are described. The typical form *numilia* Cr. (98 b) occurs in Surinam and on the Amazon; it is chiefly characterized by the ♀ which shows a short and broad yellow median band of the forewings and yellowish-red discus of the hindwings. — In *esite* Fldr. from Mexico to Colombia the golden-yellow spots are reduced in size in the ♂, and the ♀ has black hindwings and a narrower, but longer yellow spot of the forewings. — *penthia* Hew. from Brazil (to the south of the Amazon) is smaller, the ♂♂ have somewhat less blue spots at the distal margin of the hindwings and the ♀♀ have yellow instead of greenish blue submarginal markings of the hindwings (like the ♀ of *esite*). But there are also ♀♀ occurring that have the hindwings similar to those of *numilia*, only the brown-red colour being darker; we denominate this form ab.
- fulva*. **fulva**. — *neogermanica* Stich. from Paraguay is the smallest form; the golden-yellow spots are more subdued and the bluish markings at the distal margin of the hindwings are only suggested. The ♀ has a strongly cornered apex of the forewings, a concave distal margin rounded behind and a straight inner margin; the hindwings are rounded, at the anal end a little angular. — The larva of *penthia* is in the last stage bright green, at the black head there is above the mouth a large red spot, so that only lateral stripes remain of the black colouring, the whole animal is as if overstrewn with white glass beads, the ground of the dorsal and subdorsal spines is of a bright red, the other spines being pale yellow, above them all the spines as far as the middle of the accessory spines are green, then follow a black point or a black transversal band and a white point. The larva has similar habits as the larva of *Myscelia orsis*, but it does not cover itself with faeces; when at rest, it is about S-shaped, in which position its body and head are lying flat on the leaf. The pupa on the whole resembles that of *M. orsis* and is something less flattened out; ground colour green, above preponderantly whitish green, especially on the 6. to 9. segment, between the edge of the wings and the margin of the wings there is a brown stripe which is continued forward and, enclosing the upper part of the horns and the base of the antennae, unites itself there with the other side; on the 6. and 7. segment there are little black dots as remainders of the spines. The pupa is fastened to the upper surface of the leaves and raises itself under the effect of light, or rather turns towards the light.
- acontius*. **C. acontius** L. (98 c) from Colombia, Guiana, Brazil and Paraguay exhibits, together with the following, very closely connected species, in the ♂ a special shape of the wings; the figures make a further description dispensable. The ♂ is distinguished from the following *orites* by a brown-coloured scent-organ on the upper surface of the hindwings and, besides, by the golden-yellow band of the forewings being semicircularly bordered in front. — *exquisitus* Stich. is a larger form from the Upper Amazon distinguished by a strongly



curved costal margin, a strikingly expanded apex and a very concave distal margin of the forewings, and an almost straight costal margin and undulated border of the hindwings. The ♀♀ are also larger corresponding to the ♂♂, but with respect to their shape, markings and colouring not essentially different from the typical *acontius*-♀♀. — The larva is, according to the figure, in the last stage green with 4 rows of brown branched spines on each segment: the two long horns on the head, branched out in three grades, are of the same colouring, the head is black, in the middle white, the ventral part and the legs are dull yellow. The pupa, according to the description of W. MÜLLER, resembles on the whole that of *penithia*, and like this reacts also upon the influence of the light.

**C. orites** Stch. (98 b) from Panama to Peru (?), though there is also a ♂-specimen from Southern *orites*. Brazil (Santa Catharina) in our possession. The golden-yellow median band of the forewings is in front bordered rectilinearly and the androconium of the hindwings is grey-coloured. In the ♀ the yellow spots are less sharply separated than in the *acontius*-♀♀. This species, on an average, is also larger than the *acontius* flying in the same districts and there are even very remarkably large specimens among the ♀♀. — *C. acontius* and *orites* also differ somewhat in the shape of the male secondary sexual organ, it is, however, possible that the two forms might be temporal forms of one and the same species.

### 37. Genus: **Nessaea** Hbn.

This genus, which only a few years ago was justly separated again from *Catonephele* by H. STICHEL, has but few species differing very little in their exterior. It is distributed from Mexico to the Amazon River. Compared with *Catonephele* there is but little difference in the veins. BATES says about *N. obrinus*: „This charming butterfly frequents swampy places in the woods of Para and, with the exception of some districts, is less often found in the whole Amazon valley. Its flight is extremely impetuous, but it is fond of resting on leaves where a ray of sunshine breaks through the shade.“ This description apparently applies to all the species of this genus. The larva of *obrinus* was known already to the ancient authors. If the description be right, this larva essentially differs from the well-known larvae of *Catonephele* by the considerably shorter and stronger spines on the head and by only one row of spines (instead of 4 as in *Catonephele*) being, however, on the back.

**N. obrinus** L. (99 b) from Guiana, the Amazon and Bolivia, is the most beautiful species of the genus, *obrinus*. the ♂ being adorned on the hindwings by a broad orange-yellow band, which in other species is seen only less developed or not at all. The ♀, as already indicated, has not got this orange-yellow band, but it has an elongated green spot in the apex of the forewings. — The larva is green, has a dark red lateral stripe, a red head with two moderately long branched spines of the same colour and, on each segment of the body, in the middle of the dorsum a short green ramose spine.

**N. batesii** Fldr. (99 c), also from Cayenne and the Amazon, differs in the male sex from *obrinus* by *batesii*. having a short straight band instead of the broad yellow band of the hindwings, and by a short green band in the apex of the forewings.

**N. aglaura** Dbl. and Hew. (99 c) from Mexico and Guatemala, differs considerably from the preceding *aglaura*. forms by the quite different position and shape of the yellow band of the hindwings; the under surface, however, is quite similar.

**N. regina** Salv. (99 b) from Venezuela and Colombia is on the forewings like *aglaura*, but the hind- *regina*. wings are unicolorously black, except a small brown spot at the inner angle. The ♀♀ are of a more subdued colour (greyish-black) and, like the ♀ of *obrinus* and *hewitsoni*, have 2 red-brown little spots in the middle cell of the forewings.

**N. hewitsoni** Fldr. (99 b) from Colombia, Ecuador, Peru and the Upper Amazon is above black with *hewitsoni*. one green band on each of the wings. The ♀ has no green band on the hindwings.

### 38. Genus: **Myscelia** Dbl.

The species of this genus are distributed from Mexico to Southern Brazil. They are easily to be recognized by the shape of the wings, for both forewings and hindwings have corners and spikes. By this shape they differ from *Catonephele* in which thus shaped wings do not occur; moreover the *Catonephele*-species, with 2 exceptions, are considerably larger. In the *Myscelia*-species an iridescent-blue upper surface of the ♂♂ is prevalent. As to their veins etc. they are not different from the *Catonephele*-species. One species, *capenas*, having hitherto been united with *Catonephele*, has been removed to *Myscelia* by H. STICHEL. We also place here *sophronia* because, according to its exterior as well as according to the formation of its veins and palps, it better belongs here than to *Cybdelis*. — According to MÜLLER the following is to be said about the early stages. Food-plant of *M. orsis* is *Dalechampia triphylla* Lam. The egg is about hemispherical, a little oval and, with a broad basis, sticks on to the leaf, it has fine transversal stripes, is covered with 10 or 11 longitudinal veins growing



narrow but distinctly higher towards the top, not reaching, however, the pole; the eggs are singly stuck to the lower surface of the leaves. In the last stage the larva is 16 to 28 mm long, the head is green from each side of which, like antlers, there rises a horn of about three times the diameter of the head. These light-brown horns are in two places shortly ramulous, and on their top there is a star-like formation (rosette), the segments of the body show short branched green spines in varying numbers, the body is green with numerous white papillae; after the 1. or 2. skinning the animal, when at rest, takes up a position in which the body in its entire length is lying flat on the leaf, the head being lowered in such a way that the points of the horns are touching the leaf (defensive position). During the first two stages the little larva gnaws off the leaf as far as the ribs on which it deposits its faeces. The pupa is somewhat flattened out, especially at the posterior parts, on the dorsum, except the 2. segment, without any edge, appearing therefore, when seen laterally, rather slender, from above especially in the region of the segments 5—7 broad, from here towards the front a little, towards the back considerably reduced in width; it is little tuberos, 2 short conical points at the head, a tapering edge on the 2. segment, a very prominent, smooth edge of the wings, 3 movable connections of the segments, rather freely movable in all directions, the end of the abdomen is like in *Ageronia* broad, flattened down. The pupa is fastened to the upper surface of the leaves, raises itself under the effect of the light and turns itself towards the light. — A. SEITZ reports about the butterflies: The ♂ of *M. orsis* most positively belongs to the most magnificent sights. The sparkling blue colour attracts even the glances of those who are not specially interested in nature. The living specimen never exhibits the large shining grey spot at the inner margin of the hindwings, which disfigures the prepared butterfly, for even in its swiftest flight the *orsis* never raises its forewings so high that this spot would become visible. The ♂ of *orsis* is very frequently seen (near Rio). Everywhere in the woods, on wet roads, on bushes, at little clearings they are resting in wait at the ends of branches and they occur in most any season of the year. In São Paulo, I do not remember of having returned from any of my numerous excursions without having found some specimens of *orsis*, although I never saw many of them together. The ♀♀ of this species remind us a great deal of some *Neptis*; but while the Indian species of the latter genus particularly rested on flowers, I never noticed the like in the *Myscelia*-♀♀. The latter always settle on leaves, the ♀♀ fluttering indefatigably from one leaf to another and resting on each of them but for seconds. If one chases them, they retire into the interior of the bushes (while the other Nymphalidae, quite on the contrary, fly out of them when being pursued); this strange conduct is, of all the day-butterflies, experienced but in the *Brassolidae* and some *Satyridae*.

*orsis*. **M. orsis** *Dru.* (98 f) is the best known species from Brazil; there is a considerable difference in the sexes. Like the following species, the ♂ has an androconium consisting of a black spot near the costal margin of the hindwings and in a corresponding blank friction-area, on the under surface of the forewings, being accompanied by a ventricose expansion of the inner margin of the forewings.

*cyanomelas*. **M. cyanomelas** *spec. nov.* (98 f) from the Lower Amazon (Santarem) has a much darker (brown) under surface with bluish-whitish markings.

*cyaniris*. **M. cyaniris** *Dbl.* and *Hew.* (99 a), distributed from Mexico to Venezuela, is a rare species. The ♂ is of a bright iridescent blue. The light markings are in the non-iridescent ♀ either whitish or bluish.

*ethusa*. **M. ethusa** *Bsd.* (99 a) from Mexico has only shining blue stripes, but no reflection.

*rogenhoferi*. **M. rogenhoferi** *Fldr.* (99 a) from Mexico, which is known to us only from the figure, is presumably a temporal or local form of *ethusa* from which it differs by more violet striate markings and larger white spots on the forewings.

*pattenia*. **M. pattenia** *Btlr.* and *Druce* from Costa Rica resembles *ethusa*, but the markings are more greenish-blue and the second and third blue bands of the hindwings are narrower and nearer to each other. The white spots on the forewings are more strictly separated.

*leucocyana*. **M. leucocyana** *Fldr.* (99 a) from Venezuela has markings shining in blue on the wings and also whitish spots on the forewings.

*cyananthe*. **M. cyananthe** *Fldr.* (99 a) from Mexico has likewise blue-shining, but much broader markings; there are no white markings.

*skinneri*. **M. skinneri** *Mengel* from Mexico (Boyemena, Sinoloa) has not become known to us. It is described: Ground-colouring of the whole upper surface black, along the inner margin of the hindwings little lighter. Beginning at the base of the forewings there stands a purple spot extending more than  $\frac{3}{4}$  inch in the middle cell, nearly  $\frac{3}{4}$  inch in the wings. Along the margin of the wings there runs a line of white or light-blue spots, broken along the whole margin. There is a parallel line of spots of similar colouring, though somewhat darker, running close to the angle. Here there are two white apical spots surrounded by a very fine blue shine, 3 submarginal spots and 2 in the centre of the costal margin of the same colouring. The hindwings are rounded with a thin, broken line of white spots running along the angle. A broad spot of the same purple colour as on the fore-



wings, proceeding from the base in the cell, mostly terminates at the upper margin of the wings. It is not divided as on the forewings. Near to the margin is a row of purple spots running parallel to the angle. A second and third marginal row goes through the wing. Between the last row and the broad spot, a band runs into the centre through the wing. Inclusive of this row and exclusive of the white marginal line, 4 rows of purple-coloured spots stand between angle and spot. The under surface of the wings as in *streckeri* Skinner, similar to the *streckeri*. under surface of *Pyrameis atalanta*, and can likewise not be described.

**M. sophronia** Godt. (98 f), a very rare species from Brazil, has blue colouring on the hindwings and on *sophronia*. the basal part of the forewings, on the latter wings also white spots. The ♀ has a duller, more steel-blue colouring, and larger white spots on the forewings. The reflection of this species is very strange. It is in the ♂, when the animal is held towards the origin of light, violet-blue, while it is cyan-blue when seen standing between the origin of the light and the butterfly; in the ♀ it is green. The species is known to A. SEITZ only from Southern Brazil where it flies rather high up in the Orgel Mountains and seems to be very rare. He did not come across them near Rio itself, but according to v. BÖNNINGHAUSEN it occurs in single specimens to the north of it. According to STAUDINGER, the species also occurs in the mountains of Venezuela.

**M. antholia** Godt. (98 f) from the Antilles is larger than the preceding species and has black wings of a *antholia*. blue iridescence except the distal margin, the forewings have a large white spot beyond the middle cell and obliquely below it another something smaller one, so that they form an interrupted white band. In the apex of the forewings there is placed another smaller white double-spot. The hindwings are without any markings, except the ♀ in which also the blue reflection is missing nearly altogether, and in which the distal margin is whitish at the front part, and at  $\frac{1}{3}$  of the width of the wings there is an effaced line of white dots terminating into the costal margin.

**M. capenas** Hew. (98 f) from the Upper Amazon shows but little sexual dimorphism; the ♀ has a *capenas*. more grey ground colouring and more pronounced markings. We have a ♂ at hand from Rio Madeira (Humayta, June to September), which is considerably smaller and has no brown band on the hindwings, and above the blue inner marginal spot of the forewings there is one more such spot, the under surface being also darker. We denominate this (local?) form as *madeira form. nov.* — *octomaculata* Btlr. from Peru differs especially by *madeira*. *octomaculata*. having 4 instead of 3 bluish spots on its forewings.

### 39. Genus: **Cybdelis** Bsd.

Very much approaching the *Eunica*, but differing from them by the fur-like haired eyes. The cells of the hindwings, being open in *Myscelia*, are closed in *Cybdelis*. The colouring is throughout above black with white spots and blue reflection which is, however, concentrated upon the surroundings of the spots. The head is rather stout, the eyes very pilose, the palps long, at the top lowered, antennae of medium length with flat clavola, the thorax robust, the legs strong and the abdomen slender; the forewings angled below the apex, the 1. subcostal vein originating at the cell-end, the 2. right after, the 3. beyond the middle of the wings, the cells of both wings closed, the 2. median vein of the forewings very much bent. Precostal of the hindwings simple, very much bent. There are about 4 forms known that are closely connected with each other; all of them occur in the warmer parts of South America and are rather numerous in some places.

We reproduce here a ♂ of **C. phaesyle**, of which HÜBNER figures only the ♀. The species is probably scarcely more than the southern form of *mnasylus*. Typical *mnasylus* Dbl. and Hew. (102 B h) from Venezuela *mnasylus*. have on the forewing an oblique spot behind the cell, 2 little punctiform spots and a larger round dot near the anal angle white, and on the hindwing a white opalescence encircled by a fine violet-blue. — In *thrasylla* *thrasylla*. Fldr. (102 B h) which seems to be an alpine form widely spread in the north of South America, the margin of the blue opalescence on the hindwing is violet and so much broadened that but a little white nucleus remains in the centre, not larger than one of the white spots on the forewings. — *boliviana* Salv. (102 B h) has the *boliviana*. white spot entirely covered by blue, and in *phaesyle* Hbn. (102 B h) itself the opalescence on the hindwing is *phaesyle*. missing altogether, the hindwing being unicolorously sepia-brown with quite a faintly dark submarginal line; but behind the cell of the forewings there is a white band consisting of three bands, which is connected with the isolated spot before the anal angle by a violet iridescent band. The latter is the most southern form reaching in the east as far as to the mountains behind Rio de Janeiro, in the west as far as Peru and Bolivia.

### 40. Genus: **Libythina** Fldr.

This genus owes its name principally to the palps being, like in a *Libythea*, prolonged like a nose. I am not able to give any description of their habits and early stages. With the preceding genus behind which it was placed there is, in my opinion, no relationship whatever, but rather with the genus *Ergolis*. The eyes are naked here, in *Cybdelis* furry; the antennae gradually and slightly thickened, in *Cybdelis* with a flat



clavola; the veins are quite divergent. The 3 principal veins are inflated at the base, the median is thickened as far as to the branching-off of the 1. vein, the base of this vein starting directly beyond the base is even also thickened in the ♂ etc. — There is only one species known from the Amazon River, being rare as far as I know.

*cuvieri*. **L. cuvieri** Godt. (hyperipte Hbn.) (97 d). A medium-sized butterfly above and below dark-brown; the forewings with a weak prong below the apex, the hindwings strongly bent at the anal part. Forewings with 6 scattered white punctiform spots in the distal area and faint violet reflection in the inner area. On the under surface the white spots are more numerous, the hindwings with a purple gloss. From the Amazon (Obidos, Teffé, the figured specimen from Santarem). The stated habitat „Jamaica“ might be due to a mistake in confounding it with *Eunica tatila* (100 A a) which is not quite dissimilar. Mostly single and in many places of the range rare.

#### 41. Genus: **Eunica** Hbn.

About 80 forms of considerable geographical variability, but concerning the specimens from the same region, mostly being of an amazing constancy, form this genus. The animals are very elegantly shaped, reminding us very much of our *Apatura*, nearly always of a brownish-black ground-colour with few white spots, but often with a magnificent blue reflection which is sometimes also seen in ♀♀. Just like the American *Megalura* are in certain connections to the *Cyrestis* of the Old World, and the *Cystineura teleboas* to the African *Neptidopsis*, we find the same connections in *Eunica* to the African *Crenis* having probably also like these numerous though short spines in the larvae \*). The butterflies have the median of the forewings strongly thickened or even distinctly inflated at its base, as far as to the branching-off of the middle median vein; sometimes even this is also strongly thickened as well as the subcostal. The forewings are sometimes angled below the apex, the cell of the forewings closed, that of the hindwings often closed by such a fine transverse vein that it is only distinctly noticeable in transmitted light or after desquamation. Antennae gradually thickened to a thin and flat clavola of more than half the length of the costa. Middle and hind-tibiae not prolonged as in *Gynaecia*, *Ageronia* etc. Wings with slightly undulated, smooth or also dentated margin. — The butterflies fly when the sun is shining, but by preference in the shade of the woods, they especially live in the mountains, are mostly found single or even rarely, but at times they suddenly occur in great numbers. Most of the species are to be found in the Amazon-regions and Northern Perú, only 3 species go far to the south. They seem to disdain flowers, but are fond of drinking from wet brook-stones and mud-holes, from lures and rotting fruit.

The colouring and markings of *Eunica* are in nearly all its species so corresponding that even by long descriptions it would hardly have been possible to achieve full clearness. Therefore the illustrations for which the plate 100 had been destined, have been subsequently doubled, thus forming the plates 100 A and B — a designation otherwise unusual in the „Macrolepidoptera“; we thought this augmentation of figures to be necessary for the sake of a better orientation.

*tatila*. **E. tatila**. This species is at once recognizable by the small projection of the margin below the apex, making an impression as if just below the apex a bit of the top of the wing had been cut out. The butterfly is dark brown with a violet — in the ♀ more cyan-blue — reflection and 6—7 scattered white punctiform spots in the distal area of the forewing. **tatila** H. Schöff. (100 A a) is the smallest form lying before me, it comes from Cuba, has rather small, not very sharply demarcated white spots and rather dull blue reflection. — *coerulea*. **coerulea** Godm. and Salv. (100 A a) is the form reaching from Colombia to the north through Central America and Mexico as far as to the Southern United States (Florida). Larger, with bright reflection and large, pronounced, and often somewhat four-cornered white spots which in the ♀ are so large that they almost flow together. — *bellaria*. **bellaria** Fruhst., from Central Brazil, is said to be smaller than *coerulea*, of a duller violet-blue and with smaller white four-cornered spots. Espiritu-Santo. Brazilian specimens are not lying before me, the description, however, pretty well agrees with a specimen found at the „Chanchamayo“. — *tatilina*. **tatilina** Fruhst. finally, described together with a ? from the Upper Amazon, has on both surfaces more conspicuous and below more sharply demarcated white spots; on the under surface the apical and marginal areas contrast more sharply (aberrantly?) with the more blackish discus. — *tatila* is not only one of the most widely spread, but also one of the most common butterflies of the genus, though like most of the *Eunica*, appearing in great numbers only in certain years.

*maja*. **E. maja** F. (= naeris H.-Schöff.) (100 A a, b). It approximates the *tatila*, but the white spots on the forewings are covered with brown in the ♂ and the apex of the forewings is straightly clipped off, not cut out. In the ♀ the white spots are large and pure white, being, however, otherwise quite brown and having no blue reflection whatever. Seems to be very much distributed in Central Brazil, is missing, however, in the immediate surroundings of Rio.

*concordia*. **E. concordia** Hew. (100 A b). The upper surface of this species resembles a little that of *maja* by the spots on the forewings being covered with brown scales and thereby veiled. The blue reflection likewise has the violet tinge and even the shape of the wings is similar to that of *maja*, for the apex of the forewings is obliquely clipped-off. But the lower surface is quite different, with very bright and beautiful markings, especially

\*) These connections have even led to a union of *Eunica* and its homogeneous species with *Crenis* to a subgenus, called *Eunicinac*. Cf. Vol. XIII, p. 204.



the hindwing exhibits a beautiful double-eyespot before the apex and from the costa there runs a short anterior and a long posterior brown marginal spot to the interior of the wing. Above the blue reflection is especially bright in the distal half of the hindwings. From the Amazon, Iquitos, Tapajoz and so on.

**E. malvina** Bates (100 A c). Larger than the preceding, upper surface brown, without distinct reflection, the spots on the forewings only noticeable as large dull stains. Easily to be recognized by the under surface of the hindwings which is of a light grey marked with beautiful brown dentated lines and has before the apex a beautiful double-eyespot encircled by yellow, which is followed by 2 or 3 smaller ones towards the anal angle. Southern Central America and South America as far as Ecuador and the Amazon. The ♀ is traher similar to the ♂, the distal part of the forewings of a darker colour. Nowhere common.

**E. brunnea** Salv. (99 f). Pretty large, above similar to a *caralis* (100 B b), dark brown, apex and an indistinct oblique band beyond the cell silky lighter brown. Basal part of the wings with a dull violet reflection. Markings of the under surface of the hindwings: dark brown lines on a lighter brown ground. Before the apex a beautiful double-eyespot with a metallic blue nucleus, above the middle median vein a smaller, below it a larger ring-eye. In the subcostal area 2 comma-like streaks, one more at the closing of the cell, and about 2—3 mm before the margin a submarginal line. Bolivia and Peru.

**E. monima**. There are 4 forms of butterflies, obviously nearly allied, but quite easily distinguishable. So far there are 3 names existing for them: *monima*, *modesta*, *pusilla*. As all the descriptions are so inexact that they are adaptable to all the 3 names, and as the only figure (*monima* with CRAMER) is, according to GODMAN and SALVIN, „everything else but good“, the names have now been assigned to one form, now to the other, and often even — at least partially — united (DYAR, GODMAN and SALVIN). I should like to distinguish now the following forms, the appearance of which is to be established by the figures of the four. **monima** Cr. (= myrto Godt.) (100 A b) I take to be the smaller form from Cuba, which was several times wrongly denominated *pusilla* (this latter form does not occur at all in Cuba). It is nearly entirely without any reflection, the spots more or less dull, and the same specimens as are found in Cuba, also fly in Florida, Mexico and Yucatan. — **habanae** form. nov. (100 A c) likewise flies in Cuba, but is probably a season-form of *monima*, for a whole series lies before me without transitions. It is always larger, the blue reflection considerably stronger and the under surface brighter though not differently marked. — **modesta** Bates (100 A b) may then be called the form flying from Guatemala to Colombia. The ♂♂ have a strong blue reflection, but are without spots on the upper surface; size like *monima*; ♀ below rather brightly marked. — **pusilla** Bates (100 A b) might be the tiny butterfly which in some districts where *modesta* is missing, seems to replace it. It has hardly the size of a *Lycaena icarus* and no reflection; by far the smallest *Eunica*. The figured specimen comes from the Colombian Province of St. Marta and may be especially small; but GODMAN and SALVIN mention *pusilla* from Panama which is not very distant, whereas the genuine *pusilla* is presumably absent in Cuba.

**E. macris** Godt. (100 A d) immediately recognizable by the dusty yellowish-grey colour of the upper surface. In typical *macris* the apex of the forewing is mostly black with a number of white spots, the hindwings have, in front of the irregularly dentated submarginal band, generally a row of 4—5 dark dots corresponding to the pupils of the ocelli on the very much white-mixed under surface of the hindwings. Occurs in Central and Southern Brazil (Bahia, Espiritu Santo); near Rio de Janeiro, however, the species does not occur. Further to the south it frequently reappears in Paraguay, the ♂ flying there in two forms: one not to be separated from the northern form from the Amazon valley having a dark white-spotted apex of the forewing and a uniformly dusty-grey ground-colour of the under surface of the hindwings; and a second one with a drab apex of the forewing, little contrasting to the discus, with dots partly overshadowed in brown; with this form we might connect the name ab. **aeschrion** Fruhst. (100 A d), but the ground-colour of the forewings is just as often lighter as darker than that of typical *macris*. This form nearly always lacks the row of dark dots on the upper surface of the hindwings. — **heraclitus** Poey (100 A d) is the Cuban form; it is coloured the most brightest of all, the forewings below the apex the most strongly angled, the dots on the hindwings large and distinct, the upper surface of the wings also often marked in the discus with dark dentate-lines. Between this and typical *macris* stands **phasis** Fldr. reaching from Colombia to the south of the Amazon; according to FELDER it has the more strongly angled margin of the forewings of the Cuban form, as well as its size, but the colouring of the Southern Brazilians. — On the whole, large series show that both the ground-colour and the grey or black apex vary a great deal in the same district and the denominations much rather signify aberrations than being names of special races.

**E. margarita** Godt. (100 A d). At once noticeable by the pearl-grey ground-colour. The hindwings exhibit black marginal-chains, the forewings a white oblique band and in the black apical part three white little spots. A southern animal. Typical *margarita* are common in the most southern parts of Brazil, and the specimen described first seems to come from Porto-Alegre; in specimens from there, the apical band of the forewings is strangulated on the median. If one travels only some hours to the north, to São Leopoldo, one already finds preponderantly specimens in which the distal margin of the silver-grey basal area penetrates like an immense triangular tooth into the white band of the forewing, not only like a small point as shown in the figure.



- Further to the interior, this distal projection of the apical area is absent; the apical area is distally not so distinctly delimited in black, the white band of the forewing much broader and more uniform. This form, which especially comes from Paraguay and was imported in great numbers several years ago, is the form figured in STAUDINGER's „Exotic Day-Butterflies“ and called **eburnea** (100 A d) by FRUHSTORFER. Specimens from Petropolis, from the Orgel Mountains, are again somewhat different from specimens from Paraguay; near Rio de Janeiro the species does not occur at all. Still further in the interior we then meet the gigantic form **ingens** *form. nov.* (100 A d) which lies before me from Bolivia, where it was taken at altitudes of 7 to 800 m. — Like most of the *Eunica*, *margarita* occurs only in certain years, is sometimes rare for a long period, till all of a sudden it appears in great numbers. The larva lives on *Sebastiana*, in its early stages it unites little pieces of leaves with faeces to a shelter, later on it is green with black head and white lateral stripe and rests with slightly raised front and back parts, the horns on the head stretched forward. The latter are rather long, slightly curved and furnished with single accessory spines. The lateral spines of the 4. to 10. ring are stunted to small points, the dorsal spines to small white warts. Pupa green, slender, with short points on the head and faint dorsal ridge; it is fastened to the upper surface of the leaves and raises itself towards the light.
- eburnea.* **E. cabira** (100 A e f). A very variable animal; ♂ above very dark brownish-black with faint, dull blue reflection being only brighter in the sun. The ♀♀ are below and above quite similar to the ♂♂, but from behind the costal middle of the forewings, a very oblique narrow white band runs towards the margin above the anal angle, the posterior part of which band dissolves in spots and is sometimes strewn with small brown grains of dust, especially at the margins. Under surface reddish-brown, in the apex of the forewings mixed with whitish shades, and with a large doubly pupilled eye below the centre of the inner margin of the hindwings. In the same country there occur large and small, lighter and darker, below strongly and faintly marked specimens, probably according to the altitude. Described from Venezuela. — Peruvian specimens with little white on the under surface in the apex of the forewings, very deep-black discus of the forewings and very black-marked
- gerwisa.* under surface of the hindwings are **gerwisa** *Fruhst.* (100 A f as *gervisa*). They presumably differ from *tenebrosa* *Salv.* from Bolivia only by the latter having uniformly deep-black upper surface of the wings in the ♂ and also their under surface being often so darkened that one can hardly any more recognize the characteristic
- ninetta.* markings — a big double-eyespot before the apex of the hindwings and an angled median line. — **ninetta** *Fruhst.* from Ecuador (not lying before me) has a blue reflection reaching further towards the margin on the upper side, less black marked under surface of the hindwings, which has a brighter violet reflection in the centre. —
- tenebrosa.* Specimens that are, like **tenebrosa** *Salv.*, said to come also from Bolivia, are above a little bit lighter brown,
- editha.* especially in the distal area; they have been called **editha** *Fruhst.*, but have neither below more white in the apex than the Peruvians, nor do they lack the violet hue of the under surface of the hindwings which has,
- carias.* however, not so pronounced black markings as *gerwisa*. — **carias** *Hew.* (100 A f), a common butterfly in Colombia, is so nearly allied with *cabira* that it is hardly to be called a particular species. Here the forewings are above in the distal half overflowed with a bright golden-brown, their apex is below not white, but otherwise the under surface is similarly marked as in *cabira* from Venezuela. The butterflies are common, especially at mud-holes on the road, but local.
- amelia.* **E. amelia** *Cr.* (100 B a). This species reminds us a great deal of *orphise* (100 B a) on the under surface, but is immediately recognizable by the strangely shaped wings: the costal margin of the forewings is considerably shortened, therefore the margin of the wings does not run obliquely, but almost straight, and the inner margin is nearly as long as the costa, the hindwings are very large, too. Moreover the blue reflection is characteristic, being in the ♂ of a magnificent ultra-marine blue and covering the whole forewing up to the apical third which remains black and has white fringes; on the hindwing the blue reflection is in the basal part and the distal half remains black, contrary to the most *Eunica*. *amelia* belongs, according to FELDER, to the group of the smaller
- amycla.* **amycla** *Godt.* which, however, distinguishes itself by the median and submedian being not only thickened, but expanded to a vesicle. The ♀♀ are spotted white and have a row of beautiful eyes on the under surface of the hindwings. The ♂ of *amelia* has a very conspicuous long tuft of hair before the inner margin of the hindwings.
- taurione.* **E. taurione** *Hbn.* (♀ = *marsolia* *Godt.*) resembles a small *amelia*, but the blue colouring occupies the whole basal two thirds of the forewings. The under surface is lighter and much less marked, especially the
- fasula.* eye-markings are much less developed. Brazil and Amazon. — **fasula** *Fruhst.* are smaller ♀♀; darker, the little white spots on the forewings much smaller, the black margin more extended and the submarginal row of dots of the hindwings more pregnant. From the Amazon.
- orphise.* **E. orphise** *Cr.* (= *tryphosa* *Hbn.*, *castalia* *Hew.*) (100 B a). The ♂ is above black with a dull ultra-marine blue reflection in the proximal half of all the wings and grey fringes; without spots. In the ♀ the whole upper surface is of an iridescent steel-green, the forewing is white in the apical half, otherwise spotted black. The under surface pretty much resembles that of *amelia*, the hindwings are dark ruddle-red with a violet reflection; the markings are to be seen from the figure. The species seems not to be very rare and widely distributed over the northern part of South America, from Guiana to Peru. Specimens from Colombia are larger than those from the Upper Amazon, the blue reflection of the upper side reaches further to the margin, and the under surface is more variegated by violet-white and metallic bluish-grey pruina.



**E. anna** Cr. The forewings rather pointy, the basal half in the ♂ with a bright blue reflection and *anna*. in the ♂ dull-brown spots in the apical area, 3 of them pass by in a row in an oblique direction behind the cell, coming together before the apex and forming an oblique stain. Beneath the scheme of markings in the distal area of the hindwings resembles that of *brunnea* (99 f), but the streaks are thicker and in the proximal part there is a large dark four-cornered spot at the middle of the costa and a thick dark comma-like streak under it. Considerably smaller than *brunnea*, the eyes of the under surface of the hindwings, however, similar.

**E. sophonisba** Cr. (100 A d). ♂ black with magnificent blue band at the margin of the hindwings, which *sophonisba*. laps over on the anal part of the forewings; ♀ of a steel-green gloss with white oblique band of the forewings. Much more characteristic, however, is the under surface: light or metal-blue, with very complicated black markings; peculiar is an ochreous ray through the centre of the hindwings, which looks as if faded or like an artificial change of colour. In typical (Guiana-) specimens the blue of the hindwings runs in the ♂ from the margin proximally till over the centre and is therefore very broad; in the ♀ the white oblique band at its proximal margin above the lower cell-angle projects proximally in the shape of a bow, and in both the sexes the ground-colour of the under surface is quite light bluish-grey. — In *agele* form. nov. (100 A e) (= *sophonisba* *agele*. *Stgr.*), from the Upper Amazon (Humayta, Iquitos) and Colombia, the blue band of the hindwings of the ♂ occupies scarcely more than  $\frac{1}{3}$  of the hindwing, the oblique band of the ♀ runs more pointy, the white protuberance at the cell-end is diminished, the ground-colour of the under surface especially in the ♂ much darker, bluish-green, the ray in the hindwings brown instead of yellow (*sophonisba*, as it says in the table, is a misprint).

**E. chlorochroa** Salv. (100 A e). On the under surface this species is almost exactly like *sophonisba*, but *chlorochroa*. above the distal half of the hindwings is not blue in the ♂, but steel-green, and this colour has a bright whitish-grey gloss in the sun. North-Eastern Peru.

**E. mira** Godm. and Salv. (100 A e). On the under surface of the hindwings the basal brown here likewise *mira*. continues, like a thick ray, through the bluish-green hindwing towards the margin, but does not quite reach it. The upper surface of the (unknown) ♂ is certainly black with a broad metallic margin of the hindwings; the ♀ has steel-green, black-spotted forewings with white subapical band, and dark hindwings. The species is only known to me from the figures in the Biologia Centrali-Americana, of which I give a copy. Panama.

**E. norica** Hew. (100 B a). Forewings under the apex geniculated, upper surface black, the hindwings *norica*. with a broad blue reflection in the distal area. The under surface with very bright violet-brown and brownish-black markings is at once to be noticed from the figure. The ♀ has on its brown upper surface a white oblique band which is widely discontinued behind the cell. Typical *norica* come from Chanchamayo in Peru; a smaller form with more reddish-hued under surface comes from Bolivia (Oroya), seems to be more of a mountainous form and was separated as *occia* Fruhst. (100 B a). The species is apparently common where it occurs. *occia*.

**E. mygdonia** Godt. (100 A e). This rather large *Eunica*, occurring in great numbers in some years *mygdonia*. near Rio de Janeiro and then frequently seen on the Corcovado, the Tijuca, at the foot of the Orgel Mountains, coming even into the gardens of Sa. Thereza, as far as Botafogo and into the Botanical Garden, in order to disappear almost entirely for years, has a unicolorous dark upper surface with 5 quite effaced little spots in the distal area of the forewing. It has a characteristic under surface which is easily seen from the figure and only varies in the tinge of the colouring. The ♀ has a white oblique band on the forewing and 2 little subapical spots. If GODMAN and SALVIN have correctly construed this species (against which there are many arguments), *anna* Bilr. and *Dru.* would coincide with it and the range would be very great reaching from Guatemala to Ecuador in the west and Southern Brazil in the east.

**E. augusta** Bat. (100 A f). ♂ above black, the basal half of the forewings with a magnificent bright *augusta*. metallic-blue reflection the intensity of which in sunshine reaches up to that of many a Morpho. Before the apex of the forewing a white oblique band which is double as broad in the ♀ as in the ♂, the upper surface of the wings being here, however, steel-green almost as far as the margin. The species is at once recognizable by the dentated margin of the wings which is otherwise only noticed in *caelina*, and by the bark-like marked under surface of the wings. Typical *augusta* originate from Central America and are not rare there. The figure in STAUDINGER's Exotic Day-Butterflies is the narrow-banded Colombia-form going in the north as far as Costa Rica. The fringes are white-speckled. — *olympias* Fldr. (100 A f) has less blue on the forewing and the *olympias*. white oblique band is missing altogether in the ♂. The under surface is almost exactly as in *augusta*, but the hindwings are less deeply dentated and the fringes not so bright white-speckled. Likewise Colombia.

**E. caelina** Godt. (100 B b). Hindwings above and beneath almost exactly as in the preceding, also so *caelina*. deeply dentated; but the forewings more ultramarine blue than cyan-blue, upper surface with 3 separated white subapical spots, beneath there runs through the forewing from the costal centre towards the anal angle, a broad white oblique band strongly covered with brown in the ♂. Southern Brazil. — *alycia* Fruhst., founded *alycia*. upon 1 ♂ and which has not been lying before me, from the Upper Amazon, is said to be considerably larger, the forewings much lighter violet, the hindwings lighter brown, the white dots on the forewings more diffuse, under surface of hindwings with more white markings. Local and not common.

**E. caresa** Hew. (100 B b, d). Very nearly the largest species of the genus; the forewings below the *caresa*.



apex very prominent, in the ♂ the upper surface black, with dull violet reflection (except the marginal area) and with white fringes. ♀ darkbrown with oblique white band of the forewings and 2 or 3 subapical little spots between the band and apex. Beneath the hindwings are subdued speckled red-brown or brownish-black, overpowdered in white, with generally only suggested ring-chains or dentate-stripes, without sharply marked eyes and bands. Rather common, distributed from Colombia to Peru, but local, absent in vast districts, especially in the mountains. The confused markings of the under surface changes off enormously, either predominantly grey, or violet, brown or reddish tinged, and on the upper surface the band of the forewings of the ♀ may be in one specimen broader, in another narrower. — In Venezuelan specimens that were separated as *picea* *Fldr.*, as a rule, the white overpowdering of the under surface is thinner so that the markings of the rings and bands are still well noticeable below it.

*empyrea.* **E. empyrea** H. Schöff. (100 B b). Above very similar to the preceding. Smaller, without the white fringes, the violet reflection more confined upon the costal area of the forewings. Beneath the wings are much more unicolorous, the hindwings not so much over-powdered, the markings, consisting of dark transverse lines, more distinct. Brazil.

*caralis.* **E. caralis** Hew. (100 B b). Like the preceding, larger, the upper surface with hardly distinguishable reflection only to be seen distinctly in the sunshine; a quite slightly lighter colour of the brownish black ground-colour runs bow-shaped before the apex from the costa to the middle of the distal margin. The under surface is rather one-coloured, the hindwing with bands of a silky gloss, on the whole little marked. From Colombia to Peru. — *campana* *Fldr.* is above quite similar, the ♂ above in the proximal forewing-area a little brighter blue and the apex of the forewing on the under surface of a stronger violet-white; beyond the silky-glossy median band of the under surface of the hindwings, 4 eye-rings are somewhat more distinctly prominent than in Peruvian *caralis*; from Colombia. — *indigophana* *Fldr.* from Venezuela exhibits above still brighter blue reflection and is easily recognizable by the ♂ showing above as well as beneath a dark undulate-stripe before the margin. — *ariba* *Fruhst.* Pretty large (length of forewings 35 mm), the apex still more curved. Wings above of a deep dark-blue with a faint violet hue excepting the submarginal area, the latter light brown, with a faint gloss and a row of blackish-brown, rudimentary, only partially coherent punctiform spots. Hindwings beneath greyish-violet, basal region greyish-reddish, slightly glossy with diffuse narrow median bands, otherwise without markings. Probably from the Amazon; described according to 1 ♂; unknown to me.

*volumna.* **E. volumna** Godt. A group of partly interosculating forms of butterflies. The most common of them is *tithonia* *Fldr.* from Bahia where the ♂♂ are in some years rather common. On the upper surface the ♂ shows only before the hindwing-margin a narrow iridescent stripe, the dull-blue iridescent ♀ a white oblique band which is downwards reduced in width. The under surface is distinguished by very variegated colouring, especially blue forewing-cell which is black only at and before the end. The typical *volumna* probably hardly differing from it, was presumed from the environs of Rio de Janeiro, but it is not likely that another *Eunica* occurs there beside *alcmena* and *mygdonia*. — *intricata* *Fruhst.* from Blumenau in St. Catharina has the iridescent band of the hindwings as thin as a thread, the hindwings are beneath grey, along the zig-zag bands with a greenish hue. The median and submarginal transverse lines are sharply and several times broken. Between them a doubly-pupilled upper eyespot and a double lower eyespot. — *celma* *Hew.* (100 B c) is above almost entirely like *tithonia*, but the forewings have below black ground-colour with very metallic blue embedding, and the hindwings are very much lighter only before the distal margin; the blue ante-marginal stripe of the upper surface of the hindwings is quite narrow in the ♂; Amazon. — The name of *celmina* *Fruhst.* was founded upon a single ♂ from Scapi in Bolivia which shows above a light greyish-blue submarginal band of the hindwings and beneath smaller ocelli.

*venusia.* **E. venusia** *Fldr.* (100 B c). The ♀ quite similar to the preceding, but the ♂ distinguished by a very broad, intensely radiant blue-iridescent spot becoming visible before the margin of the hindwing in certain light; Colombia. — *persephone* *Fldr.* likewise exhibits this radiant spot of the ♂, but upon it there are black spots, and on the under surface the eyes of the hindwings and the discal spots of the forewings are larger; likewise from Colombia.

*araucana.* **E. araucana** *Fldr.* This form entirely resembles the figured *excelsa* *Salv.* and *Godm.* (100 B c, d), but the under surface is still more unicolorous and duller, and the blue reflection of the ♂ duller, too. The latter is in *excelsa* of almost just as magnificent brightness as in *venusia*, from which *excelsa*, however, immediately distinguishes itself by the margin of the forewings projecting less angled below the apex and by the much less variegated under surface which, on the forewing, lacks the beautiful blue distinguishing the *volumna*-, *celma*- and *venusia*-group; the *excelsa*-♀, however, has in the forewing-discus on the upper surface a blue reflection (being, individually, developed very differently), in which we notice a white oblique band consisting of 3 separated spots. *excelsa* occurs on the Chiriqui in Panama and in scarcely differing specimens in Colombia where *FASSL* took them at the Rio-Songo. — *aspasia* *Fldr.* with above very brightly iridescent discus of the forewing, from Ecuador, is larger and forms a right transition to the following form *E. cinara*.

*cinara.* **E. cinara** *Hew.* (100 B d). Very approximate to *aspasia* and *excelsa*, but differing from *excelsa* by the ♂ exhibiting, before the margin of the hindwings, not a bright, but quite dull blue reflection; the light spots on the under surface of the forewings are not pure white like in *excelsa*, but tarnished greyish-brown, and in the ♀



the forewings have before the apical third not three separated white spots, but a broad white oblique band proximally bordered with blue reflection. Colombia, Amazon. — The name *oreandra Fruhst.* denotes Peruvian specimens in which the blue reflection is more brightly and decoratively prominent than in the northern affinities. *oreandra.*

**E. clytia Hew.** (100 B e). Compared with the preceding, plainly coloured and with hardly any decorations. ♂ above dark-brown with uniform violet reflection, ♀ brown with 5 white spots standing in 2 oblique rows. Under surface of hindwings plain ashy grey, the dentate-lines and eye-rings formed of plain dark streaks. Peru, Rio Madeira and Upper Amazon. *clytia.*

**E. veronica Bates** (100 B e) likewise from the Amazon, has the same size and about the same colours as *clytia*, but the markings of the hindwings being beneath unicolorous yellowish ash-grey are still more reduced. *veronica.*

**E. violetta Stgr.** (100 B d). As the description of this species by the author refers to the figure, specimens corresponding exactly to it are, however, not lying before me, I bring a copy of STAUDINGER'S figure which is said to be painted according to 2 not quite sound ♂♂ and, therefore, may be inexact. The ♀ is not described. Pebas. — Maybe it is only a form of *viola Bates* also originating from Pebas, which would thus form the type of the name; although the latter has a more reddish-coloured under surface, and red markings, yet the design of both is the same. On the upper surface of *viola* the small light spots in the apical area are covered up with dark, or missing altogether, and the bluish-violet reflection is less; these differences also occur in *clytia* and *veronica* and are only individual there. Teffé, Pebas. *violetta.* *viola.*

**E. eurota.** ♂ above black with blue reflection of magnificent splendour, extending in a broad band along the costal margin of the forewings and reaching, in the shape of a glossy oval, proximally convex, from the margin of the hindwings as far as almost to the cell-end. The ♀ is dark-brown with a white oblique band of the forewing and often white preapical spots in addition. The under surface of the hindwings is comparatively very plainly marked: a submarginal cucullated line, a median line turning almost rectangularly round the cell, between both above one double eye-ring and below it 2 or 3 single ones. The range is very great so that numerous sub-forms have been distinguished which, however, were mixed up several times. — The most southern is *euphemia Godt.* (= *dolores Prittw.*, *alcmena Boenningh.*) from Southern Brazil, which chiefly distinguishes itself by the very dark, almost black under surface of the hindwings. Espiritu Santo and Rio de Janeiro, in the alpine districts. — *eurota Cr.* (100 B e) from Surinam to Colombia, is lighter and somewhat smaller, but the blue iridescent stripes of the upper surface are broader and more lustrous, especially those on the hindwing. — *flora Fldr.* is the race occurring from the Upper Amazon as far as up to Peru. The blue of the hindwings in the ♂ does not reach quite to the margin, and in the ♀ there are yet 2 small subapical spots behind the white oblique band. The animals vary exceedingly, and from the Chanchamayo there are lighter and darker specimens lying before me, more or less blue decorated; those with a lighter under surface have been branched off as a form of the Upper Amazon, *myrthis Fruhst.* — *theophaenia Fruhst.* is smaller than *flora*, in the ♂ the bands are more subdued, more violet, those on the hindwing broader. Under surface reddish instead of brown or grey with light spots in the distal area of the forewing. A ♀ is mentioned having the white band of the forewings dissolved into 3 spots what may be constant for this form the habitat of which is on the Middle Amazon (Manaos). *euphemia.* *eurota.* *flora.* *myrthis.* *theophaenia.*

**E. alcmena.** This magnificent species has in the ♂ above a blue costal-marginal stripe, which is sometimes continued even at the distal margin, and a blue marginal band of the hindwings; the ♀ brown with a white oblique band of the forewing. Characteristic is the under surface. Here there is, near the base in the cell and above it, a velvet-brown spot; near the costal margin, behind the middle of the wings, a large eye-spot, encircled by yellow and with two pupils; (proximally) before this 2 arch-like stripes touching each other, the lower one lying on the transverse vein; from this lower one a brown shadowy outline runs rectangularly to the inner margin and beyond this line there is an eye-spot, to which sometimes another small accessory eye-spot adheres. Before the hindwing-margin a dark shadowy outline. Furthermore the *alcmena*-♂ is distinguished by the place, where the first median vein branches off from the median principal vein (near the base of the forewing), showing also on the under surface a blue iridescent spot. *alcmena Dbl.* and *Hew.* (100 B e, f) flies from Mexico to Panama. Here the blue stripe of the costal margin is at the cell-end somewhat overpowered by the dark ground-colour and thereby strangulated or even interrupted; it ends in a thick wedge before the apex without extending any further along the margin. — *amata Druce* from Costa Rica resembles in the male sex pretty much the typical *alcmena*, the ♀ I do not know. In the ♂♂ — certainly also in the ♀ — the eye-rings on the under surface are (according to DRUCE) smaller, above the blue is considerably more abundant and more violet. — *pomona Fldr.* (100 B f) which may be a species of its own (there are, however, transitions of it to *alcmena* lying before me, from the Chiriqui), shows the blue costal-marginal stripe bent round before the apex and following the margin to the anal angle, but sometimes with attenuations or slight interruptions behind the cell. Costa Rica to Colombia and Venezuela, varying in almost every locality. — Such a local form is *pompata Fruhst.* with more blue than violet stripes; the under surface darker, all the ocelli of the hindwings smaller, surrounded by a softer yellow the dark submarginal band more prominent. Colombia. — *irma Fruhst.* (100 B f) has decidedly the loveliest ♂♂ (♀ not at hand); a band of magnificent blue lustre in the sunshine runs from the base of the forewings as far as before the apex, where it makes a broad bend going as far as into the anal angle. The band of the hindwing is broader, but somewhat shorter, otherwise like in *alcmena*. Under surface *alcmena.* *amata.* *pomona.* *pompata.* *irma.*



like *pomona* (100 B f), but the black lines and the borders of the eye-spots thicker and darker. Peru. — *alcmena* and its forms are mostly very common in their range.

*bechina.* **E. bechina** Hew. (99 f). Under surface quite similar to that of *clytia* and *veronica*, but the upper surface differing by the presence of white punctiform spots in the apical area of the male forewings. Typical *bechina* come from the Upper Amazon. Wings above quite darkbrown with violet-blue iridescent centre; forewings with 5 light spots in the apical area, 4 of which are white, the middle spot, however, overshadowed dark.  
*evelide.* — **evelide** Bates is beneath a little darker and more strongly black marked and the lower row of the spots in the apical area is often effaced; from Colombia. — Likewise originating from Colombia (Rio San Juan), there are specimens in which also only the 2 apical spots are faintly suggested, but besides, the blue reflection on the upper surface is so much reduced that it hardly reaches as far as the middle of the wings; this is **emmelina** Stgr. — As contrasted with this, **medellina** Fruhst. is distinguished by especially intensive light and vast blue colouring of the upper surface of the wings and 2 very large white subapical dots; the middle dot of the discal row is absent; Colombia. — **chorienes** Fruhst. finally, from Southern Brazil, has again more subdued reflection and all the 3 dots of the discal row are absent. — *bechina* though being a widely distributed species, is not common.

*careta.* **E. careta** Hew. (100 B f) entirely resembles on the upper surface *bechina* and also varies like this. On the non-iridescent upper surface there are generally 2 subapical punctiform spots and one before the middle of the margin, and on the under surface there is in the centre of the hindwing-costa a darkbrown, three-cornered spot behind a loam-yellow place. But the spots on the forewings may be augmented, also all or partially covered with brown (in typical specimens only the spot before the middle of the margin) and on the under surface the hindwing-costa may have 2 or also 3 dark spots, the otherwise loam-yellow spot of the costal margin may be absent, or grey, whitish, or with dark filling etc. Described from the Amazon, but probably widely distributed in the northern part of South America, although often occurring in rare specimens.

*sydonia.* **E. sydonia** Godt. from „Brazil“ is not lying before me, but is described with denticulated wings, above brownish-black, without spots, of a violet gloss at the base; beneath with 4 greenish dots. Reflection of the hindwings of less extension. Under surface of the forewings dark grey with one dot and 2 oblique bands of blackish colour; distally there is opposite the faintly violet margin a curved transversal row of 4 greenish dots. Under surface of the hindwings violet-brown, with some dark curved and little-prominent lines, and with 4 greenish dots that approach each other by twos. The ground-colour of all the wings is faintly pierced by whitish tints. The abdomen has the colour of the wings. Antennae brown, with grey ringlets and yellowish point of the clavola. — In **poppaeana** Fruhst. from Surinam the violet touch on the hindwing is much more expanded, the animal larger, the under surface of the hindwings densely besprinkled with grey.

*alpais.* **E. alpais** Godt. from „Brazil“ is not at hand. The description runs thus: wings denticulated, brownish-black. Forewings suffused with bluish-violet, marked with 5 white spots; from the margin of the hindwings there extends a blackish undulated line. Under surface of the forewings very much like the upper surface, but towards the base with a single whitish crescent and the margin is of a violet grey with 6 blackish dots, the 4 posterior ones of which are arranged in a bent transversal line. Under surface of the hindwings violet-grey with 2 spots and hereafter 2 curved lines of a chestnut-brown colour. Between these 2 lines there are 3 black eye-spots with white pupil and yellowish iris. The front eye-spot is separated from the others and has 2 pupils; the second eye-spot is of half the size of the anal-eye-spot which it almost touches.

*elegans.* **E. elegans** Salv. (100 B f). This butterfly which is not rare in Peru, can at once be recognized by the shape of the wings. The distal margin of the forewings is bulged out here, while in the similar *Eunica*-species it is concave, gnawed out or straight at most. The upper surface is brownish-black, the proximal half of the wings of a violet-blue reflection; the under surface silky yellowish-grey with black discus of the forewings and numerous dark lines on the hindwings, formed from little bows. ♀ with above and beneath similar white oblique band of the forewings.

#### H.-Group: Catagrammidi.

Very normally and uniformly shaped butterflies, above black with metallic bands, on the under surface mostly brilliant, with variegated and changeable markings. The spines of the larvae somewhat reduced; habitat nearly in the tropics many very rare.

#### 42. Genus: **Callithea** Bsd.

This genus numbers about a dozen of species distributed from Colombia to the Amazon; in the latter district most of the species occur. The Callitheae are medium-sized, on both surfaces of the wings magnificently coloured and with some, however larger, *Agrias*-species, they exhibit an interesting example of congruence in shape, which may, however, not be taken to be a symptom of mimicry, as the species of both the genera are not considered as „patented“ species.

The exterior of the Callitheae is so characteristic that it is impossible to mix them up with other genera and that the mentioned similar *Agrias*-species are distinguished by their greater size. The Callitheae have



curiously buttoned antennae, the palps are densely covered with scales and hair, their last joint is small and pointed, the eyes are naked, the hindwings have a double-furciform precostal.

The larva of *Call. sapphira* was observed by OTTO MICHAEL near Santarem on the Lower Amazon, but unfortunately he did not give any further details; he merely states that the male larvae are of a beautiful blue colouring, while the female larvae are more greenish or orange coloured; they have sharp spines containing a caustic or venomous substance and live in single specimens on a bean-like creeper. The time of flight lasts but a short time; they mostly stay in the woods, but also fly single into the boroughs where they have been found after the night's rest on the walls of houses.

PAUL HAHNEL reports about the intellectual powers of the Callitheae that a *markii* (*hewitsoni*) after having been several times chased up, at last took refuge on a small trunk where it, however, hardly rested and in the very same moment changed its mind and immediately went some inches higher up in order to hide itself on the under surface of a leaf hanging down above it — it probably imagined to be quite safe there; the observer was really astonished at this clear thinking power of the animal so hardly pressed upon by its persistent pursuer. The Callitheae (like many butterflies with an intensive blue) have, according to the same observer, a scent very similar to that of vanilla.

A. ♂ on the upper surface of the hindwings in the discocellular without shaggy hair.

**C. sapphira** Hbn. (99 c) from the Lower Amazon (Santarem) exhibit, as is to be seen from the figures, *sapphira*. a conspicuous sexual difference. The wonderful sapphire blue of the ♂ is not equalled by any other *Callitheae*-species and the ♀ is on account of a broad ochre-yellow band of the forewings a most remarkable appearance. — The larva has been described above.

**C. hewitsoni** Stgr. (99 c) from Colombia and from the Upper Amazon differs from the following *hewitsoni*, *markii* (99 f) by a larger yellowish-red basal area of the upper surface of the forewings; the colouring of this part of the wings changes off rather considerably, since all shades from yellowish-red to ochre-yellow are found in it. This area has also on the under surface of the forewings the same extension, its colouring, however, does not change off so very much and is generally ochre-yellow.

**C. markii** Hew. (= wallacei Stgr.) (99 f) from the Upper Amazon has, with the exception of the *markii*. inner margin, totally blue, glossy hindwings and a broad blue-shining distal band of the forewings. The ♀ has a rather broad verdigris band on the upper surface of the forewings.

**C. batesii** Hew. (99 f) from the Upper Amazon. ♂ similar to the ♀ of *markii*, but it has much less blue *batesii*. gloss and is of orange-red colour on the basal part of the hindwings. On the under surface, which is much more marked in black, the basal third of the hindwings is orange-yellow, too.

**C. buckleyi** Hew. (99 e) from Ecuador differs from *staudingeri* subsp. nov. (= buckleyi Stgr.) from *buckleyi*. *staudingeri*. the Upper Amazon (São Paulo de Olivença and Jurimaguas) by its somewhat smaller size, broader green margins of the upper surface, and beneath by less black colouring on the forewings and reduced black markings also on the hindwings, especially conspicuous on the band bordering on the ochre-yellow basal part.

**C. degandii** Hew. (99 f not *degandei*) from the Upper Amazon has a bluish-black upper surface with *degandii*. very broad verdigris margins. According to HEWITSON'S figure the whole middle part of the upper surface of the wings is of a deep blue gloss, which is seen in the ♀ only exceptionally.

**C. bartletti** Godm. and Salv. from the Lower Ucayali and Rio Napo is described as follows: ♂ above deep *bartletti*. purple (blue), central area of the forewings mostly black. Apex of forewings (broad) and distal margin of the fore- and hindwings metallic green. Beneath: basal third of the forewings and basal half of the hindwings ochre-yellow; rest of all the wings green; at the cell-end and at the first median vein of the forewings blackish; 1 black spot between the 1. and 2. median vein and 3 others run parallel to the distal margin; the hindwings have 4 bands of black spots on the discal half (? distal half), placed parallel to the distal margin. The apex of the hindwings is more rounded in the ♀ than in the ♂; base of the wings greenish-black instead of purple (blue); the green margin of all the wings broader. — We cannot perceive from this description whether *bartletti* is a form of *degandii* or *adamsi*. Presumably the latter is also a form of *degandii*.

**C. adamsi** Lathy (99 e) from Peru (Perèné, 4000 feet) is above much darker than *degandii* and has *adamsi*. narrower verdigris margins, the blue gloss is dark violet, the centre of the wings without gloss. On the under surface the orange-yellow basal part is darker, very much reduced and, on the forewings, confined to a basal spot, the black markings are different, too. — **frigga** subsp. nov. from Peru (Cuzco) is above hardly differing *frigga*. from *adamsi*, but shows beneath the yellow basal area on the hindwings extended as in *degandii*, on the forewings, however, more extended, the black markings are also much more developed.



- srnkai*. **C. srnkai** *Honr.* (99 c) from the Upper Amazon is very similar to *degandii*, but has a broader green margin and a wonderful sapphire-blue gloss of the upper surface. On the under surface of the forewings the black markings are greatly reduced.
- salvini*. **C. salvini** *Stgr.* from Iquitos is also similar to *degandii* (99 f), but the upper surface is of nearly the same beautiful blue gloss as in *srnkai* (99 e) and has just the same metal-green distal margins as the latter, but the apex of the forewings itself is also of this colour. Beneath the basal part of all the wings is orange-red, the under surface is otherwise similarly marked as in *degandii*, the inner margin of the forewings, however, is broad and deep black.
- whitelyi*. **C. whitelyi** *Salv.* (99 e) from Peru is above very similar to *depuiseti* (99 d), but it lacks the shaggy hair in the discocellular of the hindwings, the whole hindwing except the greyish-green margin, therefore, showing blue gloss. On the under surface of the forewings are 5 submarginal black spots decreasing in size from behind to the front; the red colouring at the base of the wings is lighter than in *depuiseti*, also somewhat broadened, especially on the forewings, and the inner black line is divided into large black spots.
- lugens*. **C. lugens** *Drc.* from Peru (Cuzco) is described thus: ♂ head, antennae, neck, shoulder-covers, thorax and abdomen black. Forewing very similar to that of *C. optima* (99 d), but much more lustrous blue, the black apical margin much broader; hindwing much more lustrous blue, than in *optima*, the blue colouring proceeding exactly from the base as in *whitelyi* (99 e); the greenish distal margin is much broader, too. Under surface resembles that of *C. optima* (99 d), but without the black lines and with very much less red at the base of the hindwings, but with much more red than in *leprieuri* (99 d); a large round red spot at the cell-end; the forewings have a submarginal row of 5 rather large black spots. — Although the author compares this species with 2 species belonging to 2 different groups of species, yet the remark that the blue of the hindwings begins at the base of the wings as in *whitelyi*, shows evidently that *lugens* belongs into the group A and the nearer affinity of *whitelyi*.

B. ♂ on the upper surface of the hindwings in the discocellular with shaggy hair.

- leprieuri*. With **C. leprieuri** *Feisth.* (99 d) from Surinam and the Lower Amazon, commences that series of species in which the ♂ shows long black shaggy hair of the discocellular on the upper surface of the hindwings; for these species *C. FELDER* has established the genus *Cyane* which is distinguished especially by shorter antennae and longer, stronger palps. *C. leprieuri* shows a dull blue gloss on the upper surface, being intensified on the basal part of the forewings, in the ♀, however, only indicated.
- depuiseti*. **C. depuiseti** *Fldr.* (99 d) from Peru resembles *leprieuri*, but has a more intense blue gloss of the upper surface, which extends also to the hindwings. The greyish-green marginal band of the upper surface is much broader and lighter than in *leprieuri*, the under surface is quite similar as in the latter, the forewings, however, showing less black markings. — Rather different is the Bolivian form which we call **eudia** *form. nov.* It has much broader, also lighter greyish-green margins and a more intense blue gloss of the upper surface. On the under surface of the hindwings the golden gloss is confined to the median band in which the black spots are placed, these spots are somewhat larger, the distal (submarginal) black line being broader and also the red basal spots somewhat more extensive.
- philotima*. **C. philotima** *Rbl.* „♂. Nearly allied to *C. depuiseti* *Fldr.*, *optima* *Btlr.* and *whitelyi* *Salb.* Differing from the former two by a much broader, pale metallic-blue margin of all the wings. The black marginal line is much finer than in *depuiseti*, also the apical part of the forewings is less extensively black. The fringes are snow-white along the margin of all the wings. The jet-black long scent-hair in the disc of the ♂-hindwings as in *depuiseti*. — The under surface forms by the disposition of the red basal spots an intermedium between *depuiseti* and *optima*. The forewings exhibit a short blood-red basal streak of the costal margin and only 1 black subapical dot in cellule 5. At the base of the hindwings there are 3 blood-red long spots, one towards the costal margin and one towards the inner margin, and one long tooth-like spot in the upper half of the discocellular, the sharp point of which is situated about in half the length of the discocellular. Also at the black transverse vein of the discocellular there are a few red scales. The black macular markings quite similar to that of *depuiseti*, which entirely lacks the long red spot in the discocellular, whereas *optima* shows the whole basal area of the hindwings (except a bluish-black spot in cellule 8) of a miniate colour. *C. whitelyi* has only at the base of the discocellular of the hindwings red spots; the first transverse line of it is broken up into short longitudinal spots. 1 ♂ from the Chanchamayo.“
- optima*. **C. optima** *Btlr.* (99 d) from Peru and Ecuador is somewhat smaller and has more pointed forewings than *depuiseti*, but much more intensive blue gloss and narrower greyish-green margins of the upper surface. Nearly the basal half of the under surface of the hindwings is miniate, the rest of the markings, however, very similar to those of *leprieuri*. — **eminens** *form. nov.* (99 e) from Southern Peru (Upper Madre de Dios, 500—1200 m) is remarkably different from *optima*, but nevertheless probably a local form of this species. It has been discovered by Mr. A. H. FASSL. The greyish-green margin is on all the wings considerably broader, about three times as broad as in *optima*, therefore the area of the blue gloss is considerably diminished, the black spot in the centre of the forewings, which in *optima* is very conspicuous in most any direction



of the light, is in *eminens* very feebly developed and, when looking at the animal laterally, not visible at all. The red colouring on the basal area of the under surface of the hindwings is very much reduced, but it occupies the whole discocellular and outside the cellule there are a little spot at the median and 1 stripe at the subcostal greyish-green; the black spots of the hindwings are increased in size and especially the spots forming a submarginal band are considerably broader than in *optima*.

**C. freyja** *spec. nov.* (99 e misprinted as *freyia*) from Peru (Chanchamayo) resembles *optima* as regards *freyja*. the shape of its wings, but the distal margin of forewings appears still more distally bent. The verdigris margins are much broader, more sharply confined and do not change into the blue-shining colouring of the wing-centre. The red basal colouring of the under surface is similar as in the following *fassli*, but still less, so that only a little more than  $\frac{1}{4}$  of the discocellular is occupied by it; it is bordered in black; the basal red dusting is much less than in the affined species; the black band margining the red area in *optima* is, in *freyja*, broken up into small, partly minute dots, and the two distal rows likewise consist but of small black spots and the spots of the middle row are also smaller; on the forewings there are 4 very little and uniform large subapical spots (dots).

**C. fassli** *spec. nov.* (99 d) from the Colonia Florencia on the Rio Putumayo (frontier between Co- *fassli*. lombia and Ecuador) resembles above *optima* a great deal, but has more pointy forewings and by far not so magnificent blue gloss as *optima*. On the under surface there are in the apex of the forewings not 4, but only 3 and smaller black spots, the hindwings have more golden splendour, the black spots are smaller and the red colouring on the basal part which, according to O. STAUDINGER, occupies in *optima* at least the discocellular, extends in *fassli* only to the anterior half of the discocellular and is all around, partly broad, bordered in black; furthermore the red colouring which is, withal, very much darkened by interspersed black scales, occurs in a little spot at the costal margin, 2 little stripes at the inner margin of the hindwings and in a basal spot on the forewings; all these spots are, like the spot in the discocellular of the hindwings, (partly broad) bordered in black. — Mr. A. H. FASSL reports that he has seen yet 6 entirely equal specimens of this species in a South American museum.

#### 43. Genus: **Catagramma** Bsd.

Most of the species of this genus spread all over tropical America are medium-sized, although some larger species are met, too; a great part is homed in the Amazon valley and the side-valleys of it. They are easily recognizable by their exterior to be seen from the figures and can hardly be mixed up with specimens of the very nearly allied genera *Callicore* and *Perisama*. As to the structure of the body, *Catagramma* differs from *Callicore* by the branching-off of a subcostal vein before the cell-end, and from *Perisama* by the naked eyes; the ♂♂ have uncommonly thickened forelegs.

W. MÜLLER states the following about the early stages of *C. pygas*: the larva lives on *Allophylus petiolatus* Radlk. The eggs are deposited on the under surface or on the tips of the upper surface of the leaves. Instead of the spines, the larva has only enlarged little warts on each of which there are 2 bristles; the horns on the head are comparatively still larger than in *Callicore*, for they attain a length of 1 cm; the thickening in the middle of the body takes place only shortly before changing into a pupa, before that the larva is cylindrical. The pupa is similar to that of *Callicore meridionalis*. It seems very difficult to rear up the larva in closed rooms.

**C. brome** Bsd. (101 B b) from Colombia is one of the smaller species with yellow bands. It is charac- *brome*. teristic for its broad almost oviform yellow bands of the forewings.

**C. atacama** Hew. (101 B c) from Chiriqui, Colombia and Peru is easily distinguished from the similar *atacamã*. species by the under surface.

**C. faustina** Bates (101 B c) from Panama has, like *atacamã*, longitudinal stripes on the under sur- *faustina*. face of the hindwings, but is nevertheless considerably different, also above.

**C. denina** Hew. (101 B b) from Colombia is similar to *atacamã*, but smaller and beneath with diffe- *denina*. rent markings.

**C. mionina** Hew. (101 B b) from Colombia, chiefly differs from the preceding species by the under *mionina*. surface.

**C. tolima** Hew. (101 B b) from Peru and Northern Brazil has a broader yellow band of the fore- *tolima*. wings than *mionina* and a large spot of blue reflection on the hindwings.

**C. guatemalena** Bates (101 B c) from Guatemala resembles the preceding, but has a considerably *guatema-* lighter under surface. *lena*.

**C. lyca** Dbl. and Hew. (101 B c), from Mexico to Colombia, has very narrow orange band of the fore- *lyca*.



wings. Beneath it resembles *mionina* (101 B c), from which it differs, however, not only by the shape and position of the yellow band of the forewings, but also by the distal light band not being yellow but glossy blue.

*mena*. **C. mena** *Stgr.* from the Chanchamayo (Peru) is but little larger than *mionina*, but has a larger broad ochre-yellow band of the forewings which is placed more in the length of the wings and which starts close at the costal margin and terminates shortly before the distal margin near the angle; the blue spot on the hindwings is much larger. On the under surface of the hindwings the 5 blue spots are larger and prolonged.

*discoidalis*. **C. discoidalis** *Guen.* The translated description runs thus: Small. Oval, broad orange-coloured spot. Oblong blue spot of the hindwings beginning from the base. Under surface with only 4 not pupilled dots before the central band and 3 at the anal angle. Broad yellow lines, the first posteriorly united with the 2nd and 3rd; the latter rises again close on the venter side of the first dot. Colombia.

*pacifica*. **C. pacifica** *Bates* (= *bugaba* *Stgr.*) (101 B d) from Central America is the smallest species of this genus. The steel-blue reflection of the hindwings is of varying extension, and beneath the black markings vary a great deal.

*aegina*. **C. aegina** *Fldr.* (101 B e) from Ecuador, Colombia and Bolivia has broader yellow bands, but placed in the same way as in *lyca*. The ♀ has a more compact shape and the blue spot on the hindwings is smaller and divided by the black veins. — **C. salamis** *Fldr.* is the form from Rio Negro and from Peru with a broader yellow band and diminished blue spot of the hindwings.

*dulima*. **C. dulima** *Guen.* This species has been described in the following way: very nearly allied to *zelphanta* from which it differs only by the following: Subapical spot with white and violet margins on glossy ground. Hindwings beneath decidedly light lilac with very light siskin-yellow base and central part, the latter strongly mixed with lilac. Central spots smaller, more distant from each other and with finer black margins. The black subterminal line is undulate, or rather consisting of crescents and encircles metallic sky-blue scales. Peru. — The author lays stress upon the possibility of the coincidence of *dulima* with *zelphanta* or *hystaspes*.

*zelphanta*. With **C. zelphanta** *Hew.* (101 B d) from the Upper Amazon we commence the series of redbanded species. In this species is, beside the greatest part of the hindwings, also the basal part of the forewings of a faint blue gloss.

*hydaspes*. **C. hydaspes** *Drury* (= *lyrophila* *Hbn.*, *hesperia* *Perty*) (101 B d) from Southern Brazil and Paraguay is a neat and frequent species. Red band of the forewings narrow, glossy spot of the hindwings large. The ♀ does not differ from the ♂.

*heraclitus*. **C. heraclitus** *F.* from Brazil is denoted by A. G. BUTLER as nearly allied to *hydaspes* (= *hyrophile*), without mentioning any difference.

*hystaptes*. **C. hystaptes** *F.*, coming as stated from Brazil and Bolivia, has been described as follows. „Wings blackish-brown, with blue gloss, hindwings beneath yellow, with black ring-lines and 3 blue dots.“ Presumably the animal is an aberration of *hydaspes*, or the author may have had a normal *hydaspes* before him and may have forgotten to mention the red band of the forewings in the description.

*kolyma*. **C. kolyma** *Hew.* (101 B d, e) and **C. pasithea** *Hew.* (101 B e) from the Upper Amazon look very differently above, but are still forms of only one species, since all the transitions are noticed.

*felderi*. **C. felderi** *Hew.* from the Upper Amazon differs from **C. cajetani** *Guen.* (= *audofleda* *Thieme*) (101 B e) from Peru by the yellow band of the forewings and a greater extension of the blue gloss in the hindwing.

*codomannus*. **C. codomannus** is divided into a greater number of local — or temporal forms. **C. codomannus** *F.* (= *sinamara* *Hew.*) (101 B e, f) from Brazil lies before us from Eastern Colombia (Medina, 500 m), from the *astatre*. Collection FASSL. This form hardly differs above from **C. astarte** *Cr.* (101 B f) from Bolivia, but the red bands of the under surface of the forewings are broader in *astarte*. The ♀ has a brick-red basal half of the forewings. — The form **C. antillena** *Kaye* (101 B e) from Trinidad is somewhat smaller, has narrower red bands of the forewings and a broader red band of the hindwings. — **C. militaris** *Stgr.* from Venezuela has a violet reflection of the upper surface, the apical spot is absent and the red band of the hindwings is reduced to a little stripe at the costal margin. — **C. miles** *Bates* from the Upper Amazon has very much enlarged red bands of the upper surface which are sometimes confluent on the forewings. — **C. selima** *Guen.* (= *cynosura* *Hew.* pt.) from Minas-Geraes is a smaller form showing only narrow red bands of the upper surface and preponderantly yellow colouring of the under-surface of the hindwings. — **C. stratiotes** *Fldr.* is the form from Ecuador.

*excelsior*. **C. excelsior** *Hew.* (101 B f) from the Upper Amazon has a magnificent deep-blue reflection and a yellow transverse band of the forewings. The ♀ has only the shining blue spot at the inner angle of the hindwings, but no reflection. — **C. excelsissima** *Stgr.* (101 B f) from the Upper Amazon (São Paulo de Olivença) has a glossy blue upper surface with a red band of the forewings which is reduced in **C. michaeli** *Stgr.* from Manicoré on the Rio Madeira to a short basal stripe. — **C. pastazza** *Stgr.* (101 B f) from Ecuador and Peru (Chanchamayo)



is very similar to *excelsior*, but has not the blue reflection, but only the lustrous blue spot at the inner angle of the hindwings. — On the Chanchamayo there occur, however, also specimens similar to *pastazza*, but with blue reflection: *speciosa* form. nov. — *excelsa* Stgr. from Ecuador differs from *excelsior* by its reduced yellow band of the forewings, leaving the basal part of the wings free, and by diminished blue gloss. — The under surface of the hindwings shows that all the preceding forms belong to one species. *speciosa.*  
*excelsa.*

*C. cynosura* Dbl. and Hew. (101 B g) from the Upper Amazon, Peru and Bolivia strongly differs from the *codomannus*- and *excelsior*-forms by the under surface of the hindwings which have, at the costal margin, a large band-like, ochre-yellow spot strikingly contrasting with the other light-yellow ground-colouring, and therefore the subbasal black band does not go as far as the costal margin, but ends already at the costal. The submarginal blue spots on the hindwings are always sharply separated from each other, also in the ♀♀.

*C. peristera* Hew. (101 B h) from Colombia, Peru and Bolivia has almost no sexual difference; the ♀ differs only by small blue spots at the inner angle of the hindwings.

*C. eunomia* from Colombia, Ecuador and Bolivia in both sexes occurs in 2 forms: *eunomia* Hew. with an ochre-yellow basal half of the forewings, and *incarnata* Stgr. (101 B h) with vermilion colouring of this part of the wings. The ♀ shows less extension of the blue-shining spot at the inner angle of the hindwings.

From *C. texa* Hew. (101 B g) from Colombia, *fassli* subsp. nov. from Bolivia (Rio Songo, 750 m) differs by the red discal spot of the hindwings being considerably smaller or altogether absent, and the apical stripe of the forewings being lighter; the ground-colour of the under surface is lighter (whitish), too, and the subapical stripes of the forewings are almost white. *texa.*  
*fassli.*

*C. lepta* Hew. (101 B g) from the Upper Amazon is above similar to *texa*, though it has a blue spot on the hindwings instead of a red one; also beneath it very much resembles *texa*.

*C. pyracmon* Godt. (101 B h) from Brazil and Surinam is one of the smaller species with deep-red, somewhat blue-iridescent basal area of the forewings. The upper surface of the hindwings is of a lustrous blue. *pyracmon.*

*C. pygas* Godt. (102 A a) from Southern Brazil, Colombia and Bolivia, has only in the ♂ a very insignificant blue reflection. The ♀ has greyish-brown upper surface of the hindwings. — From the collection of Mr. A. H. FASSL we have lying before us one ♂ from Bolivia (Rio Magiri, 700 m) and 1 ♀ from Peru (Upper Madre des Dios) showing an entirely different under surface, the ground-colouring of the hindwings being much lighter yellow and the markings appearing effaced and blurred. The ♂ has a yellow, the ♀ a red basal half of the forewings; the blue spots in the anal angle of the upper surface of the hindwings are especially developed. We call this form *typhla* subsp. nov. (102 A a). *pygas.*  
*typhla.*

*C. cyllene* Dbl. and Hew. from the Amazon and Bolivia has dull blue reflection of the upper surface, especially of the hindwings. The markings of the under surface are duller than in *pygas*, but the red band of the forewings is just like on the upper surface strangulated at the end of the discocellular by the dentiform penetration of the black costal margin and of a spot at the proximal margin. *cyllene.*

*C. aphidna* Hew. from Venezuela (Valencia) is known to us only from the description which runs thus: Upper surface black, the fringes of all the wings white-spotted. Basal half of the forewings carmine, subapical parted white band at each end sprinkled with white. Hindwings with 2 or 3 pale-blue spots near the anal angle. Under surface: forewings as above, but basal part of the costal margin yellow, a blue line running parallel to the costal margin. Subapical band longer and yellow and 1 submarginal blue band, and between this and the apex a grey band. Hindwings lilac, the base yellow, 2 dark brown lines each of them beginning at the base of the costal margin with one red spot, running rather straight and parallel with all the others and the proximal margin to the anal angle, being connected near the distal margin and little undulate and reaching the costal margin near the centre; these lines include some blue spots near the anal angle; the distal margin dark brown, in the centre of the wings there are 2 large black spots, one (near the costal margin) characterized by 3 cyaneous spots, the other by 2, all with ochre-yellow margins. *aphidna.*

*C. thamyra* Men. (102 A b) from Minas-Geraes has retrenched blue reflection and narrowed red band of the forewings. The under surface resembles that of *cyllene*, but the submarginal yellow band of the forewings runs into the inner angle.

*C. maimuna* Hew. (103 A a) from the Upper Amazon resembles *cyllene* (102 A a) a great deal. It differs above by the blue reflection of the hindwings presenting itself only in a sphenoidal spot at the outer border of which, very distant from the distal margin, there are 3 blue dots. The red colouring of the forewings occupies also the entire inner margin up to near the inner angle. The under surface entirely resembles that of *titania* (102 A a), the yellow bands are, however, broader.

*C. titania* Salv. (102 A a) from Guatemala and Honduras has an expanded and bright blue reflection of the hindwings and the red basal area of the forewings is rather reduced. *titania.*



- asta*. **C. asta** *Salv.* (102 A a b) from Mexico which we have become acquainted with only from the figure, greatly differs from the affined species on the upper surface by the absence of a red band.
- hydarnis*. **C. hydarnis** *Godt.* from Southern Brazil, being very rare, resembles *hesperis*, but it has a straighter distal margin of the forewings, the deeper band of the forewings is narrower, does not reach to the costal margin and ends far from the inner angle; the basal part of the forewings has the same beautiful blue reflection as the hindwings; before the apex of the wings stands a small white spot. Under surface not unlike that of *pygas*, but blue spots missing, the anterior „eight“ is formed very regularly, the posterior „eight“ somewhat less, and the submarginal chain-band of the hindwings is centrally indistinct.
- hesperis*. **C. hesperis** *Guer.* (102 A b) from Colombia, Peru and Bolivia presents itself as a charming little animal in its broad, dark red band of the forewings and the intensive light blue reflection on the greatest part of the hindwings and the basal area of the forewings, which is also noticeable in one or several small dots in the apex of the forewings. — **parima** *Hew.* from Ecuador has narrower and lighter red band of the forewings and a more expanded blue reflection of the hindwings.
- mellyi*. **C. mellyi** *Guen.* from Peru (lying before us from the Chanchamayo). The author takes it to be a species of its own and compares it with *hydaspes* and *hesperis*. We think that it differs from *hesperis* only by the submarginal bands being more yellow on the under surface.
- patelina*. **C. patelina** *Hew.* (102 A c) from Guatemala has the same magnificent upper surface, but different under surface being of black ground-colouring; it is represented by the last figure of the row 102 A c which by a mistake is signed „*aretas* U“.
- pitheas*. **C. pitheas** *Latr.* (102 A b) from Panama and Venezuela has light red bands of the upper surface and peculiar pale-red, sometimes yellowish ground-colouring of the under surface of the hindwings. The ♀ scarcely differs from the ♂.
- cyclops*. **C. cyclops** *Stgr.* from the Tapajoz (Amazon) has a very long red band of the hindwings reaching almost to the distal margin. — **columbiana** *Stgr.* from Colombia differs by a short oval red band of the hindwings and broader black markings of the under surface. — **centralis** *Stgr.* from Chiriqui has a longer and broader red stripe of the hindwings; the anal eye-spot mostly has 2 white spots.
- aretas*. **C. aretas** *Hew.* (102 A c, 4. and 5. figure) from Venezuela has light-red basal half of the forewings and on the hindwings a larger red central area than *pitheas*; in the apex of the forewings is a short reddish-yellow band. The under surface has the same markings as *pitheas*, the ground-colouring, however, is more yellow. On table 102 A the upper surface has by mistake been denoted by *maimuna*, the under surface by *patelina* U; the last figure of the row denoted by *aretas* U represents *patelina*.
- sorana*. **C. sorana** *Godt.* (102 A c) from Brazil, Paraguay and Bolivia differs considerably from all the species by the markings of the under surface of the hindwings. The ♀ has the red band of the hindwings only indicated and a strong blue reflection of the hindwings and a shorter almost white apical band of the forewings; the red bands of the forewings also have a bluish shine. — **latona** *Btlr.* from ? (presumably Venezuela) has a larger red basal area of the forewings and much smaller red area of the hindwings, but in the middle of the hindwings a blue gloss.
- oculata*. **C. oculata** *Guen.* has a large crimson basal spot of the forewings, which is divided by the black veins; forewing without reflection, but hindwing with light greenish reflection. Under surface the most similar to *sorana*, but considerably different; the red median band of the forewings is absent, the subapical band rather broad and blue; ground-colouring of the hindwings black, far away from the distal margin a sharply dentated blue band (thick line), the two eyespot-markings distally not closed, each with only one blue spot. Habitat unknown.

#### 44. Genus: **Perisama** *Dbl.*

The species belonging to this genus are of almost the same size (medium size). They are confined to the mountains of tropical America and easily to be recognized by their exterior: velvety-black upper surface with glossy blue or green bands on the upper surface of the forewings and mostly the same or greyish-green band at the distal margin of the hindwings; the under surface is very characteristic: on a whitish, grey or yellow ground 2 black, either almost straight or curved or dentate lines between which there are often black dots. The first stages are not yet known. We unite the species formerly included in *Myscelia* and separated by E. SCHATZ as *Orophila*, with *Perisama*, because they do not show any symptoms that would justify their separation.

- bonplandii*. **P. bonplandii** *Guér.* (102 A d) from Colombia is the largest species of this genus. The ♀ is hardly different from the ♂. — Specimens with very light and nearly unmarked under surface of the hindwings have been described as **albipennis** *Btlr.* (102 A d). — **d'orbignyi** *Guér.* are specimens in which on the under surface of



the forewings the base is blue instead of red. — *equatorialis* Guen. (= *bonplandii* Hew., var. *bourcieri* *equatorialis*. Btlr.) from Colombia and Ecuador are small specimens with narrowed blue band of the hindwings and darkened under surface of the hindwings. — *lineata* Btlr. from Peru differs from *equatorialis* by the two black *lineata*. lines of the under surface of the hindwings being more remote from each other. — *rubrobasalis* Rbl. essentially *rubrobasalis*. differs from the typical form by the red basal colouring of the discocellular on the under surface of the forewings, while on the under surface the hindwings and the apical part of the forewings are also of a more dark-brownish colour. Ecuador, 650 m. — *parabomplandii* \*) Dogn. differs merely by the shape of the black lines on *parabomplandii*. the under surface of the hindwings. The outer line is very much curved, thus partly approaching the inner line, which is also more curved than in normal specimens. Colombia (Popayan). — *mola* Dogn. from Ecuador (El *mola*. Monje, Loja, Zamora) has a narrower band of the forewings, which is parted in the discocellular and does not reach the costal margin; the band of the hindwings is narrower, too. Under surface of the forewings as in *d'orbigny*, that of the hindwings greyish-white, the outer line rounded and regular, the inner line slightly curved; 5 black dots; the red margin of the costal margin inclines to leaping over the first line and reappearing behind the second line.

*P. picteti* Guen. This species of which we have no specimen at hand, has been described as follows: *picteti*. Shape and exterior like *bonplandii*. Above the same marking, but the forewings have two deep-blue rays starting from the wing-base and following the two main veins. A round white subapical spot. Under surface of the forewings black with white basal area followed by a broad pink-red transversal space which is effaced, in the cell stronger coloured and at the margins sky-blue. Then comes a white costal spot and below it a row of irregular spots, the first being green, the others deep cobalt-blue. Behind the apex a streak, likewise blue. Under surface of the hindwings silky greyish-white with 2 fine black lines, one of which is central and very much curved, the other, parallel to the margin, being serrate-dentate and bordered by small red dust-grains in the first half of the line. Apex margined by a fine carmine line from the base to the second line. Peru.

*P. morona* Hew. (102 A d) from Peru and Bolivia resembles above a small *bonplandii*, but is quite *morona*. different beneath; conspicuous is the red middle-line of the hindwings.

*P. priene* Hpffr. (102 A d) from Peru seems to be a common species. — *boliviana* subsp. nov. from *priene*. Bolivia has above a broader, more coherent band of the forewings with a bright golden gloss; the red space *boliviana*. of the under surface of the forewings is larger, and the ground-colour of the hindwings browner, while it is all grey in *aenea* subsp. nov. from Colombia whereby the black dots stand out in bold relief. In this form the *aenea*. golden-green median band of the upper surface of the forewings is more sharply demarcated and the greyish-blue band of the hindwings narrower.

*P. cabirnia* Hew. (102 A d e as *cabirina*) from Peru and Bolivia, differs above from *bonplandii* by a *cabirnia*. metallic band and basal ray, but still more beneath by lines proceeding in red, on silver-grey ground.

*P. cotyora* Hew. (102 A e) from Bolivia has quite a different under surface, both the wings without red. *cotyora*.

With *humboldtii* Guér. (102 A e) from Venezuela, Colombia and Peru commences the series of species *humboldtii*. having a yellow under surface of the hindwings. — *rhodoptera* Btlr. above and on the under surface of the hind- *rhodoptera*. wings resembles *humboldtii*, on the under surface of the forewings, however, *comnena* (102 A f). — *divergens* *divergens*. Btlr. from Ecuador, has a larger red basal area on the under surface of the forewings. — *ouma* Dogn. Hind- *ouma*. wings with a narrower blue band being nearer also to the wing-margin, on the under surface of the hindwings instead of the red spot a small blue spot. Ecuador (Loja).

*P. tringa* Guen. The author has described this species as follows: very closely connected with *humboldtii* *tringa*. of which it might be merely a local form. The shape of the hindwings, however, very different, being rounded instead of prolonged at the anal angle. The upper surface differs little, but the under surface of the forewings has an entirely carmine disk except the basal area, the yellow colour remains. By this arrangement the black colour is confined to a plain band, while, in *humboldtii*, it covers almost the whole wing. Peru.

*P. lucrezia* Hew. (102 A e) from Colombia resembles above *euriclea* (102 A h), but has yellow under *lucrezia*. surface of the hindwings with a dentate black submarginal line, a black curved median line, 5 black dots and several small red stripes before the distal margin. The basal part of the forewings is red, the apex of the wings yellow with a black and a red line, from the middle of the costal margin a black band runs to the inner angle.

*P. goeringi* Dru. (102 A e) from Venezuela has no green band of the forewings, but at the end of the *goeringi*. discocellular a green spot, a small green apical spot and in the posterior part of the discocellular a green streak to which another smaller spot is distally attached. On the distal margin of the hindwings we notice some green moon-spots. The under surface of the forewings is black, only the basal part of the discocellular and the apex of the wings are yellow. The under surface of the hindwings is ochre-yellow with 2 dentate black

\*) The author spells it *parabomplandii*, as also often *bomplandii*.



lines between which there are 3 to 5 very small (sometimes missing) black dots. — Specimens with a brown under surface were described as *hahneli* Stgr.

*oppelii*. **P. oppelii** Latr. (102 A e, f) from Colombia has a sulphur-yellow under surface with 2 black lines on the hindwings. In *viridinota* Btlr. from Peru the blue band of the upper surface of the hindwings has disappeared except some few little scales. The ♀ has somewhat rounder shape of the wings.

*eminens*. **P. eminens** Oberth. has above a broad yellow band of the hindwings instead of the blue one, but does not differ from *oppelii* beneath. It is presumably not a species of its own, but only a remarkable aberration.

*comnena*. **P. comnena** Hew. (102 A f) from Peru has an ochre-yellow-under surface of the hindwings and a large red basal spot of the forewings, thus resembling *humboldtii*, but between the black lines of the under surface of the hindwings there are no dots.

*xanthica*. **P. xanthica** Hew. (102 A f) from Peru has black upper surface of the hindwings and deep-yellow under surface with 2 nearly parallel black stripes.

*nyetimene*. **P. nyetimene** Hew. (102 A f) from Ecuador has the forewings marked similarly as in *humboldtii*, but on the distal margin of the hindwings only 4 sphenoidal blue spots, the under surface of the forewings being black with brown basal stripe and brown apex of the wings and 2 white spots at the costal margin; the under surface of the hindwings is yellowish-brown with a dentate submarginal line and a black, little curved median line between which there are 5 black dots and several submarginal white streaks. — In *tristrigosa* Btlr. from Peru the black dots on the under surface of the hindwings are absent.

*cloelia*. **P. cloelia** Hew. (= *ochreipennis* Btlr.) (102 A f) from Peru is most conspicuous by a large blue spot at the proximal margin of the forewings, which are besides provided with a blue basal stripe and a subapical spot; the hindwings have a faint blue band of the distal margin. The under surface has almost the same markings as in *oppelii* (102 A e), but deeper yellow.

*tryphena*. **P. tryphena** Hew. (102 A f) from Colombia has a large yellowish-green spot on the forewings, which is adjoining to a basal stripe of the same colour, a yellowish-green spot at the costal margin and a small bluish apical spot. The hindwings have a bluish-grey marginal band and a yellowish-green median spot. The under surface resembles that of *oppelii*, but is paler yellow, and between the 2 black lines there are also several small black dots.

*vitringa*. **P. vitringa** Hew. (102 A g) from the Upper Amazon has a similar but still paler under surface than *tryphena*, the black upper surface has a yellowish-green band nearly of the same width and leads from the costal margin to the inner angle, as well as 2 blue rays at the base of the forewings and a distal-marginal band consisting of 4 greenish-blue small spots.

*camelita*. **P. camelita** Hew. from Bolivia shows a greenish-blue median band reaching from the costal margin to the inner angle, broad blue basal stripe and rather large blue apical spot of the forewings; the hindwings exhibit a very broad bluish-green marginal band decreasing in width from the costal margin to the inner angle, and some few blue scales in the centre. The under surface is quite similar to that of *humboldtii*.

*lebasii*. **P. lebasii** Guér. (102 A g) from Colombia is striking for the blue rays on the hindwings, which are in *negrina* form. *negrina* form. nov. from the Upper Rio Negro only alluded to. In this form the greyish-green band of the hindwings is also broader, the lustrous blue band of the forewings, however, narrower.

*lanice*. **P. lanice** Hew. (102 A g) from Ecuador and Peru is above very similar to a little *bonplandii*, but the green band of the forewings is narrower and dentate on both sides. The under surface is quite different, as is shown in the figure.

*moronina*. **P. moronina** Stgr. i. l. from Peru (Chanchamayo) is somewhat larger than *lanice*, above hardly differing from it, the under surface of the hindwings, however, is darkened to such an extent that, except the light colouring placed distally to the outer dentate line, only an elongated triangular spot distal to the inner black line at the costal margin and some very little spots in the centre remain light; the inner, proximally red-edged line is much less curved than in *lanice* and black discal dots are absent. The under surface of the forewings has more red colouring on the basal part and a complete middle row of blue spots.

*guerini*. **P. guerini** Fldr. (102 A g) from Colombia has almost white under surface of the hindwings; the red stripe at the costal margin of the hindwings may also be absent or only indicated; at the basal part of the under surface of the forewings there may be a red spot instead of a blue one.

*vaninka*. **P. vaninka** Hew. (102 A g, h) from Colombia and Peru differs from the similar species by a red stripe at the costal margin of the upper surface of the hindwings and by pure blue bands. The ♀ is hardly different.



**P. alicia** Hew. from Ecuador is beneath hardly different from *vaninka*, but the greenish band of the *alicia*. forewing on the upper surface is narrower and straight, thus beginning more near the apex of the forewing, the greenish-blue band of the hindwing is narrower, too; in the apex of the forewing there are 2 or 3 small blue spots. — *ilia* *subsp. nov.* (102 A h) from Colombia (Aguaca-valley 2000 m; Tolima, 1700 m, discovered by A. H. *ilia*. FASSL) has beside the subapical spots of the forewings sometimes yet small submarginal blue spots. The under surface of the hindwings is snow-white (not reddish as in *alicia*), the black stripes and spots are finer, instead of the large red spot in the discocellular of the forewings there are only a blue spot (anteriorly) and a red one (posteriorly) at the end of the discocellular; behind the discocellular there are a white spot and a blue one standing together and oblique from the end of the discocellular another blue spot; the other part of the forewings is deep black except the white apex of the wing in which we notice a fine black line.

**P. xenoclea** Fldr. from Venezuela exhibits much narrower green bands than *alicia* being interrupted *xenoclea*. on the forewings. The under surface of the forewings hardly differs from *alicia*, but the hindwings have light grey ground-colouring, the median lines originate at the costal margin more towards the base, the red margin of the costal margin reaches only as far as to the origin of the median line and the discal spots are much stronger.

**P. euriclea** Dbl. and Hew. (102 A h) from Colombia and Venezuela differs above from *vaninka* by more *euriclea*. greenish bands and by greenish-blue apical spots and submarginal little dots of the same colour. The under surface is likewise very similar to that of *vaninka*, although the two lines of the hindwing do not run into each other at the costal margin.

**P. jurinei** Guen. from Peru resembles a great deal *euriclea* above, but on the under surface of the hind- *jurinei*. wings it has a pure white ground colouring.

**P. yebe** Hew. (= *malvina* Kretzschm.) (102 A h) from Colombia has very light bluish-green bands; in *yebe*. some specimens the marginal band of the hindwings distally turns into whitish colour. The under surface is very similar to that of *euriclea*, but the two black lines at the costal margin of the hindwings are more remote from each other at their origin. The red costal-marginal stripe only reaches as far as to the inner black line, and the discocellular of the forewings does not show any red colour, being on the basal half white, on the distal half lustrous blue.

**P. volara** Hew. from Venezuela has a shorter and narrower band of the forewing divided by the black *volara*. veins, and a considerably narrower band of the hindwings than *vaninka*; small apical spots absent. Beneath, the inner black line is merely suggested anteriorly, the outer line being finer and the black spots smaller; on the forewings there are no blue markings.

**P. calamis** Hew. from Bolivia (Apolobamba) is a magnificent little animal from which *fassli* *subsp. calamis*. *nov.* (102 B a) from Peru (Upper Madre de Dios) differs by larger bluish-green spots of the upper surface. The *fassli*. basal part of the under surface of the forewings is not red, but orange-yellow, the fringes are red all round and a fine red line stands in the apex of the wings. The hindwings are of a tender grey, in the middle lighter, the wing is encircled by a red marginal-line, besides there is a red dentate submarginal line and a very much curved, fine black median line; behind the median we notice an indistinct, small red stripe.

**P. chaseba** Hew. from Bolivia differs from *saussurei* Guén. (102 B a) from „Brazil“, Bolivia (Coroico) *chaseba*. and Peru (Upper Madre de Dios) on the upper surface by the absence of the white apical spot; the blue rays *saussurei*. of the hindwings being in *chaseba* nearly in the centre of the wings, are brought nearer to the wing-margin in *saussurei* which is also sometimes provided with a bluish-green band at the inner angle of the hindwings. The under surface of the hindwings is much more yellow than in *chaseba* and in the centre spotted in brown.

**P. cecidas** Hew. (= *cecida* Ky., *Stgr.*) (102 B a) from Ecuador and Peru has, like many *Perisama*- *cecidas*. species, a row of blue-shining spots at the distal margin of the hindwings.

**P. compaspe** Hew. (103 A a) from Colombia resembles very much *cecidas* on the forewings, but it has *compaspe*. a large greenish-blue spot in the centre of the hindwings; the under surface is also quite similar to *cecidas*, although the red median spot on the forewings is strangulated by a dentiform black spot starting from the inner margin.

**P. diotima** Hew. (102 B a) from Bolivia, Ecuador and Colombia has above unicolorous hindwings. — *diotima*. *cardases* Hew. (102 B b) only differs by the red spots in the middle of the under surface of the forewings, being *cardases*. probably only an aberration of *diotima*.

**P. clisithera** Hew. (102 B b) from Bolivia (Rio Songo 1200 m) is, with respect to the arrangement of *clisithera*. the markings on the upper surface, most similar to *goeringi* (102 A e), though it has, as is shown by the figures, quite a different under surface. It is one of the most beautiful species of this genus.

**P. patara** Hew. (102 B b) from Colombia (taken by A. FASSL in Eastern Colombia, Upper Rio Negro, at *patara*. an altitude of 800 m), is a charming little animal being similar to *clisithera* beneath, but above differing from it altogether by the absence of the metallic rays. The ♀ discovered by Mr. A. H. FASSL is somewhat smaller than the ♂, having more rounded wings and much duller colours on both the surfaces.



*barnesi*. **P. barnesi** *Schaus* (102 B a, b) is an entirely differing species. We are unable to ascertain whether it belongs to this genus, since the animal is only known to us from the figure. Striking are the position of the blue band on the upper surface of the forewings, being placed very much towards the margin, as well as the markings of the under surface especially on the hindwings.

*laxis*. **P. laxis** *Guen.* The author describes this species as follows:

I am very much in doubt whether this small species is a real *Callicore* (*Perisama*), but the sole specimen of the Museum of Geneva being in a very bad condition I do not dare to make it the basis of a new genus which would then be insufficiently characterized. Shape of *Callicore clymena*. Forewing with very much projecting angle like in *Vanessa*, black, somewhat dentilated, with small whitish crescents, three rays of green grains of dust at the base of the wing, a small curved band beyond the centre, beginning behind the apex with a white spot and fading away in a group of green grains of dust; finally a golden-green subapical streak. Hindwing somewhat dentate, but not angular, black with a subterminal band composed of 4 small crescents and followed by a number of dust-grains at the anal angle, the whole sparkling in a greyish green, but not golden. Under surface of all the wings coloured like coffee with milk, here and there suffused with pale violet; the fringe-edging is preceded by an extremely fine carmine line only noticeable under a magnifying glass. Forewing with entirely carmine disk, furthermore a broad black band posteriorly effaced, above marked with a white subcostal spot. At first sight the hindwings seem to be unicolorous, except the apex the origin of which is white, but when examining them carefully, we notice a very much dentated subterminal line of a bright carmine, cleared up by white dust-grains. Peru.

Of the following species, which we are not able to reproduce owing to the absence of the originals, we simply give the descriptions.

*vichada*. **P. vichada** *Druce*. Upper surface black. Forewings with green bands as in *humboldtii* (102 A e), hindwings similar to *hilara*. Under surface similar to *vitringa* (102 A g), the black bands further remote and the band next to the base starting only from the centre of the cellule. Somewhat smaller than *priene*. Colombia.

*canoma*. **P. canoma** *Druce*. Upper surface black, the green median band, beginning at the costal margin, in the middle broadest and reaching the posterior angle, connected by a band of the same colour, beginning at the base. A grey stripe near the apex of the wing. Hindwing with narrow bluish-grey band. Under surface of the forewing black, the apex of the wing, a small spot before the middle of the costal margin, and the base silvery white, the distal half of the cellule lustrous carmine. Hindwing silvery white with two black bands one of which, being nearest to the base, is proximally edged in carmine. The distal band zigzag-shaped; between the bands there are 4 distinct black spots; the costal margin is bordered with carmine. Somewhat smaller than *priene* (102 A d). Peru (Huasampilla).

*hazarma*. **P. hazarma** *Hew.* (= *dauidi Dogn.*) from Ecuador (Loja) differs from the species, being similar beneath (*tryphena* (102 A f), *lineata*) by having instead of the greenish-blue median band of the forewings a rather broad band of the same colour along the inner margin, as well as an unusually large subapical spot of the same colour. The bluish-green distal-marginal band of the hindwings is little developed.

*eliadora*. **P. eliadora** *Dogn.* from Ecuador (Loja) has like *albipennis* (102 A d) the under surface of the hindwings without markings. The bluish-green median band of the forewings consists of little, isolated spots, whereas the whitish-green distal-marginal band of the hindwings is very broad.

*gisco*. **P. gisco** *Godm. and Salv.* Upper surface quite similar to *xenoclea*, but the green band of the hindwing broader, basal stripes of the forewings narrower, also the median band of the forewing somewhat more reduced. Under surface similar to *humboldtii*, but the black band of the forewing narrower, apical spot more brownish, distal margin and anterior part of the hindwings brownish, costal margin, however, yellow. Colombia.

*astuta*. **P. astuta** *Dogn.* Wings black, markings metallic green with blue reflection. Forewings like in *priene* (102 A d), the transverse band divided at the end of the discocellular, above it a costal spot. Two fine basal rays one of which being in the discocellular reaches the band and a small subapical stripe. Hindwing with narrow distal-marginal band consisting of crescent-shaped spots. Fringes white, at the veins a little black. Under surface reminding of that of *priene*; proximal half of the forewing of a bright red followed by a small blue and white costal spot and some small blue streaks, apex of the wing with extensive colouring of a greyish tint; hindwing brownish-grey, costal margin with fine red edging, submarginal line regular, black, distally bordered in red, proximal line slightly tortuous: 5 rather small dots. On all the wings a very fine red edging at the greatest part of the distal margin, fringes as above. In some specimens the interior of the hindwings has beneath a reddish tint. Colombia (Popayan).



45. Genus: **Callicore** Hbn.

The species of this genus are distributed from Mexico to Argentina, one species has also been occasionally observed in the south of North America; their chief habitat is in the mountains. They have most characteristic features: velvety black upper surface with golden-green bands and very light, mostly white under surface of the hindwings with peculiar circular markings, owing to which the little animals have been denominated „88“. All the subcostal veins arise only after the end of the discocellular, the eyes are densely haired and the forelegs are very slender, not broadened in the ♂♂.

According to W. MÜLLER the shape and depositing of the egg is in *C. meridionalis* the same as in *Myscelia orsis*. The larva lives on *Trema micrantha* Dell. The two lateral, little diverging horns on the head of the fully grown-up larva are very long and slender and have short strong accessory spines each of them forming 4 rosettes; the other spines are like in *Myscelia orsis*; the body is anteriorly slightly, posteriorly more reduced in width; the head is green, the horns are brownish-grey with lighter bands, the back of the horns and the spines turned backwards are preponderantly greenish, the little warts are white, the yellow subdorsal stripe disappears shortly before turning into a pupa. Pupa similar to that of *Myscelia orsis*, above velvety-green, beneath pale green, a white and brown stripe running along the wing-margin being continued behind, beneath the stigmata; in the place of the lateral spines there are distinct white dots, smaller ones being less distinct in the place of the little verrucae. Influenced by the light, it performs movements like *Myscelia orsis* (cf. p. 482).

The name *Callicore* is to be used for the genus *Catagramma* if we interpret strictly the rules of priority; we, therefore, propose the synonymous name *Corecalla* for the present genus.

*C. clymena* Cr. (102 B c) occurs in South America (to the south as far as Paraguay), but also in the *clymena*. southern parts of North America. — *peruviana* Guen. from Peru and Bolivia has somewhat narrower blue bands *peruviana*. on the forewings, whereas the blue band on the hindwings is a little broader. — *bisosto* Guen. occurring in *bisosto*. Guatemala is much smaller; wings less rounded. — We figure (102 B c) a remarkable aberration with respect to the under surface, having been taken by Mr. A. H. FASSL. — Belongs to the more common species.

*C. janeira* Fldr. (102 B c) from South Brazil has the distal-marginal band of the hindwings only indi- *janeira*. cated. The ground-colouring of the under surface is darker and the black marking finer than in *clymene*.

*C. meridionalis* Bates (102 B c) from South Brazil has only in the ♀ marks of the blue band of the *meridiona-* hindwings. The black markings of the under surface are stronger and the distal bordering of the black sub- *lis*. apical band of the forewings is distally projecting in the shape of a tooth.

*C. anna* Guér. (= *phytas* Bsd.) (102 B c) from Mexico is characterized by an almost snow-white under *anna*. surface with fine black markings. The ♀ has only a somewhat broader blue band of the hindwings.

*C. marchalii* Guér. (102 B d) from Colombia and Venezuela differs from all the species by the dark *marchalii*. brownish ground-colouring of the under surface.

*C. merida* Honr. (102 B d) from the mountains of Venezuela (Merida) is very similar to the following *merida*. species, though it has a broader and longitudinally parted blue band of the hindwings.

*C. panthalis* Honr. (102 B d) from Venezuela resembles above *lidwina* (102 B e), beneath *euclides* (102 B e). *panthalis*.

*C. consobrina* Guér. Unknown to us. According to GUENÉE the green band is rather broad, the under *consobrina*. surface dirty-yellow, the „eights“ are in touch with each other and border on the third line. The forewings very much narrowed and with but one single black dot.

*C. phlogaea* Salv. (102 B d) from Colombia has a narrow and sharply confined band of the hindwings, *phlogaea*. being in *boliviana* *subsp. nov.* from Bolivia broader and dentate on both surfaces. — In *phlogeides* *Stgr.* from *boliviana*. *phlogeides*. Colombia, the blue band of the forewings is broader and the blue band of the hindwings is missing altogether.

*C. dodone* Guen. (102 B d, e) from Colombia has broad band of the forewings, but no band of the hind- *dodone*. wings whatever or only quite a narrow one being placed more towards the centre of the wing.

From *C. neglecta* Salv. (102 B e) from Guatemala, Colombia and Peru, *granatensis* Guen. differs by *neglecta*. a narrower blue band of the hindwings. *granatensis*.

*C. lidwina* Fldr. (102 B e) from Peru and Rio Negro has, in a certain exposure to light, a magnificent *lidwina*. blue reflection.

*C. eluina* Hew. (102 B e) from South Brazil (as is stated, also from Venezuela) has a much narrower *eluina*. band of the hindwings than *lidwina* and beneath somewhat darker ground-colouring, but the same blue reflection as *lidwina*.



- euclides*. **C. euclides** Latr. (102 B c) from Colombia and Peru has broad blue bands on all the wings and beneath strong black markings. In a certain exposure to light there is a deep-blue reflection noticeable, especially on the hindwings.
- guenéei*. **C. guenéei** spec. nov. from Ecuador resembles *euclides* above, but the green bands showing a bright golden or azure reflection, according to the incidence of light, are still broader, especially the band on the hindwings appearing in a certain exposure almost just as narrow as in *artemis*, in another exposure, however, extending (with irregular proximal delimitation) far across the wing-centre. Under surface similar as in *eupepla*, the black band of the forewings being, however, a little narrower and the white colouring at the base of the wings more reduced; on the hindwings we miss the posterior black spot of the anterior „eight“, and the red costal-marginal stripe only goes, as for instance in *phlogea*, as far as to the second black line and, at its end, is neither extended to a spot. The ground-colouring of the under surface of the hindwings is somewhat lighter than in *eupepla*.
- artemis*. **C. artemis** spec. nov. (102 B f) from Colombia has only very faint blue reflection, narrow blue band of the hindwings, and beneath very fine black markings.
- metiscus*. **C. metiscus** Dbl. and Hew. (102 B f) from Venezuela has very broad, golden bluish-green bands on all the wings, but only little blue reflection on the proximal part of the band of the hindwings. The under surface of the hindwings has fine black markings, and the forewings have only a red spot at the end of the discocellular.
- eupepla*. **C. eupepla** Salv. and Godm. (102 B f) from Central America may be looked upon as the most beautiful species of the genus. In certain exposure spots of golden gloss appear in the greenish-blue bands on fore- and hindwings.
- belesis*. **C. belesis** Godm. and Salv. (102 B f) from Central America not lying before us seems to have no blue reflection. The under surface of the forewings has much more red colouring and the hindwings are much stronger marked in black than in *eupepla*.
- gabaza*. **C. gabaza** Hew. (102 B f) from Colombia has a beautiful violet reflection on the whole upper surface and only a minute light apical spot of the forewings. The ♀ has no blue reflection.
- astala*. **C. astala** Guér. (= *cornelia* H.-Schäff.) (102 B g) from Mexico to Colombia differs from *gabaza* above only by a white apical spot of the forewing and beneath by the outer black submarginal line being accompanied by a red line.
- candrena*. **C. candrena** Godt. (102 B g) from South Brazil and Argentina is isolated in this genus, since it has no blue band on the upper surface of the forewings and an extraordinarily strong marking of the under surface of the hindwings.
- branicki*. **C. branicki** Oberth. (102 B g), described by the author as *Catagramma*, is undoubtedly an aberration of a *Callicore*, presumably of *clymena*, for we also have lying before us a specimen of *clymena* being quite similarly marked. Mr. A. H. FASSL has also taken aberrations of *Callicore* with quite similar markings.
- ceryx*. **C. ceryx** Hew. from Cuenca (Ecuador) is undoubtedly no species of its own, but an aberration, possibly of *euclides*.

The following forms are not lying before us, but have been compared with *C. clymena* (102 B c) by their author. Some *Callicore*-species are very much inclined to variation. It seems as if the author has taken several such aberrative forms to be species of their own.

#### A. Wings above black, without blue reflection.

- clinda*. **C. elinda** Guen. Shape and general exterior like *clymena* (102 B c). Green band of the forewings broader and more lustrous, that of the under surface with much less spacious markings; the „eight“ very isolated, parallel, with fine dots. Margin very narrow red; by its rhombic part the third line approaches the costal, the fourth starting in red to the fifth. The red disk of the forewings cut straight through in its first half, later on suddenly geniculate instead of rounded as in *clymena*. First white apical band at first broad, later on from the second suddenly narrowed. Habitat unknown.
- aurelia*. **C. aurelia** Guen. Shape of *candrena* (102 B g). All the wings triangular and prolonged at the apex and the anal angle, with interrupted edging of fringes. The green band of the forewings short, its 2 upper spots fragmentary and small, the first not reaching the subcostal vein, the second almost punctiform. The green subapical streak divided into two unequal ones. Under surface of wings with jet-black, very broad and distinctly visible markings, the hindwings yellowish-grey. The two „eights“ touch the third line; the anterior one with a single dot, while its inner part is narrowed to some kind of a stalk. Costal margin broad red forming now the beginning of the fourth line. Red disk of the forewings dark and very broad, the black band remaining very narrow. The small white apical stripes still narrower and more distinct than in *clymena*. With respect to the distinctness of the markings reminding of *Catagramma hydaspes* (101 B d). Habitat unknown.



**C. bourcierii** *Guen.* All the wings are prolonged at the angles. The green band is anteriorly just as *bourcierii*. broad as posteriorly and geniculate in the cellule. The under surface of the hindwings of a rather deep grey, with faded lilac. The markings are all strictly isolated. In the anterior „eight“ the second dot is effaced. The red costal margin is broad and is met by the third line below the fourth, while the fourth line proceeds on it as far as the costal. The black band bordering the red of the forewings is very narrow and both the small grey stripes following it are broad. The club of the antenna rather prolonged and at the base of the inner side reddish-brown. Quito.

**C. seropa** *Guen.* Closely allied to *clymena* (102 B c) the shape of which it has, the wing-contour being, *seropa*. however, generally more rectangular. All the fringes sharply interrupted. Band of the forewings broader, more intensely golden-coloured, distally sinuate, the band of the hindwings narrower and shorter. The markings of the under surface are finer, both the „eights“ strictly isolated and parallel. The red costal margin is very narrow and remote from the „eight“, but it expands in the right angle across the 3. and 4. line; the 3. line sends forth a fine black streak margining it as far as the costal vein. The red disk of the forewings forms a bend at its junction with the black band, and the two small white apical stripes are very broad and more sinuate. — Is possibly only a local form of *clymena* though it has a peculiar appearance. Para.

**C. nystographa** *Guen.* Band of the 4 wings similar and of the same width, bright green, that of the *nystographa*. hindwings parallel to the margin, the space between being double as broad as the band itself. Under surface with very fine markings, the two „eights“ very isolated, the anterior „eight“ pyriform with 2 dots. Costal margin thin, terminating at the 3. line, the fourth reaches the apex of the wing. Black band of the forewings very broad, confining the red disk which extends towards the base of the wing. Quito. — According to a figure by H. REBEL in Vol. 46 of the Berl. Ent. Zeitschr., the under surface of the hindwings is almost just as dark as in *marchalii* (102 B d), but the black markings are much darker there, the under surface of the forewings exhibiting also an about thrice as broad black band. GUENÉE has not mentioned anything about the dark under surface of the hindwings.

**C. pavira** *Guen.* Shape and wing-contour like *metiscus* (102 B f). Bands bright golden-green, blue at *pavira*. the edges, those of the forewings broad, connected with the base by a faded streak over the median vein, those of the hindwings nearly just as broad, entirely discoid, posteriorly pointed, below it a streak at the anal angle. All the fringes white. Under surface of the hindwings white with very fine markings; the first „eight“ pyriform with a single dot. Red costal margin confined upon a broad, very short faded streak. Disk of the forewings entirely black with white apex, parted by a fine black streak not reaching the base. Base white with a plain carmine cellular spot. Peru.

#### B. ♂ with azure reflection.

**C. coelinula** *Guen.* Seems to be allied with *eluina* (102 B e), but the entirely white fringes, the spot *coelinula*. on the hindwings of which I shall speak later on, the two-dotted „eights“ etc. together with the different habitat prevent me from uniting it with „*eluina*“. It has the shape and wing-contour of *clymena* with which HÜBNER has mixed it up, from which, however, it is easily distinguished by its blue reflection. The fringes are entirely white on the hindwings; the latter, moreover, have below the blue reflection, between the 1. and 2. median vein, a glossy spot, more metallic than velvety blue, which is, however, only noticeable in certain exposure and changes even into green. The under surface may be compared with HEWITSON's figure 31, but the satiny-white is homogeneous, the markings are more narrowed, the „eights“ larger and closer to each other; the upper „eight“ has beside the dot a very distinct comma-like streak. The 5. line is regular and slightly sinuous, and follows the dents of the wings; the red margin, finally, is very thin, far remote from the „eight“ and confined by a distinct rhombic spot from which the 3. and 4. line start and which is distally somewhat concave. The black band of the forewings is geniculate. Brazil.

**C. brevipalpis** *Guen.* (= ? *eluina* var. *Hew.* [fig. 65] ? *lidwina* *Fldr.* \*). I cannot tell for certain whether *brevipalpis*. the said synonyms may not be partly applied to this new species, for the insufficient exactness of figures and descriptions prevents me from doing so; but since neither of the authors has spoken of the principal character, and the palps of this *Callicore* are so strikingly short, I concluded therefrom that they can certainly not have seen this species. At all events it has the following characteristic distinctions. The hindwings are prolonged at the anal angle and have entirely white fringes; their terminal band is very broad, pale and dull green, that of the forewings being oblique, bright green, distally very distinct, turning posteriorly on the opposite side into reflection. The subapical streak is very pronounced, the sky-blue reflection less bright than in *coelinula* not covering any spot. Under surface snow-white with rather thick, very distinct and isolated black markings. The anterior „eight“ forms a circle with a handle, something like a tennis bat, and has only one single large dot. The red margin is very thin and its distal end, by no means widened, receives the 3. and 4. line which join each other before reaching it. The palps do not extend beyond the forehead. Venezuela.

\*) Wien. Ent. Mon. 6, p. 114.



## C. Neither with reflection, nor with green band of the forewing.

*carmen.*

**C. carmen** *Guen.* Shape and contour of *candrena* (102 B g). Wings with blue basal spot, of the same shape, but small on the forewings, with a green web above it changing with deep green on the wings; forewings with interrupted fringes, with a fine subterminal line of pale green, anteriorly brightened by white; hindwings with broad, very distinct subterminal band of greenish-blue changing off with golden-green. The markings of the under surface are very distinct on all the 4 wings. Hindwings of somewhat dingy-white, the „eights“ pretty much like in *candrena*, the anterior „eight“ without dots and connected with the third line by 2 black veiny streaks; red margin fine, but indistinctly broadened between the „eight“ and the third line. Under surface of the forewings bright carmine, delimited by a rounded black band being proximally dentate. Apex with a green streak between the two white lines. Brazil.

46. Genus: **Dynamine** *Hbn.*

This genus belongs to the series of forms of *Limenitis* what is proved not only by the structure of the butterfly, but also by the shape of the larva and pupa. We have placed it here, because the great works on exotics (such as STAUDINGER-SCHATZ, GODMAN-SALVIN), according to which the museums and collections are mostly arranged, have placed it immediately after the *Callicore*; KIRBY's Catalogue has the same arrangement. Two groups are distinguished by the veins, being also characterized by their exterior, but connected with each other by intermediary forms. From the other genera of the *Limenitis*-group, *Dynamine* differs by the small size and, in the veins, by the 3. subcostal vein not running into the apex of the wing, but into the costal margin; the 4. subcostal vein runs into the apex of the wing and the fifth into the distal margin. In one part of the species the sexes are very similar to each other, in the other part, however, they differ greatly above. The larvae also show the general type of the larvae of the *Limenitis*-group, though they are more broad than cylindrical, and the spines on the head are absent, what is easily explained by the habits of the larvae preponderantly feeding on the pollen of the blossoms and inflorescences of *Dalechampia*; when penetrating into the blossoms or buds with the head and the prothorax, spines or any similar formations at the head and prothorax would only be an impediment. The spines of the body are transformed into short cones bearing knobbed or plain bristles. The pupa resembles very much that of *Limenitis*. About 50 species of this genus are spread all over the tropical parts of America, although their proper habitat is in the valley of the Amazon-River where nearly 30 species are to be found. The habits of the butterflies totally agree with those of the *Adelpha*-species being the typical representatives of the *Limenitis*-group in South America. According to P. HAHNEL the butterflies fly on the banks of rivers as well as in the neighbourhood of human habitations and in plantations, and are easily attracted by baits. When taken in the net by the collector, they display a very excited, timid behaviour. According to A. SEITZ the *Dynamine*-species have an elegant flight except the white species having a peculiar jerking zigzag-flight whereby they differ from the exteriorly similar *Nymphidium*-species (*Erycinidae*). They mostly fly in double a man's height, preferring shady roads in the woods and like to rest on wet places of the soil. According to a letter from Mr. A. H. FASSL nearly all the species fly at an altitude below 1000 m; the butterflies rest on wet places of the soil, but also on hedges and blossoming bushes where also the ♀♀ fly. The flight is similar to that of *Adelpha* and *Pyrrhogyra*, i. e. rather quiet, similar to that of *Melitae*. — By the colouring of the upper surface two groups may be distinguished: species with a white upper surface in both the sexes, and such with variegated upper surface of the ♂♂, the latter group, according to the markings of the under surface, being subdivided into species with eye-spots and into such without.

## A. Upper surface white.

*agacles.*

**D. agacles** *Dalm.* (101 A a) from Southern Brazil has above and beneath nearly the same markings save that on the under surface the white markings in the dark margins are larger, and in the anterior part of the forewings there are verdigris markings. — **core** *subsp. nov.* from Colombia (Cauca Valley), presumably occurring also in Venezuela and Central America, has above and beneath narrower black bands with less white markings, and less verdigris colouring on the under surface.

*maeon.*

**D. maeon** *Dbl. and Hew.* (101 A a) from Brazil is rather large, has broad margin of the hindwings, divided by a white line, and a black median band of the hindwings. The ♂ has greenish-blue gloss on the basal area of the forewings, the ♀ being without it.

*athemon.*

**D. athemon** *L.* (101 A a) from Brazil is a little larger still than *maeon* from which it also differs by a broad white line of partition of the black distal margin of the hindwings as well as by the black median



band of the hindwings occurring also in a spot at the inner margin of the forewings. The black bands of the under surface have brown filling.

**D. coeades** *Burm.* Somewhat larger than *athemon*, of the same shape, and very similar also with respect to the colouring and markings, body above black, beneath white. Antennae with fine white ringlets. Hindwings entirely white, forewings anteriorly with black costal margin and distal margin, expanded at the terminal angle, with 3 concave sinus, the first being longer, at the end of the cell, the second shorter but broader, in the 5. cell of the distal margin, and the third smaller, in the last marginal cell. Base of costal marginal band somewhat expanded with a bluish-green metal-spot. Beneath like above, but in the basal part of the black costal band there is a yellow ray penetrating yet into the first sinus and being proximally accompanied by a blue metallic border: the apex of the wing, finally, is white and the black band before it bordered in yellow. Taken in the north of Buenos-Ayres, near the village Las Conches. *coeades.*

**D. amazonica** *spec. nov.* (101 A a) from the Amazon, is presumably a temporal or local form of *athemon*. It differs by its greater size and by greater extent of the blue brilliant colouring on the forewings as well as in the black margin of the hindwings. The brown band in the middle of the under surface of the hindwings is stronger. *amazonica.*

**D. coenus** *F.* (101 A b) from Brazil, Paraguay and Bolivia, has a very narrow black margin of the hindwings and a bright bluish-green gloss of the basal part of the forewings. The under surface has much browner filling in the black markings. — **leucothea** *Bates* from the Amazon has broader dark markings, **albidula** *Weeks* (= *coenus* *Stgr.* i. l.) from Bolivia, however, narrower dark markings, so that the posterior submarginal spot and the white discocellular spot of the forewings are in coherence with the white ground-colour. *coenus.* *leucothea.* *albidula.*

**D. theseus** *Fldr.* (101 A b) is distributed from Mexico to Colombia and Venezuela. The species is remarkable for the stretched shape of the wings and the broad black margins. *theseus.*

**D. limbata** *Btlr.* (101 A b) from Bolivia is somewhat larger than *agacles*, has broader black margins, a crescent-shaped white spot in the middle of the black hindwing-margin and verdigris colouring on the basal part of the forewings. The under surface has much more verdigris markings. *limbata.*

**D. niveata** *Btlr.* from Bolivia differs from **pittheus** *Stgr.* (101 A b) from Venezuela, Colombia and Panama above by full black margins and beneath by having an interrupted, posteriorly also only suggested brown median band of the hindwings. *niveata.* *pittheus.*

**D. pieridoides** *Fldr.* (101 A b) from Colombia, Venezuela and Panama, differs from *anubis* by somewhat smaller size, somewhat narrower black margin of the hindwings, and on the under surface of the hindwings, by the absence of the brown half-band in the centre of the costal margin. *pieridoides.*

**D. anubis** *Hew.* (101 A b, c) from the Amazon is larger than the preceding species. The ground-colour is above and beneath white, the black margins are very broad. The black margin of the hindwings is parted in the middle by a white line, at the distal margin of the forewings there are two white spots and in the centre of the costal margin there is a large white spot. The under surface has much browner markings of the distal margin and wing-base and an elongate spot filled with brown in the centre of the costal margin of the hindwings. *anubis.*

In **D. myrrhina** *Dbl.* (101 A c) from South Brazil and Paraguay the hindwings are above and beneath fully white, only the centre of the under surface of the hindwings exhibits a brown dot sometimes hardly visible. On the basal part of the upper surface of the forewings there is likewise bluish-green gloss, and the under surface of the forewings is rather broad white at the distal margin. *myrrhina.*

**D. ate** *Godm. and Salv.* (101 A c) from Guapiles is unique among the white species for having on the under surface of the hindwings 2 submarginal blue eye-spots which are placed at the outer boundary of the submarginal brown band running parallel to the wing-margin and, therefore, being curved. Beside a sub-basal hindwing-band there is a premedian brown one with little bluish-glossy marking. The marking of the under surface of the forewings corresponds to the upper surface, although the common lustrous blue markings are present. *ate.*

## B. Upper surface variegated.

### a) Under surface of the hindwings without eye-spots.

**D. tithia** *Hbn.* (101 A c) from South Brazil is one of the smallest species. The upper surface is greenish-blue in the ♂, but much more greenish in the ♀ having also purer white spots on the upper surface and one such spot on the anterior part of the hindwing-centre. This species is characterized by a broad brown median band of the under surface of the hindwings, with a light filling. — Larva according to WILH. MÜLLER, when being grown up, with considerably shorter accessory spines than the larva of *mylitta*, head pale yellowish, body on the first 5 segments quite green, on the following 6 segments green above the stigmata, only the 4th segment brownish-red, beneath the stigmata whitish-green with 2 white dorsal lines beginning from the 6th *tithia.*



segment, from the 7th segment rather broad white oblique stripes enclosing the lateral spines of the preceding segment and reaching as far as to the anterior end of that segment. White, glassy diaphanous are: the lateral spines 6—12, the spines beneath the stigmata 6—12 and those above the feet 6—12; the other spines are black, but with hyaline knobs. The white oblique streaks are in the end so much widened that the ground-colour almost disappears. The pupa resembles that of *mylitta*, but the horns, wing-edge, and protuberances on the segments 2—5 are pretty much effaced, and besides, the pupa is, like that of *Eueides isabella* very much curved towards the venter, so that the ventral part is nearly parallel to the place it is lying on. It is greyish-green with a brown dorsal and lateral line and numerous dark lines on the second segment and the wings. Beside this darker form there is another light one. The eggs are, as it seems, always deposited to or into a rather young bud (inflorescence-bud) of *Dalechampia triphylla* Lam., but especially often on *Dal. stipulacea* Müll. Arg. The little larva, hardly erept out, eats into a male bud, always selecting the spot where the upper rims of the two resinglands meet. In this way it always gets into the oldest male flower-bud in which it then remains hidden, eating the pollen, but ejecting its faeces out of the bud. Thus hidden in flower-buds, it goes through the first two skinings. During the 3 last stages it spins together the involueral leaves of an inflorescence in which hiding-place it finds its food at the same time. In this or a similarly created hiding-place the insect also pupates.

*salpensa*. **D. salpensa** Fldr. (101 A d) from Colombia, Venezuela, Central America, Brazil, Peru and Bolivia differs from *tithia* only on the under surface of the hindwings by the brown median band being only plain, narrow and regularly shaped, and, therefore, not sinuate.

*radicula*. <sup>*radicula*</sup>**D. radiculata** Hew. (101 A d) from the Amazon has a light bluish-green upper surface with black marginal markings and white spots. The under surface of the hindwings has 3 yellowish-brown bands bordered in black. The ♀ has a black upper surface with white spots on the forewings, a white median band and a blue submarginal band of the hindwings.

*sara*. **D. sara** Bates (101 A d) from the Upper Amazon is as large as *radicula*, has more distinct white spots on the upper surface of the forewings, the white spot at the inner margin being absent. The under surface, especially of the hindwings is, as the figure shows, rather different.

*decima*. **D. decima** Hew. (101 B a) from the Upper Amazon differs from the preceding four species above by lighter and more green colouring, the white spots being also larger and more intensively white. Owing to the marking of the under surface of the hindwings, this species has an isolated position.

*geta*. **D. geta** Godm. and Salv. (101 A d) from Peru and Bolivia has lustrous greenish-blue upper surface with black distal marginal markings. The under surface differs greatly from *tithia* and *salpensa*, especially on the forewings, as seen from the figure.

*agnes*. **D. agnes** spec. nov. (101 B a) from Bolivia and Peru, resembles very much *geta* above, though it has a very fine black submarginal line of the hindwings and small green spots in the apex of the forewing. Whereas the under surface of the forewings is quite similar to that of *geta*, the under surface of the hindwings is, as the figure shows, rather different.

*ines*. **D. ines** Godt. (100 A a) from Colombia has a green-shining upper surface. The under surface is more yellowish than in *agnes* and the bands are finer.

*vicaria*. **D. vicaria** Bates (101 A e) from the Upper Amazon is the largest species of the genus. The very rare ♀ has, on the hindwings, a white basal and median band, broader than in *mylitta*, but before the distal margin only some small white spots. On the forewings it has, like *mylitta*, an oblique but broader white half-band at the base of the inner margin. Shortly before this band, more distally, we notice a larger, irregular white spot and, at the costal margin, a long broad one, similar as in the *egaea*-♀. Besides there are 2 rounded spots before the distal margin and one before the end of the inner margin.

*hecuba*. **D. hecuba** Schaus (101 A e f) is similar to *vicaria* above, but is characterized as a good species by the rather different marking of the under surface.

*amplias*. **D. amplias** Hew. (101 A f) from the Amazon is most remarkable for its green upper surface with very black markings. The ♀ is above similar to the ♀ of *mylitta*.

*erchia*. **D. erchia** Hew. (101 A f) from the Upper Amazon has ochre-yellow colouring of the upper surface with a green tinge on the inner part and with dark marginal marking. On the submarginal band of the under surface of the hindwings we sometimes notice the beginnings of an eye-spot marking.



**D. chryseis** *Bates* (101 A f) from the Upper Amazon and Nienaragua has a broad black apical part of *chryseis*. the forewing.

**D. sosthenes** *Hew.* (101 A f) from Nicaragua has stronger bands on the under surface of the hind- *sosthenes*. wings. It differs above from *ines* by a narrower margin of the forewings and a broad black anal angle of the hindwings.

b) *Under surface of the hindwings with eye-spots.*

With **D. setabis** *Dbl.* and *Hew.* (101 A g) from Bolivia and the Upper Amazon begins the series of species *setabis*. bearing eye-spot markings on the under surface of the hindwings; *setabis* has only one eye-spot being placed at the anterior part of the submarginal band.

**D. artemisia** *F.* (= *artimesia* *Ky.*) (101 A g) from South Brazil and Bolivia is a small species, in *artemesia*. the male sex above verdigris or glossy bluish. The ♀ resembles the ♀ of *egaea*, it has, however, smaller white spots and narrower white bands.

**D. neoris** *Hew.* from the Amazon has a verdigris upper surface with diaphanous marking of the *neoris*. under surface, uniform entire black margin of the hindwings and very much curved black distal margin as well as a black triangular spot in the centre of the costal margin of the forewings. The under surface has white ground-colouring, on the hindwings there are 4 yellowish-brown stripes the outer one of which has, on the outside, 3 blue eye-spots surrounded by black, the distal margin being also yellowish-brown, parted by a blue line. The forewings have yellowish-brown marking on the distal margin, at the basal part of the costal margin and at the costal margin near the apex of the wing, as well as in the centre black marking forming a circle near the distal angle.

**D. thalassina** *Bsd.* (= *immarginata* *G.* and *S.*) (101 A g) from Central America and Colombia, has *thalassina*. a green-shining upper surface with black margins being, however, visible on the forewings only in a certain exposure.

**D. pebana** *Stgr.* (101 A g h) from Pebas is smaller than *egaea*, resembling it, however, above. The *pebana*. marking of the under surface is rather different, as seen from the figure. The ♀ is still unknown.

**D. onias** *Hew.* (101 A g) from the Amazon exhibits a verdigris upper surface with dark brown distal *onias*. margin, occupying on the forewings the whole apical third and forming a four-cornered spot in the distal angle. On the forewings, the white median spots of the under surface are diaphanous. The under surface of the hindwings exhibits white ground-colouring with 4 brown bands of which the middle one is parted by a blue stripe, the distal one having 2 blue eye-spots. The under surface of the forewings is black to a great extent, the basal part brown; in the black part there are 4 white spots, and small blue spots are at the inner margin, in the middle of the distal margin, and a blue submarginal line borders the brown distal margin. The ♀ is brownish-black, with a moderately broad white median band and a white subbasal band of the hindwings, which are also provided with a submarginal bluish line. The forewings have 7 white spots varying in size.

**D. mylitta** *Cr.* (= *postverta* *Cr.*) (101 A h) \*) is nowhere rare in the whole neotropical region. — *mylitta*. In ab. **bipupillata** *Stgr.* i. l. the under surface of the hindwings lacks the blue-shining spot behind the second *bipupillata*. eye-spot in the anal angle. According to the observations of W. MÜLLER the small larvae crept out on the 5th of November, the butterflies on the 1st of December. The larva is, in the last stage, rather short and broad, not like most of the Nymphalidae entirely cylindrical, thus resembling on the whole more the habitus of an Erycinidae-larva than that of a Nymphalidae-larva. The spines are in general as in *tithia*. In the 3 last stages the larva is of a pale green with white dorsal stripes, the spines are also green, the ball-ended bristles glassy diaphanous. In the 5th stage there is also a darker brownish-black form found beside the light form, which has, however, been observed only in captivity. The larva has the same habits and the same food-plants as *tithia* (cf. p. 505). The pupa is either light-green or light-brown, tolerably slender, the wing-partings are closely appressed; it has 2 short coniform horns, 2 strong projectures at the second and fifth segments, both are two-pointed at the ends, small not paired tips are at the anterior margin of the segments 6 to 10, there is also a strong edge of the wings present. It has 3 movable connections of the segments and is only movable to the sides, showing the following brownish markings: a stigma-stripe effaced towards above, a distinctly circumscribed spot on the 7th segment in the middle line and 2 lines at the bottom of the wings, wings and head being of dark colour.

**D. paulina** *Bates* from the Upper Amazon is nearly just as large and above nearly of the same *paulina*. colouring and markings, as *vicaria*, the under surface, however, resembles that of *mylitta*, though darker.

**D. egaea** *F.* (= *serina* *F.*) (101 A h) from Paraguay (and from the Upper Amazon?) resembles a *egaea*. great deal *mylitta*, though it has a narrower black margin of the hindwings and broader black marginal markings on the upper surface of the forewings. The ♀ has broader white bands and spots than the ♀ of *mylitta*.

\*) The valve of *D. mylitta* *Cr.* is of a peculiar shape, being at the base expanded like a board with a slight depression in the centre and antler-like end, the three tips of which remind us in some way of the Lycaenidae-genus *Lampides* (especially of *L. celeno*). (H. FRUHSTORFER.)



- perpetua*. **D. perpetua** Bates from the Upper Amazon is about as large as *vicaria* (101 A e). The upper surface is green like in *mylitta*, the black distal margin of the forewings is much broader and has two deep roundish spots starting from the dark margin, at the inner angle. At the cell-end there is a bent black stripe, but in the wing-centre there is no black spot. The hindwings have a broad dark margin with distinct proximal delimitation. Some specimens have a black spot near the anal angle. The under surface resembles that of *egaea* (101 A h), but on the forewings the white apical spot coheres with the white spot in the inner angle, the median band of the hindwings being much broader and with much blue marking. Is one of the rarest species of the genus.
- glauce*. **D. glauce** Bates (101 B a) from Central America, the Amazon and Bolivia, has a golden-green upper surface. The under surface greatly resembles that of *egaea*, but the posterior eye-spot of the hindwings is much less developed.
- dyonis*. **D. dyonis** Hbn. (101 A i, 101 B a) from Mexico and Honduras, but also found in the south of the United States, is above more golden than *glauce* and has somewhat less black markings. The under surface of the hindwings has two fully developed eye-spots.
- zetes*. **D. zetes** Mén. (101 A i) is the only species of this genus having its habitat on the Antilles. The present specimen comes from Cuba. This species is distinguished by its stretched shape of the wings. The under surface of the hindwings exhibits, beside the rather broad submarginal band enclosing the two proportionately large eye-spots, three pretty straight and parallel brown bands situate near the wing-base.
- gisella*. **D. gisella** Hew. (101 A i) occurs in Panama, Colombia, Bolivia and on the Upper Amazon. HEWITSON has described this magnificent species according to one ♂, and figured a violet-blue specimen. But there occur just as often specimens without the violet shine, the white spots of the forewings also vary greatly and may even be represented only by minute traces of some spots. The ♀ (the figured specimen belongs to the collection of Mr. A. H. FASSL) resembles above very much the ♀ of *mylitta*. — ab. **peruviana** Stgr. i. l. There are specimens extant in which the white spots on the upper surface of the forewings are but suggested or partly absent.
- zenobia*. **D. zenobia** Bates (101 A i) from the Upper Amazon is unique in the colouring of the upper surface and the marking of the under surface. The ♀ is still unknown.
- meridionalis*. **D. meridionalis** spec. nov. (101 B a) from Paraguay has three small eye-spots in the submarginal band filled with light yellow, otherwise the under surface resembles that of *arene*, but *meridionalis* lacks the small black eye-spots in the apex of the forewings, instead of which there is one larger white spot.
- arene*. **D. arene** Hbn. (101 A i) from the Lower Amazon has, on the under surface of the hindwings, a complete row of 5 eye-spots whereby the under surface of the hindwings reminds us of the Satyridae-genus *Euptychia*.
- persis*. **D. persis** Hew. (101 A i) from the Upper Amazon is a remarkable species of this genus owing to its dark sky-blue upper surface. The under surface is similar to that of *arene*, but the eye-spots — except the most anterior one — are only indicated by black dots.
- myrson*. We are not able to say anything about **D. myrson** Dbl.-Hew. and **aerata**, since we have not succeeded in procuring the literature dealing with these species.

#### 47. Genus: **Cyclogramma** Dbl.

As to the habitus this genus, consisting of few tropical species, is placed between the *Cybdelis* and the *Catagramma*; rather approximate to the latter, but with longer legs, like those butterflies that are fond of resting on the trunks of trees, such as the *Ageronia*, *Gynaecia* etc. In *Callicore* with which the *Cyclogramma* are also closely allied with respect to the under surface of the hindwings — they also exhibit the number 88, though somewhat displaced — we miss altogether the upper discocellular of the forewings; in *Cyclogramma* it is present, though short. The eyes are hairy, the antennae of medium length with a club shrinking somewhat into the shape of a spoon, the middle tibiae elongate, the forewings of a normal shape with quite slightly concave margin, the hindwings with their costal margin cut off straight and slightly undulate distal margin. REUTER seems to lay great stress upon the fact that the points of the palpi are not bent down as in the otherwise approximate *Perisama*; but this is not constant, the butterfly is probably able to lower or to stretch out the points of the palpi; the position in which the insect perishes remains then. We know of 2 species distributed from Mexico across Central America and reaching as far as the most northern parts of South America, but nothing is known to me about their early stages, and as to their habits only that they drink from brooks and wet places on the road and seem to disdain flowers.



**C. pandama** *Dbl.* and *Hew.* (102 B h). Of a deep darkbrown, the black apical part of the forewings *pandama*, divided by an oblique orange band; before the apex a small white spot. Beneath the forewings exhibit a red proximal part, the hindwings 4 rings combined to 2 eights. Mexico to Panama. Not rare.

**C. bachis** *Dbl.* (= *bimaculata* *Hew.*) (103 A a). Beneath quite similar to the preceding species, but *bachis*, above we notice instead of the orange band another larger white oblique spot. The forewings are in their basal part of a lustrous lilac, the hindwings blue. Only in Mexico (e. g. Oaxaca), not common.

#### 48. Genus: **Haematera** *Dbl.*

The charming little butterflies forming this little genus, are above dark brown and scarlet or vermilion. Beneath the forewings are quite like those of a *Callicore*, but the hindwings are of a leaf-like colour without the characteristic lines and marks of the preceding genera. Systematically, the nature of the palpi, their hair etc. brings them nearest to the *Cyclogramma*. The larvae, according to W. MÜLLER, also point towards this group; they live on Sapindaceae. The main difference between the *Haematera* and the preceding genera may be caused by the biological habits of the two groups, consisting in the *Callicore* displaying adorning colours, the *Haematera*, however, defensive colours, on their under surface. In South Brazil I found, towards evening, sleeping *Callicore* though very rarely when searching through the bushes for larvae. I noticed them then in the very interior of the bushes resting entirely hidden on the principal stalk, with their wings drawn in and their head turned downwards; *Haematera pyramus*, however, which is common in some districts of South Brazil, I roused out of the ends of the twigs of bushes where it had been resting quite free and unnoticeable, protected by the under surface and resembling a dry leaflet.

On the forewing, the first subcostal vein arises immediately before the cell-end, the second something beyond it: the upper discocellular is longer than in the other *Catagrammidi*, the lower one being absent as the median one bends round immediately into the middle radial. The chief veins are slightly thickened at the base of the forewings, though not properly enlarged to a blister. The larva has, only as long as it is quite small, minute spinal stumps which disappear soon and turn into white granulations. The butterflies fly in the sunshine on roads and near bushes.

**H. pyramus**. There is probably only one species in this genus, although some authors presume two or three. — **pyramus** *F.* (102 B g) is the name of the Brazilian form the ♀ of which has only a narrow hemo- *pyramus*, chrome band of the forewings, and on the hindwings a faint red median cloud at most. I took this animal in the very southernmost part of Brazil. To this ♀ with totally or almost totally brown hindwings belongs the ♂ form having broad brown wing-bases on the fore- and hindwings. — **thysbe** *Dbl.* and *Hew.* (102 B h), further- *thysbe*, more, is the northern form with quite red forewings (except the apical part) and with also more red in the hindwing. In the forewings hardly the outermost base is yet dull brown, and I possess ♂♂ from Colombia in which the darkening of the wing-base is absent altogether; this form flies from the Amazon in the whole of the northern parts of South America. — **rubra** *Kaye*, from Trinidad is one of those rather widely spread *rubra*, intermediate forms the ♂ of which has the forewings of *thysbe* and the hindwings of *pyramus*, described already by STAUDINGER without denominating them. — Larva green, with white ripples, in the middle strongly thickened, only on the sides small stunted spines and on the head 2 long branched horns; no lateral stripe. It lives on *Urvillea ulmacea* and rests, like an *Apatura*-larva, with drooping head and the horns placed upon the spot where it lies. After 3 or 4 weeks it turns into a green, white-rippled pupa of about the shape of an *Araschnia prorsa*-pupa, issuing the butterfly after some days. The butterflies are found everywhere in tropical South America, occur in great numbers in some years and are fond of wet places on the road and of the banks of brooks where they are sometimes met in numbers together; when being chased up they flutter on a neighbouring twig of a bush where they wait until the danger has disappeared. According to the district where they fly, we find transitions to the form described first so that we could give many denominations.

#### Group **Limenitidi**.

The Limenitidi which do not occur in Africa and Australia, but which are otherwise spread over all the temperate and warm regions of the globe, show a special liking for a black upper surface traversed by a white postmedian band and for a variegated under surface. Almost only where mimetic influences have destroyed the original design of colouring or where there is an overlayer of metal colours, we notice thorough deviations; but also in the latter case, e. g. in *Dynamine*, the original colour penetrates again in the ♀♀ in case they lack the metal colours. The *Dynamine* which we have, according to the catalogue-works, been treating of after the *Catagrammidi*, ought more correctly to be placed here \*). — The larvae of the Limenitidi have peculiarly reduced spines, since a number of the originally present spines disappear later on, while some few others grow into paired spinous clubs or into not paired cones. Only the *Dynamine*-larva deviates

\*) Anatomically they stand rather isolated. The extremely long penis and saccus are absolutely apaturoidal, the robust uncus limenitoidal, and the magnificently formed valve is, with respect to the structural boldness only rivalled by some *Argynnid*i. (H. FRUHSTORFER.)



from this type, as it is in the habit of eating into buds, the anterior part of the larva being, therefore, smooth in order not to be hindered when boring its way. The pupa is characterized by an appendage on the back, which has been described more exactly in the different genera; the head without any proper tips, but sometimes with peculiar wing-appendages, the latter, however, mostly in Indian species. The butterflies are fond of forest-roads on which they flutter up and down sailing by jerks; they are mostly excellent flyers and visit wet places on the road and the banks of brooks, some come to the bait, many like also flowers.

#### 49. Genus : **Adelpha** Hbn.

This polymorphous genus is surpassed, as to the copiousness of species, only by few other genera and must undoubtedly be regarded as the most multiform genus of the *Limenitidi* of the whole globe. As to the number of species it is excelled only by the neotropical genera *Heliconius*, *Actinote*, *Phyciodes* and, eventually, the Indo-Australian *Neptidi*.

The *Adelpha*, however, are not alone conspicuous by their copious species, but they presumably also beat all the other neotropical genera of the Nymphalidae by their abundance of individuals. They are reckoned to the characteristic landscape butterflies that are to be found most anywhere, just like the *Neptidi* on the Indo-Australian soil.

Structurally they are so nearly allied with the genus *Limenitis* that thorough differences cannot be brought into prominence at all; but they have less hairy palpi and thinner forefeet of the ♂♂. They also all have hairy eyes, whereas in the Indian allies there are alternatively rows of species with hairy and hairless eyes.

The branching off of the subcostal veins is exactly like in *Limenitis*; also here the second and third veins are, at their origin, for a short distance lying close to the main vein. The cell of the forewing is always closed by a fine, somewhat bent posterior discocellular connecting the median either aslant or vertically, shortly after the second vein; the cell of the hindwing is open. The precostal is bent distally and stands exactly at the origin of the subcostal. — The forefeet of the ♂♂ are very fine and thin, with scales. Tarsus  $\frac{2}{3}$  of the tibia which is but a little shorter than the femur.

In the veins of the forewings some species (*lara* Hew., *isis* Drury, *epione* Godt.) differ by the second subcostal vein arising after the cell-end. These species are also quite differently coloured, but they agree well with the type in all the other characteristics so that only a subgenus separation might be permitted.

In spite of the manifold species most of the *Adelpha* have the same typical habitus and the scheme of markings by which they are recognizable at first sight. Only the above-mentioned species, that also differ in the veins, are of entirely deviating colours and also habitus: *A. lara* and *isis* have a carmine transverse band across the black forewings, *epione* a white one. The greatest part of the *Adelpha*, however, has on a blackish-brown, dark-striped ground either an orange-yellow or white longitudinal band varying often, decreasing in size or dissolving into spots, or disappearing altogether on one wing. Often the band of the forewing is orange, that of the hindwing white, thus varying in the most manifold way and still adhering to the general type.

The position of the orange-coloured preapical spot of some series of species is of special importance for the grouping of the species, but all the characteristics are still fluctuating, especially also the reverse side the strange striation of which varies not only according to the geographical situation, but also temporally and individually. Except the *Phyciodes* and certain *Euthaliidae* there is, therefore, hardly any genus of the Rhopalocera offering greater difficulties to the systematical and synoptical treatment, than this genus. Moreover, also the anatomy of the sexual organs in allied species issues but uncertain clues. The clasping-organs are entirely limenitoid and, in their large outlines, approach those of the genus *Pantoporia* (*Athyma*) in such a way that, according to the state of our present, rather still primitive knowledge, it would be quite impossible to ascertain where organs or photoes of them belong to, which are not denominated.

According to about 60 species and forms I examined there are two principal groups distinguishable:

α) Valve with dorsal appendage which may be rudimentary or, in all the intermediate stages grows up to  $\frac{1}{3}$  of the length of the valve.

β) Valve without dorsal appendage.

The first group is partly combined with an extremely long, narrow and partly sharp-pointed uncus, but the shape of the uncus varies in the other species from a sharp, nicely shaped, slender and bent point, up to broad clumsy appendages. The valve has always a dorsal groove already noticed by GODMAN and SALVIN, and is mostly ventrally dentate. There are, however, all the transitions possible up to entirely unarmed valves being then formed especially athymoid. The valve may be simply cylindrical or ventrally uncommonly expanded, and beside slender forms with an obtuse end there exist also nearly square ones with 2 or 3 small acicular teeth (resembling a *Limenitis procris* from India and Ceylon). Penis as a rule short, obtuse, but there are also species with extremely pointed, unciformly curved end. Saccus expanded in the shape of a spoon. Valve



sometimes with very long hairs, occasionally also only with short bristles, the basal or subbasal cone always with bristles or warts, armed.

The larvae of *Adelpha*, as far as they have become known, generally resemble the larvae of *Limenitis*; some have besides branched spines, in others they are altered into short hairy caruncular cones. The head is set with short spines. The pupae are, according to Dr. W. MÜLLER of a peculiar shape, with 2 horns on the head and broad wing-edges, mostly of brown colour with more or less metallic lustre.

According to MICHAEL, *Adelpha* like to rest on leaves or on the soil with their wings spread out, being the most common *Nymphalidae* that enliven the forests in the most conspicuous manner.

The floating way with which the *Adelpha* fly, according to Dr. HAHNEL, is one of the most elegant forms of motion, jerking only little with somewhat convex wings and still easily descending from the height and reascending just as easily. They never fly, however, for a long time, but continually settle down for a short rest on the leaves high up in order to fly then again over to a neighbouring twig.

On the Upper Amazon, some species of *Adelpha* are in the habit of widely spreading their wings when at rest, and this behaviour is imitated by *Megalura*, small Erycinidae and Hesperidae, while some *Papilio*-species with which they are always found together, such as *lycidas*, *varus*, *crassus*, and *sesostris* are sharply contrasting with them by their dark exterior and closed wings.

*Adelpha* are constant frequenters of the crowds of day-butterflies meeting day by day at the banks and gathering down from the twigs at a very sunny spot, in the midst of *Eunica* and *Megalura*. They also came to the fecal bait placed on leaves by Dr. HAHNEL near Pebas, together with *Pyrrhogyra* and *Temenis*.

Dr. HAHNEL once also observed an *Adelpha* near Obidos coming frequently to a banana-bait prepared by him. It was, however, constantly ambushed by a greedy lizard which in spite of its clumsy feet rushed furiously towards the *Adelpha*. The butterfly made its escape by flying high up and settled on a leaf. But whenever, after some time, it was enticed by the deceptive bait and flew down again, the enemy made a new attack. This having recurred frequently for about 10 times, the lizard at last gave up molesting any further the *Adelpha* which had gained quite an agility by this experience.

Little is known of the vertical distribution; the *Adelpha* are, however, preponderantly inhabitants of the plains. Some species are, nevertheless, entirely alpine, so e. g. *olyntia* occurring in Colombia up to an altitude of 2500 m and being never met below 2000 m. One species was yet observed at an altitude of 2800 m on the volcano Irazu in Costa Rica. In Bolivia *A. aricia* is, according to Mr. FASSL, the highest-flying species living in the same altitudes. The *Adelpha* called „sisters“ by the Americans, are spread uninterruptedly from Mexico to southern Bolivia and at the Atlantic coast we meet them from the West Indies (Trinidad) to the southern parts of Brazil. The Central American region with 31 species is especially abundant, on the Amazon there are 13 species found, in Rio Grande do Sul about 7. The fauna of the Andes is most peculiar.

Two groups of species which were noticed first by FELDER: cell of the forewings short = *Adelpha* Hbn.; cell of the forewings elongate = *Heterochroa* Bsd. \*).

### A) Group of Species *Adelpha*.

#### a) Only one subcostal vein before the cell-end.

**A. isis.** Easily recognizable by a red oblique band on the forewings which varies also in extent especially in the ♀ according to the locality. The species is confined upon Central and Southern Brazil, everywhere very rare. If we consider specimens from Rio de Janeiro to be typical (*isis* Drury), the luxuriant *isis* race from Espirito Santo with entirely red forewing-cell may be separated as *divina* Fruhst. *divina* is especially conspicuous by an elongate red basal spot of about 1 cm width, above the submedian of the forewings. This red spot is absent in the form from Rio as well as in the distinct race occupying Sa. Catharina and described as *pseudagrias* Fruhst. (108 f as *isis*). *pseudagrias* is characterized by the red subapical transverse band of the forewings being strongly narrowed, and instead of three reddish transverse bands we notice in the cell of the forewing of the ♂ only a red round dot. This dot is also present in the ♀, but above it there lies yet a rudimentary band. *pseudagrias* thus presents itself as a melanotic form of the lighter races of the more northern districts of Brazil reminding us thereby of the likewise dark *Agrias claudiana* Stgr. from Sa. Catharina which also differs by its reduced red colour from the lighter and more richly coloured *Agrias claudina* Godt. (= *anetta* Gray) occurring in Rio de Janeiro. Claspings organs characterized by the valve with extremely long bristles and the beautiful contour. A broad base is followed by a cylindrical distal part being ventrally distinctly dentate. The dorsal appendage irregular, tapering off considerably towards above. Point of the uncus ventrally thickened.

\*) Anatomically there are also 2 series of species distinguishable. They, however, do not agree with those based upon the structure. Group A) with clunicula, a dorsal appendage of the valve. B) without clunicula; comprising but few, though the most magnificent species of the genus.



*lara*. **A. lara** replaces *A. isis* in Venezuela and the region of the Andes. It differs from the Brazilian *isis* chiefly by the absence of cellular red spots on the upper surface of the forewings, while the under surface is recognizable by yellowish-brown cell-decorations instead of red ones. Two territorial forms: **lara Hew.** with a regular red transverse band on the forewings which is distally bent out convex hardly perceivable. The under surface more violet, always without the black median band in the anal part of the hindwings. The ♀ is only slightly larger than the ♂, ♀ somewhat lighter brown and also beneath somewhat paler than the ♂. Venezuela. — **mainas subsp. nov.** (108 f as *lara*) is found from Colombia to Bolivia along the range of the Andes. ♂: the red band distally more irregular. The under surface with a pale oblique band being, however, magnificently rouged at the costal and anal end. The ♀, of which I examined a specimen from the Rio Negro, stands in the same relationship to the ♂ as the ♀ of *lara*. Claspings organs of about the same structure as in *isis*. Valve set with just as long bristles, but the clunicula more uniform with a broader periphery. Point of the uncus without medial thickening. Valve more slender in its outer parts. The differentiation is, however, still rudimentary and confirms much rather that *A. lara* belongs to *isis* than that they are specifically different. Median band of the hindwings only streak-like, but always distinct. Peru, Bolivia; an intermediate form also in Ecuador, nowhere rare.

β) Two subcostal veins before the cell-apex.

*agilla*. **A. epione**, the only species of the whole genus with a pure white transverse band of the forewings. Two areal forms: **agilla Fruhst.** (108 e as *epione*) occurs along the Andes from Colombia to Bolivia from where the figured specimen originates. The width of the brown median band on the under surface of the hindwings varies regardless of the locality. — **epione Godt. \***), a smaller form with much narrower white band on the forewings and prominent white small anteterminal spots on the under surface of the hindwings. In my collection from Espiritu Santo, but occurring also near Rio de Janeiro; in STAUDINGERS collection there are ♂♂ from Casa Branca in the State of Paraná.

*eponina*. **A. eponina Stgr.** An interesting species the white band of which begins to dissolve already towards the costal margin and to change into greyish-brown. Under surface especially characteristic by vast greyish-violet parts. Colombia, Cauca Valley. — **volupis subsp. nov.** is a magnificent form from the Rio Aquaca Valley, from an altitude of 2000 m in the Western Cordilleras of Colombia, with considerably narrowed white decorative band on the forewings being extended only as far as to the posterior median where it disappears already. Also on the under surface the white bands begin to recede what is especially recognizable by the reduction of the white median band.

*hypsenor*. **A. hypsenor Godm. and Salv.** (108 f misprinted as *hypsina*) has so far been known for certain only from the Province of Antioquia, the Cauca Valley in Colombia. FASSL discovered it at an altitude of 2000 m in the Rio Aquaca Valley (Western Cordilleras). The under surface resembles that of *A. mesentina* (108 e) except that the red spots are replaced by yellowish-brown ones. The ♀ is larger, on both the surfaces lighter brown than the ♂, with a somewhat broader white oblique band. *hypsenor* already forms the transition to the group with ochre-yellow bands on the forewings to which

*sophax*. **A. zalmona** belongs. There are two local forms to be mentioned: **sophax Godm. and Salv.** (108 d) from Costa Rica, Panama and some districts of Colombia. Under surface with narrow greyish-violet subbasal band of the forewings, and **zalmona Hew.** from Colombia without exact habitat, with considerably broader band of the hindwings.

*melanthe*. **A. melanthe**, a magnificent easily recognizable species with nearly double as broad dark chrome-yellow belt of the forewings, as *sophax*. Three geographical races: **melanthe Bates** with two white dots in the forewing-cell. Central America from Mexico to Panama in sparsely timbered woods at an altitude of 600 to 1000 m. — **melanippe Godm. and Salv.** with narrowed and darkened yellowish band of the forewings. Colombia. *spruceana*. — **spruceana Bat.** with still more narrowed median band and, like *melanippe*, without white cellular dots on the forewings. Ecuador. Claspings organs still entirely of the type of *Adelpha isis-lara*, valve basally somewhat narrower, ventrally less convex prominent, clunicula growing somewhat more slender towards above. Point of the penis more sharply curved.

*chancha*. **A. mesentina**, a rather rare, very characteristic species with reddish-ochreous area of the forewings. Only two ramifications with not very abrupt partings: **chancha Stgr.** (108 e as *mesentina*) with broadened black longitudinal bands on both the surfaces of the hindwings. Peru. — The name-type is based on a specimen with a shortened reddish-brown band on the forewing: **mesentina Cr. \*\*)** being beneath somewhat paler than the Andine form. Cayenne, Surinam, Amazon. Also from Venezuela and Ecuador, in the Tring-Museum.

#### B) Group of Series Heterochroa.

*irmina*. **A. irmina**, a common species of the ochreous group of the great *Heterochroa*-section of the whole genus. Relatively large with steep median band of the forewings. Under surface resembling that of *A. irma*, but with white drops on the hindwings. Three geographical branchings: **irmina Dbl.** (108 f) varying according to the

\*) Valve basin-shaped, basally ventrally expanded, armed with 4 spines. Clunicula black, pyramidal, very high; valve somewhat more slender in *agilla*.

\*\*) Valve boldly shaped, ventrally set with 12 to 15 teeth, besides with a dorsal protuberance, clunicula with extraordinarily broad base.



season. One form of the rainless period in January, being somewhat faded beneath, and specimens with more pronounced markings, of the rainy months (June, July). Venezuela. — *fumida* Btlr. is beaten in size by *irmina*, *fumida*, the narrower longitudinal band of the forewings being more acutely angled, too. From Eastern Peru. — *wilhelmina* Fruhst. Smaller than *irmina* Dbl. and Hew. from Venezuela, above darker, the ochreous longitudinal band more strangulated on both the surfaces, considerably narrower. Under surface: forewing with larger white spots. Hindwing with much narrower white maculae. Oblique band of the forewing darker, more narrowly confined. Hindwing in the subanal region lighter, more spotted in yellow. Bolivia. Claspings organs of the habitus of *A. alala*, entirely different from the groups of *A. isis* and *A. erotia*. Valve remarkably short with 2 or 3 exterior teeth, but without any ventral ones. Clavicula high, narrow. Uncus plain. Point of penis not sharply bent upwards, but nearly straight.

**A. irma** inhabits Peru and Bolivia as *irma* Fruhst. (108 c). Upper surface similar to *boreas* Btlr. and *irma*. *irmina* Dbl., the ochreous oblique band, however, proximally more widening and the distal spot at the anterior median nearly isolated. Under surface: band of the forewing steeper than in *boreas*. Hindwing more roundish, with 3 whitish-violet median transverse bands, the outer one of which projects the furthest into the wing-centre. *irma* thereby approximates *irmina* Dbl. from which it is, however, immediately distinguishable by the subdued colours of the bands being, besides, also narrower. Peru: Pozuzo, reaching an altitude of 2000 m near Carabaya. — *nadja* Fruhst. Ochreous band of the forewings more extensive than in *irma*. Hindwing pierced by a magnificent black submarginal band appearing only obsolete in specimens from Peru. Under surface: yellowish oblique band of the forewings broader, lighter, all the bands of the hindwings being also more violet and broader. Bolivia. — Genitals considerably differentiated from those of *A. irmina*. Valve entirely more slender, without any spines, but with very long bristles. Point of penis curved.

**A. boreas**. An Andine species and distributed, from Colombia to Bolivia, upon 4 areal forms; especially beneath most variable in the extent of purple or violet parts with metallic lustre. — *tizona* Fldr. (108 d) *tizona*. has two distinct small yellow preapical spots on the forewings. FASSL found the ♀ on the Upper Rio Negro, the under surface of which is more fallow, the yellow area of the forewings broader, likewise paler. — *tizonides* Fruhst. (108 d) beats *tizona* in size; with roundish hindwings and indistinct reddish-brown apical spots, very broad and distally only faintly dentate subapical band of the forewings. Under surface of hindwings traversed by a narrow brown postmedian band. West Colombia and Cundinamarca. — *opheltes* subsp. nov. *opheltes*. was recently again discovered in Panama from where GODMAN had figured it already as *A. tizona*. Band of the forewings above distally only unnoticeably dentate. Under surface with broader brown postdiscal band than *tizonides* and reduced transcellular stripes. — *verenda* subsp. nov. (108 c) differs from *tizona* by darkened and *verenda*. proximally deeper incised oblique band of the forewings. The under surface exhibits a narrower transverse band of the forewings and more whitish edging of the hindwings. Peru, common, preferring altitudes of 1500 to 2000 m. — *boreas* Btlr. equals *A. irma* (108 c) in size; under surface lacking the violet hue, the oblique *boreas*. band of the forewings sharply set off, paler than in *verenda*. Bolivia, also on the Upper Rio Negro.

**A. ximena** Fldr. The most imposing species of the group with ochreous area on the forewings, which *ximena*. expands similarly as in *A. mesentina* (108 e) and from which three subapical maculae extend in the shape of a band as far as to the costal margin. Under surface resembling that of *tizona* Fldr. but without the transverse band running through, which is replaced by two rows of roundish light spots. Peru: Pozuzo, not rare.

**A. salmoneus** inhabits Central America from Guatemala, and Colombia. We may separate 2 geographically split branches. — *emilia* Fruhst. (108 e), a smaller form with more imposing greyish-violet bands *emilia*. than *salmoneus* (108 e) exhibits. Guatemala to the Cauca Valley. — *salmoneus* Btlr. (108 e), a more magnificent *salmoneus*. race with more streak-like bands on the under surface. Eastern Colombia also from Cundinamarca in the Tring Museum.

**A. colada** Fldr., an extremely rare species of which only the type is known and which I was enabled to examine thanks to the obligingness of the officials in the Tring-Museum. Upper surface about similar to that of *salmoneus* (108 e), while the under surface approaches more *boreas* Btlr. and still more *A. irma* Fruhst. (108 c). Bogotá (Colombia).

**A. saundersi**, the most luxuriant species of the series with brownish-yellow bands. The under surface is most imposing with its magnificent reflections of silvery brightness reminding us of *Argynnis adippe* and being unparalleled among the *Adelpha*. According to WEEKS there is said to be a local race in Colombia with white drops on the under surface instead of those of metallic lustre. — *saundersi* Hew. is described from Ecuador *saundersi*. and also found in Colombian districts, where FASSL took single specimens near Pacho at an altitude of 2200 m. — *leutha* subsp. nov. stays smaller than *helepecki* (108 d) and has a lighter yellow under surface, very much *leutha*. reduced reddish-brown longitudinal bands and obsolete silver-spots of the anal part of the hindwings. Peru, Cushi from 1820 m. Type in the Tring-Museum. — *helepecki* Weeks (108 d) is only lying before us from Bolivia. *helepecki*. The ♀ was collected by FASSL near Coroico. It differs from the ♂ only by a more pronounced black spotting on the under surface of the hindwings.



**A. leucophthalma** forms the transition to a charming, sharply confined group with ochre-yellow band of the forewings and white discus of the hindwings. — **leucophthalma** Latr. (107 f) found in Peru, the western slope of the Andes near the Pacific Ocean near Guangamarca, (according to the statement of the author from the year 1809). The form is figured according to a ♂ from Cundinamarca in the Tring-Museum. The band of the forewing is beneath pale-yellow, and on the hindwings the white spots recur frequently. — **mephistopheles** Btlr. from Colombia comes oftener to Europe than the type of the name. There are also in Colombia several local races. BUTLER based his type upon relatively small specimens and STAUDINGER also figured a ♀ stunted in its habitus. There are, however, much larger specimens lying before me without exact statement of their habitat. — **tegeata** subsp. nov. with paler band of the upper surface, but remarkably darkened under surface of the hindwings. A charming form is found at the volcano Irazu (Costa Rica) in about 2800 m height, which was mentioned already by GODMAN, but which has remained unknown to me in nature, just like ♂♂ from Nicaragua and Panama.

**A. zina** the differences of which compared to *leucophthalma* are to be noticed from our figure of *zina. restricta* (107 f), is distributed upon 3 geographical subspecies: **zina** Hew. with elliptic white discus of the hindwings composed of 4 narrow maculae, and **leucacantha** subsp. nov. in which the white disk consists only of 3 components and is almost circular. The ochreous longitudinal band of the forewings lighter and broader than in *zina*, under surface paler with more white and yellowish markings. Both the forms in my collection from Colombia. — **restricta** subsp. nov. (107 f). Approximates *leucacantha* by the likewise more roundish than acute reflection of the hindwings. The under surface of all the wings darker reddish-brown, the longitudinal band of the forewings considerably narrower, more sharply set off, the violet spots more pregnant. Cananche, Cundinamarca June 1903. Claspings organs of the plainest structure; valve neither spined nor hairy, clunicle in the shape of an isosceles triangle, point of uncus not thickened, neat; point of penis not chitinated.

**A. justina** inhabits Venezuela, Colombia, and Peru, occurring everywhere in distinctly separated territorial races. The white spot of the hindwings always appears elongated in the shape of a band. — **lacina** Btlr. \*) from Guatemala to Panama, occurring as a great rarity, has a narrower beautifully light-yellow band of the forewings. — **justina** Fldr. differs from *A. zina* by a larger and lighter yellow apical spot of the forewings. Colombia, rare. — **justinella** Fruhst. ♂ deviates from *justina* Fldr. from Colombia by the blackish-dusted and also darkened, much narrower yellowish band of the forewings and the elongated white discal spot on the hindwings, which is, however, greatly reduced in width. — In STAUDINGER's collection there are also specimens without white reflection of the hindwings (**maira** form. nov.); habitat Venezuela. — **praevalida** subsp. nov. Yellowish longitudinal band of the forewings lighter, narrower. Subapical dots much smaller, the white discal spot of the hindwings, however, very much elongated and broader. At the costal margin there appears but a small macula as occurring in *leucophthalma* Latr. Hindwings beneath with a white band traversing the whole centre and being twice interrupted. Peru: Cuzco.

**A. olynthia**, one of the best-known and most easily recognizable species characterized by uncommonly narrow, ochreous or reddish-brown row of spots contrasting delightfully with a purely white longitudinal stripe of the forewings. The under surface is either preponderantly faded yellowish-brown (106 a *levicula*), but only in the Colombian races, or it changes into reddish-brown (*olynthia* 106 a) which colour increases in intensity the more we go to the south. Claspings organs distinguished by the valve being without spines and set with very long hair, and by a remarkably high, narrow clunicle: point of tegumen relatively broad. — **olynthia** Fldr. is very common in Colombia and, according to the locality and season, varies there somewhat in the width of the white stripe of the forewings. This stripe is the narrowest in a ♂ from Villavicencia, exhibiting at the same time the most imposing and darkest red-yellow spots on the forewings. — **levicula** subsp. nov. (106 a) has broader, but paler yellow components of the band of the forewings and another second pair of transcellular yellowish spots distal to the cell-apex which are absent in typical *olynthia*. Beneath more reddish instead of greyish-yellow as in Muzo- and Villavicencia-♂♂, with purer and finer colours. From Pichinde in Colombia from an altitude of 5000 feet. Type in the Tring Museum. — An incidental aberration is introduced as **inachia** form. nov. having been thus denominated by STAUDINGER in his collection. The white median zone of the forewings is absent and the reddish-brown band of the forewings is uncommonly broadened. — **olynthina** subsp. nov. shows the narrowest white median band of the forewings among the known *olynthia*-races. The under surface resembles yet the Colombian ♂♂ by pale yellowish-brown colouring. Ecuador. — **theaena** subsp. nov. (106 a as *olynthia*) is very common near Cuzco in Peru. Like *levicula* it shows a pronounced row of transcellular maculae of the forewings proximal to the three usual preapical spots. The white stripe of the hindwings decidedly broader than in *olynthina*. Under surface with reddish-yellow or reddish-brown spots, all the white and violet maculae more prominent. — **zopyra** subsp. nov. is found at the Chanchamayo, Peru, and near Cushi in the Province of Huanaco in 1900 m height. It resembles *theaena* except that the ultracellular, reddish-yellow double-spot on the upper surface of the forewings is absent like in the Colombian forms.

**A. valentina** spec. nov. is a considerably modified species with conspicuous and progressive extent of the reddish-yellow and white bands of the upper surface. The latter sometimes exhibits a proximal blue

\*) There are 2 ♀-forms: α) with relatively narrow complete white band, β) with white area of the hindwings being separated at the anterior radial. Beneath, both the ♀-forms lying before me from Orosi (Costa Rica) from an altitude of 1200 m, differ from the ♂♂ by more pronounced violet-grey submarginal spots.



reflection. The double-spot beyond the cell also prominent. Under surface intensively reddish-brown. From the Rio Negro and along the Andes from Colombia to Bolivia \*).

**A. alala** is considered as the most common *Adelpha* in the region of its occurrence. According to HAHNEL it is met everywhere in open places sitting together in groups, apart of the society of the likewise common *Megalura*, but like them always with their wings spread out. The species is extremely variable, and beside its sensitiveness to territorial influence we know for certain that it also succumbs to metagenesis. We know specimens with fine reddish-brown bands on the under surface, beside such with pale, faded colours as seen in *ehrharti* (108 a), thus showing the typical colouring of the dry season. The uppersurface is also subject to various modifications. Especially the extent of the reddish-brown submarginal band is most variable. It may either traverse both the wings as a series of coherent spots (*completa*), or be completely present only on the forewings (*cora*). Furthermore there are specimens with only 3 or 4 reddish-brown subapical spots (*alala*, *prae-caria*) and, finally, such without any reddish-brown maculae at all being replaced by white ones (*albifida*). The one white-speckled form is presumably also a production of the rainless period. According to the few documents I was able to examine, the valve of the clasping-organs seems also to be subject to slight variations of its contour. The valve is short, with nearly square base and steeply raised or cut off end (*albifida*) or obviously elongated with a more slender end tapering softly. A sharp double-point is common to all the forms. The medial dorsal tooth stunted, the most insignificant in *albifida*, the broadest in *cora* from Peru. The uncus itself remains remarkably slender, pointed and is, in that respect, only beaten by the forms of the group of *A. zina* and *A. irmina*. *alala* Hew., the typical form, without the reddish-brown submarginal band on the upper surface, comes from Venezuela, the white median zone sometimes relatively broad (*alala*), occasionally very narrow (*titia* form. nov.), the transcellular white small comma-spots always pregnant. — *completa* Fruhst. occurs in Colombia. The yellowish-brown bands are less developed than in *alala*, and we have even a form without reddish submarginal spotting of the hindwings, *prae-caria* form. nov., being denoted in 108 a as *completa*. The specimens I have at hand are immediately recognizable as such of the dry period, with faded under surface, and such with sharply prominent reddish-brown bands of the under surface. The specimens being coloured the most brightly beneath are lacking the ochreous band of the upper surface of the hindwings. — *negra* Fldr. is a form from the Upper Rio Negro reminding us of *titia* and *prae-caria* and exhibiting a narrow white median band of the hindwings. The yellowish anal spot of the hindwings appears somewhat smaller than in *titia* as well as the subapical maculae of the forewings. The under surface of all the wings somewhat paler and more faded than in the form of the rainy period from Venezuela. — *ehrharti* Neubgr. (108 a) was based upon specimens without reddish-yellow decoration of the upper surface of the hindwings. We figure a specimen from Paramba, Ecuador. 1200 m, collected in April during the dry period, with all the marks of the generation of the rainless period. Several more ♂♂ from Ecuador, in FRUHSTORFER's collection, are just as brightly coloured and distinctly striped as the typical form from Venezuela. White median band only little broader than in specimens from Venezuela, somewhat broader than in those from Colombia. The distal subapical maculae more pregnant and darker than in *completa*, but terminating already at the anterior median vein. — *cora* Fruhst. analogous to *ehrharti*, but immediately distinguishable from it by the yellowish submarginal band reaching, on the forewings, from the costal margin as far as into the anal angle. Under surface darker than in *ehrharti*, white median band distally more extensively bordered in yellow. Pozuzo (Peru). — *albifida* Fruhst. Peru has a more extensively white median band than *completa*, the distal subapical row of 5 dots white instead of yellow, besides there are not any traces whatever of a yellow submarginal band on both the wings. Under surface, especially in the apical area of the forewings, more extensively spotted in white than in any allied *alala*-form. — *privigna* subsp. (or form.) nov. is a form or race analogous to *albifida*, with considerably narrower white area on both the wings. Habitat presumably Peru or the Upper Amazon. — *negrina* subsp. nov. (108 a) is a form being common in many parts of Bolivia. Beside it a local race, *fillo* Fruhst., is found in Western Bolivia and Argentina, presumably at another season. Resembling *ehrharti*, with yellow bands interrupted at the anterior median vein, under surface of the wings, however, lighter than in *ehrharti* and *cora*, the subapical white spots of the forewings considerably smaller and the white median band much narrower than in *negrina*. The ♀ of *negrina* was discovered by FASSL in Bolivia. It is somewhat larger and of rounder wing-contours than the ♂, exhibiting somewhat more extensive reddish-yellow subapical maculae of the forewings.

**A. corcyra**, from Colombia to Ecuador, occurring beside *A. alala* from which it differs by the broader hindwings projecting with an obtuse tail. The white zone of the forewings decidedly narrower, anteriorly reduced. The small transcellular spots are standing in one row above the median band and are always effaced. — *corcyra* Hew. (108 a) was set up by its author according to much smaller specimens than the one we present. The specimens also vary beneath according to the seasons and altitudes from a lighter colour to darker grey. FASSL found *corcyra* still at an altitude of 2200 m in the Eastern Cordilleras of Colombia. The small form as well as the large form are included in the so-called Bogotá-consignments. — *collina* Hew., an excellent territorial form with considerably narrowed reddish-yellow submarginal band of the forewings and posteriorly reduced white

\*) Valve set with sharp spines, narrower and longer than in *A. olynthia*, clunacula, however, much broader and shorter, uncus more spadiceous instead of simply pointed as in *olynthia*.



median zone of the hindwings on which we miss the reddish-brown anteterminal region of the upper surface, *arctina*. so that *collina* looks again very similar to certain *A. alala*. — *aretina* Fruhst. has still narrower white bands than *collina*. Both the forms are found in Ecuador.

*aricia*. **A. aricia**, a rare and magnificent species, apparently met only in Peru and Bolivia. Two territorial races. *aricia* Hew. (108 a) of which we figure the characteristic under surface occurs in Bolivia. The upper *serenita*. surface is adorned with a much broader reddish-yellow band than *serenita* subsp. nov. of which we figure the upper surface by the name of *aricia* (108 a). Its under surface exhibits less bright reddish-brown bands and spots than the larger type from Bolivia. Habitat Peru.

*epidamna*. **A. epidamna** Fldr., an extremely rare species of which but few specimens are known, one of them in FRUHSTORFER's collection \*). It is pretty sure that *epidamna* replaces the preceding species in Colombia. It is, however, mentioned separately here, because the reddish-yellow submarginal band of the forewings is not rectilinear as in *A. aricia*, but it turns out distally in the shape of a crescent between the radials and the anterior median, and also disappears already at the central median. The under surface shows more prominent black crescents distal to the reddish-brown median band, and puer white small submarginal spots.

**A. cocala** commences the large group of species with yellowish-brown band of the forewings and white area of the hindwings. The series of species then gradually turns into such forms in which a little white appears on the forewings, and finally into forms where the yellowish-brown is isolated only to remain as a separated apical spot. All the three combinations of colours have a relatively obtuse uncus and a valve with large medial dorsal tooth the shape of which differs in the single species. The clasping-organs of *A. cocala* are characterized by basally remarkably thickened uncus, valve short with strangely little developed dorsal appendage, the end with sharp teeth. *cocala* is one of the most widely distributed Adelphes; we meet it from Honduras *lorzae*. to Bolivia and, on the Atlantic part of the Continent from Guiana to Sa. Catharina. — *lorzae* Bsd., the northernmost branch of the race, is by mistake mentioned as *A. urraca* by GODMAN, in the Biologia, from Honduras in my collection and distributed as far as Panama, is distinguished by the broader white median band of the hindwings and paler yellow middle area of the forewings. — *lorzina* subsp. nov. from Colombia has already *fufina*. decidedly narrowed yellowish-brown and white area on both the wings. — *fufina* subsp. nova, another local form from Colombia, shows a darker yellow part of the forewings without any traces of a whitish hue at the *urraca*. submedian. The white stripe of the hindwings less extensive than in *lorzina*. — *urraca* Fldr. (107 a) of which we figure a ♀ specimen, is a luxuriant form beating the type from Surinam by broader yellow and white areas. Under surface distinguished by most prominent white and violet spots. Upper Rio Negro, also at the proper *urracina*. Upper Amazon, e. g. near Iquitos. — *urracina* subsp. nov. (106 c), common in Peru and parts of Bolivia, lies before me also from Mato-Grosso. The bands very much approach the type, but the band of the forewing *suapura*. appears more complete, the whole colouring darker. — *suapura* subsp. nov. (106 c as *sapapura*) from Venezuela *cocala*. is a little form with considerably reduced yellow bands of the forewings. From the Suapura River. — *cocala* Cr., common in Cayenne and Surinam, has again somewhat broader reddish-yellow bands of the forewings *riola*. than *suapura*. — *riola* subsp. nov. (106 c as ♂ instead of ♀), from Rio de Janeiro and the State of São Paulo, initiates the interesting Brazilian geographical forms; distinguished by the darkened faded reddish-brown under surface with reduced greyish-violet spotting and most pronounced, anteriorly tapering white stripes of the forewings. In *riola*, of which we figured a ♀ from Rio de Janeiro, we notice in the ♂ and ♀ a white hue *caninia*. at the submedian of the upper surface of the forewings, which, in *caninia* subsp. nov. (106 b as *riola*) projects into the yellow zone already in the shape of a band. Sa. Catharina and to the north as far as São Paulo, *didia*. while in *didia* subsp. nov. from Espiritu Santo the connection with *cocala* is restored by the white being absent in the submedian zone, whereas the whole colouring of the under surface entirely resembles that of the other species from Rio de Janeiro to Sa. Catharina.

**A. trinina** is confounded in the collections with *A. cocala*. It has a delimited range and is found only from Colombia to Ecuador beside *A. cocala*, as well as in Trinidad. *trinina* differs above by the reddish-yellow preapical maculae of the forewings being either absent or hardly suggested, and beneath by the absence of the white median band of the forewings being replaced by a faded loam-coloured band. The tegumen has a considerably more pointed uncus, the valve remaining also more slender than in *A. cocala*. Besides the medial dorsal tooth projects nearly double as strongly as in the vicarious type. The end of the valve only faintly *fufia*. spined. — *fufia* subsp. nov. (107 b) is remarkable by a dark ochreous, sharply confined band of the forewings *cocalina*. and by white stripes reduced towards the anal angle. Colombia, apparently not rare. — *cocalina* subsp. nov. (106 b) smaller than the preceding one with a more uniform yellowish-brown zone and reduced white stripes *trinina*. of the forewings. Ecuador, Paramba, from an altitude of 1200 m. Type in the Tring-Museum. — *trinina* Kaye was united with *A. velia* by its author, and described and figured as *A. velia trinina* in Trans. Ent. Soc. 1913, p. 555. The ♂ differs from *cocalina* and *fufia* by broadened white median band of the hindwings. Isle of Trinidad.

\*) FASSL found a ♂ at the C  non del Tolima in the Colombian Central Cordilleras.



**A. boeotia** differs from *A. cocala* by the isolated yellowish-brown preapical maculae of the forewings. The more uniform ochreous zone of the forewings grows lighter towards the submedian and, in a Brazilian race, changes its colour even into a pure white, analogous to the forms of *A. cocala*. Under surface at once recognizable by an expanded whitish median band traversing both the wings. Tegumen with broadened point and valve is likewise basally more robust compared to that of *cocala*. The dorsal tooth more obtuse and bulky than in *A. cocala* and *A. fufia*. Known from Central America to Bolivia and from Central Brazil. — **oberthüri** *Bsd.* described from Guatemala, is lying before me from Honduras and Costa Rica. Above it resembles *A. davisii* (106 c), though the whole posterior part of the faintly yellowish-brown band of the forewings is white, especially in the ♂♂ from Honduras. — **boeotia** *Fldr.* (106 c) is not rare in Colombia. The *boeotia*. white stripes of the hindwings are, as a rule, somewhat narrower than in **davisii** *Btlr.* (106 c) which has originally *davisii*. come from Peru and of which we figure a somewhat deviating, remarkably small ♂ from Ecuador. Under surface a little more variegated than in *boeotia*. — **fulica** *subsp. nov.* differs from *davisii* by distinct reddish-brown *fulica*. subanal maculae of the upper surface of the hindwings, by which it approaches *boeotia* from Colombia. Under surface more intensely reddish-brown. Bolivia. — **fidicula** *subsp. nov.* is based upon a specimen sent to me *fidicula*. by the firm of BANG-HAAS from Espiritu Santo 8 years ago. Excepting the very much broadened yellowish zone of the forewings, it approaches the ♂♂ from Honduras by the white submedian brightening. The preapical maculae of the forewings are very large. Under surface characterized by faded reddish-brown ground-colour being much less strongly overhued in violet than in the Andine vicarious types.

**A. heraclea** *Fldr.* is a marked form of *A. boeotia*, or a species nearly allied to *A. boeotia*, which *heraclea*. has remained a rarity and has not been found again. Neither in the Tring-Museum nor among the 700 specimens of my collection there are any analogous specimens. On the forewings there is only a subapical punctiform spot. Hindwings somewhat more slender than in *boeotia*, with more prominent yellowish anal spot. The white median band of the hindwings is distinguished by a relatively broad, fiery reddish-brown distal margin. KIRBY in his catalogue brought *A. heraclea* *Fldr.* in connection with *A. thesprotia* *Fldr.* The latter species, however, belongs into quite a different group (of *A. melona-arete*), a fact which I was able to ascertain by means of the types placed at my disposal by the Tring-Museum.

**A. sichaeus**. A magnificent, sharply limited species occurring along the range of the Andes and in some alpine districts of Venezuela. It is in some places common and, especially in Bolivia, always met in series. The species varies but little in the width of the remarkably darkened, beautifully reddish-yellow zone of the forewings. As BUTLER already stated, *sichaeus* shows, especially above, a certain alliance to *A. cocala* *Cr.* from which it is, however, at once distinguishable by the more ramous white spotting of the under surface of the wings. The structure of the sexual organs makes us also conclude that there are nearer relations to the *iphicla*-group than to the series of *A. cocala*. Tegumen with tender, finely curved point, valve cylindrical, without the basal thickening of *A. cocala*. Clunicle very high, extremely pointy. — **sichaeus** *Btlr.* The band of the fore- *sichaeus*. wing light orange-coloured, broader than in *privata*. Colombia, also mentioned from Venezuela by GODMAN. Found by FASSL on the Upper Rio Negro. The white zone of the hindwings more extensive than in the Ecuador-race. The ♀♀ exhibit a still paler yellow zone of the forewings and beneath enlarged white and violet spots and bands. — **privata** *subsp. nov.* (106 a) forms a transition from *sichaeus* to *A. irisa* (106 b), and differs from *irisa* by much narrower ochreous longitudinal bands of the forewings and the white median bands of the hind- *privata*. wings being costally and anally greatly reduced. Under surface: the whitish spots are considerably receding and the violet submarginal maculae remain smaller and stand more isolated. Ecuador. — **irisa** *subsp. nov.* *irisa*. (106 b) inhabits Peru; type from the Chanchamayo. All the bands are moderately narrower than in **leucopetra** *subsp. nov.* (106 a). Forewing-band considerably darker and nearly as broad again as in *privata* from Ecuador. Hindwing: the white median band likewise greatly expanded and tapering off posteriorly. Under surface: dark reddish-brown with extremely bright, sharply delimited purely white markings, very large reflecting violet maculae and a longitudinal row of 6 roundish, large, almost black submarginal dots of the hindwings. The ♀ was discovered by Mr. FASSL who sent it to me for inspection. Size of the reddish-brown band still more extensive than in the ♂, the wing-contour more roundish, the shape larger. Bolivia.

**A. aethalia**, by the position of the forewing-band, approaches *A. boeotia* *Fldr.*, while the magnificent under surface approximates much more *A. erotia*. *aethalia* has hitherto been mistaken, because KIRBY not knowing the type brought it into connection with *A. thesprotia* and *A. malea* *Fldr.*, which species, in their turn belong to entirely different groups. The sexual organs differ considerably from those of *A. boeotia*. The uncus is more pointed, distally less strongly curved; the valve anteriorly very much reduced, with sharper point and armed with a greater number of small denticles. The medial, dorsal appendage rests upon a narrower base and raises itself to a more slender point. **aethalia** *Fldr.* (106 d) is not very rare in Colombia and Ecuador, and *aethalia*. is contained in almost every so-called Bogotá-consignment. The under surface exhibits more yellow than *A. frusina* (106 e). — The more southern **metana** *subsp. nov.* (106 d) is found in Peru and on the Upper Amazon *metana*. and is figured according to a ♂ from the latter habitat. The yellowish-brown zone of the forewings is proximally deeper indented than in *aethalia*, the white area of the forewings more extensive, the under surface darker reddish-brown. — **frusina** *subsp. nov.* (106 e) from Eastern Bolivia, the Province of Sara, by its faded under surface *frusina*.



approaches again more the Colombian vicarious type. The white band of the hindwings still more broadened than in *metana*, and on the forewings the beginning of a white hue in the submedian region being especially distinct in a ♂ of my collection from Mato-Grosso. — *pollina* *subsp. nov.* was recently discovered by LE MOULT in Cayenne. The very light zone of the forewings deeper indented at the cell-apex and the white median band of the hindwings considerably narrower than in *aethalia* from Colombia. Under surface similar to that of *frusina*, but more intensely reddish-brown.

*A. euboea* might above be easily mistaken with *A. aethalia*, the only thorough difference being noticed in the yellowish-brown zone of the forewings greatly narrowed towards the submedian. The white stripe of the hindwings is also tapering and we nearly always notice an inclination to forming a violet or blue proximal boundary-line whereby a certain analogy is created to the Indian *Pantoporia*; a genus replaced by the *Adelpha* in South America. The ground-colour of the under surface is a beautiful brown with bright violet stripes as we meet again in *A. phliassa* (107 a). Anatomically *euboea* is sharply separated from all the allies by the extremely long, very sharp and much higher appendage to the valve. The valve is, besides, laterally and ventrally swollen, the uncus formed like the beak of an eagle, slender with distinct point. — *fabricia* *subsp. nov.* (106 d) is a form distinguishable from the name-type, *euboea* *Fldr.*, by smaller size and throughout darker total colouring. *fabricia* has, besides, a distally sharper delimited ochreous band not showing in the anal direction the white hue peculiar of *euboea*. On the under surface the bands of *fabricia* are decidedly narrower. Colombia, without exact habitat. According to KAYE, a similar form occurs in Trinidad. — *hilareia* *subsp. nov.* has a reduced more irregular yellowish-brown zone of the forewings and more intensely and beautifully coffee-brown stripes on the under surface of both the wings. Peru, Tarapoto, and from the Upper Amazon. — *mamaea* *subsp. nov.* is found in Mato-Grosso. The reduction of the yellowish and white bands of the upper surface is still increased as well as the darkening and reduction of all the markings on the under surface.

*A. erymanthis* resembles *A. euboea* and *fabricia* (106 d), but the white stripes of the hindwings are still more reduced and terminating in the anal direction into a sharp point in the Central American type. A very rare species of which only two forms are known to me: *erymanthis* *Godm.* and *Salv.* being on the forewings most similar to *A. boeotia* (106 c), the white band of the hindwings being, however, much narrower. Under surface most approximate to that of *A. aethalia* (106 d). Nicaragua, Costa Rica. — *adstricta* *subsp. nov.* The light yellowish-brown zone of the forewings broader, proximally running straighter than in *erymanthis*. The white area of the hindwings reduced to a short, extremely narrow, small band terminating at the third median and, thereby, resembling *A. ernestina* (106 b). Colombia. Type in the Museum of Geneva.

*A. jordani* is an entirely isolated species. Its size very much approximates the small *A. boeotia* *Fldr.* with which also the position of the reddish-yellow zone agrees the most. The peculiarly bulging stripes of the hindwings, however, distinguishes it from all the allies. Another characteristic mark is especially a black spot in the anal angle of the under surface of the forewings not seen in any of the allies. Two geographically separated branches: *jordani* *subsp. nov.* (106 d) with remarkably broad bands on the under surface. Peru. — *ernestina* *subsp. nov.* (106 b). As to the habitus, smaller than *jordani*, the ochreous median band of the forewings very much darkened, the white median area of the hindwings shorter and narrower, but bordered in the anal angle by a much broader and more distinct dark-blue zone. Under surface: white marking reduced, more faded, forewings with a more extensive yellowish postdiscal region. The brown longitudinal band of the hindwing so characteristic of *jordani* nearly again as broad as in the Peruvian branch. Bolivia, Mapiri. Type in the collection FRUHSTORFER. A ♂ somewhat deviating from it, from Bolivia. San-Ernesto at an altitude of 1000 m, below the 68th degree of western and 15th degree of southern latitude. Collected in September 1900, in the Tring-Museum \*).

*A. erotia* is considered to be one of the commonest species of the Continent. It is not able to offer great resistance to climatic influences, so that it is divided into a number of territorial forms, and besides, it seems to be subject to metagenesis, for there exist enormous specimens with large white spots beneath (*permagna*) beside relatively small ones being only little checkered beneath. There seems to exist also a form of condition independent of time and locality with beginning or advanced white embedment at the end of the yellowish-brown median band in the submedian region of the forewings. The most characteristic under surface is conspicuous by the great number of isolated silvery white spots and the purely white subbasal bands of the hindwings. According to the season and the habitat of the butterflies, the white submarginal maculae are covered by reddish-brown ones (Colombia), or they increase even in size (Surinam, Cayenne) or they are faded (Venezuela). The tegumen is most plainly shaped with the usual, rather sharp point of the uncus, valve with a roundish clunicula (with a dentiform dorsal appendage), exteriorly obtuse, nearly entirely unarmed. — *deleta* *subsp. nov.* (106 e). The yellowish longitudinal band is in the anal direction, near the submedian, brightened up with white, also otherwise lighter than the following races. The three subapical maculae uncommonly strong;

\*) Claspings organs sharply differing from those of *A. erotia*, but without any special marks. Clunicula higher than in *A. erotia*.



the white median area of the hindwings 8 mm broad (4 mm in *erotia*). Under surface very faded, the otherwise yellowish maculae of the forewings almost of a purely white colour. All the longitudinal bands light-yellow instead of reddish-brown as in the Andine allies. Base of the hindwings with purely white extensive stripes. Venezuela, from the peninsula of Patar, collected in August. Type in the Tring-Museum. — **delinita** *delinita*. *subsp. nov.* (106 f). The ochreous longitudinal band of the forewings more compact, i. e. more uniformly broad and distally less dentate than in *deleta* and *erotia*. Median band of the hindwings, especially considering the size, relatively narrow, distally bordered with ochre-yellow frequently in the anterior part, sometimes also in its full length. Wings of the ♂♂ beneath dark reddish-brown with reduced white submarginal bands. Type from Colombia (Cauca Valley). Quite a similar form is found in Central America from Guatemala to Panama. Specimens from the latter habitat have, according to GODMAN, remarkably much white in the submedian zone of the forewings. — **permagna** *subsp. (or form.) nov.* (106 e) was found on the Rio Dagua in Colombia. The *permagna*. white hue of the forewings also here sometimes attains a certain extent, but it may almost disappear in ♂♂ from the same habitat. *permagna* beats all the well known *erotia*-races by its considerable size and the more extensive submarginal white spotting of both the wings. *permagna* seems to be distributed from Colombia throughout the whole district of the Upper Amazon as far as French Guiana, for there is a magnificent ♀ lying before me from the latter district, as well as ♂♂ from Marcapata (Peru). — **erotia** *Hew.* (106 e) *erotia*. was described by its author according to a relatively small ♀ from Bolivia and occurs pretty conformably in many parts of Peru and Ecuador. Ground colour of the under surface more reddish-brown instead of loam-yellow as in the Colombian races. The median band of the hindwings variable, sometimes bulged out, and the narrowest in a ♂ from Ecuador. — ♂♂ with white embedment in the submedian part of the forewings, **albina** *form. nov.*, are especially common in the Amazonas-part of Peru where they occur beside gigantic *permagna*. In Ecuador and Peru *erotia* was yet collected in altitudes of 4000 and 4500 feet, it inhabits, however, preponderantly the hot valleys. — **fugela** *form. nov.* is a peculiar, relatively small form reminding us on the *fugela*. upper surface of *A. davisi* (106 c) and *metana* (106 d) by small subapical spots and an especially pale median zone of the forewings, beneath, however, showing all the marks of *erotia* by purely white stripes on light reddish-brown ground. They are possibly considerably differentiated, deviating specimens of a dry period, since beside the type from Obidos another ♂ from Bahia is lying before me. — **uta** *form. nov.* forms an intermediary *uta*. between *A. boeotia* and *A. sichaeus*. ♂: upper surface very similar to *A. sichaeus*, but with much lighter longitudinal bands of the forewings, with a light-yellow hue especially in the anal direction and being especially distally more strongly indented. The subapical maculae are more isolated. The white median band of the hindwings, by its shape, reminds us more of *A. valentina* *Fruhst.*, being very much strangulated below the broadened costal spot, tapering also in the anal direction where it exhibits a bluish-violet hue. Under surface: all the spots of the median band of the forewings are placed in one vertical row and are not moved proximally at the cell-apex. The violet submarginal spots combined to completer bands, the other violet spots light, the basal bands white instead of grey. White median area of the hindwings more irregular, the reddish-brown submarginal band is absent and replaced by a series of indistinct white effaced spots. Ground colour much lighter reddish-brown. Forewing more roundish, hindwing narrower, more undulate. Bolivia, 1 ♂ collected by A. BANG-HAAS, and 2 ♂♂ from Honduras in the Coll. FRUHSTORFER.

**A. delphicola** has been described in the famous book of travels: „Two Years among the Indians“ by Dr. TH. KOCH-GRÜNBERG, Berlin 1910, p. 308, the clasping-organs being figured p. 359 beside those of *A. erotia*. *delphicola* is above hardly to be separated from *A. erotia*, the under surface, however, is in many parts so very different that it may be considered as a parallel species of *erotia*, just like *A. aethalia* *Fldr.* and *A. euboea* *Fldr.* being above almost analogous, are also occurring simultaneously. The under surface of *A. delphicola* may easily be mixed up with that of *A. euboea*, while the total colouring of *A. erotia* and *A. aethalia* is very much alike. In substance, *delphicola* deviates beneath from *A. erotia* by the darker, preponderantly coffee- or violet-brown total colouring and by compact whitish bands in the submarginal part of the hindwings instead of the isolated white spots of *erotia*. The subbasal stripes, especially of the hindwings, are not purely white, but beautiful greyish-violet. Tegumen with a broader appendage of the uncus. Valve with extremely slender, unarmed exterior part, while that of *A. erotia* bears 4 sharp points. Cluncula narrow, high, that of *erotia* obtuse and low. — **nava** *subsp. nov.* (106 f) was discovered in Eastern Bolivia in the Province of Sara. *nava*. The greyish-violet faded under surface makes entirely the impression as if the specimens collected from the end of February to the beginning of April belonged to a dry period. — **praetura** *subsp. nov.* (106 f) was *praetura*. figured according to a ♂ from the Rio Demerara (British Guiana). The yellowish-brown part of the forewings more extensive and darker than in *nava*, the white median band and the subanal spots of the hindwings more reduced. The longitudinal stripes of the hindwings remarkably broad, partly purely white. Widely distributed, in my collection from Surinam (Cayenne), Mato Grosso and from the Lower Amazon. — **delphicola** *Fruhst.* *delphicola*. based upon considerably smaller specimens being beneath very much darkened, from the Upper Rio-Uaupes, the Upper Amazon and Peru. — **ophellas** *subsp. nov.* denotes a magnificent form with especially luxuriant, *ophellas*. yellowish-brown preapical spots, acutely angled median band of the forewings, which is widely overflowed in white in the anal direction. The under surface similar to that of *nava*, but more variegated, with sharper delimited, whitish-violet stripes. Espiritu Santo and further inland as far as Paraguay.



*A. phylaca* resembles above an *A. erotia* (106 e) with narrowed yellow zone of the forewings. The white hue of the submedian part advances almost to the middle median and stays likewise more reduced than in the white-dotted *erotia* and *delphicola*. Tegumen strong with robust, broad and relatively short uncus. Valve anteriorly tapering, clunicula broader than in *A. boeotia*. Valve compared to *A. erotia* narrower, longer, clunicula, however, very similar so that by means of the valval appendage the species of the whole group of *A. erotia* cannot be distinguished. Only when considering the total number of all the characteristics, we may ascertain differences, though not easily. The great affinities of the species are not only expressed in the markings, but also in the sexual organs. *phylaca* has a greater range than was known hitherto. *phylaca* Bat., described from Guatemala and advancing to the north as far as Mexico, has very large light-yellow preapical spots and an extensive median area with nearly double as broad white zone of the hindwings as *A. leopardus* (106 d). A diminutive form of it is *trinita* Kaye from the Isle of Trinidad in which the whole yellow area of the forewings appears most reduced. — *phylacides* subsp. nov. (106 f). ♂: the yellow longitudinal band much narrower than in *phylaca*, proximally deep indented. Under surface darker reddish-brown with sharply defined bluish-violet spots. Alto Amazonas, Peru, also in the central part of the Amazon. — *sarana* subsp. nov. (106 c). Habitus smaller than the preceding form, the yellow anterior half of the forewing-band broader, lighter. Under surface; very much brightened, with faded yellow, instead of distinctly defined reddish-brown bands, the spots being dark violet in *phylacides* are almost white, the submarginal bands subdued, with grey, instead of metallic blue lustre. Bolivia, from the Province of Sara. — *georgias* subsp. nov. was recently discovered in Mato-Grosso (Brazil); it beats the *phylaca*-forms so far known by the size of the strongly darkened orange-coloured zone of the forewings. Median stripes of the hindwings, however, strangulated, under surface faded, most similar to that of *A. goyama*, preponderantly greyish-brown.

*A. goyama* Schaus is perhaps also only a *phylaca*-race; but since the clasping-organs are somewhat different, we provisionally mention it here as a species of its own. Before I knew the description by SCHAU, I denominated the form *leopardus* by which i. l. denomination we figure it fig. 106 d. Smaller, with narrower wings than *sarana*, the anterior yellowish half of the median band of the forewings running more rectilinearly, the white median bands considerably narrower. The under surface still more monotonous than in *sarana*, almost without any violet marking being replaced by a monotonous grey. The brown postmedian line of the hindwings being narrow in *sarana* is more than double as broad. We repeat here the original diagnosis of SCHAU \*): „*Adelpha goyama* Schaus. Forewing with a white band from the inner margin to above the second vein, surmounted by a large yellowish space growing narrower at the fifth vein. Near the apex three narrow yellowish spots. Hindwing with a broad white band from the costa to the anal angle, a yellowish spot in the anal angle. Under surface of the forewings: costal striped in grey with some white and reddish at the base; cellule at the base whitish lilac with a reddish streak from the median vein, 4 reddish transverse lines. Base beneath the cellule greyish-brown. The white median band extended as far as the costal margin, but with a reddish-brown hue above the third vein, distally likewise bordered by a reddish-brown line being replaced at the costa by a square dark brown space. Then follow 3 whitish spots, furthermore a subterminal grey line and a marginal reddish-brown one, apex and terminal area reddish brown. Hindwings greyish-white at the base. The white median band extensively bordered by reddish-brown. The submarginal zone greyish-brown, traversed by a thick brown line. The distal margin greyish-white, in front of it 2 reddish lines. Two small black crescents with reddish-brown cap in the anal angle. Expanse of wings: 43 mm. Brazil: Castro (Paraná). — Nearly allied to *erotia*, also known from Paraguay.“ In the collection of FRUHSTORFER there are also specimens from Espiritu Santo, Rio de Janeiro, Sa. Catharina and Cochabamba (Bolivia). Uncus somewhat thicker and the valve broader than in *A. phylaca sarana* from Bolivia.

*A. barnesia* Schaus \*\*). Forewing with a white median band from the inner margin to the third vein. A broad yellow spot above this, distally accompanied by 2 small yellow spots near the costa. Hindwings with a broad white median band. Anal angle very prominent. A yellowish spot near the anal angle. Under surface with a white median band, the yellowish zone, however, replaced by a dull white margin divided by reddish veins. My specimen differs from the name-type by the white submedian spot of the forewings reaching hardly the third resp. posterior median. The upper surface of *barnesia* entirely resembles *erotia*, the caudiformly extended elongation of the hindwings distinguishes it, however, from *erotia* and all the vicarious types. The under surface of *barnesia* harmonizes with *A. delphicola* Fruhst. and *A. aethalia* Fldr. (106 d), the hindwings, however, differ from these 2 species by an uncommonly extensive reddish-brown submarginal zone. Bolivia, very rare. Beside the type there is only one ♂ of the Coll. FRUHSTORFER known.

*A. phliassa* has entirely the scheme of markings of *A. plesaura* (107 a) except that in some forms the white hue at the reddish-brown median zone of the upper surface of the forewings is absent. The under surface resembles that of *A. delphicola* and *A. euboea*. The yellow preapical spots are absent in *phliassa* like in *A. plesaura*, whereby these two species are easily distinguishable from all the types of the *A. erotia*-group. *phliassa* Godt. (107a),

\*) Proc. Un. Stat. Nat. Mus. 1900 p. 395.

\*\*) Proc. Un. Stat. Nat. Mus. 1900 p. 396.



described from Surinam, inhabits all the three Provinces of Guiana and the whole district of the Lower Amazon. The under surface is sometimes much darker striped than it is in our figure, especially specimens from Cayenne and Obidos are thereby conspicuous and thus form a transition to *implicata* *subsp. nov.* Here the forewings exhibit from the inner margin as far as up to the middle median a white hue of the ochreous median band, being otherwise also much narrower. The white median band of the hindwings, however, broader, the basal area of the hindwings covered with violet instead of whitish. Peru. — *bartolme* *subsp. nov.* was recently discovered in Mato Grosso where it occurs beside *A. plesaure* which is so nearly allied with it on the upper surface. The bands of the upper surface analogous to *implicata* with the sole exception of the much narrower white stripes on the hindwings. The under surface eminently differing by a reddish tinge on the median part of the forewings. The whole distal area of the hindwings likewise extensively covered with reddish-brown.

**A. plesaure.** We have succeeded in most favourably demonstrating the markings by our figures (107 a). The yellow zone as well as the white one of the forewings vary according to the habitat of the butterflies. The under surface is likewise variable according to the locality, either with prominent bands or faded. *plesaure* *Hbn.* A form being rarely found in collections, with yellowish-brown though insignificant white embedding of the forewings, being prolonged as far as to the inner margin. The orange-coloured part of the forewings are besides much less extensive than in our figure. Habitat unknown, presumably Guiana. — *cera-chates* *subsp. nov.* approaches the most closely the illustrations in HUEBNER'S „Zuträge“, by the reddish-yellow colour running through the whole forewing and the strangulated shortened white colour. The under surface peculiarly faded, discoloured into wax-yellow. Mato Grosso. — *sirona* *subsp. nov.* from Eastern Bolivia shows, beside its considerable habitual size, also a broader yellowish-brown band of the forewings; under surface also darker and more variegated, with more pregnant reddish-brown stripes than in the allied races mentioned so far. — *heredia* *subsp. nov.* (107 a as *plesaure*) is a most characteristic territorial form from Central Brazil, recognizable by the elongated white of the forewings extending as far as to the wing-centre at the cost of the reddish-brown part. Bahia, Espiritu Santo. — *antoniae* *subsp. nov.* resembles *heredia* except that the yellowish-brown part of the forewings is more irregular, the white stripes narrowed and the under surface on the forewings with darker yellow, and on the hindwings with sharper reddish-brown stripes. Santa Catharina.

**A. cytherea** forms one of the most intuitive examples of the geographical variability of a species the amplitude of which we illustrate by our 7 figures 108 b. On the upper surface, the reddish-yellow as well as the white part may shade off in different extent according to the locality. The under surface, however, is more constant in the ground-colour, even extremely constant, and even the width of the white median band is subject to but slight modifications. The greatest variability is exhibited by the Colombian species among which we meet such being striped the darkest brown on the under surface, beside such with a supplementary yellowish-brown median band on the upper surface of the hindwings (*olbia*, 108 c). With the exception of Mexico, *cytherea* is distributed throughout the whole of Central America and the southern continent from Colombia to Bolivia, and from the West Indies to Santa Catharina. The sexual organs are closer allied to the *cocala*-group than to the following *A. iphiela*-forms, they are, on the other hand, so well specialized that we may speak, also according to the configuration of these organs, of an independent *A. cytherea*-group. Valve of about the contour of the *cocala*-valve, with extremely broad and deep groove, the short point without spines, but with very long hair as in *cocala*. Cluncula relatively short, roundish, uniform. Penis broad, little chitinized; scaphium with thin arms. Uncus like in *A. cocala*, but basally less swollen. — *marcia* *subsp. nov.* (108 b) is found from Guatemala to Colombia. Yellow zone of the forewings narrower than in the typical form, as well as the white band of both the wings. — *despoliata* *subsp. nov.* (108 b as *cytherea*) is the common form of Colombia. The reddish-yellow part of the forewings darker than in *cytherea* *L.*, somewhat narrower, the white spot of the forewings anteriorly not ending in a sharp point, but suddenly interrupted broad at the posterior median. — *dagwana* *subsp. nov.* (108 b) forms the melanotic extreme of the whole species, with a white median band being only as thin as a thread. The reddish-brown bands of the under surface more prominent than in all the known *cytherea*-races. The white stripes are not always so much reduced as in our figure; they may be half as broad again, as is shown by two ♂♂ of my collection. Rio Dagua (Western Colombia); type in the Tring-Museum. — *olbia* *Fldr.* (108 c) is the lightest form; conspicuous by a postdiscal yellow band of the hindwings. Colombia, rare, probably from the Cauca Valley where it occurs as aberration beside *despoliata*. — *tarratia* *subsp. nov.* (108 b) approximates *despoliata*, though its yellow region of the forewings is also on the decline, whereby it approaches more *dagwana* and *marcia*. The white spot always goes beyond the lower median of the forewings in a distinct pointed prolongation. Ecuador. Type from Paramba. — *lanilla* *subsp. nov.* (108 b) is found from Peru to Bolivia and is further inland distributed as far as Mato Grosso. Upper surface most nearly allied to *cytherea* except that the white spot of the forewings is prolonged further anteriorly and the median band of the hindwings considerably broadened. — *insularis* *subsp. nov.* (108 b) beats even *lanilla* in the extent of the white median band. The hindwings bear only one (instead of two) blackish-grey submarginal bands. Trinidad. Similar forms are found also on the other West Indian Isles, and DOUBLEDAY reported *cytherea* already in 1847 from the Isle of St. Lucia. — *cytherea* *L.*, the nomenclatural type, described from Surinam, goes to the north as far as Venezuela and the Upper Rio Negro. The yellow area of the forewings somewhat more extensive and paler than in *lanilla*. — As *nahna* *Sm.* a form being similar and equal to *olbia* is described from Merida (Venezuela) with somewhat



*herennia*. shorter white band of the hindwings. — *herennia* *subsp. nov.* is immediately distinguishable from *cytherea* by the very pointed white spot of the forewings reminding us already of *mythra* (108 c) and advancing as far as to the cellular wall. Besides, the reddish-yellow spot between the broader median and the submedian begins to withdraw far from the white middle stripe and is shortened in some specimens just like in *A. aea*. *mythra*. Central Brazil, Espiritu Santo and Rio de Janeiro. — The southernmost race, *aea* *Fldr.* (108 c as *mythra*), is lying before me from Santo Catharina and Santos. Its white stripes are expanded advancing to the anterior median, the yellow part of the forewings being, at the same time, reduced in width.

*mythra*. *A. mythra* *Godt.* differs from *A. cytherea* by the isolated yellow spot of the forewings, forming almost a regular triangle. Beneath, *mythra* is easily separable from *cytherea* by a whitish-violet submarginal band of both the wings and by the white median band reaching, slightly discoloured in violet-grey, the costal margin of the forewings. The species is extremely resistant, and between specimens from Espiritu Santo and Rio Grande do Sul there are but so very slight shades of colouring that a separation of the paler southern form is not necessary. Anatomically, *A. mythra* is connected with *A. cytherea*, except that the valve is somewhat shorter, ventrally more rounded, the dorsal appendage longer and more pointed, the uncus centrally thickened downwards.

*syma*. *A. syma* *Godt.* (107 f) has the same occurrence and resistency in common with *A. mythra*. The under surface is most characteristic by the regular intervals of narrow white and reddish-brown bands. Like in *mythra*, the white median stripe as well as submarginal stripe reach the costal margin of the forewings. The ♀ has somewhat more roundish wings than the ♂. In the Tring Museum there is, however, an aberration, *pravitas* *form. nov.* (107 f), with faded yellowish-white preapical area of the forewings and with light-yellow instead of orange-coloured anal spot of the hindwings. Also beneath, the reddish-brown stripes are replaced by light ochre-yellow bands with broad black borders. I know also of *A. syma*-specimens from Minas-Geraes, Paraguay and the Argentine Republic.

*coryneta*. *A. coryneta* *Hew.*, a peculiar and rare species, so far known only from Bolivia, has an isolated oblong reddish-yellow preapical spot of the forewings, sending its festoon-like prolongation down as far as to the posterior median. Central area of both the wings very broad, of a milky white, advancing beyond the cell-apex. Hindwing with neat bipartite, crescent-shaped white anal spot instead of yellow. Under surface most peculiar, reminding us somewhat of that of *A. attica*. The white area bordered at first by a blackish, then reddish-yellow band, submarginal zone violet, distal margin again reddish-yellow. ♀ somewhat larger than the ♂, with more roundish wings.

*A. thoasa* already forms a transition to the *A. iphiela*-group. Upper surface characterized by one or two transcellular spots of the forewings, varying in extent according to the habitat and maybe also to the season. — *silia* *subsp. nov.* (107 e) shows them in the most luxuriant development. Under surface entirely iphieloid by violet preapical spots, whereas all the other allies exhibit yellowish maculae reminding us of *gerona*. Argentina, type from Encorado, Sa. Cruz de la Sierra (January) in my collection, another specimen in the Tring Museum. — *manilia* *subsp. nov.* Considerably smaller than *silia*, with only one insignificant transcellular dot of the forewings; the reddish-yellow embedment, however, somewhat more extensive. Under surface with a broader subapical spot being already overhued in yellowish. Bolivia. — *cuyaba* *subsp. nov.* has above somewhat narrower white median band, but equals otherwise *silia* in the magnificently developed white small transcellular spots on the under surface of the forewings with sharply delimited light yellow preapical area. Mato Grosso. — *thoasa* *Hew.*, described from the Amazon-district, is lying before me in a race very much allied with it, from Peru. There exists only one small white dot of the forewings, the yellow border narrower than in *manilia* from Bolivia. Under surface like in *gerona* with 2 small white stripes in the forewing-cell. — *zalma* *subsp. nov.* already approximates the Bolivian *manilia* and has like it only one minute white dot at the cell-end. The hyaline area of both the wings somewhat broader. The ochreous preapical spot of the forewings more posteriorly prolonged and more vertical instead of horizontal. From Tarapoto on the Huallaga in Peru. Type in the collection of FRUHSTORFER. — *gerona* *Hew.* (107 e) a graceful race, above similar to *A. coryneta*, but the yellow embedment of the forewings shorter. Anal spot of the hindwings reddish-yellow. Under surface somewhat like that of *A. iphiela*, but with two silvery white, instead of violet small stripes in the cell of the forewings. The apical spot of the upper surface diaphanous, appearing as a faded ochre-yellow area. The white zone of the hindwings framed by yellowish-red. Described from Minas Geraes, from where also our figured ♂ originates, and from Paraguay in my collection.

*A. iphiela*, the chief representative of the great group with isolated and relatively small reddish-yellow preapical spot of the forewings, inclines still more than the other *Adelpha* to the formation of local races, the difference of which is founded by a greater or smaller extent of the white median band of both the wings and the reddish-yellow embedment of the forewings. The under surface, however, remains constant. Clasp-organs most characteristic, tegumen with strong and still boldly eurved uncus, valve prominent by a clunacula rising like a cone, but very broad towards the base, being dorsally, before the point, deeply indented, also ventrally, below the tooth, projecting sharply convex. — *massilia* *Fldr.* (107 e), from Eastern Mexico, is the



northernmost race. The yellowish-brown part of both the wings more extensive than in the nomenclatural type. — **massilides** *subsp. nov.* beats *massilia* in size. The preapical spot of the forewings more imposing *massilides*. and distally more irregular. The white zone of both the wings more extensive. Under surface lighter whitish-grey, the brown longitudinal bands darker and more prominent. Western Mexico. — **iphicleola** *iphicleola*. *Bates* (107 d) inhabits the whole of Central America. Nomenclatural type from Guatemala. The form is common everywhere and is reported to occur in Guatemala in altitudes higher than 4000 feet. — **gortyna** *gortyna*. *subsp. nov.* has a smaller dark preapical spot of the forewings and narrower white median bands. Colombia, very common in the Cauca Valley. On the volcano Chiriqui a form smaller in the habitus is found which, however, agrees with *gortyna* in the scheme of markings. — **funalis** *subsp. nov.* is known to me only from the *funalis*. Rio Dagua in Colombia, and like all the races of this river-basin very much darkened, so that the white median band of both the wings is reduced to half its normal width. Type in the Tring-Museum. — **phera** *phera*. *subsp. nov.* somewhat resembles the Venezuelan *A. iphiclea exanima* by the extremely pure-white and very broad median zone of both the wings. The under surface approximates likewise the Venezuelan race by relatively small transcellular spots. Habitat of the beautiful form is unknown. — **exanima** *subsp. nov.* is found *exanima*. in Venezuela. The yellow subapical spot of the forewings smaller than in *gortyna* and *phera*, the white area more extensive than in *gortyna*, of a purer white. Under surface darker than in *iphicleola* from Honduras, but there exist also specimens of a dry period with preponderantly whitish hue and prominent white submarginal stripes. — **iphiclea** *L.* (107 a) having originally come from Surinam, is also common in Cayenne *iphiclea*. and on the Lower Amazon. The yellow embedment of the forewings is, in the ♀, unciformly prolonged at the anterior median of the forewings. — **iphimedia** *subsp. nov.* has an almost just as broad white median band *iphimedia*. of both the wings as *silia* (107 c) and a strangely stunted reddish-yellow spot of the forewings. Cuba. — **daceleia** *subsp. nov.* A pygmean form, smaller than *A. gerona* (107 e); the subapical spot of the forewings, however, paler and larger than in *iphimedia*. This excellent race, conspicuous already by its small size, inhabits the Isle of Trinidad. — **pharaë** *subsp. nov.* is met in Mato Grosso, Peru and Bolivia. It is most closely allied to *pharaë*. *iphiclea* from which it differs by an expanded median band and a more imposing apical spot. — **indefecta** *subsp. nov.* (107 c) excels *pharaë* in the size of the reddish-yellow embedment of the forewings, forming, however, a transition to the Brazilian territorial forms by the strangulated white band of the forewings. The under surface is distinguished by the prolonged subapical strigae and the pale yellowish-red longitudinal bands. Paraguay, type in the Tring Museum. — **leucates** *subsp. nov.* is set up according to a specimen of the *leucates*. FELDER-collection of the Tring Museum. *leucates* in many respects reminds us of *iphimedia* from Cuba and presents itself as a genuine product of a hot and dry zone. It differs from the most nearly allied *ephesa Mén.* by a broader white median zone of both the wings, the lighter and paler ochreous and also more imposing subapical spot and the paler under surface. Bahia. Similar specimens from Pernambuco in the collection of STAUDINGER. — **ephesa** *Mén.* inhabits Central Brazil. The nomenclatural type might originate from Rio de *ephesa*. Janeiro, where its author has been collecting personally. The apical spot of the forewings more roundish than in *iphiclea*, the white zone narrower. Not rare in Espiritu Santo and near the capital of Rio de Janeiro. — **gellia** *subsp. nov.*, finally, resembles the Paraguay-race on the forewings, but the white area of the hindwings *gellia*. is again narrowed. Under surface darker than in *indefecta* and *ephesa*, the reddish-brown longitudinal bands more prominent. Sa. Catharina, to the north as far as São Paulo.

**A. thessalia** is found as a vicarious type, smaller in the habitus, beside *A. iphiclea* to which it is nearly allied by the upper and under surface. The shape of the wings is somewhat more pointed, the reddish-yellow apical spot more compact and more roundish. The white median band of the forewings tapering anteriorly. Hindwing more slender, more sharply dentate, the reddish anal spot obsolete, the sexual organs greatly differentiated: uncus much narrower, more slender, strangulated towards the base, valve ventrally without the convex medial projection, nearly uniformly cylindrical, more slender and pointed. Clavicula basally narrowed, rising in almost uniform width. Two areal forms: **thessalia** *Fldr.*, the typical form from the Rio Negro. Very *thessalia*. common in Peru and Ecuador up to an altitude of about 1200 m. Rare in Colombia. Beneath recognizable and differing from *A. iphiclea* by shorter transcellular strigae. In Bolivian specimens we notice the influence of the seasons. For instance, ♂♂ from Coroico belonging, according to the dark-brown striped under surface, to a rainy period, show a prolongation of the reddish-yellow preapical area on the upper surface of the forewings; time of their flight November and December; whereas specimens from August, by their preponderantly light grey bands on the faded under surface create the impression of being the product of a dry zone. — In **cesilas** *subsp. nov.* the character of the dry season form is increased. The preapical spot is narrowed and *cesilas*. begins to dissolve at the margins. The white zone of both the wings is nearly as broad again as in specimens from Peru. Under surface of both the wings predominantly whitish, the reddish-brown stripes, especially in the basal zone, as thin as a thread. From Pilcomayo to the Rio Grande, collected by STEINBACH in December.

**A. calliphiclea** *Btlr.* was founded on CRAMER's figures J and D, table 376 of his Pap. Exot. IV. The *calliphiclea*. form, provided its not having been misdrawn or coloured wrongly, is remarkable for 3 small white transverse bands of the cell of the forewings and a purely white submarginal band of the under surface of both the wings. Above it resembles *A. abia* *Hew.* by a three-cornered subapical spot. Surinam. Similar specimens from Bolivia are, according to BUTLER, reported to be in the British Museum.



- abia*. **A. abia** Hew. (109 a) hitherto known only from Rio de Janeiro, may be considered one of the commonest Adelphes of Southern Brazil occurring also in Argentina and Paraguay. It very probably replaces *A. thessalia* in Brazil and the neighbouring states. The clasping-organs are, as regards the valves, but slightly differing, but the uncus of *abia* seems to be more robust and shorter, the scaphium and the saccus broader. The valve of *abia* is somewhat more slender with a more bulky appendage of the very high clunicula. According to the season the under surface of the butterfly may be striped in vivid light cocoa-brown or nearly whitish, with faded bands. Upper surface very similar to *A. iphiclea indefecta* (107 e), though with a more pointed reddish-yellow area of the forewings. Specimens from Rio Grande do Sul are beneath almost entirely whitish-grey.
- basiloides*. **A. basiloides** resembles above *A. iphicleola* (107 d), except that the white median band penetrates the cell. The under surface is darker blackish-grey, the brown longitudinal bands are somewhat more tightened than in *A. iphiclea*. The range of the species is very limited: Central America, and besides only Colombia and Venezuela. **basiloides** Bates (= *lemnina* Fldr.) originally described from Mexico and occurring as far as Panama.
- lydia*. The ♀ has sometimes a second streak-like spot before the apex of the cellule of the forewings. — **lydia** *caelia*. *Btlr.* is a race described from Honduras that has remained unknown to me in nature. — **caelia** *subsp. nov.* has more roundish contours and a greater size of the wings than *basiloides*. Median band broader, the yellowish parts more insignificant than in specimens of a more northern origin. Colombia, rare. — **lativitta** *Stgr.* beats even *caelia* in the width of the white median area. Venezuela.

**A. pithys**, a rare species hitherto known only from Guatemala, has recently been discovered also in Mexico. Upper surface as in *A. iphiclea*, only with the yellowish subapical band of the forewings being posteriorly prolonged, relatively narrow and projecting as far as to the costal margin. **pithys** Bates (109 a) differs beneath from the forms of the *iphiclea*-group by the transcellular whitish violet maculae or strigae being replaced by a faded loam-coloured band. Basal zone of the hindwings extensively whitish violet, only with fine reddish-brown lines instead of strong brown stripes as in *A. iphiclea*. Guatemala, very rare, in altitudes from 2000 to 5000 feet. — **vodena** *subsp. nov.* Habitus larger than that of the Central American race, the median band of the hindwings considerably narrower. Under surface throughout darker, the hindwings with prominent reddish-brown distal delimitation of the white discal band. Guerrero (Mexico).

*donyssa*. **A. donyssa** Hew. (= *roela* Bsd.) occurs in Mexico and Guatemala beside *A. pithys*, likewise very rare, ascending from the lowland up to altitudes of 2000 m. The species resembles above the common *A. abia* Hew. (109 a) from Rio de Janeiro, is larger than *A. pithys* with much narrower white median band. Under surface darker, the base of the hindwings more grey than violet. GODMAN found a ♂ at the volcano Fuego in Guatemala in an altitude of 7000 feet.

**A. abyila**, a species being very rarely found in the collections, resembling above *A. pithys*, but immediately distinguishable from it by the long-stretched, sharply serrated hindwings, which exhibit an uncommonly large reddish-yellow anal spot. The subapical spot of the forewings prolonged to the costal margin as well as posteriorly, but strongly tapering between the medians, contrary to *pithys*. **abyila** Hew. (109 a) inhabits Jamaica, with relatively broad white median band of both the wings. Only 1 ♂ from the Tring-Museum is known to me. — **abylina** *subsp. nov.* has been mistaken for *iphiclea* L. by LUCAS, Lep. Exot. 1835, p. 126, and also figured as *iphiclea* table 68, topmost figure. ♂ with strangulated white median area and with a most narrowed submarginal band of the forewings traversing as far as to the posterior median. KIRBY thought the form to be identical with *A. celerio* Bates, but *abylina* is still less allied with *A. celerio* than with *A. iphiclea* L. Habitat of *abylina* unknown, presumably one of the West Indies.

**A. gelania**, a collective species from the West Indies; upper surface brown with a narrow white or yellow median band extending as far as to the anterior radial. Before the apex another yellowish spot. Cellule of the forewings with three red transverse bands, anal spot of the hindwings very large, reddish, enclosing 2 black punctiform spots. — **gelania** *Godt.* from Puerto Rico is in the STAUDINGER-Collection of the Berlin Museum. — **arecosa** Hew. (109 b) differs from it by white bands of the upper surface. Habitat unknown, one of the Antilles. The statement of DOUBLEDAY, however, that the species is said to occur in Mexico, has hitherto not been confirmed.

**A. lerna**. A magnificent species combining the marks of the *A. iphiclea*-group, by the scheme of markings on the upper surface, with those of the *A. erotia*-group, by the opulent decoration of the under surface. According to the habitat, the size and width of the white bands and yellowish red spots of the upper surface are variable, whereas the under surface changes its tints less according to the locality than to the season. Like in *A. erotia*, we notice in the dry period predominantly yellow bands, in the wet period preponderantly intensive reddish-brown bands. *lerna* occurs from Central America to Bolivia, and as a rarity in the Amazon district and parts of Guiana. Anatomically *A. lerna* has the same form of the uncus as *A. erotia*, while the valve being distally extremely slender and turned down with the distal end in the shape of a beak, shows no relations whatever to the group of *A. erotia* and *A. iphiclea*, but occurs quite isolated. Clunicula has the shape of



a boss, strongly chitinated. — *aeolia* Fldr. (107 b) according to the season changes the extent of the white median band. FELDER's type exhibits narrower bands than the model of our figure, resembling thereby much more the Central American ♂ than it was described by GODMAN and SALVIN. I have specimens from Colombia before me with light buff stripes and such with reddish-brown bands of the under surface. Range from Nicaragua throughout Colombia. — *archidona* subsp. nov. (107 b) is found in the Amazon-district of Ecuador and Peru and differs from the Bolivian *lerna* Hew. (107 a) by somewhat darker reddish-yellow spots and less broad bands of the forewings. — *leonina* subsp. nov. (107 b) differs from all the *lerna*-races by the larger and lighter ochreous preapical spots of the forewings and the much narrower white median band of all the wings. The under surface appears more copiously set with black spots than in the other allies of *lerna*. British Guiana, Essequibo River. Type in the Tring-Museum.

*A. naxia* belongs to a small group of species differing by the various though insignificant constellations of the subapical spots of the forewings. The under surface approaches that of *A. delphicola* and *A. iphiclea* and deviates from *A. lerna* thereby. The clasping organs exhibit trifling, but still immediately recognizable differences. Valve of *A. naxia* shorter, almost quadratic at the base, the dorsal tooth forming an isosceles triangle. Range from Mexico to Colombia, probably along the whole Upper Amazon and the chain of the Andes, since I recently received specimens from Mato Grosso. One charming form also on the Isle of Trinidad. *naxia* Fldr. (107 b) described according to a ♀ from Onaca, Santa Marta (Colombia), resembles beneath *A. iphiclea* except the transcellular whitish-yellow maculae being much larger. — *mucia* subsp. nov. is before me from the volcano Chiriqui. The white bands are narrowed compared to *naxia* and the Mexican race, the reddish-brown apical spot is darker and the under surface with more intensive decorations in reddish-brown. — *epiphiclea* Godm. and Salv. was denominated thus by its authors on table 38 f. 9, 10 in the Biologia, but identified with *A. basilea* Cr. in the text p. 306. The name of *epiphiclea*, however, holds good at all events, since *basilea* Cr. is replaced by the synonymous *A. iphiclea* L. The reddish-brown preapical spot of the forewings broader than in *A. mucia*. Mexico, apparently rare. — *hieronica* subsp. nov. (107 c) has, considering its small size, remarkably broad white median bands, especially on the hindwings. The preapical spots of the forewings are, however, extremely reduced. The under surface shows all the characteristics of the insular races, it is conspicuously darkened, all the markings extremely pronounced. Trinidad, Tabaginte, Nariéva-district, ♂-type in the Tring Museum. — *dominula* Möschl. from Surinam was based upon a ♀-form of imposing size, with a small reddish-brown apical spot and a more crescent-shaped transcellular reddish-yellow area. Under surface remarkably similar to *A. iphiclea* L. — Near Manaos on the Rio Negro, a territorial form is found, *diatrete* subsp. nov., without the blackish-brown longitudinal stripes seen in *dominula*, but preponderant reddish-brown ground-colour. The preapical spots on the upper surface of the forewings are also more intensively reddish-yellow. Type in the Collection STAUDINGER in the Berlin Museum. — *zynia* subsp. nov. distinguished by very broad, light ochre-yellow subapical spots of the forewings. The white median band of both the wings about as in *naxia*. Under surface faded, paler than in the more northern forms. The shape only somewhat larger than in *hieronica*. Apparently very rare, Mato Grosso. Only 2 ♂♂ in FRUHSTORFER's Collection.

*A. ixia* differs from *A. naxia* by the appearance of a supplementary yellowish spot of the forewings, so that the preapical area extends as far as to the middle median, while in *A. ixia* it terminates already at the anterior median. White median band of the forewings always shorter. Hindwings narrower than in *naxia* and, therefore, more protracted in the anal part. Under surface traversed by broader reddish-brown bands. Valve more slender, basally not thickened as in *A. naxia*, the tooth shorter, blunter. The species, according to the material I was able to obtain, can be proved only from Mexico to Colombia and Venezuela. *ixia* Fldr., the nomenclatural type, originates from Venezuela. Median band of both the wings something like in *A. naxia* (107 b), but shorter. The stripe embedded between the posterior radial and the anterior median in the pale ochre-yellow area of the forewings much longer and narrower than in *A. naxia*. — In Colombia *ixia* is represented by *fundania* subsp. nov. (109 b) with narrower white median area of both the wings and likewise stunted preapical spot of the forewings. On that account the faded whitish-yellow transcellular spots of the under surface also appear reduced in size. The influence of the season is evident on the under surface by a dark tinge of the longitudinal bands in the butterflies of the rainy months, and by pale reddish-yellow stripes in those of the dry period. Colombia. — *leucas* subsp. nov. is the name of a considerably different territorial form from Mexico, having already the second preapical stripe elongated and distally bent up anteriorly, while the posterior stripe is somewhat broader still than in *A. pseudomessana* (107 b) with which the character of the spotting on the forewings otherwise nearly harmonizes. Under surface in spite of the greater size with a narrower white median area than in *A. fundania* and *ixia*, the brown parts more extensive, also all the greyish-violet stripes broader.

*A. messana* Fldr., hitherto known only in one specimen in the author's collection, has according to the type that lay before me from the Tring-Museum, only one small reddish-yellow submarginal preapical spot of the forewings, while *ixia* and *naxia* exhibit two of them. Beside *messana* there exists already another form or species of the FELDER collection with three subapical spots of the forewings. It is introduced here as

*A. aufidia* spec. nov. uniting the marks of *A. ixia* and *naxia*; it has like *A. ixia* lobatedly protracted hindwings and like *A. naxia* reduced yellowish zone of the upper surface of the hindwings. Beneath it also



approximates *A. naxia*. The shape of the preapical spot of the forewings resembles more that of *A. pseudomessana*, and from all the mentioned vicarious types *messana* differs by 3 small submarginal spots, while *A. naxia*, *ixia* and *pseudomessana* exhibit but two of them. *aufidia* differs from the type of *A. messana* Fldr. by a narrower, longer and distally deeper indented ochreous subapical spot of the forewings. The white median band is anteriorly decidedly narrowed, and the median band of the hindwings appears likewise of smaller extent. The components of the subapical transversal band are beneath neater, the light markings covered with a more intensive violet. Colombia, Bogotá (?). A ♂ collected by LINDIG in the Tring-Museum. —

*canuleia*. ***canuleia* subsp. nov.** is nearly allied to *aufidia*, except that the yellow band-like ochreous part of the forewings is posteriorly more extensive, without being continued between the anterior medians. Under surface darker with reduced white and predominant reddish-brown bands. Peru, Tarapoto, type in the Collection FRUHSTORFER.

*pseudomes-*  
*sana*. ***A. pseudomessana* spec. nov.** (107 b ♂). ♂ exactly equalling typical *messana* by the elongated ochreous subapical spot of the forewings, the white median bands, however, being somewhat narrower and more sharply separated. The hindwings exhibit a whitish submarginal line being absent in *messana*. The under surface reminds us much more of *velia* Fldr. by the dark brown instead of yellowish collective hue, besides all the light areas are also much more pregnant, more sharply delimited, only the submedian band of the hindwings is double i. e. parted, peripherically reddish-brown with light violet-grey centre, while in *messana* it is unicolorous reddish-brown. Anatomically, *pseudomessana* is strictly separated from *A. naxia* and *A. ixia* by the very long and narrow tooth of the valve reminding us of *A. iphiclea*. The valve itself more slender and pointed than in *A. naxia*, and also immediately separable from *A. ixia* by the high cluniclea. Peru, Tarapoto and Chanchamayo.

*velia*. ***A. velia***, an excellent species being still extremely rare in the collections, inhabits Colombia, Venezuela and parts of Central and Southern Brazil. Intermediate forms are surely still found in the interjacent districts. Markings of the upper surface somewhat resembling those of *A. pseudomessana* (107 b), the preapical area of the forewings, however, most closely connected with the white median band. Under surface recognizable by relatively large submarginal spots and widely diffused whitish-violet longitudinal stripes. The subbasal band of the hindwings double, the marginal lines of it like in *pseudomessana* (107 b) separated by a grey embedment. Three areal-forms: ***velia* Fldr.** Known to me only according to a ♀ with the wrong designation „Bogotá“, from the FELDER-Collection in the Tring-Museum. Habitat, however, surely Colombia. — ***himera* Fldr.** seems to replace *velia* in Venezuela, but it is possible that it is a species of its own what cannot be determined since there is only a single ♂ specimen lying before me, the type in the Tring Museum. The median bands of *himera* nearly again as broad as in *velia* and *veliada*, exhibiting besides also a small crescent-shaped white spot beneath the ochreous subapical macula, being absent in *velia*. The under surface shows more analogies, especially as regards the spotting of the forewings, but the ground-colouring is lighter. Venezuela. — ***veliada* subsp. nov.**, an excellent form of which two ♀♀ from Santa Catharina and a third one from Espiritu Santo are lying before me. Habitus of *veliada* surpassed by *A. velia*; hindwings shorter, forewings more roundish, the ochre-yellow part of the forewings distally deeper and more finely indented, the spot in general narrower. The yellow anal spot of the hindwings smaller, paler. The under surface lighter, the white marking more hazy, gradually changing into the ground-colour. Base of all the wings lighter.

*calliphane*. ***A. calliphane* spec. nov.** (109 b). ♂ above similar to *abia* (109 a), the yellowish preapical spot, however, not touching the costal margin of the forewings, still narrower and longer, and always reaching as far as the central median. Shape of the wings narrow, forewings curved, hindwings anally tapering very much, median band on the forewings anteriorly, and on the hindwings posteriorly running to a point. Red anal spot of the hindwings smaller than in *abia* Hew. Under surface: white median band of the forewings traversing from the costal margin the whole wing, resembling thereby *cocala* Cr. *calliphane* is, however, also beneath easily separable from *cocala* by the presence of a second somewhat effaced post-discal band running proximally to the very narrow yellowish submarginal band and parallel to it. In my ♀ from Rio de Janeiro this white intermediate band is absent and the shape of the wings is somewhat more roundish. Undersurface reddish-brown, with light violet longitudinal stripes in the proximal half of the wings and a submarginal band of the same colour on all the wings, and with a violet line in the reddish-brown postmedian band of the hindwings. Claspings-organs most characteristic by a very short valve being basally broadened like a square, ventrally with an obvious convex medial projection, dorsally with a proximal broad inflated expansion. The tooth very long, its base extensive. The end of the valve broad, rounded off, but with 4 sharp teeth. Rio de Janeiro to São Paulo, rare. Type in the collection of FRUHSTORFER. 2 ♂♂ from Paraguay in the Tring-Museum.

*falcipennis*. ***A. falcipennis* spec. nov.** Forewing with far protracted apex. Hindwings curved, sposteriorly greatly reduced in size. Preapical spot of the forewings nearly triangular, shaped the same way as in *epizygis*, though somewhat narrower and, therefore, not confluent with the white longitudinal bands. Shape and course of the median bands as in *calliphane* Fruhst. (109 b). The ochre-yellow anal spot of the hindwings relatively small, narrow, without a central black dot. Ground-colour of the under surface: light buff as in *cocala didia* Fruhst. Base of all the wings greyish-violet. In the cell of the forewings two brown-yellow longitudinal bands no both the surfaces ruled with sharp black lines, at the cell-apex 3 to 5 grey pointed strigae. Median band distally



bordered in black. Both the wings traversed by a greyish-violet narrow submarginal band with a proximal black line running parallel to it. Claspings organs analogous to those of *A. calliphane*, valve, however, without the dorsal boss, whereas the ventral projection is more pronounced, clunicula rising from a narrower base. Contour of valve just like the preceding species, approaching the *A. alala*-group by the short, compact shape. Type in my collection from Rio Grande do Sul. — **perga** *subsp. nov.* was recently discovered in Santa Catharina and differs above by narrowed white and orange marking. The under surface is more variegated, the white streaks and spots are overhued by violet. The white median band of both the wings is also interiorly bordered in black, and on the wings a transcellular row of 5 distinct white spots appears, which are hardly suggested in *falcipennis*.

**A. epizygis** *spec. nov.* (109 b). ♂ above very similar to *calliphane*, the white median band of all the wings, however, much broader so that the yellow preapical spot is confluent with it. This spot costally much more extensive, forming a triangle instead of a narrow band as in *calliphane*. The reddish anal spot of the hindwings somewhat more imposing than in *calliphane*. Under surface: the white median band begins only at the anterior median, above it there are, however, three very broad yellowish-white internerval maculae advancing as far as the subcostal veins. Distally to them and parallel, a row of 5 or 6 greyish-white roundish dots traverses the wing-centre. The scheme of markings described just now remind us of *euboea* Fldr. from Colombia and *leopardus* (*goyama* Schaus) from Paraguay. The violet bands like in *calliphane*, but somewhat more subdued, the postmedian bands of the hindwings violet instead of predominantly reddish-brown and with reddish-brown longitudinal line. Claspings-organs entirely different from those of *A. calliphane* and *A. falcipennis*, much more allied to those of the group of *A. iphiela* and *A. abia*. Appendage of the uncus elongated. Valve likewise more slender in spite of a ventral expansion, the exterior part much longer, more sharply dentate. Clunicula up to the very high point broader, type from São Paulo; a ♂ from Rio Grande do Sul with somewhat broader median band in the collection of FRUHSTORFER; besides a ♂ from Paraguay in the Tring-Museum.

**A. rufilia** *spec. nov.* Shape of the wings more pointed than in *A. epizygis*, forewing with 2 obsolete ochreous subapical dots being absent in *epizygis*. Under surface: the white central areas on both the surfaces broader and with a lighter reddish-brown border, just like the yellowish-white subapical maculae and their distal parallel band. The whole other surface of all the wings greyish-white instead of violet traversed by fine light-red lines. Claspings-organs of this species characterized by the uncommonly neat marking of the under surface are prominent by the remarkably broad, relatively short dorsal tooth. This protuberance itself is more robust than in the allied species, more densely set with strong spikes; valve ventrally slightly curved; point armed only with two minute teeth. Rio Grande do Sul, very rare, only 2 ♂♂ in my collection.

**A. epona** *spec. nov.* An insignificant species combining the characters of the group of *A. iphiela* and *A. plesauere*. The upper surface resembles *A. iphiela* (107 a), *A. thessalia* (109 b) and *A. abia* (109 a), the isolated preapical spot is, by its square shape, the most similar to *A. thessalia* Fldr. The extent and course of the median band resemble *A. abia* and *A. calliphane*. The under surface differs from that of *A. epizygis* only by more faded transcellular spots. Compared with *A. plesauere*, the whole colouring of the under surface appears duller, a pale bluish-grey being prevalent. Claspings-organs with extremely short uncus; valve somewhat approaching that of *A. epizygis*, though without the inflated protuberance of the lower part. In case of intermediate stages occurring, *A. epona* may eventually be united with *A. epizygis*.

**A. felderi**, a peculiar entirely isolated species, recognizable by the far projecting apex of the forewings and sharply delimited, narrow, mother-of-pearl-lustrous, white median band on both the wings. The dark ochreous small preapical spot reminds somewhat of *A. ixia* and *naxia*. The under surface is most characteristic by the reddish-yellow ground-colour resembling *A. sichaeus* and by the band of the hindwings somewhat resembling *A. olynthia*. Three areal forms occurring from Mexico to Costa Rica: **felderi** Bsd. described from Costa Rica, is closely allied with **falcata** Godm. from Guatemala. Both have a smaller preapical spot and somewhat broader white median band of the forewings than **jarias** *subsp. nov.* from Mexico. The latter form is once noticeable by a fourth component of the otherwise tripartite apical area, embedded between the anterior and central median.

**A. fessonia** Hew. (109 c) forming, together with *A. cestus*, a small group, is recognizable by a broad white median band advancing to the costal margin on the forewings. The band forms an obtuse angle at the cell-apex. The preapical spot uncommonly large, light ochre-yellow. Under surface traversed by dark-brown bands, anal angle reddish-brown. The apical spot of the forewings pale yellow with reddish embedment. Nomenclatural type from Honduras, but occurring from Yucatan throughout the whole of Central America to Costa Rica. Not rare in Western Mexico, also from Guadalajara and Orizaba in the Tring-Museum. Specimens from Mexico exhibit a broader white band than ♂♂ from Honduras, ♂♂ from Costa Rica a more imposing preapical spot.

**A. cestus** Hew. (109 c) is excelled in size by *A. fessonia* and shows on the forewings instead of a large preapical area only three relatively small reddish-brown maculae quite closely approached to the apex. Venezuela, very rare.



*rothschildi*. **A. rothschildi** *spec. nov.* (106 a). ♂ length of forewings 33 mm. Ground-colour jet-black with light brown basal part and longitudinal bands of the same colour in the cellule of the forewings and in the median and distal region of the hindwings. Forewing with a band being very proximally bent up beyond the cellule and composed of 8 dark orange-yellow, roundish, medium-sized spots being peripherically diffuse. Before the apex of the cell there are three more small spots of the same colour, those at the costal margin being elongate and very thin, the two lower ones of a square shape. Under surface: ground-colour dark reddish-brown. Base of the forewing, one median band, one post-discal band and a row of 6 submarginal spots light bluish-grey. The whole surface of the hindwings except the reddish-brown distal region likewise light grey. The costal margin, one subbasal, 2 median and 2 submarginal bands reddish-brown. The interior reddish-brown submarginal band on both sides bordered in black. In the anal angle there are 2 black dots between the posterior median and the submedian. The distal margin jet-black, at the cell-apex of the forewings two grey points and above there are those 2 whitish square spots that are coloured in dark red on the upper surface. The under surface resembles somewhat that of *A. salmoncus* Btlr. Ecuador, Paramba, from an altitude of 3500 feet, from May 1897. Type in the Tring-Museum.

*tracta*. **A. tracta** Btlr. (109 c) is to be found in every parcel from the volcano Chiriqui where it inhabits altitudes of 3—4000 feet. The species is besides known only from Costa Rica where it is met at the volcano Irazu even in altitudes of 6—7000 feet. The character of its markings must be considered to be just as isolated as its occurrence. Upper surface cocoa-brown with a lighter brown middle-zone and two submarginal stripes of the hindwings of the same colour. The forewings are traversed by a band-like united row of pale ochre-yellow, distally diffuse spots. Under surface yellowish-grey with reddish-brown longitudinal bands. Both the wings have besides a faded pale-yellow median stripe. The clasping-organs are noticeable by a low dorsal appendage of the valve rising tuberosely, but not in the shape of a tooth. Valve is besides distally supplied with a remarkably long tooth on the top. Uncus robust, resembling that of the *A. serpa*-group.

*leuceria*. **A. leuceria** Druce (109 c), originally described from Guatemala, occurring to the south as far as Panama and to the north as far as Mexico, differs somewhat according to the season. Thus, the Tring Museum possesses a ♂ from Cuesta de Misantla from June 1896 with all the characters of a dry-period form, lighter and broader white bands on the under surface of the wings. The upper surface differs from all the known species (with the sole exception of *A. malea* Fldr.) by a broad ochreous median area traversing both the wings, but growing narrower anteriorly from the cell-apex. Distal to this band only three, relatively large preapical spots of the same colour as the median bands. Anal spot of the hindwings uncommonly broad, but isolated. Under surface somewhat reminding us of *A. sichaeus irisa* (106 b) with white median stripes through both the wings and violet prominent submarginal spots.

*malea*. **A. malea** Fldr. (109 c) possibly replaces *A. leuceria* in Colombia, though the under surface is so different that it can certainly be considered a species of its own. Both the wings traversed by a costally broader ochreous band confluent with the anal spot of the hindwings. The under surface with a more than again as broad faded yellowish-white median zone, compared with *A. leuceria*. Basal spotting of both the wings, however, agrees with that of *A. leuceria*. Venezuela, Colombia, very rare, only 1 ♂ in my collection. — **juanna** Sm. is a local form described from Valdivia in Colombia; of a greater habitus than *leuceria* and *malea*, but not deviating from *malea* in the marking.

*ethelda*. **A. ethelda** Hew. (109 d). Upper surface dark brown. Both the wings are traversed by a joint orange band being slightly angled beyond the cellule and beginning to dissolve into single spots above as well as beneath. The under surface entirely resembles that of *A. attica*, but the median zone of the forewings is more band-like and just like those of the hindwings pale yellowish, instead of white. The subbasal black stripes somewhat weaker. Described from Quito in Ecuador, but pretty surely not originating from this capital situated almost 3000 m above the level of the sea, but presumably collected in the hot valleys of that country in an altitude of not more than 1500 or 1800 m. Very rare, only the type known.

*demialba*. **A. demialba** Btlr. (109 d) a characteristic, quite isolated species, which is also locally extremely confined and has hitherto been proved only from Costa Rica and Panama. *demialba* is considered an alpine butterfly flying in open spaces of the woods in altitudes of 4 to 5000 feet and being very difficult to catch. Upper surface bluish grey with black bands. Forewings distally, from the cell-apex, decorated with 2 rows of submarginal white spots, besides a series of ante-terminal stripes traverses the forewing, and beyond the cellule there are three strigae embedded. Under surface bluish grey with brown bands changing off with violet stripes in the cell of the forewings and in the interior part of the hindwings.

**A. attica** initiates an interesting and prominent small group of species found extremely seldom in the collections. The few species belonging to this group exhibit the magnificent and singular markings of the under surface of the *A. serpa*-group, but are still anatomically closely allied to the *A. iphiclea*-group by the valve being crowned by an appendage. *A. attica* itself has the relatively broad, knife-shaped uncus of the *A. serpa*-group; the valve itself is distinguished by being entirely unarmed. The clunicle is nearer to the sternit than in the



species of the *iphiela*-series, ventrally hardly noticeably convex, the point slightly rounded. The whole valve set with long hair, the clunicula narrowly triangular, the uncus covered with little warts. The habitus of *attica* somewhat resembles *davisi* (106 c) except the dark loam-coloured tint also passing over on the white median stripes of the hindwings. The under surface is specialized throughout and has the prominent white spot encircled by black before the cell-apex of the forewings in common with the *A. serpa*-group (107 c). On the hindwings there are brown or black or violet bands. — *attica* Fldr. (110 A a). Type in the Tring-Museum, as well as a ♂ *attica*, from the beginning of the rainy period at the end of March or in the beginning of April 1897, collected 400 to 1300 m between Villavicencio and Monteredondo by Dr. BÜRGER. Ground-colour of the under surface light yellowish-brown. Ochreous band of the upper surface of the forewings somewhat narrower than in *carmela* *carmela*. *subsp. nov.* This is, as to the habitus, larger than the preceding form; under surface with broader white, and with more extensive dark brown, longitudinal bands. Colombia, without exact habitat in the collection of FRUHSTORFER, but presumably from the Rio Dagua, since it was obtained by W. ROSENBERG. — *lesbia* Stgr. *lesbia*. With broader and somewhat lighter ochreous bands of the forewings than *attica*, band of the hindwings costally bordered with fainter yellow. Patria; Alto Amazonas, 1 ♂, STAUDINGER's co-type, captured by A. BANG-HAAS, in Coll. FRUHSTORFER. — *serita* *subsp. nov.* (110 A a) ♂: light ochreous band of the forewing much narrower than *serita*, in the mentioned races, just like the white longitudinal band of the hindwings which is costally only less tinged in yellow than *lesbia*, instead of it the anal spot of the upper surface of the hindwings is enlarged. Under surface: is very closely allied to *carmela* by the dark brown bands, but differs from it by the more extensive and light whitish-violet submarginal spots and strigae of all the wings. Bolivia, Province of Sara, end of February till the beginning of April.

*A. gavina* *spec. nov.* is most closely allied to *calliphane* (p. 526) by the very similar upper surface (109 b), *gavina*. The shape of the wings is, however, more compact, the reddish-yellow apical spot of the forewings shorter and considerably broader. The white median band more of the character of *A. abia* Hew. (109 a). Subanal spot of the hindwings uncommonly large, beating in extent that of *calliphane*, *epizygis* (109 a), and *falcipennis*. Under surface: remarkably similar to that of *A. plesauze*, showing, however, also certain analogies with *A. calliphane*, but immediately distinguishable from it by the white zone of the forewings terminating already at the base of the anterior median, whereby the under surface comes in connection to *epizygis*, *abia*, *falcipennis*. Occurring from Rio de Janeiro and Espiritu Santo to Blumenau, Santa Catharina. 2 ♂♂, 4 ♀♀ in the Coll. FRUHSTORFER.

*A. melona* is to be numbered among the largest species of the genus. The ♀ generally excels *A. archidona* (107 b) in the dimension of the wings. The yellowish-brown zone of the forewings more compact, more homogeneous than in *A. nea* (110 A b). Under surface with only one black-bordered white spot before the cell-apex, the brown bands of the hindwings darker and broader than in *serpa* (107 c). The nomenclatural form *melona* Hew. has remained unknown to me, it is absent in the Tring-Museum and also in my collection. *melona*. Very likely it resembles Peruvian specimens the ♂♂ of which exhibit a somewhat darker under surface than the ♂♂ from Surinam. — *thesprotia* Fldr. has a lighter and more extensive reddish-yellow zone of the forewings *thesprotia*. than the Peruvian race. ♀ with light ochre-yellow band which is overhued in whitish as far as to the posterior median. The white area of the under surface in the ♂ distally light coffee-brown, in the ♀ bordered by nearly greyish-brown. Surinam, Cayenne. According to KAYE, a vicarious form is found in the Isle of Trinidad. — *leucocoma* *subsp. nov.* (110 A a) is found at the Upper Amazon. The ♂ also shows traces of a white hue at the *leucocoma*. submedian and a more extensive white median band of the hindwings. The under surface more faded with paler bands. — *meridionalis* *subsp. nov.* (110 A a) ♀: distinct local form, distinguished by the uniform broad *meridionalis*. dark ochre-yellow longitudinal band of the forewings somewhat tinged in white at the submedian, and by the median area of the hindwings, being also anally very much broadened, the hindwings exhibiting a nearly double as broad yellow subanal spot. Under surface remarkably lacking blue spots of silvery lustre, but with large white spots in the cell of the forewing and very broad and light yellowish-brown bands of the hindwings. Patria: Brazil, Santa Catharina, ♀-type in the Tring-Museum. Whether this habitat is correct? — I should presume similarly coloured ♀♀ in Southern Peru or in Bolivia.

*A. arete*, a magnificent species hitherto known only from Brazil. Upper surface very similar to *A. melona*, but the forewing shows a purely white sharply limited zone advancing as far as to the posterior and sometimes even to the middle median. Under surface at once recognizable by 3 broad brown bands covering the whole upper surface of the wings and leaving only two pregnant white stripes. *arete* Men. (110 A b) from *arete*. Central Brazil: forewings with a bipartite white stripe reaching as far as to the last median. Espiritu Santo. — *cibyra* *subsp. nov.* is based upon a ♀ of the Geneva Museum, nearly without any traces of a white hue on the forewings and with a uniform yellowish brown band, habitat unknown. — *pseudarete* *subsp. nov.*, likewise *cibyra*. of an uncertain habitat, differs from *arete* by the white spot on the upper surface of the forewings advancing *pseudarete*. as far as to the wing-centre. Anatomically *A. arete* which was examined in the form *pseudarete* deviates from *A. attica* by the boldly curved, ventrally distinct valve with a distal part tapering off rather suddenly. The clunicula may be considered the narrowest one among all the species examined. It is digitiform and rather uniformly covered with spinules placed in almost regular rows. The end of the valve is sharply armed. Uncus narrower than in *A. attica* Fldr.



*deborah.* **A. deborah** Weeks has a dark ochre-yellow zone of the forewings running more regularly than *A. melona*. The hindwings have no white median stripe, but only two dun antemarginal bands, under surface similar to *A. attica*, only with darker brown bands. Colombia, very rare. A co-type of the author is in my collection.

*zunilaces.* **A. zunilaces** spec. nov. approaches *A. attica* by two small yellowish preapical spots, and somewhat *A. erotia* and *A. jordani* in the course of the very broad ochreous median zone. The under surface is closely allied to *A. deborah*, but all the longitudinal stripes are still darker than in *A. deborah*. Iquitos, type in the Coll. STAUDINGER.

*biedermanni.* **A. biedermanni** spec. nov. Upper surface black with two reddish-brown spots in the cellule and small reddish-brown adnerval stripes ending radiatiformly and not reaching the distal margin. The latter stripes are also seen on the under surface in brick-red colour. Base of the under surface of both the wings as white as chalk. The white basal area distally bordered by a broad light brick-red longitudinal band. In the white area, on the forewing, there is also a small red transverse band, on the hindwings two furciform, small longitudinal bands. The whole outer zone of both the wings black.

The following three species inserted here are the only ones that have remained unknown to me in nature and of which there exists not even a figure.

*makkeda.* **A. makkeda** Hew. from Para. Upper surface dark brown. Both the wings traversed by a broad band. On the forewings this median band is orange-coloured and divided into eight parts by the veins. The fourth component is distally somewhat advanced towards the apex, projecting thereby beyond the others. The white median area of the hindwings distally with an orange hue. Forewings with some black lines and a short orange band in the cellule and below it, besides with a subapical bipartite spot. Forewings with two, hindwings with three submarginal reddish stripes. In the anal angle of the hindwings an orange-coloured spot. The under surface hardly differs from *A. erotia*. *makkeda* is, however, on the upper surface easily distinguishable from all the known species by the median zone of the hindwings being divided into a white and a reddish half.

*caphira.* **A. caphira** Hew. is denominated according to a ♀ from Venezuela and probably belongs to the group of *A. ixia* and *A. naxia*; forewings dark brown. Both the wings with a white band beginning at the second median vein of the forewings, where it is crossed by black veins. Forewing with a large spot near the costal margin and somewhat outside the wing-centre. Two smaller spots above the middle macula and also beneath it, all of them orange-coloured. Forewing with two, hindwing with three submarginal bands.

*orinoco.* **A. orinoco** Weeks is described in the 38th volume of the „Canadian Entomologist“. It originates from Venezuela.

## II. Section. Species without dorsal appendage (clunícula) of the valve.

The species belonging here all show the same character of markings on the under surface of the forewings: black cancellated markings before the cell-apex.

**A. celerio** may be looked upon as one of the most variable and, therefore, most interesting species of the genus. Hardly anything had been hitherto known about the multifariousness of its forms. KIRBY believed to be right in uniting *celerio* with *A. serpa*, but this species itself sends forth a ramification as far as Central America, and besides, there are anatomical characteristics by means of which we may easily separate the two collective species: the uncommonly slender, boldly bent uncus of *celerio* being pointed like a needle and remarkably contrasting with the clumsy uncus of the races of the *A. serpa*- and *A. hyas*-group. The valve is likewise narrower, less robust, and the ends of the scaphium shorter, more pointed. Another characteristic, though quite exterior, is the scheme of markings on the under surface of the hindwings. There we find in *A. serpa* a submarginal double-row of long-stretched crescent-shaped maculae united to bands, whereas in *celerio* short small square spots separated by black lines. On the upper surface all the races belonging to the series of forms of *A. celerio* are conspicuous by a greenish hue of the diaphanous median zone. Like in the other Adelphes, the extent of the reddish-yellow area of the forewings, the width of the white median zone, and especially also the dimension of the yellowish anal spot of the hindwings vary according to the season and locality. Range from Mexico to Peru, presumably also Bolivia, to the east and in Venezuela. — **diademata** subsp. nov. (107 d ♀) is based upon the form of the dry period lying before me from Western Mexico and Orizaba. The reddish-yellow embedding of the forewings in both the sexes more extensive, and the transparent greenish white median band broader than in the name-type. — As **godmani** form. nov. (107 d) I should like to mention a darkened deviation being conspicuous for its narrowed greenish median bands, a larger reddish-yellow anal spot of the hindwings on the upper surface, and gloomy, expanded brown longitudinal stripes on the under surface. Type from Orizaba in the Tring-Museum. — **celerio** Bth. (107 d), originally described from Guatemala, but distributed all over Central America and as far as the Cauca-Valley (Colombia), is at once distinguishable from the more northern *diademata* by the smaller reddish-yellow preapical spot. — **syrra** form. nov. is the name of a melanotic form analogous to *godmani*, which was wrongly denominated *massilia* Fldr. by GODMAN and SALVIN and *phintias*, also figured on table 28 fig. 7, 8 of the Biologia Centrali-Americana. — **phintias** subsp. nov. (107 e), of which we figure a ♀, approaches *diademata* from which it differs by the darker, somewhat narrower and more irre-



gularly bordered subapical spot of the forewings and by the narrowed median band of the hindwings. Venezuela (Merida), type in the Tring-Museum. — **duilliae** *subsp. nov.* (107 d), a much more modified territorial form *duilliae*. found in Ecuador. It corresponds to the rainy period form *godmani* and *syrra* of the more northern districts and excels these Central American deviations even by reduced white areas of the forewings. Represented from Chimbo and Paramba, from an altitude of 1000 to 3500 feet. To this form probably belongs an especially fine ♀ of my collection without exact habitat, with dark green bands on the upper surface and light brown clouding on the under surface of the forewings. — **diadochus** *subsp. nov.* lying before me from Tarapto on the Hual- *diadochus*. laga, Peru. The size of the reddish preapical area of the forewings corresponds more to that of *godmani*, the width of the median zone to *celerio*.

**A. seriphia** is a magnificent vicarious type of *A. celerio*, distributed from Central America and Venezuela to Bolivia, recognizable by still more advanced retrogression of the white median band of the forewings, which is dissolved into entirely isolated maculae, and by luxuriant development of the reddish-yellow zone traversing in the shape of a band both the wings, whereby it forms an analogon to *A. olbia* Fldr. of the *A. cythera*-group. Sometimes the reddish-brown garland of the hindwings is absent. On the upper surface *seriphia* is yet characterized by especially prominent reddish-brown transverse bands of the cell of the forewings, while large helmet-shaped submarginal spots on the under surface of the forewings indicate a certain alliance with *A. serpa*. We know but few specimens, mostly ♀♀. Anatomically *A. seriphia* appears strictly separated from *A. celerio* and *A. serpa* by the shape of the uncus which is, before the point, bent unciformly and strangulated. Uncus otherwise in its contour approaching more that of *serpa*, turned steeper outwardly, without the fine curve it forms in *celerio*, and without the gentle medial swelling of the latter. — **pione** Godm. (110 A a) *pione*. and *Salv.* is based upon a single ♀ of the Coll. STAUDINGER from the volcano Chiriqui and differs from the nomenclatural type from Venezuela by a somewhat more faded, more yellowish-brown than reddish, and broader longitudinal band of the submarginal zone of the upper surface of both the wings. — **seriphia** Fldr., described *seriphia*. from Venezuela and Colombia, is lying before me in almost identical ♀♀-specimens from both the countries. The reddish-brown submarginal band of the under surface more pronounced than in the figure of *pione* Godm. and *Salv.* — As **aquillia** *subsp. nov.* a ♂-form of the Coll. FRUHSTORFER is introduced with reduced reddish- *aquillia*. brown band of the forewings, joined by some more specimens from Oceana (Colombia) of the Coll. STAUDINGER in the Berlin Museum. — **naryce** *subsp. nov.* from the Chanchamayo (Peru) resembles above *aquillia* and approxi- *naryce*. mates beneath, by the faded and paler colouring, **therasia** *subsp. nov.* from Bolivia. The specimens found there *therasia*. by FASSL are smaller than the Colombian forms, their median white spots still more insignificant, scarcely half as broad as in *pione* and *seriphia*. The white zone of the hindwings besides more pregnantly bordered in black.

**A. serpa**, a magnificent species the range of which is much more extensive than was supposed and the occurrence of which must yet be proved for great distances. The Central American race which was hitherto known only in one specimen and was considered as a species of its own, is here, for the first time, brought into connection with the collective species. All the forms have a very large reddish-yellow preapical spot in common; the median area remains always purely white without the greenish hue of *A. celerio*. On the under surface the extent of the reddish-brown macula before the apex of the forewing-cell varies. The clasping-organs are throughout more robust than in *A. celerio* and *seriphia*, uncus more than double as broad, valve ventrally more sharply dentated, its point more roundish; scaphium and point of penis likewise clumsier. — **sentia** Godm. and *Salv.* *sentia*. Described according to a ♂ from British Honduras; only 1 ♂ and 1 ♀ lying before me from Panama. The ♀ has a still more extensive, more faded preapical spot than the ♂ figured by GODMAN. The median band is purely white, on the hindwings narrower than in the ♂. — **paraëna** Btlr. forms a distinct intermediate form *paraëna*. connecting *sentia* with *serpa*. Forewing with only three instead of four components of the white median band. Surinam and Lower Amazon. — **serpa** Bsd. (107 c) was figured according to 2 ♀♀ from Santos. The race remains *serpa*. pretty constantly between Espiritu Santo and São Paulo. Further to the south, the yellow preapical spot is somewhat shortened and the white median band is narrowed, thus forming **damon** *subsp. nov.* (107 c) represented *damon*. according to a ♀ from Paraguay, but occurring pretty similarly also in Santa Catharina. — **ornamenta** form. *ornamenta*. *nov.*, however, reminds us somewhat of *A. seriphia*. The ochre-yellow spot of the forewings is prolonged as far as to the posterior median; hindwing with a complete series of elongate postmedian reddish intra-nerval spots. Patria presumably Bahia, type in the Geneva Museum. — **hyas** Bsd. is the distinct form from Rio Grande *hyas*. do Sul characterized by more roundish hindwings with very small anal spots. The under surface is remarkable for the absence of the reddish-brown rosette and for the white median band. Ground-colour also otherwise more faded, the basal and distal zones more straw-coloured than whitish. The coniform spot in the cell of the forewings narrower, the roundish, black-bordered maculae before the cell-apex yellow instead of white. Both the wings, finally, distinguished by small black intra-nerval stripes resembling *A. celerio*. — **radiata** form. *radiata*. *nov.* forms a transition from *serpa* to *hyas* by already exhibiting the black intra-nerval lines, but also by the remaining reddish-brown rosette-band round the white median area of the hindwings, characterizing the *serpa*-group. Also the shape of the basal, coniform spot of the forewing-cell corresponds more to *A. serpa* *damon* than to *hyas*. As to the shape of the clasping-organs, *radiata* excels *serpa* from Rio de Janeiro and *hyas* from Rio Grande do Sul by a bulkier structure of the uncus as well as of the valve. *radiata* occurs in Santa Catharina



*myrlea*. beside *A. serpa* *damon*. — Another analogon to *radiata* is lying before me from Espiritu Santo: *myrlea* *form. nov.*, above immediately noticeable by an only tripartite reddish-brown preapical spot being more broad than long. Under surface with narrow, very dark brownish-red periphery of the white median area. Otherwise like *radiata*. Very rare, known to me only in one specimen of my collection.

*herbita*. **A. herbita** *Weym.* So far only one specimen (♀) known. Upper surface very similar to *A. zea*, also to *A. plesasure*. A yellow area extends as far as to the central median and is sharply indented on both sides and especially distally very irregular. This faded ochreous part is closely connected with a white median band being anteriorly very narrow. Under surface characterized by a white median band touching the costal margin and being proximally bordered in black. Both the wings also decorated with a white ante-terminal band. At the apex as well as in the centre of the forewing-cell there is one yellowish spot. Santa Catharina.

**A. zea**, hitherto known only from Brazil, has just like *A. serpa* a more extensive range, for it is met already in Mexico and Central America, then again from Espiritu Santo to Rio Grande do Sul and Paraguay. The upper surface resembles *A. serpa*, but the hindwings are shorter, more sharply undulated with a distinct lobular projection at the distal end of the middle median. The under surface entirely white, whereby it differs from all the other Adelphes. Cell of the forewing with two small reddish-brown transverse bands; besides, both the wings are traversed by a coffee-brown or whitish-red longitudinal band. The veins are distally covered with black and form, together with two ante-marginal lines, a very pretty network. — *emathia* *Fldr.* described from Potrero in Mexico has remained unknown to me in nature. According to its author it is above very similar to *A. serpa*, but it exhibits broader white bands. — *paroëca* *Bat.* Extremely rare in Guatemala and Costa Rica; it has a narrow faded yellow preapical spot and below it a much smaller, entirely isolated macula between the anterior and middle median. The white median zone of the forewings is, however, compact contrary to the southern races, the anal spot of the hindwings very large. The under surface of the hindwings bears a broader cocoa-brown submarginal band than *zea*, but is otherwise not very different. — *zea* *Hew.* described from Rio de Janeiro, is very rare there. I have only a ♀ from Espiritu Santo lying before me, with very large pale ochre-yellow embedding of the forewings and a white median double-spot of the forewings, being isolated by the broad black bordering of the middle median. — *serpentina* *subsp. nov.* remains considerably smaller; the orange-yellow subapical spot of the forewings much narrower, as well as the anal spot of the hindwings. White median band of all the wings, especially considering the small size of the specimens, broader than in *zea* from Espiritu Santo. The red bands of the under surface darker, more sharply bordered in black. Santa Catharina. — **A. tarpeia** *subsp. nov.* (110 A b) occurs in Paraguay, and in a somewhat different race, also in Rio Grande do Sul. As to the habitus, it is even somewhat inferior to *serpentina*; nevertheless the white median areas are still considerably expanded. The black submarginal lines of the under surface of the hindwings, however, are decidedly fainter and the red stripes likewise less prominent. Description according to 2 ♂♂ from Paraguay in the Tring-Museum, 3 ♀♀ from Rio Grande do Sul in my collection. Anatomically *A. zea* which was examined in the race of *serpentina* *Fruhst.* has many peculiarities. Especially by the shape of the valve it differs from all the known species of the toothless group, by a peculiarly short point of invariably broad cylindrical shape, not tapering distally like in *A. serpa* and *A. celerio*. Contrary to *serpa* there are only some sharp spines noticed at the end; instead of it, the terminal margin is set with uncommonly long hair-like bristles. Uncus about as in *A. celerio*, somewhat shorter and not so beautifully curved.

**A. nea** approximates above *A. plesasure* by the absence of subapical reddish-yellow spots. There are but few specimens known. I saw only one couple from the Tring-Museum and three specimens of the Coll. *FRUHSTORFER*. — *nea* *Hew.* (110 A b) described from Peru, from Cayenne in my collection and from British Guiana in the collection of the Tring-Museum. A very large yellowish-brown transcellular spot of the forewings stands, especially in the ♀, almost isolated. The band otherwise running like in *A. plesasure*, but more irregular. Under surface with three whitish-violet maculae bordered by broad black at the apex of the forewing-cell resembling thereby *A. serpa* (107 e). Hindwings somewhat approaching those of *A. celerio* (107 d), but supplied with broad brown bands. Uncus most singular by its deeply indented point. Valve more pointed than that of *A. serpa*, but with only one ventral tooth. — *campeda* *subsp. nov.* ♀: longitudinal band of the forewings narrower, darker ochre-yellow with a slight white hue at the submedian. The white area of the hindwings runs more vertically, the black submarginal bands are narrower. Under surface: by the predominating black ground-colour and the widened reddish-brown longitudinal bands, the whitish areas are very narrowly confined, and the silver-glossy bluish-violet tiny fenestrae in and round the forewing-cell are much smaller, too. The double row of small submarginal white spots is more sharply separated by the veins spread more thickly with black and a stronger ante-marginal line, and the single small spots are, therefore, more isolated. Colombia.

We have to insert (to p. 512) another form of this genus, the acquaintance of which I have made only subsequently: *A. hypsenor fassli* *subsp. nov.* being a luxuriant form and of a considerably larger shape than the specimens from the patria of the nomenclatural type, the provinces of Cauca and Antioquia. The oblique band of the forewings not only considerably broadened, but also of a more magnificent colouring. In some specimens purely white, in others, especially towards the anal angle, more extensively suffused with reddish-



brown. The brightening up of the transverse band of the forewings is also noticeable on the under surface. Canon del Tolima, Central Cordilleras of Colombia, from an altitude of 1700 m.

### 50. Genus: **Limenitis** F.

To this genus belong 100 forms which, in case they have not lost their original characteristic colour and markings by mimicry, exhibit preponderantly dark upper surface of the wings with white postmedian band, the under surface being rather variegated, with reddish-yellow dots or bands. The butterflies are mostly of a considerable size and rather conspicuous behaviour, so that they also rouse the attention of non-entomologists when meeting them. In Europe this group is vulgarly called „ice-butterflies“, while in America several species are known as „white admirals“. The imperfect spines of the larvae places the genus between the faintly spined *Catagrammidi* and the almost spineless *Apaturidi* or *Charaxidi*. It is best to place them beside the *Ageroniidi* in the larvae of which likewise only quite few spines are developed to clubs, while many segments of the larvae are entirely without any spines. Those observers who lay more stress upon anatomical particulars in the veins, in the formation of the palpi etc., report of relations with the *Argynnidi* or *Hypolimnatidi*, from which they seem to me to be rather remote. They certainly have relations to *Neptis* and *Pandita* in the Old World, whereas in America they almost unnoticeably pass over to the *Adelpha*. They make the impression of a highly specialized group and are most undoubtedly the issues of the very latest epoch of creation, since they copy even quite recent species of butterflies, being partly still in the act of forming and developing.

The eggs form strongly sculptured three-quarter balls, the surface representing a distinct hexagonal network the nodes of which bear small bristle-shaped spikes. They are singly deposited on the under surface of the leaves, mostly near their extremities, the food-plants belonging to families of plants that are very much remote from one another. The larvae hibernating for the most part, in most cases exhibit only the spines on the thorax-rings and then again those on the last segments fully developed and sometimes thickened to morning-star shaped clubs, while those on the interjacent rings are sometimes altogether absent, sometimes reduced to short stumps. In most cases the larva when at rest occupies a peculiar position bending the end of the head under the slightly raised thorax, so that, in a similar way as the spines of the head in the *Ageroniidi* and *Apaturidi*, the thoracic spikes appear here as an anteriorly stretched weapon. The pupae are distinguished by a securiform most peculiar appendage on the back of the abdominal base, appearing sometimes like a drop of blood coming out from the pupa. Only the *Adelpha*-genus, which is also otherwise hardly to be separated from *Limenitis*, shows a similar formation, and even in a higher degree. This appendage looking like a drop of blood remains vacant when the developed butterfly is still lying in the tegument. The head of the pupa is often quite rounded, but may also terminate into small points, or (like in the Indian group of *Modusa*) bear wing-shaped divergent appendages. The butterflies are of an elegant structure, with big eyes, palpi of medium length and with strong bristles and mostly exhibiting a light longitudinal streak; the siphon delicate but long, somewhat pigmented, often green or light yellow. Thorax strong, abdomen in the ♂ always very slender, forewing triangular, with rectilinear contours, only the margin quite slightly concave, the fringes mostly speckled, the apex often finely bordered in white. Hindwing with undulated margin sometimes coming forth in a slight angle in the middle. The veins are not very constant, but the first and second subcostal vein branch off before the cell end. — The *Limenitis* mostly have only 1 generation in the temperate zone. The larva hibernates young, after having in many cases built artificial, small receptacles for it, in which it remains hidden during winter. In early summer it pupates and turns a butterfly mostly in June. It bustles about on forest-roads and broad highways; some are fond of visiting flowers, others disdain them altogether and prefer much rather fruit and baits. When being once allured they soon grow intimate, so that we may feed some of them by touching their siphon with the bait, while we hold them by the wings. They are otherwise timid forest-animals, being often not easy to capture, gliding along in a jerky flight with their wings spread out flatly, sometimes even slightly lowered. They are the most frequently found in the early morning hours before 11 o'clock, and then again in the afternoon towards 4 o'clock on wet places of the soil, while during the other hours of the day they remain on the crowns of the trees. Their chief range is the temperate zone of the northern hemisphere; in Africa, South America and Australia proper they are altogether absent; North America has 6 species.

#### A. Mimetic species.

**L. bredowi** Hbn. (= *eulalia* Dbl. and Hew.). This butterfly being a characteristic butterfly of the *bredowi*. Western United States has above still quite the aspect of the *Adelpha*, and it is more probable that there is here indeed a relationship existing, than a real mimicry. The butterfly inhabits the Pacific States and Mexico, being in some parts common, but mostly local. Above it deviates from nearly all the *Adelpha* by the white median band, though being interrupted reaching almost the costal margin, what occurs quite seldom or incompletely in the *Adelpha*. The under surface, however, differs very much from that genus and resembles more the other *Limenitis*, the hindwings being uniformly yellowish-green, only with a white median and submarginal



- californica*. band. The typical *bredowi* of HÜBNER flies from *Arizona* through Mexico to Guatemala. — *californica* Btlr. (109 f) is a species differing from *bredowi* by less violet coloured under surface, especially the bright violetish-grey bordering of Arizona-specimens is at the distal margin of the median band on the hindwing narrower, more subdued and often interrupted. The larva is said to live on oak-trees, according to EDWARDS.
- lorquini*. **L. lorquini** Bsd. (109 d). Similar to the preceding as to the arrangement of colours, but the apical reddish-yellow does not form an isolated spot, but covers the apex itself; the white median band broader. — The larva pretty much resembles that of *weidemeyeri*; on the second thoracal ring there are two appendages. It seems to live on different trees. HOLLAND mentions *Prunus demissa*, according to EDWARDS it lives on *Quercus*, while BEHR says that the butterfly is frequently found where *Salix* is growing on which it lives; there is, furthermore, also the poplar-tree mentioned. The butterfly inhabits the Western United States, especially California, being according to BEHR in some places common and easy to capture. — *eavesi* Hy. Edw. is a form occurring in California among typical specimens.
- astyanax*. **L. astyanax** F. (= *ephestion* Stoll, *ursula* Godt.) (109 e). Is often easily mixed up with the similar form *proserpina* of *artemis*. The under surface like in the latter form, but without any traces of the white band. Above black, in the distal part of the hindwings of a bright metallic blue. Distal margin and apex of the forewings with small white, often also orange spots. — Egg green, the network very strong and the small spines on the nodes strong and pointed. Larva, when grown-up, whitish, greenish or brownish, on the second ring 2 branched and thickened spines, and with incrassations on the back of the second and the last abdominal rings; on oak-, willow-, lime- and cherry-trees, gooseberries and bilberries etc. Pupa with rounded, but very much projecting head and rather thick yellowish-brown dorsal securiform appendage; anterior part yellowish-brown with darker wing-partitions, abdominal part of a dull white; it is on the whole more slender and anteriorly darker than that of *artemis*. The butterfly does not nearly vary so much as *artemis*; of course, the blue of the hindwings may be very much increased and be occasionally extended on the forewings (ab. *caerulea* Ehm.). By the atavistic occurrence of a white band there may also result great likeness with *L. arthemis*. Such specimens form the ab. *albofasciata* Newcomb. The species is rather common in many parts of North America, and the ♀♀ may attain an enormous size. The range extends from the Atlantic Coast to the Rocky Mountains, and from Southern Canada to Arizona. To the south of this range, in Mexico, the animal appears then again in insular habitats, but very rarely seems to occur there. These specimens inhabiting the southernmost range, *arizonensis* Edw., differ from the northern specimens by a brighter bluish lustre on the under surface and by the absence of the small white spots at the apex of the forewings. The form thereby approximates in the aspect of the upper surface still more the *Vanessa cyanomelas* (93 f), likewise flying in the Mexican mountains, and is presumably just like them to be considered a superficial copy of the patented *Papilio* from the *belus*-group, many forms of which (such as *chalceus*) are likewise black and posteriorly of a metallic green glimmer, inhabiting the Mexican mountains; the more northern form, however, with white spots before the margin of the forewing, joins the type of colouring of *Papilio philenor*, being also imitated by some forms in other groups of butterflies (*Argynnis diana*-♀, *Papilio troilus*, *glaucus* etc.).
- archippus*. **L. archippus** Cr. (= *disippe* Godt.) (109 f). Imitates *Danaïs plexippus* L. (Vol. I, table 28 c) and has, therefore, an appearance entirely different from *astyanax*. Reddish-yellow with black, white-spotted margins and dark veins. The mimicry also extends as far as the under surface, and as an essential difference in the marking there remains only a curved post-median line on the upper surface of the hindwings, which is, however, very differently developed, being sometimes black and thick, sometimes only indicated. It is missing altogether in the form ab. *pseudodorippus* Streck. From Southern Canada and British Colombia to the South of the United States. — *hulsti* Edw. (109 f) exhibits greatly diminished black markings, as well as the *obsoleta* Edw., being hardly different and still lighter in the yellow tinge of the upper surface, appearing more as mimic of *Dan. berenice* (31 a). It occurs more in the West of the United States, in Utah and Arizona. — *floridensis* Streck. (= *eros* Edw.) is the south-eastern form, from the Gulf States; it differs from typical *archippus* chiefly by the dark reddish-brown colouring of the upper surface and is therefore probably often considered a species of its own, because the larva is said to have longer horns on the second ring. — Egg bright green, almost spherical, larva whitish, with a dull green or leaden grey tinge and with dirty-yellow or green shades, venter and feet darker brown or olive. The second abdominal ring is thickened, whereby the dorsal securiform appendage of the pupae is already indicated. The pupa itself greatly resembles that of *astyanax*, somewhat more slightly built and of a duller colouring. The larva lives especially on poplar- and willow-trees, the butterfly is not rare. — The species approximates *astyanax* much more than we might suppose, owing to the totally different appearance (being the result of the difference of the models); this near alliance is proved by the larvae, pupae, the habits and observations of hybrids of the two species.

## B. Non-mimetic species.

- weidemeyeri*. **L. weidemeyeri** Edw. (109 e). Above black with white postmedian band, behind which there is a row of white dots and, on the forewing, a white subapical demi-band. On the under surface of the hindwings the basal half is divided into a great number of yellowish-grey cells by numerous black transverse streaks. In the normal specimen the white band is in both the sexes rather of the same width, but it may also be aberratively reduced (= ab. *sinefascia* Edw.). — Larva whitish with green shades and spots, the ventral surface, as far as



to the lateral line, darker. On the second thoracal ring there are 2 long branched spines, on the one beyond, as well as on the third and the last abdominal rings there are spiny knobs; on *Populus*. Pupae brownish (in the beginning greenish), the wing-partitions darker, the abdominal part lighter; the dorsal appendage yellowish-brown. The butterfly is distributed especially in the western part of North America, more common in the mountains, especially in the Rocky Mountains, its range extending in the United States from Montana and Nebraska to the western coast.

**L. arthemis.** Similar to the preceding, though quite different on the under surface being dark brown traversed by the white band, with orange dots in the wing-cell and before the margin. The ordinary form **arthemis** *Drury* (= *lamina* *F.*) (109 e) has very broad white bands, resembling thus somewhat on the upper surface *weidemeyeri* as well as certain forms of the Old World. — In the form **proserpina** *Edw.* (109 e), however, the white bands may be obliterated, in rare cases even disappear altogether, whereby great likeness with *astyanax* is created, especially when there is also an increase of the blue colour on the hindwings. In that case, however, the orange-red submarginal spots on the under surface of the hindwings mostly shine through to the upper surface, in some cases even creating a simultaneous increase of the yellowish-red colour, which has led to the denomination of **rufescens** *Ckll.* *proserpina* is also mostly considerably smaller than *astyanax*. — Egg green, larva, when grown up, dark brown (rarely olive-green), with a white dorsal saddle on the fifth to eighth abdominal ring. The thickened second thoracal ring bears no branched spines like the preceding forms, but two truncated cones being spinose above, the second abdominal ring is tuberosus as well as the last but one. It lives on *Crataegus*, *Salix* and probably also on other plants. The butterfly flies on roads near wet places, is often common in Southern Canada and the Northern United States to the south as far as Pennsylvania, but is absent in the whole west. According to HOLLAND it reaches altitudes of 2500 m.

#### K. Group *Ageroniidi*.

This is one of the most peculiar groups of day-butterflies confined exclusively to America. The main group *Ageronia* (*Peridromia*) is supplied with an organ of sounds, a peculiar kind of rattling or clattering, which belongs to the most energetic sounds created by insects. A rattling *Ageronia* flying over the road even attracts the attention of the passers-by and in the silent woods I was able to hear the noise from a distance of 40 paces without listening intently. The butterflies, therefore, have the popular name of „rattlets“ or „clatters“ (in Brazil: „Matraca“). The rattling noise is heard as soon as a butterfly catches sight of another one, but also in the pursuit of invaders into the district of impatiently waiting males. Another peculiarity consists in the upper surface of the *Ageroniidi* exhibiting a lichenoid or trunk-brown protective colour, while the under surface often has bright, glaring colours, such as hemochrome, erceus-yellow etc. Consistent with this is also the attitude while being at rest, about similar to that of a *Boarmia*; the butterfly sits with flatly spread wings clinging to a trunk and never claps the wings together above the back, like the other day-butterflies. There are often dozens of butterflies sitting on one trunk. When being chased up, they furiously whirl round the trunk and then generally settle on that side of the tree being opposite to the pursuer's. When flying away they glide along silently, but sometimes they were flying around me with a rattling noise, when I was standing in an open space, and when I kept quiet, they settled down on my grey suit with their heads down and their wings spread out. — The organ by which they create the sounds, was of course first searched for in the veins. In the very much rattling *A. feronia* there is, however, no thickening of the veins found in the basal part of the wings, but the forewing shows the discocellulars thickened to a strong, horny listel, just like the median and the radials at the place where they are joined with the discocellulars. On the under surface of the wings, the connecting point of the upper discocellular with the subcostal may be raised to a veritable knob which must certainly be suspected to be degenerated in such a peculiar way by the transformation into an instrument. In opposition to this fact, REVERDIN on examining the genitals, has recently discovered an organ consisting of 2 spiny points, at the abdominal margin of *Ageronies*, in which he suspects the creator of the sounds. — The larvae, as far as is known, live on *Dalechampia*-species; they exhibit 2 thin, slightly bent horns on the head and on the back single spines developed at the end to branched spikes; the pupa itself has on the head two long divergent appendages (hare's ears), but otherwise no conspicuous appendages. The butterflies are fond of resting on the trees of avenues and on the palmtrees bordering the roads, on *Oreodoxa* being widely spread in the tropical American pleasure-grounds, on *Embauba*-trees and *Bombax*.

#### 51. Genus: **Ectima** *Dbl.*

Pretty small brown butterflies with white band of the forewing and lichenoid markings, beneath without glaring colours. The first subcostal vein of the forewings branches off immediately before, the second behind the cell-end; the upper discocellular is quite short, the middle one curved, the lower one stunted. The most conspicuous parts in the butterfly are the very long middle- and especially hind-legs the shins of which, as well as the femurs and tarsi are very much elongated. By stretching these legs the butterfly resting head downwards on trunks, raises the anterior body, while the distal margins of the wings are closely appressed to the bark of the trunk. The larva of the forms greatly resembling one another, lives on *Dalechampia*;



its horns on the head are more curved than in the allied genera. The pupa with hare's ears at the head which are somewhat shorter and broader than in *Ageronia*. The butterflies are met either resting on trunks or lying on them in spirals. Contrary to the *Ageronia* they seem not to be able to rattle, at least I have never heard them making a noise. The range extends over the whole warmer districts of South America from Nicaragua to Southern Brazil and Paraguay. The forms of this genus are very nearly allied to each other, and as the older descriptions are inaccurate and the habitat is often not mentioned, the relations of the older names to the forms that are known now, are not always traceable.

*rectifascia*. **N. rectifascia** *Btlr.* and *Dr.* (? = *lirina* *Fldr.*, *erycinoides* *Fldr.*) (103 a). This northernmost species distributed across the whole southern part of Central America from Nicaragua to Panama, is at once recognizable by the relatively narrow, interiorly always smoothly cut off oblique band of the forewing. The ground-colour of the wings is rather light nut-brown without any metal lustre.

*liria*. **A. liria** *F.* (103 a). This species appears to me to represent the Venezuelan form probably also flying in Guiana. The oblique band is as broad again, ending broad over the inner-angle in the margin; the under surface is much lighter, the upper surface shows in the sun unnoticeable, though subdued and dull violet reflection. — *infirma* *Fruhst.* flies further to the south (Bahia); it has conspicuously light drab ground-colour and the white band of the forewing is broader. — *lirissa* *Godt.* (103 a, b) is the South Brazilian form; the band is gnawed out at the margins and its lower part sometimes exhibits dark ocelli or ringlets (= ab. *exilita* *Fruhst.*); the upper surface is rather dark and is somewhat lustrous in the sunshine, but without a real blue gloss. — In *lirides* *Stgr.* (103 b) from the Upper Amazon, the dark marking of the upper surface little contrasts with the sombre ground-colour, and the rather smoothly edged band of the forewing terminates very broadly on the lower median vein; the under surface more drab than yellowish-brown and with insignificant markings. — *astriata*. **astricta** *Fruhst.* from Peru exhibits above in both the sexes blue gloss, and the white oblique band of the forewings terminates into a kind of a cone owing to deep indenture; the black bands darker and placed more vertically. — Larva on *Dalechampia*; pupa brown with pale spots; beginning from ring 5 a light dorsal stripe. The butterflies are mostly common at clearings in the woods; when being chased away from a trunk, they generally fly in a straight flight to the nearest trunk, evidently showing a slight similarity in the flight with the ♀ of *Emesis fastidiosa*; the latter, however, never rests on the trunks of trees, but on the under surface of the leaves.

*jona*. **D. jona** *Hew.* At once noticeable by the more considerable size and the oblique band being dissolved into single white spots. The ♂ has a brighter blue gloss. From Peru to the Lower Amazon; seems to be rarer.

## 52. Genus: **Panacea** *S. and G.*

These butterflies usually exhibit on the upper surface green bands with metallic lustre, representing in the basal part of the hindwings a complicated parallel stream, being then terminated by a coherent metal-band. Like in the *Ageronia* to which the genus is evidently closely allied \*), the under surface may be hemochrome or also dull-coloured. The genus was formerly confounded with the following *Batesia*, but the only species forming the latter genus differs so considerably that it better remains separated. In *Batesia* the upper radial of the forewing forms a curve being downwards concave, upwards convex, being thus just the reverse of the lowest radial, so that both are divergent anteriorly and posteriorly and approaching each other in the middle, while the second radial passes through in the midst between the two. In this way about the following strange figure is formed:  $\asymp$ , being the more conspicuous, as it stands in an enormous hemochrome spot. In the *Panacea* the course of the radials is normal, nearly parallel; the forewings are here also much more pointed, their distal margin centrally drawn in etc. We do not know anything about the early stages; the butterflies are fond of the mountains, are in some parts common and have similar habits as the *Ageronia*. The single species vary extremely, but less geographically than individually, and to such an extent that almost all the species are connected with each other by certain transitions. The under surface of the apex is either hemochrome or black or yellow, the hindwings are sometimes marked with diffuse spots beneath, with lines, or figures, or even not marked at all.

*procilla*. **P. procilla** *Hew.* (103 c) is the species which beside *prola* being scarlet beneath comes the most frequently to us. It has beneath black forewings with reddish-brown or dark greyish-brown apical part being cut off by a white oblique band; the cellule is striped brown or blue, the hindwings are of a reddish-brown, marked in black. In Colombia, not rare, common in the so-called „Bogotá-Collections“. A. H. FASSL has made some observations about their habits. According to him the egg is very small, like that of *Satyrus briseis*, like a ball, somewhat tapering towards the upper pole, the smooth base oblate. The sides bear 12 vertical indentations terminating shortly before the top into projecting tips like calyces. The colour of the egg is reddish-brown. — *procilla*, in many places of Colombia at altitudes between 4 and 1200 m, belongs to the more frequently occurring butterflies. While the ♂ often drinks in numbers from the excrements of the roads in the primeval forests, the large ♀ differing considerably especially beneath, is a great rarity. *procilla*-♂♂ (as well as other *Panacea*- and *Peridromia*-species) when being disturbed in their meal, usually fly as far as to the neighbouring trunk of a tree in order to rest sitting there in wait, mostly in considerable height with their wings spread out and their heads downwards, until the intruder has passed by, whereupon they return to the very same

\*) It forms a transition to the *Charaxidi*.



old place on the road (A. H. FASSL). The ♀ of *procilla* is quite similar to the ♂, but larger and beneath of a lighter colouring, the subapical white spots stronger, more diffuse, often flowing together. — There are also larger specimens being above darker than typical *procilla*. This is the form **ocana** *Fruhst.* denominated by *ocana*, the domicile of Ocana on the Lower Magdalen River, where it was found. — In Colombia there occur, on the contrary, also smaller specimens: **salacia** *Fruhst.* with a decorative band of the forewings being not broader, *salacia*, but more golden-green. The preapical spots as in typical *procilla*, but the white stripes on the under surface of the forewings shorter than there, more like in *ocana*. — **lysimahe** *S. and G.* was founded upon a single *lysimahe*, ♂ from the volcano Chiriqui, being probably not of a different species, because it deviates only by the steel-green, postmedian band of the forewings nearly as broad again and by the submarginal ocelli of the hindwings, which form a beautiful regular chain in *procilla*, being almost extinct. — **divalis** *Bates* is also nearly allied to *divalis*, *procilla*, but the under surface of *divalis* has a stronger red hue; the eye-spots are absent altogether, or there are only 2 to 4 smaller ones. From the Upper Amazon.

**P. chalcothea** *Hew.* (103 d). From Colombia; the upper surface is similar to *procilla*, or still more so *chalcothea*, to *lysimahe*, though there are no small spots before the apex, but only an entirely subdued diffuse stripe. The hindwings are of a magnificent light red beneath, clouded towards the apex. — The species thus forms a transition to *prola*.

**P. prola** *Dbl. and Hew.* (103 e). Above recognizable by the broad postmedian band of the forewings *prola*, and by the row of eye-spots in *procilla* on the hindwings, being also replaced by an indistinctly bordered, dark green metal-band. Beneath the hindwings and the apex of the forewings are of a magnificent red, mostly without any markings at all, the transverse vein and a very narrow margin of the hindwings being sometimes black at most. In Colombia not rare. — **zaraja** *Fruhst.* from Merida in Venezuela is larger and has broader bands *zaraja*, than Colombian specimens; the subapical band of the undersurface of the forewings is darker, more diffusely powdered with light green than with blue, the under surface of the hindwings more subdued red. — **amazonica** *Fruhst.* from the Upper Amazon is larger, with a broader band of the forewings and more distinct black longitudinal bands. Under surface of hindwings brighter red and without any traces of a dark submarginal band. — **dubia** *Kretschm.* is the denomination of specimens with especially glaring-red apex of the forewing beneath, *dubia*. We must, however, remark that the red colour of the under surface varies very much; in some ♂♂ it is entirely pure and without markings on the hindwings, or sometimes tarnished by layers, or provided with marginal markings, a cell-end streak or some discal spots, as are almost always noticed in the ♀. — **prolifica** *Fruhst.* *prolifica*, has on the upper surface of the forewing a broader band, on the under surface the band cutting off the apex is of a purer white and distally bordered in darker green. Ecuador.

**P. regina** *Bates* (103 e). Greatly resembles *prola*, but the hindwings being red beneath, have dark *regina*, markings; in the cell the red basal spots are absent on the under surface. From the Upper Amazon. — **victrix** *Fruhst.* *victrix*, from Ecuador has a darker total colouring, the black stripes of the upper surface being more prominent. The band of the hindwing is anally remarkably narrowed. Under surface considerably darker with more prominent submarginal rings.

### 53. Genus: **Batesia** *Fldr.*

The differences in the veins between this genus and the preceding, which were formerly combined by the (preoccupied) name of *Pandora* *Ww.*, are stated under *Panacea*. This genus consists only of a single species, a large butterfly with a most conspicuous colouring, living on the Upper Amazon and on the Rio Negro in Ecuador and not being very rare. There is nothing known about its habits.

**B. hypochlora** *Fldr.* (103 f). Above black with dull blue reflection, leaving free a black submarginal *hypochlora*, band. The distal part of the forewings exhibit a very large oval, scarlet spot. The under surface of the hindwings is metallic greyish-green. — **hypoxantha** *S. and G.* likewise from the Upper Amazon, has beneath loam-*hypoxantha*, yellow hindwings with a slight greenish hue, while in **hemichrysa** *S. and G.* (103 e) the under surface of the *hemichrysa*, hindwings is of a bright yolk colour, in the ♀ duller; from Ecuador.

### Group of Ageronies.

Median of the forewings without a spur, often sacciformly inflated at the base. The ♀♀-forelegs have spines at the first to fourth joints. Larva set with spines. Pupae at the head with 2 long bands.

### 54. Genus: **Ageronia** *Hbn.*

The species belonging to this group have so many peculiarities that they are to be reckoned among the biologically and morphologically most interesting neotropical Rhopalocera. Besides they are structurally and anatomically so very sharply confined, that no closer affinities with the groups of day-butterflies surrounding them are traceable.

The *Ageronia* are structurally distinguished by the uncommonly thickened costal and the posterior discocellular of the forewings being curved sharply convex.

The veins themselves are variable from one species to another, and even, as in some Argynnides, within



the sexes. It has formerly been tried to separate two subgenera, *Ageronia* and *Peridromia*, with the argumentation that in *Ageronia* the first subcostal veins are isolated, while in *Peridromia* they issue from a common pedicule, thus forming a fork. But this characteristic mark varies already within the sexes; as for instance the ♂ of *A. arete* has forked subcostal veins, whereas in the ♀ they are isolated. GODMAN and SALVIN have also tried to use the mouth of the basilar discocellular vein as a motive for separation, because in some species the cell is said to terminate before the bifurcation of the anterior medians, in other species at the bifurcation itself. By considering the position of the discocellulars not only the nearest allies would be separated afar, but the two sexes of one species would sometimes even have to be divided among two „genera“. The latter case would e. g. take place in *A. arete*, with the cell terminating in the ♂♂ before, in the ♀♀, however, at the bifurcation of the medians. Dr. SCHATZ has even pictorially depicted the same curious symptom in another species, *A. arethusa*. Nevertheless we approve also here of the two sections, though with the reservation that they are considered only as subgenera. We, therefore, distinguish:

- A. both the sexes with two isolated subcostal veins anterior to the termination of the cell of the forewings (group of species *Ageronia*).
- B. the subcostal veins running isolated only in the ♀, in the ♂ issuing from a common pedicule (group of species *Peridromia*).

The configuration of the clasping-organs seems to justify the hitherto prevailing isolated position of the Ageroniidi by considerable deviations from the nearest allies. The primary genital organs prove a certain alliance with the Apaturides by the uncommonly long oedeagus and saccus, but this alliance is cancelled again by the shape of the penis being almost as thin as a needle. The tegumen is of a feeble structure with a plain and strong point resembling certain Satyrides and, possibly, Euthaliides. The valve which in nearly all the species is distally cut off obliquely, may be considered as limenitoïdal, with distant relations to those of the genera *Adelpha* and *Athyma*. It lacks, however, the dorsal notch of these genera, and it much more resembles an edged glass plate than the pelvis of the Limenitides. The contours of the clasping-organs, when being looked at somewhat imaginatively, might have the shape of a fishing aquatic bird. The most interesting fact, however, is the existence of an organ at the sternit of the eleventh abdominal segment, which was discovered by Professor REVERDIN in October 1914. This peculiar formation was denominated the GODMAN and SALVIN-organ in the „Entomologist Record“ on the 15th of May 1915, p. 98, because these authors mentioned two small rods being inserted to the upper ends of the ventral part of the terminal segment at the abdomen, already in 1883 in the „Biologia“ (Vol. I p. 268). In the meantime I have found a similar organ in different Nymphalid genera, such as in *Cystineura*, *Libythina*, *Cybelis*, *Temenis*, *Bolboneura*, *Pyrhoggyra*, *Lucinia*, *Nica*, *Peria*, *Vila*, *Dynamine*, *Ectima* and all the *Catagrammidi*, even in the *Libytheinae*. In the latter it has certainly changed its place, being found before the tegumen at the tergite of the last segment. The new organ is the most magnificently developed in the *Epiphile*, where it is shaped horizontally, just like in the *Eunica* and all the *Eurytelids*. The latter category I denominated the „REVERDIN-organ“, which enters the most deeply into the venter in the *Eunica*, while in the *Catonephele* it rises broadly in the shape of a sickle, as was ascertained in 1899 by STICHEL who denominated it „Rami“. The GODMAN-SALVIN organ which is so far peculiar to the Ageroniids, occurs yet in a combination with peculiar spiculae, being either as pointed as a needle or lanciform and exhibiting certain analogies with the JULLIEN-organ. Their dimensions and the way they are fastened, differ considerably from the JULLIEN-organ, but we may still presume that their functions serve for the same purpose. Dr. REVERDIN thinks it credible that the GODMAN-organ might stand in a certain relationship to the nose of the Ageronids, which has hitherto not yet been cleared up physiologically. I myself am inclined to suppose that it is an enticing organ in order to support the actions of the proper clasping-organs. At all events it is a matter of fact that the GODMAN-organ differs in all the species, and that thereupon the single species can be distinguished with much greater certainty than it is possible with the aid of the proper clasping-organs differing but insignificantly and being, therefore, very similar to one another. The GODMAN-organ may be very long and thin (*arinome*) or shorter and more of the shape of a club (*arethusa*), it may bear only few spiculae (*arete*) or be set quite densely with them (*arethusa*). The sternit itself differs distally in all the species. It may be distally entire (*chloë*, *ferox*) or deeply gouged (*arethusa*, *februa*), bearing in the latter case a dense cluster of bristly scales in the indentation.

The larvae, when being grown up, bear on their heads two horns, being somewhat knobby at the tips, on the back and the sides spines set with short branches; the pupae, however, are of a very peculiar shape, being distinguished by two long, wing-like, narrow bands (horns?) on both sides of the head. The pupa is most peculiarly sensitive to light, raising its front body horizontally in the light, while in the darkness it relapses into its hanging position. This interesting observation of Dr. MUELLER explains perhaps the statement of LACORDAIRE, because a horizontally fastened pupa may easily rouse the suspicion that additionally it is supported by a thread.

The butterflies rest on moss- or lichen-clad trunks of trees high above the ground and they are very clever in adapting themselves to their surroundings. Sometimes 8 or 10 of them are found on a trunk always with the head turned downwards, and when having been chased up, they return again, though to the other



side of the trunk. According to my observations in Santa Catharina, the butterflies are fond of flying on sunny afternoons, and while playing in their flight, they create that peculiar crackling noise which has often been described and has given them the denomination of „Rasselchen“, according to Dr. SEITZ. The English call them „tic-tracs“, the Americans „Calicoes“, and according to an account of VAN VOLKEM communicated by CHAPRONNIER Ann. Soc. Ent. Belg. July 1873 p, 21, both the sexes produce a noise comparable to the: „crépitation de sarments en combustion.“

Dr. HAHNEL thought the rattling noise of the Ageronies, being heard the most intensely and frequently in *belladonna*, to be created by clashing their wings together. But this presumption he once found disproved when holding together one pair of wings, while the sound was nevertheless created by the other pair of wings quite ad libitum. The sound of the rattling in *belladonna* reminds us of the rustling of thick paper.

The Ageronies obstinately remain at their fixed place, from which, according to my experiences, they never fly far off: neither do they fear the neighbourhood of the settlements, and I met them on bridle-paths with great traffic. They also like so-called „Waldschänken“ where they pilfer from the intoxicant juice emanating from the borings of *Coleoptera*. They are met there together with *Opsiphanes* and even gigantic *Caligo*. The *Ageronia* are the most vigilant, rising the first in order to secure themselves; but they most certainly return again after a longer interval.

Near São Paulo Dr. HAHNEL observed *A. velutina*, *arinome* and *belladonna* at places for washing, the basins of which were constructed in the thicket of foliage-plants, and the spring-water conducted there enticed also the *Ageronia*, together with *Adelpha*, down from the high trees to the sunny ground.

The *Ageronia* are lively animals to be found in the dense woods as well as at the borders of the woods and in open spaces. On the Lower Amazon the grey *Ageronia*-species, such as *feronia* and *ferentina*, are the most common butterflies, being found at every sunny wall of the huts and on every isolated tree. They most frequently use to gather there under the mango-trees during the season when the fruit is ripening, and then also *amphinome* arrives which otherwise prefers more to live in the forest. When resting on the light-grey mango-trees, these grey butterflies are hardly any more noticeable. All the *Ageronia* (also some of the ♀♀) agree in being fond of resting especially with their wings spread out on smooth trunks of trees, but mostly with the head turned downwards. They seem not to intend making themselves invisible to eventual enemies by this behaviour (and most of all only the light-grey species would succeed in it, while the dark species are even visible already from afar), but they probably love amusing themselves in this way; for as soon as an animal of the same species or genus comes near them, there commences an interesting sport in the air in which the rattling is distinctly to be heard. The rattling-apparatus seems to be uniformly developed in all the species with the exception of *velutina*, *arethusa*, *chloë* and *alicia*, which I never heard rattling, but up to this day one seems not yet to have been able to ascertain by what these puzzling sounds are produced. Contrary to the grey species living only in open spaces, on the banks of rivers, or at the borders of forests etc., the darker species, such as *velutina*, *arethusa*, *arinome*, *amphinome* and *belladonna*, abide mostly in the woods, though at sunny places, whereas *alicia* and *chloë* are even only found in the very midst of the dark woods.

The *Ageronia* are distributed in the whole neotropical district, from the Peninsula of Yucatan and Mexico to the south as far as Paraguay and the northern part of Argentina. Single straying specimens are sometimes even met in South Texas. The most frequently they occur in the Amazon Valley, where nearly all the species are found together and among them those forms that are ornamented with the richest colours. Most of them are extremely common, but on the other hand, there are only quite few specimens known of some species.

Near Pebas on the Upper Amazon, Dr. HAHNEL has found 6 species of *Ageronia* together on excremental bait spread on leaves: the more common *belladonna*, *velutina* and *arinome*, as well as the rare *alicia*, *chloë* and *albicornis*. Little is known about the vertical distribution of the *Ageronia*. I met them in Southern Brazil up to 800 m.

#### A. Species of the *Ageronia*-Group.

*A. februa* may be considered the most multiform species of the genus being the most widely spread. *A. februa* differs from *A. feronia* with which it always flies together, by the red crescent-spots in the proximal part of the two last ocelli of the hindwings. On the under surface the black window-grates are finer than in *epinome* and *iphthime*, the brown abdominal zone is absent or exists only in the shape of narrow bands; besides, all the larger ocelli are decorated with reddish-brown crescents. *februa* Hbn. (105 d), the nomenclatural form, *februa*. might originate, according to the figure of its author, from the Amazon district or the northern part of Brazil. It is joined by specimens from Venezuela, Colombia, Panama and according to the material in the Coll. STAUDINGER, *februa* goes to the south as far as Pernambuco. The largest specimens originate from Colima and Fortim in Colombia, the most richly coloured in blue are the Venezuelan specimens. A large series from Obidos, Para and Santarem of my collection are distinguished by a bright violet lustre on the upper surface. 2 ♂♂ from Tarapoto bear the purest white subapical maculae of the forewings. — By the name of *gudula* subsp. nov. (105 d), *gudula*.



those forms are to be comprised that inhabit the western part of Mexico. ♀ of special size and of remarkably dark colouring. The white spots of the forewings much larger than in the other *februa*-races, but densely dusted with sombre grey. Under surface of the wings light greyish-white with uncommonly extensive white spots of the forewings and intensely light reddish-brown longitudinal bands of the hindwings. — *sodalía form nov.* are on the upper surface peculiarly faded brownish-grey, from the eastern and southern parts of Mexico; they are also on the under surface of a sombre greyish-brown creating entirely the impression of being specimens of the dry period. — As *hierone subsp. nov.* the preponderantly greyish-green marbled areal-form of the Peninsula of Yucatan is introduced. Type in the Coll. STAUDINGER. — *fundania subsp. nov.* is the name of the forms from Central America with the type from Honduras, differing from the Mexican forms by the lighter total colouring interspersed with more white and from *februa* from the Amazon by the greenish-grey, instead of violet-blue colour of the hindwings. All the black bands are also of a more intense hue than in *februa* Hbn., whereas the under surface is much more delicately cancellated in black than in all the other races. — *icilia subsp. nov.* is similar to *A. feronia insularis Fruhst.* being of a smaller habitus than all the allied races, of a more uniform grey colour, with remarkably reduced dark blue bands. Submarginal band of the under surface of the hindwings more intensely red than in the Continental forms. Trinidad. According to KAYE a similar race occurs also in Hayti. — *amphichloë Bsd.* BOISDUVAL's diagnosis is entirely insufficient, for it only runs thus (translated): „We possess another form being allied with *oenoe*, which was brought along from Guayaquil deviating sufficiently from *oenoe* by the ocelli of the hindwings which have a double iris“. I most unwillingly abolish, however, names of old authors and, therefore, I follow KIRBY uniting it as variety 3 b with *februa* Hbn. in his Catalogue (p. 649). To the Ecuador-form there belong also specimens from the Upper Amazon, Peru, Bolivia in my collection. They all have in common a greyish-brown colour resembling *gudula*, which is only decorated and interrupted by faint greyish-blue places. — *sabatia subsp. nov.* is closely allied with *amphichloë* and even beats it in size and the more pointed shape of the wings. The median band of the hindwings is in the ♂ proximally surrounded by a somewhat faded, broad blackish-brown area. In the ♀ the reddish-brown crescents are on both the surfaces of the hindwings more prominent, the black spotting of the whole under surface appearing also much more extensive than in the Andine specimens. Mato-Grosso, Cuyaba. — As *atinia subsp. nov.* (105 c) the South Brazilian race is separated with still broader black median bands on the upper surface of the hindwings, being easily distinguishable from *februa* of the Amazon in general by the melanotic total colouring. Rio Grande do Sul and Santa Catharina. — The larva of *A. februa* is more slender and worm-like than that of *A. arete*. Beside 2 frontal and anal horns it only bears 3 short spines on each segment. — *sellasia subsp. nov.* inhabits Paraguay. The ♀♀ resemble *atinia*, though they are more richly decorated with blue; the ♂♂ are decidedly lighter than the ♂♂ from Blumenau and Rio Grande do Sul, forming a transition to the *februa* L. of the northern zone of South America. — *ferentina Godt.*, finally, is a form the habitat of which we do not know for certain. It is founded upon a figure of CRAMER, exhibiting above still more blue marbling on a very dark ground than our figure of *atinia* (105 c). The under surface of *ferentina* is much more extensively brown than in any of the races known to me. But even if *ferentina* could not be maintained, it remains due to GODART to have first discovered and diagnosticated the species-character of *A. februa*.

*A. glauconome* is an extremely rare species occurring from Mexico and Yucatan to Costa Rica. It differs from *A. februa* by a peculiar light bluish grey of the upper surface and an extensive purely white area of the forewings, which is not dissolved into single spots. The ocelli of the hindwings only with quite faint reddish crescents. Under surface preponderantly white, with milky-blue basal part of both the wings and quite insignificant black cancellate markings. The reddish-brown hue is confined upon narrow parallel bands along the two black zigzag-garlands of the hindwings. — *honorina subsp. nov.* An excellent race of the Peninsula of Yucatan, known to BOISDUVAL already in 1871 and resembling a *glauconome* (105 b) in miniature, except the beautiful blue of the upper surface being much more subdued, more interspersed with grey than with violet. Ocelli of the hindwings more pressed together, being, therefore, more of an elliptic than roundish shape. Under surface with dark, grey basal part of both the wings, the reddish-brown lines almost extinct. — Beside *honorina* resembling *fictitia* (105 e) there occurs another form on the Peninsula of Yucatan, which may belong to the dry period: *julitta form. nov.* (105 e); its upper surface much rather resembles *A. februa sodalia Fruhst.* from Mexico, especially on account of the brownish-grey ground-colour of the upper surface. The black bands of both the wings more prominent, the white apical part of the forewings, except some small spots, veiled by greyish-brown. Under surface with somewhat stronger cancellate markings, otherwise not differing from *honorina*. — *megala subsp. nov.* (105 b as *glauconome*) is found in Southern Mexico and considerably excels *glauconome*, as figured by GODMAN and SALVIN, in the dimension of the wings, in the size of the white area of the forewings and the lighter total colouring. Type in the Coll. FRUHSTORFER. — *glauconome* Bates is above entirely darker than *megala* (105 b). It was discovered by Dr. GODMAN in Guatemala where it was observed as a great rarity only in the district of Verapaz. — *oenoe Bsd.*, originally described from Costa Rica, has remained unknown to me in nature. The diagnosis of its author mentions as the most important marks: About the size of *A. ferentina* Godt. Wings pale, grey, the forewings with a large white spot being set with small, more



or less distinct white eye-spots. Hindwing with 5 or 6 whitish ocelli which are bordered by brown and are almost entirely filled up by a black crescent. In the middle of both the wings a black zigzag-band and two extremely fine black lines before the distal margin. Diagnosis according to a specimen sent by Mons. DE L'ORZA from Costa Rica. We knew already a similar one from Yucatan.

**A. ferox.** A rare species occurring from Mexico to Ecuador, but hitherto known only in single specimens. *ferox* is nearly allied to *glauconome*, but its spots are moved more to the centre of the forewings and there is no compact white area, but two or three series of isolated maculae varying in extent according to the locality. — **fictitia** *subsp. nov.* (105 e) forms a transition from *A. februa* to *A. oenoë*. Ground colouring of the upper surface approximating more *megala Fruhst.* from Mexico (*glauconome* 105 b), the under surface, however, more *A. februa sodalia Fruhst.* from Southern Mexico. Forewing differing from *oenoë* by the complete white area being replaced by single white spots which are isolated by greyish-blue intermediate margins. The ocelli of the hindwings more intensely decorated with red, under surface with a reddish-brown, obsolete bent spot, resembling *A. februa*, at the apex of the forewing-cell. Hindwing preponderantly brownish-grey with distinct reddish-brown bands and an increased black marking resembling *A. februa*. Mexico. GODMAN and SALVIN mention a similar form from Manaure, Colombia, the chalk-white area of the forewings of it being more extensive and divided into single spots, the hindwings having also some white spots. This is presumably **ferox**. *Stgr.* with a broad effaced whitish band running from the costal margin to the proximal margin and exhibiting dissolved whitish spots. Cauca Valley (Colombia), very rare. — **tegyra** *subsp. nov.* is the name of a geographical race from Ecuador with more sharply delimited white median region of the forewings and predominant bluish-black of the hindwings. Type in the Coll. STAUDINGER. — **diasia** *subsp. nov.* has the most extensive white of the forewings, excelling thereby even *fictitia*. Porto Rico and Hayti, type in the same collection of the Berlin Museum.

**A. atlantis** *Bates* (105 e). Distinguished by the abundant greenish hue of the upper surface and blue-pupilled ocelli of both the wings. The ♀ has a white subapical band of the forewings and resembles somewhat *Dichorragia nesimachus* from the Himalaya. The under surface resembles that of *A. guatemalena* (105 c), but the ochreous hue of the hindwings is less intense, the white parts of the forewings of the ♀ are more extensive and the hindwings exhibit the same brown bordering as *A. februa*. Guatemala, from the Rio Montagua, from an altitude of 1000 m. Mexico, Guadalajara, everywhere rare.

**A. lelaps** *G. and S.* (105 e) has a preponderantly greenish-grey upper surface, except the ocelli being pupilled in blackish instead of blue. Very rare; known only from Mexico and Guatemala.

**A. chloë** forms an interesting and connecting transition from the group of *A. februa* and *A. atlantis* to the most brightly coloured species of the *Peridromia*-group. *chloë* is the smallest species known, with preponderantly dark steel-blue or slate-grey ground-colouring being by far lighter in the ♀ than in the ♂. According to the locality there are either no spots at all on the forewings, or grey, greyish-white or purely white square spots. The under surface of the ♂♂ is slate-grey, of the ♀♀ white, both the sexes have a reddish-brown distal margin of the hindwings in common. In each of the cells of all the wings there are two reddish-brown spots. Besides there is a more or less prominent series of reddish-brown median spots. The species formerly known only from the Amazon district and Southern Peru, was lately ascertained by myself as a novelty in Central Brazil and now also discovered in Bolivia in two distinct races. — **chloë** *Cr.* Upper surface bright steel-blue with prominent red spots. Rare, in Surinam. — **obidona** *subsp. nov.* (105 a). Approximates *chloë* the most, but differs from STOLL's figure by the absence of grey spots in the apical region of the forewings and by a series of red submarginal and discal maculae appearing on the hindwings. The under surface of the forewings of *obidona* shows dull-white, instead of the violet-grey spots we notice on STOLL's possibly somewhat inaccurate figure. The ♀ above dark grey, with only indistinct blue undulated bands. Ocelli of the hindwings larger than in *chloë*, distinctly pupilled in white. Forewing of the ♀ white with large black maculae, hindwing whitish-grey. Obidos, Amazon. — **nais** *subsp. nov.* (105 a), more intensely blue without the grey lustre covering *obidona*. Under surface with larger white spots of the forewings than the race of the Lower Amazon. From Tarapoto on the Huallaga in Peru. — **daphnis** *Stgr.* has on the forewings two rows of light spots the preapical ones of which are almost purely white, the transcellular ones being covered with grey; South Peru. — **nomia** *subsp. nov.* inhabits Western Bolivia. Habitus larger than that of *daphnis*, the anterior spots being also dusted with grey. Mapiri. — **xenia** *subsp. nov.* an excellent territorial race of Eastern Bolivia and conspicuous by very large, purely white preapical spots of the forewings. — **rhea** *Fruhst.* (105 a) is more closely attached to the Surinam- and Amazon-race. Forewing with blackish-powdered preapical spot, under surface duller grey than in *obidona*. Hindwing with black instead of reddish-brown median spots. Espiritu Santo and Minas-Geraes, Brazil. — **daphnicia** *subsp. nov.* Habitus smaller than in *rhea*, still more finely spotted in black than *rhea*, exhibiting besides purer white preapical spots on the forewings. Pernambuco. Type in the Coll. STAUDINGER.

**A. albicornis** *Stgr.* Upper surface most similar to *A. chloë rhea Fruhst.*, of a somewhat intenser and more brilliant bluish-green, forewing with but one reddish-brown cellular spot, hindwing without any red spots



at all, under surface similar to *A. chloë obidona* Fruhst. ♀ chalky white with sharp-serrated reddish-brown median band. Antenna white, in black ringlets, the tip black.

#### B. Species of the Group *Peridromia* Bsd.

*A. feronia* is the species being known the longest and to be found the most frequently in the collections. Above recognizable by a milky-blue or bluish-grey zigzag-band and coiling round the ocelli, the colour varying in intensity according to the locality. A red worm-shaped spot in the forewing-cell always distinctly noticeable. The black cells of the hindwings with one blue ringlet with white pupil. Under surface greyish-white. Hindwing with delicate yellowish or greenish lustre. In Central American specimens the hindwings are ochreous, a characteristic mark which is found as a form of condition (*mandragora* Mén.) also in Brazilian specimens, though very rarely. — **farinulenta** subsp. nov. Ground-colour darker greyish-green than in *feronia*. The white spots at the apex and round the forewing-cell more extensive. Under surface of the hindwings similar to that of *feronia* f. *mandragora*, covered with intensely dull ochre-yellow, but never as dark-yellow as in the larger *A. guatemalena* Bates. Still GODMANN and SALVIN were induced by this hue on the under surface to identify the *feronia*-race of Central America with the darker *guatemalena* being also ornamented with larger ocelli. Range from Texas, Mexico to Panama. Nomenclatural type from Honduras in my collection. — **insularis** subsp. nov. A small elegant race being above almost light-blue, beneath uncommonly light and with mother-of-pearl gloss, from the Isle of Trinidad. From Santa Lucia and Hayti there are likewise *A. feronia* recorded which certainly represent new races. — **nobilita** subsp. nov. As *nobilita* I denominate those Venezuelan and Colombian specimens that are conspicuous for their more extensive and prominent white spotting on the forewings and exhibiting in both the sexes an intensive and lighter blue spotting than *feronia* from Cayenne and the Amazon. — **feronia** L. (105 c), the nomenclatural type, originally described from Surinam, is lying before me in a large series of corresponding specimens from Cayenne, Obidos and the Upper Amazon. STAUDINGER has specimens from the Ucayali and Pernambuco, and on the Andine side *feronia* reaches as far as to the Chanchamayo. CRAMER knew an especially dark ♀ from Surinam which he depicted, while HÜBNER presented an especially light ♂. — **catablymata** subsp. nov. is to denote the Central Brazilian specimens in which the light pure blue appears as if covered with a grey curtain. The under surface is sometimes just as abundantly hued in yellow as in the Central American areal form. This deviation in the colouring was depicted already in 1857 as *mandragora* Mén. Further to the south, the specimens are steadily growing darker, until we come across **obumbrata** subsp. nov. in Paraguay. Habitus smaller, wing-contours more roundish, upper surface of all the wings darker, the white spotting powdered with sombre blackish-grey, all the black bands broader and the blue spotting almost disappearing. Under surface more extensively spotted in black than in typical *feronia*. Specimens being very closely allied to *obumbrata* are already found in Santa Catharina, while such from São Paulo form an also geographically natural transition from *catablymata* to *obumbrata*.

**A. guatemalena**. A remarkable species hitherto known from the Peninsula of Yucatan to Panama, was first ascertained by myself for Brazil where it very rarely occurs in Espiritu Santo. *guatemalena* excels *A. feronia* considerably in size. On the upper surface of the hindwings the black median zigzag-band appears more prominent; ocelli of the hindwings larger, with a blue periphery and white pupil being not nude as in *A. feronia*, but surrounded by a fine blue ring. Under surface of the hindwings reddish or covered with pale ochre-yellow. — **eupolema** subsp. nov. is a distinct race from Yucatan. The apical- and median-parts of the forewings throughout lighter-spotted than in the nomenclatural type from Central America. Type in the Coll. STAUDINGER. — **marmarice** subsp. nov. is most strongly contrasting with the preceding form and must be considered as the darkest areal form. Upper surface in both the sexes dull greyish-blue instead of greenish-blue as in the Honduras specimens. The subapical spots of the forewings being whitish in the nomenclatural type, are overpowdered by blackish also in the ♀. Orizaba and Guadalajara (Mexico) in the Coll. FRUHSTORFER. — **guatemalena** Bates (105 c) is found in the whole of Central America. The ♀ has an elegant, peculiarly greenish-blue colouring of the upper surface. — **elata** Fruhst. (105 d), an excellent geographical branch, is immediately distinguishable from the northern forms by the whitish, instead of livid-covered apical part of the forewings. Under surface: the black spotting appears reduced whereby the white maculae gain in space and the yellowish colouring of the hindwings grow paler. Espiritu Santo, 1 ♂ 2 ♀♀ in Coll. FRUHSTORFER.

**A. iphthime** resembles above *A. feronia* so much that it is easily comprehensible that KIRBY took it to be a variety of *A. feronia*. Also to STAUDINGER it came hard to diagnose this species. He recognized that there occur two more species of *Ageronia* in South Brazil beside *A. feronia* L., and denominated a species not being *A. epinome* Fldr. with „fallax“. The description of „fallax“, however, is much more identical with the form denominated as *epinome* by FELDER. Let us, therefore, quite briefly remark that the *A. iphthime*-races are immediately distinguishable from the analogous *A. feronia*-subspecies, by a reddish-brown apical hue on the under surface of the forewings, which is absent in *A. feronia*, and by the broad brown distal margin of the under surface of the hindwings. The *iphthime*-branches, however, are lacking the worm-shaped



reddish-brown cellular spot of the upper surface of the forewings, which exists as an insignificant white spot in some Brazilian specimens at most. The upper surface of *iphthime* exhibits besides subdued blue longitudinal bands. The hindwings show a more sharply defined black median band and more pregnant white-tinged ocelli. — Larvae according to MABILDE black with lateral blue dots, on a creeper with broad leaves which has no popular name. Palpi dark green with white ribs, pupa's rest lasting two weeks. — **iphthime** Bates (105 a) has *iphthime*. the most distinctly prominent and largest white spots of the forewings. The upper surface of the hindwings distinguished by a light brown median band not existing in the more southern forms. The reddish-brown framing of the under surface of all the wings deeper and more prominent than in the allied races. From Mexico to Panama, also reported from the Upper Amazon by BATES. — **gervasia** *subsp. nov.* is the eastern continental *gervasia*. branch founded upon specimens occurring from Bahia throughout the whole Brazilian Provinces as far as Rio Grande do Sul inclusively. The bands, being of a light blue in *iphthime*, are replaced by greyish-blue ones, the white transcellular spots of the forewings remain smaller and are veiled by grey, just like the spot before the cell-apex. The under surface is of a less bright reddish-brown, but more extensively spotted in black. — **aternia** *subsp. nov.* approximates the Central American *iphthime* by very large white spots on the forewings, though it differs from them by deeper and darker bluish-grey places on the upper surface. Bolivia. *aternia*.

**A. epinome** seems to inhabit exclusively Brazil and Paraguay and differs from *A. iphthime* by its large habitus, rounder wing-contours and a darker, but still more varied and more variegated upper surface. The black median spots of both the wings are more prominent, the single specimens more variable. The basal part of the forewings without blue admixture. **epinome** Fldr. (105 b) seems to be the most common species *epinome*. in the South Brazilian Provinces, occurring most anywhere where magnificent trees in the neighbourhood of large townships give the butterflies opportunity to pursue their favourite habit in resting on the grey bark of the trees, with their wings spread out and after having been rattling energetically. There exist 2 forms of the ♂ as well as of the ♀. I have at hand: a) ♂♂ in which the black median zigzag-band of the hindwings is distally overshadowed by grey, and b) ♂♂ in which this longitudinal band is distally set with 2 to 4 distinct white spots. On the other hand, there exist ♀♀ specimens which a) have the same light greyish-white spotted forewings as the ♂♂ and also otherwise general ♂♂ similarity (form of the rainy period?), and b) such exhibiting more uniform, sombre, hazy brownish-grey (form of the dry period?). — Specimens being especially extensively covered with brownish-grey have been denominated **fallax** Stgr. (105 b). From Espiritu Santo *fallax*. to Rio Grande do Sul and in Paraguay. — **florentia** *subsp. nov.* is the form of the northernmost branch known *florentia*. distinguishable from the South Brazilian *epinome* by remarkably large almost white subapical spots of both the wings. On the under surface the white spots are predominant, the black grates are reduced as well as the brown framing of both the wings. Bahia.

**A. fornax** resembles above somewhat *A. feronia* and *A. epinome*, the under surface, however, is immediately distinguishable from all the other species by the ochreous area of the hindwings exhibiting only a series of white marginal and submarginal spots. ♀ scarcely differing from the ♂, but with roundish wing-contours. There are but two areal forms: **fornax** Hbn. (105 c), forewing with distinctly projecting apical part, *fornax*. the median spots of the forewings relatively small. From Rio de Janeiro to Paraguay, besides in Venezuela. — **fornacalia** Fruhst. is larger in the habitus, the discal spots of the forewings more extensive, the hindwings darker *fornacalia*. than in *fornax*. From Texas and Mexico to Bolivia. In Guiana and the Amazon Valley, as well as in North Brazil, *fornax* seems to be absent.

**A. alicia** Bates (105 e) combines the scheme of markings of *A. chloë* on the upper surface and of *A. fornax* on the under surface. The forewings of *alicia* are nearly black, with three rows of white beautifully shaped spots being united to oblique bands, hindwings being bordered in black, without white intramedian dots, otherwise almost like in *A. fornax*. Upper Amazon, from Pebas, São Paulo and Iquitos. *alicia*.

**A. rosandra** *spec. nov.* Smaller by about one third compared to *A. alicia* beside which it occurs. *rosandra*. ♂ set with more prominent and lighter grey spots of the forewings than even the ♀ of *A. alicia*. Ocelli of the hindwings not elliptic or nucleiform, but roundish with white pupil. Under surface for the forewings analogous to that of *A. alicia*, hindwings, however, decorated with small blue ocelli and provided with a black square spot at the costal margin, both of which are missing in *alicia*. São Paulo do Olivencia, type in the Coll. STAUDINGER.

**A. amphinome**. One of the most common species of the genus with a range from Mexico to Bolivia, Rio Grande do Sul and Paraguay. The ♀ has rounder wing-contours and a somewhat broader and mostly also lighter transverse band of the forewings. Its habitat in the lowlands, in Central America found in altitudes ranging up to about 1000 m. — **mexicana** Luc. This rather insignificant local form has been described by *mexicana*. LUCAS as a species in a diagnosis of 50 lines. In short, comprehensive words *mexicana* differs from *amphinome* L. by darker-powdered, somewhat narrower bands of the forewings and by the appearance of a second subapical greyish-white spot which also attracted LUCAS' attention, presenting itself together with the upper spot on the under surface as a larger and purely white macula. The hindwings are of a somewhat paler red tinge than



in *amphinome*. Texas, Mexico, Guatemala, Honduras, Chiriqui. In Colombia there occur several areal forms two of which are lying before me: *morsina* *subsp. nov.* differing from the nomenclatural type from Surinam by its generally smaller shape and the subapical band of the forewings being above powdered with grey instead of purely white and beneath narrower and of a yellow tinge; — *fumosa* *subsp. nov.* (104 b), the darkest extreme known of the collective species, the oblique band on the forewings being covered with smoke-brown, and appearing also beneath still narrower and darker yellow than in *morsina*. — *amphinome* *L.* (104 b ♀) is distinguished from all the vicarious types by the nearly purely white longitudinal band of the forewings. Guiana, Amazon, Peru, Bolivia, Isle of Trinidad. — *aegina* *subsp. nov.* forms a retrogressive stride to the Colombian races especially *morsina*. The subapical band of the forewings is, however, less dark, beneath of a purer white than in *morsina*, but still duller than in *amphinome* *L.* The second subapical macula of the forewings peripherically never so extensively covered with grey or whitish than in *morsina*. The upper surface of all the wings speckled in blue. Beside such blue-speckled specimens there occur near Rio ♂♂ with greenish spots on the upper surface of the wings and a somewhat broader and lighter oblique band. According to Dr. SEITZ (Jahrb. Nass. Ver. Nat. 1893 p. 76) *aegina* occurs uncommonly often near Santa Theresa, while to the south it grows rarer, appearing near Santos only as a great rarity. Type from Espiritu Santo, also from Bahia, Parana, Blumenau and Rio Grande do Sul in Coll. FRUHSTORFER. Specimens from Paraguay are above somewhat lighter blue than ♀♀ from the South Brazilian Provinces. According to a statement of Dr. MUELLER the horns of the pupa of *aegina* are convergent, while in *A. februa*, judging from a figure of MABILDE, they are divergent. When comparing the figures of HUEBNER and CRAMER it results evidently that CRAMER figures the Surinam-form *amphinome* *L.* with purely white bands of the forewings (Pap. Exot. I Table 54 f. E. F.), whereas HUEBNER figures the Brazilian race (*aegina* *Fruhst.*) with the band of the forewing being distinctly powdered in grey.

*belladonna*. *A. belladonna* Bates (104 c) is a distinct species resembling in the colours of the under surface of the hindwings *amphinome*, while the upper surface forms a transition to *arethusa* *Cr.* Upper Amazon.

*A. arinome* resembles above *A. amphinome* *L.*, exhibiting also an analogous tendency in the colouring so that there occur also of *arinome* dull-grey powdered races in Colombia as well as in Central America and also in Brazil, while Guiana and the Amazon district are inhabited by purely white banded forms. Like in *amphinome*, the ♀ of *arinome* also has more roundish contours and an expanded white area of the hindwings. Base of the under surface of both the wings dark coffee-brown, the distal region black with dark-violet lustre. — *ariensis*. *ariensis* *G.* and *S.* The transverse band of the forewings composed of shorter components than in *arinome* of a more southern habitat, the terminal spot above the central median isolated and smaller than in *arinome*. The whitish shawl of the under surface of the forewings with a yellowish hue. Described from Panama, occurring also in Colombia. — *arinome* *Luc.* (104 c) is rarely found in European collections which mostly contain only specimens of the following areal form. Band of the forewings, especially in the ♀, very broad, upper surface in both the sexes with light blue spots. Guiana, Surinam. — *sterope* *subsp. nov.* excels *arinome* in size, but the white area of the ♂♂ is still considerably narrower. The ♀, however, has a still more extensive white area of the forewings and preponderantly greenish zigzag bands instead of blue ones. From Obidos. — *anomale* *Streck.* is reported from the Upper Amazon. By its narrowed shape of the forewing-band and by its size it forms a transition to *arene* *subsp. nov.* (104 b) of which only a ♀ from Eastern Peru is lying before me, distinguished from all the vicarious types by narrowed hindwings. The white band of the forewings is narrower by more than a third than in *arinome* and *sterope*. — *obnubila* *subsp. nov.* comprises the Brazilian territorial form lying before me as a rarity from Espiritu Santo. According to VON BOENNINGHAUSEN it also occurs only rarely at the Corcovado and in the mountains of Rio de Janeiro. ♀ smaller than ♀♀ from the Amazon district, the white area of the forewings more irregular, costally narrowed, in the intra-median parts overpowdered with brownish-grey. At the costal of the forewings, where the fourth and fifth subcostal veins are branching off, we notice a white spot being also prominent beneath, but which is absent in all the other branches of *arinome*. Under surface paler brown, the red spots faded but larger than in *arinome* from Guiana.

*A. arethusa*, an excellent species with velvet-black upper surface which seems as if set with turquoises. The sexes are dichromatic to a high extent. ♂ unicolorous, ♀ with white oblique band of the forewings. The ♂♂ conspicuous for a brown velvety scent-spot on the upper surface of the hindwings varying according to the locality. Corresponding to it, a lustrous friction-spot on the under surface of the forewings along the submedian and a light-brown disk in the median part. The red spotting in the anal angle of the hindwings varies in extent according to the locality. Range from Mexico to Bolivia, in Guiana and the Amazon district. According to GODMAN found in Guatemala at an elevation of up to about 1000 m. Three territorial forms, two of which were hitherto not recognized. — *saurites* *subsp. nov.*, with the type from Honduras, is considerably smaller than the nomenclatural form from Surinam, the sexual spot on the upper surface of the hindwings broader, brown instead of grey. The ♀ exhibits a much narrower and more yellowish than white band of the forewings and bears a large carmine costal spot of the hindwings being absent in *arethusa* from the Amazon. The under surface of the hindwings shows a large red costal spot contrary to *arethusa* from the Amazon and Guiana. Range from Mexico to Colombia. In Trinidad an allied form occurs. — *arethusa* *Cr.* is known to me only from the excellent figures of CRAMER and especially of HUEBNER. ♀ with three light-carmine spots at the costal margin of the hindwings. Inner margin of the forewings with red stripes. Surinam, Guiana. —



the costal margin of the hindwings. Inner margin of the forewings with red stripes. Surinam, Guiana. — *palliolata* *form. nov.* was discovered near Obidos on the Lower Amazon. I only possess yet ♀♀ with somewhat broader white area of the forewings than we figure it 104 a. Costal part of the upper surface of the hindwings without any traces of ruby-red spots, the hindwings being beneath without red basal streaks. — *thearida* *thearida. subsp. nov.* (104 b as *thearidas*) is a geographical race of an enormous size of the wings, with more extensive and lighter blue spots of the upper surface. The red spotting of the under surface more prominent than in Obidos-specimens. Peru (Pozuzo), type in the Coll. FRUHSTORFER; Bolivia.

*A. velutina* Bates equals *thearida* Fruhst. (104 b) in size. Upper surface darker, of a more intense steel-blue reflection and with smaller turquoise-blue spots. Area of the androconium of the hindwings black, with brown periphery. Under surface of a steel-blue lustre, with the exception of a dull black costal spot at the cell-apex and of the median friction area. Hindwings just the same, though set with 6 ruby-red, sub-terminal intermedian maculae. Rare, Upper Amazon.

*A. arete*, a relatively common species, replaces *A. arethusa* in Central and South Brazil, as well as in Paraguay. The turquoise-coloured spots of the upper surface somewhat bluer, the oblique band of the ♀ narrower than in *arethusa*, the androconium of the hindwings narrower, preponderantly of a greyish black, the friction spot of the under surface of the forewings not like in *arethusa* proceeding beyond the posterior median. ♀ always with three light ruby-red costal spots of the hindwings. Under surface of the ♂♂ black with a grey brightening distal from the cell-apex and the rudiments of a blue transverse band standing in a steel-blue median area of the forewings. ♀ at the same place with a white band, hindwings with three red basal spots as in *arethusa*, and 6 red antemarginal spots varying in size according to the locality. — *ortygia* *subsp. nov.* Habitus smaller than that of *arete*. ♂ beneath with obsolete red basal and submarginal dots of the hindwings. ♀: white oblique band of the forewings of a purer white and especially distally much more extensive than in *arete* and *alpheios*. Hindwing above more neatly speckled in blue. Under surface: the submarginal row of red maculae extends from the anal angle to the costal margin, while in *arete* and *alpheios* it terminates already between the inner margin and the anterior median. Bahia. — *arete* Dbl. according to VON BOENNINGHAUSEN occurs frequently near Rio de Janeiro and Petropolis. Under surface of the ♀ with paler and larger red antemarginal spots than in *alpheios*. The territorial form from Paraguay and Southern Brazil is introduced here as *alpheios* *subsp. nov.* (104 a). The white oblique band of the ♀♀ narrowed, divided into its single parts by broader black veins. The submarginal red dots of the under surface especially in the Paraguay-form considerably reduced in size. — The larva of *Ageronia arete alpheios* bears 2 stiffly projecting horns on the head, furthermore 3 pair of longer and apparently 4 pair of shorter spines on the central segments. The pupa's long horns are running parallel, contrary to *A. amphinome aegina* Fruhst.

### L. Group Apaturidi.

This group has very nearly the rank of a subfamily. The geographical range has been dealt with in Vol. I. p. 160; as for the more detailed characterization cf. Vol. IX. p. 695. In the Ethiopian fauna there are eventually the *Apaturopsis* (likewise with open wing-cell), which might be nearly allied to the *Apaturidi*. This genus, however, contains such rare species that nothing at all is known about the larvae and but very little about the butterflies. — In order to characterize once more quite shortly the principal peculiarities of the *Apaturidi*, we mention that the butterflies are excellent fliers, having open wing-cells, the larvae being rough, but without spines, instead of which they have posteriorly two points and at the head two protuberances that may be developed either as straight or bent horns, or as secondarily branched, small clubs, or as antlers, or as leaves being ramous at the margin; the pupa is laterally compact, with a distinct dorsal carina, generally consisting as if of green opaque glass; it is mostly fastened to a leaf or stalk and generally needs but a short time for its development. The butterflies are fond of the woods on the broad roads of which they fly up and down, taking their food; they shun treeless, cultivated districts. The chief nourishment of the larva seems to consist of tree-like Urticaceae, such as *beltis*, and where they do not occur anymore, of poplars or willows. The ♂♂ often exhibit the blue reflection which varies according to the exposure, and to which the group owes the denominations: reflecting-butterflies, changeant etc. (A. SEITZ.)

### 55. Genus: *Chlorippe* Bsd.

The American reflecting-butterflies are distributed from Mexico and the Antilles to Argentina. They partly have a more magnificent blue reflection than the palaearctic reflecting-butterflies (*Apatura*), there even occurs a marvellous green reflection; in another part the reflection is more unobtrusive and in some species it is absent altogether. The *Chlorippe*-♂♂ are partly very common, while their ♀♀ are just as rarely observed or even unknown. The American reflecting-butterflies often differ from their palaearctic allies in their exterior by cornered forewings and long-stretched hindwings, being sometimes provided with pretty long caudiform points. As to the veins there is no constant difference from the palaearctic species. A slight difference in the structure of the body is exhibited by the broadened forelegs of the ♂♂. *Chlorippe* is therefore also often considered only a subgenus of *Apatura*. The larvae of the Brazilian *selina*, *lauretta* and *kallina* greatly resemble those of the European reflecting-butterflies and have the same habit of resting on the upper surface of the leaves, while their pupae have larger and smaller points and dents on their back and are, therefore, of a rather odd shape. The larvae, as much as is known, live on *Celtis*. — According to H. FRUHSTORFER (i. l.), the clasping-organs of the outer male genitals have the broad valve of the *Apatura*-group, but the saccus as well as the penis are shorter than in the other forms of this group. The uncus is, about like in the *Ageronia*,



of a remarkably light structure and has 2 points, the valve is most peculiar by four skinny appendages. — According to the nomenclatural rules, this genus has to be denominated *Catargyria* Hbn.

- cyane.* **Ch. cyane** Latr. (= *lucasia* Dbl. and Hew.) (110 B a) from Colombia has beside the blue band of the hindwing, on the forewing only a blue spot at the inner margin, the blue reflection extends, however, not only over the greatest part of the hindwings, but also over the basal part of the forewings. The ♀ has somewhat green reflection on both the sides of the white band of the hindwing, though only at the posterior part. The form occurring in Peru lacks the blue spot at the inner margin of the forewings: **reducta** subsp. nov.
- burmeisteri.* **Ch. burmeisteri** G. and S. (110 B a) from Argentina (Tucuman) is smaller than *cyane* and has a more deeply cut out distal margin of the forewings. The blue median spot exhibits a pure blue (without a greenish shine) and proceeds further towards the anal angle. The under surface of the forewings has more sharply delimited dark spots and the hindwings show sharper bands and much violet colouring. The form from Bolivia was denominated **boliviana** by OBERTHUER.
- boliviana.* **Ch. seraphina** Hbn. (= *laurentia* Godt.) (110 B a) from South Brazil and West Colombia (Cauca Valley) has greenish-blue bands on the fore- and hindwings, appearing in lateral exposure almost of a pure green. The very intense blue reflection extends almost upon the whole surface of the hindwings and on the basal half of the forewings. The ♀ resembles the ♂♂ of *lauretta* occurring likewise in South Brazil. The ♂♂ from Colombia have somewhat narrower blue bands on all the wings. According to VON BOENNINGHAUSEN the butterfly occurs only in single specimens.
- seraphina.* **Ch. cherubina** Fldr. (110 B a, b) from Central America and the western part of South America as far as Bolivia, has broader and longer, as well as greener bands of all the wings. The ♀ differs above and beneath rather much from the ♀ of *seraphina*. The form from Bolivia is smaller, darker and has somewhat narrower and bluer bands: **parva** subsp. nov. — **thalysia** Fruhst. from Ecuador (Balzabamba), of which only the ♂ is known, has narrower blue median bands and a bright distal part in which the black submarginal band is especially prominent. Hindwing with two subanal long narrow red spots standing vertically below each other. On the under surface all the black basal and median spots are more prominent, the shape of the very strong anti- and submarginal moon-spot-bands resembles *cyane*.
- cherubina.* **Ch. lavinia** Btlr. (110 B b) from Peru and Bolivia has a marvellous green reflection. The white parts of the median band, in lateral exposure, exhibit a reddish shine. The aberrative form **ornata** Fruhst. (110 b) has a more or less large brownish-yellow subapical spot of the forewings. The ♀ has been discovered by Mr. A. H. FASSL; it varies in the colouring of the light forewing-band similarly as the ♂. There occur ♂♂ among *lavinia* (in *ornata* also?) in which the band on the upper surface, except a white spot at the costal margin of the hindwings, is completely green: **chlorotaenia** ab. nov. (Eastern Colombia, Villavicencio, 400 m, A. H. FASSL).
- parva.* **Ch. clothilda** Fldr. (110 B b) from Colombia has short and broad bands of bluish gloss. The blue reflection is not so intensive as in the preceding species.
- thalysia.* **Ch. vacuna** Godt. (110 B c) from South Brazil and Paraguay has deep-blue reflection of which only the apex of the forewing is free. The ♀♀ have a full brown oblique band and resemble the agathina-♀♀. The brown oblique band varies greatly in the ♂♂. According to VON BOENNINGHAUSEN *vacuna* is not rare at its flying-places. — The Paraguay-form **fluibunda** Fruhst. has the forewing-band dissolved into isolated, roundish maculae; in the ♀ the inner submarginal band on the upper surface of the hindwings is placed more proximally; specimens in which the subapical spots are above and beneath white or whitish, have been denominated **ab. cretacea** by STICHEL.
- lavinia.* **Ch. pavon** Latr. (= *pavonii* Ky.) (110 B c) is distributed from Mexico to Bolivia. The ♂♂ have but little violet reflection. The ♀ has a brown median band of all the wings. Specimens with a grey under surface of the hindwings are circulating by the name of **subtunifomis** Stgr. i. l. — **inunbratus** Fruhst. from Paraguay has smaller subapical spots; beneath, all the wings have more prominent and broadened violet, red and black spots and bands; median band of the hindwings of a lighter whitish-violet; all the wings with two rows of large submarginal moonspots. — **cuellinia** Fruhst. from Mexico is described as follows: ♂ reddish-yellow apical spot of the forewings smaller than in *pavon*, with two nice white proximal dots. Median band more pronounced. Under surface: darker, forewing with 3 distinct whitish-grey, small subapical dots; hindwing with intensive reddish-brown median bands. ♀ very large; under surface: forewing with extensive yellowish subapical spot. Hindwing whitish-grey.
- clothilda.* **Ch. mentas** Bsd. (110 B c) from Central America (Honduras, Chiriqui) is smaller than *pavon* and has an indistinct brownish-yellow subapical spot of the forewings. The under surface, especially of the hindwings, exhibits much more pronounced markings. The ♀ above and beneath resembles extraordinarily an *Adelpha*.
- vacuna.* **Ch. agathina** B. (110 B d) from Surinam and the Upper Amazon has only little blue reflection. The under surface of all the wings has often very few markings. The ♀ has a very broad yellowish-brown oblique band behind the middle of the hindwings. — The North Brazilian form being slightly different has been denominated **agathis** Godt.



**Ch. kallina** *Stgr.* (110 B d) from Brazil (Rio de Janeiro, Santa Catharina and Rio Grande do Sul) *kallina*. greatly resembles *agathina* above, but beneath, especially on the hindwings, it is very different. The ♀ has instead of a band only an oblique row of white dots on the forewings. The larva fully resembles that of *selina*. The pupa has a much less projecting dorsal ridge which, in the middle of the 6th segment, rises to a little prominent obtuse point, slanting from here anteriorly in a straight line, posteriorly in a convex line; the horns are short and obtuse, all the edges with a white margin. — **bertila** *Fruhst.* from Paraguay, founded upon *bertila*. a ♀, has been described thus: larger, ground-colour dark greyish-brown, the proximal white spots of the forewings more pregnant, as well as the black submarginal band of the hindwings. Under surface: on the forewings the black subapical region is reduced, so that only rudiments are yet left beyond the cell, a peculiarity being already met with specimens from Rio Grande. Hindwing with a distinct row of submarginal white crescents which are missing altogether in *agathina* and *kallina*.

**Ch. felderi** *G. and S.* (110 B d) from Colombia, Venezuela, Bolivia and Peru, has another shape of the *felderi*. hindwings, and differs somewhat beneath. The ♀ has been discovered by Mr. A. H. FASSL in Bolivia (Rio Songo). It resembles the ♀ of *zunilda beckeri*, but it has on the upper surface of the forewing a much broader and differently placed band; beneath it is of much stronger colours and more pronounced markings. — ♀ **mathani** *Oberth.* *mathani*. has a blue oblique band of the forewings. — In **floris** *Fruhst.* from Peru (Pozzuzo) the ♂ is above darker blue *floris*. but with purer white spots than *felderi*. Under surface: distal region of all the wings dark violet instead of brownish-yellow, with a complete submarginal black band bearing smaller white spots. Ocelli of the hindwings smaller.

**Ch. zunilda** *Godt.* (110 B d) from South Brazil has a ♀ varying so much that HEWITSON has been *zunilda*. deceived and has described it as a species of *Catagramma* (*Perisama*). The ♀-form **beckeri** *Hew.* lacks the *beckeri*. large brown spot on the forewings. According to VON BOENNINGHAUSEN it is very rare near Rio de Janeiro, but more common in the more southern provinces. Mr. SCHEIDEMANTEL has repeatedly bread the species from larvae, near Blumenau; nevertheless we have not yet any precise knowledge of the first stages. The butterflies are extremely timid and they nearly always fly furiously about in the breeding cage.

**Ch. callianira** *Mén.* (110 B f) from Nicaragua has a blue reflection on the whole upper surface except *callianira*. the apex of the forewing. It has a characteristic reddish-brown submarginal band of the hindwings, which occurs otherwise only in such species that have also a yellow median band of the forewings.

**Ch. thaumas** *Bates* from the interior of Guatemala (not lying before us) resembles *pavon*, though *thaumas*. it is still closer allied to *elis*. From *pavon* it differs by having instead of the orange-yellow subapical spot of the forewings 3 white spots near the wing-apex, and from *elis* by the absence of the orange-yellow spotted median band, and also by a more pronounced blue reflection. The under surface of the hindwings is of an ochreous grey, darkened by brown atoms; in the wing-centre there is an irregular brown stripe, a more subdued and moon-like stripe is running near the distal margin. SALVIN and GODMAN combine this form with the preceding one.

**Ch. elis** *Fldr.* (110 B e) from Ecuador and Colombia has a rather broad brownish-yellow median *elis*. band of the forewings. The ♀ is not yet known. — **farge** *Fruhst.* from Colombia is according to the author con- *farge*. siderably larger, the apex of the forewing more prominent, all the wing-margins are more dentate. Distal part of the hindwings lighter with more conspicuous ochre-yellow submarginal macular band remaining distinct and complete as far as to the anal angle (the latter statement does not hold good in all cases). — **fabaris** *Fruhst.* *fabaris*. from Bolivia (Cochabamba in September, La Paz in April) and Peru (Pozzuzo), has been described as follows: Only somewhat larger than *elis*, submarginal band of the hindwings above still considerably broader and always existing distinct as far as to the anal angle, whereas in *elis* the band is sometimes only as thin as thread and disappears already at the upper median.

**Ch. druryi** *Hbn.* (♀ = *laura* *Hbn.*) (110 B e) seems to occur only in Cuba. It is easily recognized by *druryi*. the broad, indistinctly delimited yellow band of the forewing. The light-blue reflection exists on the whole hindwing and at the base of the forewing. — **acca** *Fldr.* from Mexico has a darker upper surface with a nar- *acca*. rower forewing-band, but a broader hindwing-band; the hindwings are extended into a longer point.

**Ch. laure** *Dru.* (110 B e) distributed from Mexico to Colombia and Venezuela, has a much broader *laure*. white band of the wings, which is continued to the inner margin of the forewings. The ♀ is, as the figure shows, considerably different. The under surface has, in both the sexes, pronounced golden bands. — **lauretta** *Stgr.* *lauretta*. (110 A d) from South Brazil and Paraguay has no reflection and narrower white bands. Specimens in which the yellow subapical spot is separated afar from the median band being of a pure white, are called **hübneri** *hübneri*. *Stgr. i. l.* — According to VON BOENNINGHAUSEN very rare on the Corcovado. — In the Honduras-form **mileta** *mileta*. *Bsd.* the ♂ differs but slightly from *laure*. The ♀♀, however, are much larger, more yellow, the apical spots smaller, more roundish, lighter, the anterior part of the median band of the forewing is of a pure white, the bands of the hindwings are nearly as broad again, the centre of the wings is lighter with more undulated



*majugena*. crescent-bands, the orange-red subanal spots are neater. — The ♀-form *majugena Fruhst.* is smaller, has more uniformly coloured wings, narrower white median bands, a darker ochre-yellow apical spot of the forewings and more conspicuous reddish subanal spots of the hindwings. — In *mima Fruhst.* from Colombia and Venezuela(?) the yellowish median band of the hindwings beyond the cell is not overshadowed by brown, remaining on the whole more uniform and yellow of the same width as far as the submedian, the median band of the hindwings is narrower, the yellowish subanal spot larger than in *mileta*. The under surface of the forewings is of a more hazy and darker ochre-yellow hue at the base and in the submarginal region. The larva greatly resembles that of *selina*, the pupa on the whole being also alike, the dorsal ridge rises almost as high as in *laure*, reaching the highest elevation in the middle of the 6th segment, where it forms a prominent point; from here it declines anteriorly and posteriorly in the same way; the horns are shorter than in *laure*; the dorsal ridge is brown only on the 5th and 6th segments, moreover, just like the other edges white-margined.

*selina*, *modica*. **Ch. selina** Bates (110 B e) from Brazil has a white half-band of the forewings, which is far remote from the yellow apical spot. — **modica Fruhst.** from Espiritu Santo, Minas Geraes and Rio de Janeiro, according to FRUHSTORFER, is the connecting link between *selina* and *lauretta*: upper half of the forewing-band yellowish, the lower half, beginning from the 3rd median vein, of a pure white, the band of the hindwing narrower than in *selina*, broader than in *lauretta*. Under surface: the yellowish zone beyond the median band, which is distally bordered by a broad dark brown, is very narrow. — **murrina Fruhst.** from Rio Grande do Sul: the reddish-yellow apical spot of the forewings is tapering posteriorly. The median band changes into an entirely dark yellow colour, while that of the hindwings is covered with a yellow hue. Median band of the hindwings considerably narrower, bent more proximally. Median band of the under surface of the forewings yellow instead of white. — Eggs green, globose, with very distinct longitudinal stripes and fine transverse stripes; they are always deposited on the upper surface (on the central nerve) of the leaves, frequently also on the tips of the leaves. The larva resembles those of the European reflecting-butterflies, the strong horns have short lateral and 2 terminal spines, on the back there are 2 short triangular elevations; the grown-up larva is yellowish-green with a green dorsal line and obliquely, anteriorly descending narrow green stripes touching the stigmata and forming posteriorly a short descending vein. The larva has the same habits as its European affinities. The pupa has larger and smaller dents on its back; it is green, finely dotted with white, with dark lines descending anteriorly and touching the stigmata; the dorsal ridge, the wing-edge and its continuation on the segments 5 and 6, the part of the wing-margin situate behind the wing-edge are bordered by brown; the dorsal ridge is on the 4th segment divided into 2 prominent brown stripes running towards the horns. The pupa does not move when being exposed to the light, but is otherwise most mobile, jerking furiously about on being touched. — W. MUELLER denotes this species *laure*; but since the latter does not occur in South Brazil, one of the other species occurring there (*seraphina*, *vacuna*, *zalmunna*, *sultana*, *zunilda* or *selina*) must be meant.

*laurona*. **Ch. laurona Schaus** from Brazil (Petropolis) has been described as follows: ♂ similar to *laure* (110 e). The wings have the same dark-violet reflection; the orange-coloured band of the forewings is broader and reaches the apex and the distal half of the costal margin. The anterior and distal part of the white band is bordered in brownish-red and distally overtopped before the vein 4 by a large brownish-red spot not reaching the apex. — The statement of the place where it was discovered appears to us to be not authoritative; it is strange that V. VON BOENNINGHAUSEN who had been collecting in this district for more than 30 years, did not discover this species. The description also nearly agrees with *druryi* from Cuba. It may be also identical with *modica*.

*thoë*. **Ch. thoë Godt.** from „Brazil“ which has not become known to us, has been described as follows: both the wings with a white common band and a small dull eye-spot; hindwings beneath of a silvery grey, appearance and shape of *laurentia*, upper surface of the ♂♂ blackish-brown with a violet reflection, with a common oblique, centrally spotted band; with 2 black undulated lines before its proximal margin. Besides, towards the anal angle of the 4 wings, one notices a yellowish-brown spot with a black dot, and on the last tooth of the hindwings a V-shaped line, and further on greenish colouring. The under surface of all the wings is as in *laure* (110 e), but the 2 black dots at the inner angle of the forewings are absent. Abdomen of the same colour as the hindwings, antennae black with a reddish-brown club, ♀ not differing from the ♂, but without the reflection and the upper surface is somewhat less dark. — This species has not been mentioned by the modern authors; it evidently resembles *lauretta*, though the latter has no reflection.

*angelina*. **Ch. angelina Fldr.** (110 A c) is smaller than *lauretta* (110 A d), the median band is white, not interrupted, only in the anterior part in the distal half yellow, the white band of the hindwings is narrower, posteriorly very much tapering, on all the wings there are 2 very distinct light submarginal stripes. From the Upper Amazon.

*plesaurina*. **Ch. plesaurina Btlr.** and *Dr.* from Costa Rica (Carthago) described according to a ♂, differs from the *griseldis*-form *linda* by a narrower white band of the hindwings, and by the ochre-yellow band of the forewings being in the anterior part not contracted, but considerably narrowed in the posterior half and brightening only before the submedian.



**Ch. godmani** Dann. (110 A d) from Venezuela has been described according to a ♀. The under surface has silvery bands. It is presumably the ♀ of another species, having hitherto been unknown.

**Ch. moritziana** Fldr. from Venezuela differs from *angelina* (110 A c) by the following: band of the forewing light yellowish-brown, anteriorly somewhat curved, posteriorly straight, in the discocellular 2 brown spots, 3 rounded light-brown spots in the apex of the wings, the 2 black moon-spots in the anal angle of the hindwings bordered in blue, at the distal margin 2 buff spots.

**Ch. griseldis** Fldr. (110 A b) from the Rio Negro, the Upper Amazon and from Peru is a beautiful large species with only dull blue reflection on the hindwings and the basal part and the inner margin of the forewings. The under surface has dull golden bands on the hindwings and a similar, large subapical spot of the forewings. The yellow band on the upper surface of the forewings is sometimes interrupted in the anterior part. — In *linda* Fldr. from the Rio Negro the blue reflection is absent. — *laura* Oberth. is the form from the Upper Amazon, from Goyaz and from the Chanchamayo, *paulana* Fruhst. the form from São Paulo. (*plesaurina* may also belong to this species). — *nitoris* Fruhst. from Paragnay approximates *linda*, but the band of the forewing is very broad, the inner half white, the outer half ochre-yellow. — For *laura* Hbn. from Surinam (?) and Brazil (?) FRUHSTORFER has introduced the name *geyeri*. — *myia* Fruhst. (habitat unknown, probably Brazil or the Lower Amazon) is smaller, apex of the wings and anal part prominent, median band of the forewings posteriorly turning yellowish, growing somewhat narrower; the white median band of the hindwings hardly half as broad as in *linda*, which is especially conspicuous beneath.

**Ch. zalmunna** Btlr. (110 B f) from Brazil (São Paulo etc.) is above hardly to be distinguished from *sultana*, though the under surface differs by another shape of the median band of the hindwings. — The ♀-form *butleri* Oberth. is the yellow form from Sao Paulo and ♀ fa. *paulistana* Fruhst. the white, smaller form from Rio de Janeiro.

**Ch. sultana** Foett. (110 B f), owing to the marking of the under surface, is a very peculiar and isolated species.

## 56. Genus: **Asterocampa** Rüb. (= *Doxocopa* Hbn.).

This genus comprises the North American „reflecting-butterflies“ which, however, without any exception do not exhibit any reflection whatever. The species of this genus inhabit North America, except one species being distributed as far as the Antilles and another one occurring in Central America. Being already in their exterior different from *Apatura* and *Chlorippe* to such an extent that it is quite impossible to mistake them, they differ besides greatly from these affinities by their interior structure. As a rule, only the first subcostal vein is branched off before the termination of the discocellular, although there are also exceptions occurring; the shape of the male sexual organs, however, differs considerably from those of *Apatura* and *Chlorippe* \*). The species are on an average smaller than the genuine reflecting butterflies and exhibit a very uniform exterior. The eggs are deposited in small heaps, they are almost globose, at the top broad and projecting, and have 18 to 20 rather broad vertical ribs between which there are numerous fine transverse lines. The larvae live on species of *Celtis*; they generally resemble the larvae of *Apatura*, they have however, no horns, but star-shaped warts at the head; the abdomen also ends into 2 points. The pupae greatly resemble those of the European *Apatura*. This genus is known by the name of *Doxocopa*, but this name is to be applied to the Papuan (*Apaturina*) *erminea*, and on that account we had to propose a new name in choosing of which we have paid regard to the characteristic protuberances of the head of the larva.

**A. lycaon** F. (= *herse* F., *clyton* Bsd., *texana* Skinn., *proserpina* Scudd.) (109 b) from the United States has in the male sex above no distinct eyespot-marking. The ♂ has very much darkened hindwings. — The form *flora* Edw. (110 A c) from Florida exhibits in both the sexes a greatly brightened upper surface with prominent dull eyespots on the hindwings. — *ocellata* Edw. has distinct eyespots on the hindwings. It is evidently only an aberrative form. — *idyja* Hbn. is the Cuban form being above and beneath paler. — The larva is green with greenish-yellow longitudinal stripes and has on each side of the head a yellow, star-shaped small wart; it lives on *Celtis occidentalis*. The pupa is green with yellowish wing-partitions and a bluish-green back. — This species is most variable.

**A. celtis** Bsd. (110 A c) from the United States is the most common species, but it has not yet been discovered on the Pacific Coast. — *montis* Edw. (110 A c) differs only by another, though rudimentary eyespot being placed in front of the eyespot on the forewings. — The larva lives on *Celtis occidentalis*, is green with a broad, nearly white lateral stripe and a reddish small spine on each side of the head. The pupa is yellowish-green with more yellowish wing-partitions and 2 bluish lines at the sides.

**A. alicia** Edw. (109 A a ♂, c ♀) from New-Orleans is larger than the preceding species, and has a lighter, more yellow ground-colour.

\*) Claspings-organs characterized by the two-pointed uncus, whereas the preceding genus bears only one tegumen-hook. Valve with a strong bent-up spine at the end, whereas there the valve is hairy, but otherwise unarmed. (FRUHSTORFER).



- leilia*. **A. leilia** Edw. (110 A c) from Arizona has on the hindwings a row of, and on the forewings 2 eyespots with white pupils. — **antonia** Edw. (110 A c) is smaller with a lighter and more variegated upper surface owing to numerous light spots.
- argus*. **A. argus** Bates (109 b) from Guatemala and Honduras greatly deviates from the preceding species by the very much cut out distal margin of the forewings and by quite a different scheme of markings. It varies somewhat, especially the yellow band of the forewing is inconstant, being sometimes more prominent than in the figured specimen. Specimens with a distinct yellow band, occurring in both the sexes, are called **armilla** Fruhst. Seems not to be common.

### M. Charaxidi.

We have but little to add to what has been said about this group in Vol. I p. 168—69 and Vol. XIII. p. 122—23. The butterflies mostly exhibit an uncommonly clumsy, strong thorax, bearing the very thick and strong flying-muscles. The antennae are always quite gradually thickened to a moderate club, but have a strong shaft. The abdomen often adheres to the powerful thorax only like a small appendix. The flight is very powerful, though not elegant, rumbling or tumbling, with long-striking flaps of the wings, quite dissimilar to the flight of the *Apaturidi* which dart along with stretched wings. When holding the butterflies, which are generally of a considerable size, between the fingers, they develop great efforts to free themselves, and in the net they mostly flutter furiously about. They disdain flowers, but go on fruit, saps, excrements and baits by which they often get so boozy that one can easily grasp them by the thorax itself with the pincette and kill them by a pressure, whereas otherwise they are extremely timid. They are mostly always of imposing colours, very often with a dark under surface decorated by metal colours. — The larvae, frequently of a green colour, are nude, granular or with quite short hair; the head mostly exhibits short horns; the neck is often strangulated, the back may rise in pointed protuberances; at the tip of the tail sometimes two knobs, points or long appendages. — The pupae are also quite different from those of the *Apaturidi*: not bilaterally compressed, but twisted round, berry-shaped, with mostly quite short abdominal part being shoved together, resembling in the shape rather the pupae of *Danaidi* than those of other *Nymphalidae*, without any protuberance and points, with quite smooth surface. Except the northern parts of North America and Asia, they are distributed almost over the whole world, except Europe, where they only inhabit the southernmost extremity; their chief range, however, are the tropics of both the hemispheres. Some species are extremely rare and belong to the most highly esteemed objects in collections. (A. SEITZ.)

The *Prepona* are large and brilliantly coloured butterflies of a black ground-colour and, in the common species, mostly with a metallic-lustrous, bluish-green longitudinal band across both the wings. In some species the wings are transversed yet by a series of yellow submarginal spots, and in two Andine species we notice a red transverse band (similar to that of *Agrias*) on the forewings. The *Prepona* evidently replace in South America the palaearctic *Charaxes*-form with which they are so closely allied in the veins that there are but few important structural marks by which they differ from *Charaxes*.

### 57. Genus: **Prepona** Bsd.

In *Prepona* the forewings are mostly drawn forth at the apex, somewhat in the shape of a sickle; the hindwings are never caudate, but always rounded off. The antennae quite gradually change into a slender club. The precostal of the hindwings is from the very bottom bent distally, while in *Charaxes* it rises in a straight line. The cells of both the wings are closed by a fine posterior discocellular disemboing on the forewings distal from the bifurcation of the medians, on the hindwings proximal from it. The tarsus of the ♂♂ is almost as long as the tibia, in *Charaxes* always shorter. The amazingly close affinity expressed by the structure is also displayed by the shape of the larvae being built according to the same type and differing only in single details; so for instance in the longer tail-fork and the more strongly developed fourth segment, while the three first ones are suddenly tapering off behind the head. On the head there are only two instead of four horns turned hindward. We as yet know very little about the larva, and probably only the larvae of the four most common species are known (*demophon*, *meander*, *antimache* and *chromus*). They live, according to V. BOENNINGHAUSEN on Anonaceae and Abacata-trees. According to A. SEITZ (Wiesbaden 1893) they have a curious shape; behind the head there is a neck-like depression followed by a gibbous elevation, the posterior end of the insect being drawn out into two appendages, which are apart when at rest.

The *Prepona*-larvae most remarkably are without spines, i. e. according to modern views, the spines are stunted, whereby this genus shows a certain affinity to *Apatura*, being also confirmed by the powerful structure and the blue reflection of the butterflies, by their flight and habits etc.

HAHNEL also mentions (Iris 1890 p. 290) with respect to the affinity to *Apatura*, that in the *Prepona* „the *Apatura*-type is more distinctly pronounced in the tropics, than in the *Apatura* themselves, which likewise occur on the Amazon, but are somewhat excelled in the beauty of colours and the size by their northern cousins“.

According to HAHNEL (Iris 1890 p. 308) certain *Prepona* are to be noticed by a vanilla-odour „occurring often in species with a deep, intensive blue“.

The egg of *Prepona chromus* Guer., according to FASSL, is of the size of an egg of *Sphinx ligustri*, being globose, of a shiny white, with many fine pores. The micropyle relatively large and to be seen with the naked eye. The little larva when just crept out is about 2 mm long, of a greyish green; the diameter of the head is larger than that of the trunk which is tapering off backwards. At the third ring there is an elevation



set with small hairs, which corresponds about on the whole to the description of grown-up *Prepona*-larvae being, according to Dr. SEITZ, provided with a depression behind the head.

The genus exclusively comprises species of an uncommonly strong and, at the same time, regular structure of the body. The wing-contour is likewise rather uniform (the forewings always pointed, sometimes projecting like a sickle) and in more than two thirds of the species even the magnificent blue colouring of the median part of all the wings.

As to the wing-contour, the bluish-black *Prepona* resemble the genus *Aganisthos*, while the variegated species, by their slight apical rounding, form the transition to the *Agrias*, being celebrated for their colours, with which they also share the same habits and which always exhibit very much rounded forewings.

Like the palaearctic *Charaxes*, they live in the woods and are fond of rotting fruit or excrements, their wings also produce a crackling noise like thick paper when being folded together, what we have also mentioned already in Asiatic and Australian *Charaxes*.

In Santa Catharina I observed *Prepona* in all the larger forests. The butterflies were, however, by no means common and still less they formed a characteristic feature of the landscape, like the Heliconids and Morphids. On the contrary, the *Prepona* lived hidden and timid in the forest-gloom and nearly always in solitude. The only occasion for observing them was when they came flying to small trees in order to pilfer from the emanating sap. Their most favourite meeting-place was the spot where the sweet, fermenting sap was emanating from the holes which small beetles had bored into the trees. If such sap-trees, the so-called „Waldschenken“, had once been discovered, we could safely depend upon *Prepona* flying to them in a few minutes, especially in intensive sunshine. Then there was always something mysterious about their coming and going. The *Prepona* are by no means gregarious. When *laërtes* or *demophon* were drinking from a sap-hole, and another specimen wished to come near it, there was always a short fight. If *Prepona* are intended to be taken in numbers, it is necessary to clear a piccade (a hidden path) in the woods by means of the Bush-knife, at best along small water-courses, and to lay out overripe or rotting fruit. After one or two days the butterflies appear tossing greedily upon the savoury meal. In places where the forest is very dark, they forget their customary timidity over their greediness and eager desire to drink and are easily captured by twos or threes at one fruit or bait.

Near Pebas on the Upper Amazon, Dr. HAHNEL has found nine species of *Prepona* together. They were, beside *Morpho achilles*, the largest of the species that met there at the bait. When they flew to a leaf, they always settled at the upper end, according to their habit of resting on the trunk with the head turned downwards. It was then a charming sight when next to their unrivalled, towering whitish-grey wings there appeared the green under surface of a *Catonephele* or the black and white of a *Pyrrhogyra*. On the other side sometimes an *Ageronia* spread out its wings, or an *Adelpha*. Of all the neotropical butterflies, the *Prepona* have, according to HAHNEL, the fastest and wildest flight, as we may easily suppose when regarding their stout, strong thorax. Whereas the Morphids are far-roving species flying for hours in one direction and being, therefore, not even frightened by wide sheets of water, the *Prepona*, like most of the Nymphalids, are fond of remaining near their breeding-place. There they are at home, and it seems that they are kept back by the fondness of their home and a somewhat faint-hearted feeling, so that they are very seldom seen reconnoitring to remote groups of trees.

They generally very often repeat their flying expeditions; they very quickly scent the bait laid out by the collector, descend to the ground and are cheated and captured there. But even when being chased up they do not fly far away and hide in the nearest thicket with their wings clapped together, in order to return rather obstinately to their former place. This habit I also noticed in *Prothoë francki* Godt. in Java and some *Charaxes* in Siam. For hours I was standing in the highlands of Lagos or in the river- dales of the coast-region in the forest, in order to wait for the butterflies. In the meanwhile I became aware of many other mysteries of that untouched nature there. In great numbers parrots flew from one Araucania to another, or a glistening green tree-snake was wriggling along the branches. Beside the *Prepona* there appeared occasionally a *Caligo martia*, and *Opsiphanes sulcius* or *fruhstorferi* were also enticed.

Like *Prothoë francki*, the *Prepona* have the same peculiar habit of drinking with their heads turned downward, at what already Dr. HAHNEL (Iris 1890 p. 290) and OTTO MICHAEL (Iris 1894 p. 220) have been hinting.

The latter also reports the interesting fact that a *Prepona pheridamas* returned to the same place every day for 2 months. In Santa Catharina the appearance of the *Prepona* depends on the season, they grow common only during the southern midsummer, in December, and then they are met until the end of March. HAHNEL (Iris 1890 p. 276, 277) reports of *Prepona* arriving more frequently at the bait beginning from December, near São Paulo on the Upper Amazon. JULIUS MICHAELIS, according to his verbal statement, has come across numbers of them in Obidos already in August. MABILDE reports that *catachlora* and *chalciope* occur in Rio Grande do Sul during the whole summer, and *miranda* in summer and autumn. SEITZ (Eine Lepidopterologische Reise um die Welt, Wiesbaden 1893) met them in the middle of March near Santos and writes: „Their rapid



flight and their endeavours to remain in a considerable height prevent the blue of the upper surface from becoming conspicuous in a similar way as in the *Morpho*“.

Most of the *Prepona*-species inhabit the hot lowlands, some few prefer the mountains.

The beautiful *P. garleppiana* Stgr. was discovered in altitudes of 1500 to 1800 m, its nearest ally *neoterpe* Honr. was captured by OCKENDEN during the rainy season, in November, still at an altitude of 10 000 feet near Limbani, Carabaya, Peru. A ♂ of *eugenus laërtides* Stgr. in the Tring-Museum, was taken by SIMONS in August or September 1901 near La Merced on the Rio Toro, Peru, at an altitude of 3000 m. It may be that both the collectors are mistaken in the statement of the altitudes.

A sure fact, however, is that FASSL has found a *Prepona chromus* yet at an altitude of 2100 m in Colombia, and according to him *chromus* is the highest flying of all the blue *Prepona* forms that have so far been observed here.

About the vertical range of some Bolivian species FASSL reports (Entom. Rundschau 1913, April p. 44):

„As to the enormous height to which the red *Prepona* fly, the magnificent and variegated upper surfaces of which evidently do not agree at all with the other butterflies occurring there, a comparison of the animals in their sitting position issues a most striking similarity of their backs: silvery white dots and streaks on an ochreous, reddish or black ground. I captured for instance on a self-made road of 4 km length in the dark primeval forest of the North-Yunga in Bolivia, at an altitude of 1700 m, the following species of butterflies, in the course of 6 months: *Adelpha saundersi*, *Prepona buckleyana*, *xenagoras*, *garleppiana*, *Opoptera bracteolata*, *Eryphanes zolvizora*, *Caligo phokilides*, *Lymanopoda albomaculata* and *albocincta*, several species of *Pedaliodes* being „mildewed“ on their backs, *Daedalma dinias* etc.“

I am in doubt whether these white and silvery spots of the backs of the preceding animals are perhaps adapted to the water-drops of their home in the primeval forests of the mountains being eternally humid and dripping with wet. The *Prepona* which fly 800 m lower in the woods of the hot valleys, in spite of the much greater number of species, do not show one single back being so intensely dark and decorated with silver, neither does any *Adelpha*, *Brassolid* or *Satyrid* exhibit such a conspicuous likeness of colours on their backs, as the above mentioned alpine animals of the same genera.

*omphale amesia* Fruhst. being covered with violet reflection originates from Lita in Ecuador from an altitude of 3000 feet. About the occurrence in the Amazon-district we learn from MICHAEL that of 9 species (*demophon*, *antimache*, *meander*, *laërtes*, *gnorima* [recte: *omphale*], *eugenus*, *pheridamas*, *dexamenus* and *licomedes*) the latter two do not fly on the Lower Amazon. From Surinam I possess, however, *dexamenus* and *licomedes*, and from French Guiana *licomedes*, so that *licomedes* might also occur on the Lower Amazon, where it is perhaps met only very rarely and will be discovered yet later on.

The black and blue *Prepona*-species are, at least generally, widely spread. Owing to their strong wings, they are most fitted to distant excursions. They all inhabit, without any exception, the tropical and neotropical zone, Mexico being the northernmost range, South Brazil, Paraguay and Bolivia the southernmost range. Of all the species known, *meander* has the greatest distribution, being the sole species that is nowhere absent from the northernmost confines to the southernmost, except the Antilles. Next to it are *demophon*, *laërte* and *antimache*.

Several species, such as *licomedes* and *dexamenus* do not pass beyond the proper tropics, others are local as for instance *chalciope* inhabiting only the more temperate latitudes, *deiphile* occurring only from Espiritu Santo to Rio, *buckleyana* living exclusively in Peru and Bolivia. Central America also has its special forms in *phaedra*, *lygia* and *camilla*.

Some species, probably the phylogenetically oldest ones, are very constant, others again, very likely the younger forms, such as *laërtes*, *omphale* etc. are still in the state of fluctuation and evolution. Hardly any specimen is like the other. For such species there are certain centres of races to be distinguished in the neotropical district. Within these centres there are rather congruent directions of variability noticeable, which cease whenever a species passes over to another, adjoining district. As far as our faunistic knowledge suffices, we can distinguish six provinces modifying the development of a species. They are:

- |   |                                      |
|---|--------------------------------------|
| I. Central America from Mexico to Panama. | IV. Surinam and the Amazon district. |
| II. The Antilles.                         | V. Southern Brazil.                  |
| III. The Andine region.                   | VI. Paraguay.                        |

We notice in:

- |  |  |
|--|--|
| I. Large forms with faded colours.       | IV. Inclination to yellowish colouring.                                  |
| II. Reduction of the blue colouring.     | V. Small non-variegated specimens.                                       |
| III. Large specimens of intense colours. | VI. Small and pale specimens resembling certain forms of the dry period. |

The maximum of development in the number of species and beauty of colours is attained by the *Prepona* in Peru and Bolivia. There we find 12 species, i. e. as many as in the whole enormous Brazilian Empire.



Then follows Colombia with 10, the Amazon district and Central America with 9 species each. Paraguay has 5 or 6, and the Antilles only 3 or 4 species.

On the whole we are already acquainted with the *Prepona*-species, although enormous districts, especially those of the affluents of the Amazon River and some Brazilian Provinces and especially the Antilles, are still to be explored. The number of the local races being still hidden in these regions, however, will probably increase yet considerably in the next decades, when the geographical and commercial opening up of these regions will have made further progress.

All the *Prepona* bear hair-tufts on the hindwings, the colour of which varies according to the group of species. By this hair-tuft the genus differs from the Indo-Australian *Charaxes*. In the frequent blue species the hair-tufts are parallel to the surface of the wings, in some species, especially the variegated ones, however, they are raised steep and shaggy, as in *P. laërtes*, the *Agrias*. GODMAN and SALVIN make use of the colour of the sexual tufts as a mark of separation for the groups of species. When considering only the Central American species, this separation is also easily carried out. In some Brazilian species, however, we meet already within the species itself forms with grey, yellowish and black hair-tufts.

But on the whole, the examination of the easily attainable species resulted in the fact that the two groups of species separated by GODMAN and SALVIN by reason of the colouring of the scent-tufts, are also anatomically sharply separated. Thus an insignificant mark being in other genera systematically useless in every instance, offers in the *Prepona* a precious hint for the great anatomical difference of the sexual organs. On the comparative examination of the clasping-organs, the surprising result arrived at was that the species with black hairtufts, in spite of their extremely similar scheme of markings and the homogeneousness of the colouring on the upper surface, exhibit considerable differences in the structure of the sexual organs. But the above more variegated species of the genera bearing yellow hair-tufts, are so very divergent in their colours that they have so far been distributed upon two genera, and are so congruent in the structure of the sexual organs that we must, as it seems, attach a specific importance to quite insignificant marks, such as the changes of the periphery of the valve, in order to harmonize the specific difference which is so conspicuously manifested in the exterior, also with that of the sexual organs. As for instance, the structure of the species hitherto circulated as *Agrias sardanapulus* and *claudia* is hardly to be distinguished from that of the *Prepona laërtes* and *omphale*. We may, therefore, suppose that the darker and more plainly marked species of the *Prepona demophon*-group are already consolidated, while the variegated species of the *Prepona laërtes*-series are still in full evolution. According to what has been said so far, it is not to be wondered at, if it turns out that the species bearing likewise yellow tufts and having hitherto been comprised by the name of *Agrias*, belong to the *Prepona laërtes*-group. Dr. SCHATZ once mentioned the entire uniformity of the veins in „*Agrias*“ and in *Prepona*. The examination of the clasping-organs having resulted in their analogy with *Prepona*, the name of „*Agrias*“, was in future to be degraded to the denomination of a group of variegated *Prepona*, unless we attribute more importance to the more slender form of the larvac of the *Agrias*.

We, therefore, have to distinguish anatomically:

A. *Archaeoprepona*. Uncus with a chitinous, generally laminiform, spineless, ventral appendage. Type: *A. demophon* L.

B. *Prepona* (*Agrias*). Uncus with a peculiar, spined ventral appendage resembling the flower-heads of the species of plants *Phyteuma*. Type: *P. laërtes* Hbn.

The shape of the valves and the uncommonly strong and long penis show an analogy to the *Apaturidi*, but this is again restricted by the short saccus.

According to the colouring of the antennae, there are also two groups of forms to be distinguished:

A. Antennae red: *Anaeomorpha*.

B. Antennae black: *Prepona*.

#### A. Group of Species *Anaeomorpha* (ROTHSCHILD, Nov. Zool. 1896 t. 13 f 1).

Veins like in *Prepona*, the first subcostal veins free, not united as is *Anaea*.

*P. splendida* Rothsch. (103 e) from the Rio Cachyaco, resembles beneath a *Prepona meander* (111 c) *splendida*. with a lighter basal half and a dark-brown distal zone separated by a black line. Costal as far as near the wing-centre white; above deviating from all the *Prepona* by the cell of the forewing being suffused with blue, the magnificent longitudinal band traversing also the cell of the hindwing. The forewing is characterized by three blue transcellular maculae. Habitat Peru.



## B. Group of Species Prepona.

Section *Archaeoprepona Fruhst.* Hair-tuft of the hindwings black.

**P. demophon**, the most common species having been known the longest, has a plainly marked under surface, preponderantly yellow or ochre-yellow with effaced black spots, indistinct black lines and a silvery grey hue varying according to the locality. The ♀ is always larger, beneath with less black, preponderantly yellowish with effaced reddish-grey hue. The specimens decrease in size in the direction from north to south. The species is very rare in Mexico and ascertained as far as Southern Peru and Bolivia. On the Atlantic side *demophon* reaches from Guiana to Santa Catharina, Rio Grande do Sul and Paraguay. Tegumen with a short compact uncus-point the dorsal basal part of which is very much chitinized and provided with a deeply indented comb. — **centralis** *Fruhst.* is known to me only from Honduras. The form appears considerably larger than Surinam-specimens and is never beaten by *muson* (111 a) in the extent of the wings. The median band, especially of the hindwings, is more extensive than in the nomenclatural type from Surinam, more greenish and golden than blue. The subapical spots of the forewings of the ♂♂ larger, almost circular, isolated, in the ♀♀ like diffuse spots, narrower than in Surinam-specimens. Under surface entirely lighter, preponderantly greyish-violet instead of ochre-yellow, with prominent blue-pupilled ocelli of the ♀♀. According to GODMAN and SALVIN already very rare in Mexico. In the Coll. STAUDINGER there are specimens from Yucatan and Venezuela. — **muson**. A series of forms from Panama already sides with *muson Fruhst.* (111 a), the Andine territorial form with the type from Colombia. I have also ♂♂ from Ecuador at hand, and STAUDINGER mentions specimens from South Peru. The *demophon*-race of the northern Andes is considerably larger than specimens from Surinam. The median band of the upper surface of the wings is broader and lighter, more golden green; the under surface is distinguished by an especially pronounced and more glossy submarginal region being traversed by a very dark reddish-brown band which is hardly noticeable in Surinam-specimens. — **demophon** *L.* (111 a), the nomenclatural type, is very common in the Amazon district and in all the three Guianas. Specimens from Mato Grosso and Bolivia do not differ considerably from those from Surinam. — As **sysiphus** *Cr.* a form is described with especially broad and darkened brown places on the under surface of both the wings. — Also **thalpius** *Hbn.* is based upon darkened, deviating specimens with a beautiful reddish-violet hue beyond the cell of the forewing and in the median and basal zones of the hindwing. — **xyniatus** *subsp. nov.*, distinguished by large transeellular spots of the forewings and conspicuously broad light-blue median band of a very intense golden green lustre. The under surface exhibits but quite faint greyish-silvery marbling, being still more effaced than in *extincta*. Bahia; varies also in Minas-Geraes. — **pamenes** *subsp. nov.* inhabits Minas-Geraes and Espirito Santo, probably also yet Rio de Janeiro. ♂ with more irregular, smaller transeellular spots and narrower, darker blue bands of the forewings than *xyniatus*. — **extincta** *Stgr.* (111 b), originally based upon specimens from South Brazil (Blumenau) is also found in Paraguay. As a rule of a small size with preponderantly greyish-violet hue of the under surface of the ♂♂ and yellowish of the ♀♀. The black median lines, especially in the ♀♀ effaced. Larva on Anonaceae and Albacata-trees (*Persia gratissima*). — **catachlora** *Stgr.* (111 b) is found from Minas Geraes, beside *P. demophon extincta*, and was bred by Dr. WILH. MUELLER from larvae differing from *demophon*. In Rio Grande do Sul *catachlora* is common. The under surface makes quite the impression of a form of the dry season or of a cold period of *P. demophon*, being easily noticeable by greenish places bordered by beautiful parts of a silvery greyish-violet lustre. The subapical spots of the upper surface are smaller, but like the narrower bands more intense and of a darker blue gloss than in *demophon*. — In **zoranthès** *subsp. nov.* from Rio Grande do Sul there is sometimes only a blue subapical spot, and the median band of the forewings is very much narrowed. The chitinous part at the back of the uncus less sharply dentate, the other parts, however, agree so exactly with *P. demophon* that *catachlora* can only be considered a form of condition of *demophon*, but by no means, as was hitherto done, a species of its own. (A ♂ from Espirito Santo was examined.)

**P. phaedra** is an isolated species with a likewise unmarked, but darker under surface than *P. demophon*. The upper surface is like that of *P. tyrias* (111 b), but the blue median band of the hindwings is narrowed towards the anal angle, and the under surface just as intensely grey as in *P. crassina* (111 c), though without the black spot at the submedian of the forewings. Two local races: **aelia** *Godm.* and *Salv.* described according to a ♂ without blue subapical spots of the forewings, from Mexico, and **phaedra** *Godm.* based upon a ♀ from the Volcano Chiriqui. One specimen of my collection exhibits small dark-blue subapical maculae of the forewings.

**P. antimache** is always met beside *P. demophon*, although it does not reach Mexico in the north. The magnificent band of the upper surface is of a purer blue, but it has only exceptionally a greenish-golden reflection. The under surface is characterized by our figure of *tyrias* (111 b) and varies according to the habitat from preponderantly effaced ochre-yellow (Amazon, Surinam) to light silvery-grey (South Brazil). The black part at the inner margin of the forewings appears more extensive than in *P. demophon*. In some insular



races there are yet remarkably darkened, brown-tinged places noticed, especially in the basal region, being absent in continental areal races. Shape of the valve broader than in *demophon*, the uncus dorsally smooth. — *gulina* *Fruhst.*, the northernmost branch, occurs from Honduras through the whole of Central America, *gulina*, even as far as Colombia, at least as much as I was able to ascertain (Cauca Valley) from the material. The upper surface, however, resembles *demophoon* *Hbn.* from Surinam. The shape of *gulina* is, however, considerably larger, all the blue bands are very much broadened and, in the ♀♀, preponderantly of a golden green reflection. The under surface has the same purely white cell and an extremely broad white band before the cell-apex of the forewings, as *crassina*, the cell of the hindwings and the white discal band are even of a still purer and broader white than in *crassina*. In common with the continental forms, *gulina* has the centrally interrupted black anal spot of the forewings and the minute white submarginal dots in which we find no blue traces whatever. — *demophoon* *Hbn.* is the name of the territorial form from Surinam and the Amazon. The blue *demophoon*, apical spots of the forewings are decidedly smaller than in *gulina*, the under surface more uniform, effaced pale ochreous. The name of *demophoon* sounding very similarly to *demophon* *L.*, the name of *amazonica* *Stgr.* has been introduced for the Amazon race, though this denomination will hardly be maintainable. — *andicola* *Fruhst.*, the *antimache*-form inhabiting the Andes, greatly approaches *gulina* from Central America, but differs from it by the still larger size and the somewhat narrower, though more intensely blue discal bands of the upper surface. The under surface resembles *gulina* by the very broad, whitish bordering of the black discal bands of all the wings, on the hindwings, however, the marginal zone, especially in the ♀, is still more intensely white, furthermore, all the black dots and lines are much stronger. Only the anal angle of the forewings is dark yellow, the black anal spot very large and the submarginal ocelli of the hindwings are very much larger than in *demophoon* and *antimache*, in the ♂ reddish-yellow, in the ♀ greenish-yellow with distinct blue dots. *andicola* differs from *antimache* besides by the lighter, more white than grey-mingled basis of the under surface of the hindwings. The type originates from Venezuela; I add yet specimens from Ecuador and from Pozuzo (Peru). — *thebais* *subsp. nov.* joins *demophoon*, though it is of a larger shape and the under surface *thebais*, of the hindwings more variegated; the forewings exhibit distinct white transcellular parts. Mato-Grosso (Brazil). — *lyde* *subsp. nov.* differs from *thebais* by decidedly narrower blue bands of the upper surface, resembling already *lyde*, *tyrias* (111 b). As to the habitus, *lyde* approximates the Andine and the Mato-Grosso races; the subapical spots of the forewings are just as prominent as in *andicola*, *thebais* and *gulina*, thus contrasting with the *demophoon* greatly wanting of blue. The under surface of the hindwings, however, exhibits again connections with the South Brazilian *tyrias* by an especially bright, light silvery grey. Bolivia. — *antimache* *Hbn.* occurs from Bahia to Rio de *antimache*, Janeiro. The blue preapical maculae of the forewings are in the ♂♂ more prominent than in *demophoon*, more roundish, the magnificent band grows narrower. Beneath, the effaced ochre-yellow is confined to the median zone of the forewings. — In *tyrias* *subsp. nov.* (111 b) the blue median band is decreasing in both the sexes, and the *tyrias*, proximal subapical spot is always intermixed with whitish or greenish, no more intensely blue as in the vicarious types. Nomenclatural type from Rio Grande do Sul, also from Santa Catharina and Paraguay in my collection and presumably advancing to the north as far as São Paulo. — *insulicola* *Fruhst.* (112 c). On the West Indian Isles, *insulicola*, *antimache* *Hbn.* has changed into a most characteristic local race. The blue discal band, especially on the forewings, is narrower, and on the hindwings also much shorter than in the continental vicarious types. The discal bands are not deep blue, but peculiarly light green with a violet reflection. The black distal margin of the hindwings appears very much broader than in *antimache* owing to the receding blue discal colour, the ciliae are lighter, more yellowish and stand more densely than in continental specimens. The under surface has greatly, changed, being more variegated than in *antimache* and the discal bands being brown instead of black, and stronger. The white bordering of the brown discal band is extremely broadened, and there is a distinct, white submarginal band noticeable on all the wings, in place of which there are only white dots on the forewings in *antimache*. The black spot in the anal angle of the forewings is centrally not interrupted, but forms a compact mass in which a yellowish-brown, almost four-cornered macula is embedded. The black streak in the middle of the forewing-cell runs almost rectilinearly, while in *antimache* it is sharply angled. The hindwings are, furthermore, decorated with intense blue dots, the 4 last of which are the largest and provided with distinct reddish-brown ringlets. The occurrence of really deep blue dots appears to me to be very important, because GODART in his description of *amphitoë* speaks positively about small dots of a bluish (bleuâtre) colour. Hayti. In the Berlin Museum there are 3 ♂♂ fully agreeing, especially on the under surface, with my type and are taken near Port au Prince. — *ilmatar* *subsp. nov.*, another insular race from Trinidad (Port of Spain). ♂ with a somewhat *ilmatar*, longer median band of the upper surface which is placed extremely steeply and seems connected with *P. crassina* *Fruhst.* from Cuba. Preapical spots smaller than in the *insulicola*-♀ figured 112 c. Under surface preponderantly dark grey, but nevertheless yet with antimachoidal silvery grey, band-like patches. Hindwings just like those of *insulicola*, distinguished by magnificently blue-pupilled ultramedian ocelli. — *crassina* *Fruhst.* *crassina*, (111 c) is so closely allied to *phaedra* beneath that it might be considered a geographical form of the Central American species, if it were not separated from it by a large black area at the inner margin of the forewings. The black zigzag-line of the hindwings is more prominent, too, more like *P. antimache*. The upper surface



resembles *P. antimache*, but the blue subapical spots of the forewings are almost vertically placed below each other and the median band is likewise set more steeply. — The valve is somewhat more slender than in *antimache tyrias* Fruhst. from Rio Grande do Sul. From Cuba where it is rare.

*P. camilla*, an extremely localized species of which only few specimens have become known. Its relationship to *P. antimache* is about like that of *P. phaedra* to *P. demophon*. *camilla* may be considered as the species being the most conspicuously decorated in blue we know, and in no other species we find such a luxuriant, magnificent area of a greenish lustre, as in *camilla*. The blue zone as well as the preapical blue vary according to the locality of the two territorial forms. — *camilla* Godm. and Salv., described from Nicaragua and Panama, bears two elongate, narrow blue preapical stripes and a magnificent band excelling but slightly the extension of that of *P. demophon*. Under surface preponderantly light ochre-yellow with a brown longitudinal band of the forewings, being divided at the posterior radial. — *metabus* subsp. nov. \*) shows three light-blue, broad streaks and a more extensive magnificent band of the forewings than *camilla*. The under surface is conspicuously differentiated by brownish-yellow colouring with extensive yellowish areas of a silvery gloss. Colombia, originating from a so-called „Bogotá-consignment“, but surely taken near Muzo, from where it lay likewise before me, out of an altitude of 7 to 800 m from more modern collections.

*P. meander*. One of the most noted species and beneath easily discernible by the sharply delimited dark-brown distal half contrasting strongly with the lighter, whitish or grey basal zone of a silvery gloss. There is a conspicuous whitish, roundish or crescentic spot at the subcostal of the hindwings. The upper surface differs but slightly from that of *P. demophon*, but light greenish or bronze-glossy bands, as in *P. demophon* and *P. antimache*, do not occur. The ♀ beats the ♂♂ in size and exhibits more imposing transcellular stripes of the upper surface of the forewings, and beneath, the outer wing-half presents itself somewhat more faded brown. According to the locality, the size of the specimens varies, reaching the maximum of development in the Andine region, the minimum in the South Brazilian races. The geographical range coincides with that of *P. demophon*. In the north, Mexico is yet inhabited by the species, in the south, Rio Grande do Sul. — *phoebus* Bsd., the northernmost branch, described from Guatemala, is lying before me from the Volcano Chiriqui and the Cauca Valley from Colombia. The preapical blue spots of the forewings somewhat more extensive and of a brighter lustre, and the under surface of the forewings in their outermost part somewhat more fallow than in the Surinam-form. — *meander* Cr. (111 c) of which we figure a ♀ from Surinam, the habitat of the nomenclatural type, occurs in the same form also on the Lower Amazon. A similar race is found on the Isle of Trinidad. — *megabates* subsp. nov. is in the male sex as large as the figured Surinam-♀, the blue spots distal from the forewing-cell appear somewhat smaller, and the basal zone of the under surface of the hindwings is somewhat darkened. Peru, Bolivia. — *megacles* form. nov. inhabits Central Brazil. Both the sexes are beaten in the habitus by the vicarious types mentioned so far, being coincided by a reduction of the blue magnificent bands. The basal zone of the under surface of the forewings mostly appears covered by dark-grey or violet, the antiterminal margin of the forewings more sharply defined than in *meander* coinciding thereby with *phoebus* and *megabates*. Type from Espiritu Santo, at hand also from Minas-Geraes. Near Rio de Janeiro not very common. — *soron* subsp. nov. (111 c) is based upon specimens from Theropopolis in Santa Catharina. The shape of the wings grows more pointed and narrower than in *megacles*, the blue spots and bands of the upper surface are still more reduced than in the Central Brazilian areal form. On the under surface of the forewings, the antiterminal margin is confluent with the dark ground-colour as in *meander*. Hindwing generally lighter brown with fading distal zone. — *amphimachus* is here deprived of its rights as species, which BATES, KIRBY and STAUDINGER have assigned to it, whereas I took it to be a side-form of *P. meander*, following the example of GODMAN and SALVIN. The form *antimachus* is generally more common, especially in the Andine region, not at all rare in Mexico, very common in Central America, whereas the proper *meander* are of a rare occurrence there. The wing-contour is deviating, more roundish, the blue band is more extensive in the northern races, the under surface nearly always ochre-yellow, the median band always pregnant, the distal zone sometimes darkened, but even in the most melanotic races never extensively brown and sharply defined as in *meander*. Basal region of the hindwings especially in the ♀ always faded yellow instead of whitish. *amphimachus* has always the subcostal white spot of the hindwings in common with *meander*. *amphimachus* occurs at the same time with *P. meander*. Vertically it rises up to 2000 m, whereas *meander* seems to be homed more in the lower regions. — *cinctus* Fruhst. was already in 1904, considered by myself to be a form of the dry period of *P. meander*. It is indeed the northernmost branch. Habitus smaller than the Central American sister-race, the subapical blue spots being also reduced. Under surface preponderantly greyish violet, as well as the distal half of the hindwings. Mexico. — *amphiktion* subsp. nov., an excellent geographical form, beating in size the Amazon- and Surinam races. The magnificent band of the upper surface of a lighter and more glossy blue, the transcellular spots very large. Under surface of the ♂♂ extensively clouded with brown, whereby a deceptive likeness with *meander* is produced; ♀, however, immediately distinguishable from *amphimachus*

\*) Metabus, the father of Camilla.



by a light loam-yellow distal part and a glossy proximal patch. Type from Honduras, also from Costa Rica and Panama in my collection. Mr. FASSL sent me specimens from the Rio Aquaca Valley from an altitude of 2000 m in Colombia, which are not to be distinguished from Honduras-specimens. — **amphimachus** *F.* (= *amphimache* *Hbn.*) (112 c) we have figured according to a relatively small ♂ from Surinam. The ♀ is always more conspicuous, having a more intensely loam-yellow under surface than *amphiktion*. Common in Surinam and on the Lower Amazon, especially near Obidos. — **symaithus** *subsp. nov.* surpasses in the size of the ♂♂ the most considerable ♀♀ from Central America and Surinam. The magnificent band of the upper surface is decidedly broader, the transcellular spots larger, the under surface with a preponderantly reddish median band. Ecuador; presumably also in some districts of Peru. — **magos** *subsp. nov.* occurs in Bolivia and Mato Grosso, the wings are no more so extensive as in *symaithus*. The blue band is tapering off anteriorly and in the anal angle, growing decidedly narrower also in the middle. The under surface is easily distinguishable by a more decidedly greyish-brown distal area reminding us of *P. meander*, especially on the hindwings. — **fruhstorferi** *Röb.* (114 a) based upon a ♀ from Rio de Janeiro, which we figure, is the Central Brazilian form of condition the habitus of which, like *P. meander megacles* and *P. antimache*, is beaten by the northern as well as the Andine vicarious types. I possess a ♀ from Espiritu Santo being congruent with the figured specimen. ♂♂ from Bahia. Espiritu Santo and Minas Geraes, are likewise smaller than *amphimachus*-♂♂ from the Amazon etc. The blue spotting is growing less, the under surface is still more faded than in *amphimachus*, fallow greyish-yellow. — **melas** *form. nov.* is found in Santa Catharina. The shape of the wings is still similar to *fruhstorferi*, the magnificent band, however, hardly half as broad as in *amphimachus*, and still more narrowed than in *P. meander soron*. — **pseudomeander** *Fruhst.* (= *falcata* *Röb.*) (111 c, d, 114 a as *falcata*) is almost entitled to be called a species. The shape of its wings is changed, the forewings projecting like a sickle, the hindwings being narrowed to a long-stretched point. The reduction of the blue band on the forewings, compared with *melas*, makes such great progress that broad black veins begin to dis sever the magnificent area. On the under surface we notice a peculiar purple or reddish-violet lustre of the dark grey distal half being most successfully depicted in our figure. Rio Grande do Sul, rare and local. From Candelaria, however, I received about 30 specimens. — The examination of the copulation-apparatus of *meander* and *amphimachus*, which I extended also upon *cincta* *Fruhst.* from Mexico and *pseudomeander* *Fruhst.* from South Brazil, issued such a congruent result as to the ground characters, that there is no doubt of the homogeneousness of these two forms. Only the size of the dorsal uncus varies somewhat in the single specimens, although these variations are not bound to one form, but occur in both the forms. This part of the organ is strong, but of a small size, and when being looked at, is easily covered by 2 pair of teguminal appendages protruding laterally below it and with pointed clubs, or it is dislodged in such a way that it may be overlooked even in a very accurate examination of the object. But in case the hook representing the dorsal prolongation of two lateral basin-shaped formations be somewhat longer, it projects beyond the diadem-like crown of the 4 clubs, producing the impression as if there were a specific difference. The harpae, suspended beneath the mentioned clubby appendages, are broad cochleariform, tapering and, shortly before the distal end, are armed with a plain strong spine. Penis enormously developed, without any special peculiarities, sacculus short. The race *pseudomeander* *Fruhst.*, being exteriorly so sharply differentiated, does not show any remarkable anatomical deviations.

**P. chalciope.** A rather rare species the range of which is as yet little known. Our figure 111 d gives us a good idea of the under surface, the white bands of which vary in extent according to the locality. — **chalciope** *Hbn.* is presumably described according to specimens from Guiana. KIRBY mentions it at first from Cayenne, from where it is also represented in the Berlin Museum. The form is especially characteristic for the white bordering of the inner light zone, beginning from the apex of the cell of the forewing, traversing the hindwing-cell as far as to the last median, where it almost touches the white streak which, in our figure, passes even beyond the submedian. The blue area of the upper surface of the hindwings has a convex expansion. We may probably expect *chalciope* from a number of other Central and North Brazilian Provinces. — **domna** *subsp. nov.* (111 d as *chalciope*) is a very dark form with uncommonly narrowed blue median area of the upper surface. The under surface differs from *chalciope* *Hbn.* by the entire absence of the subbasal white band and the effaced instead of prominent white patch beyond the forewing-cell. From São Paulo to Rio Grande do Sul. According to a ♂ and a ♀ from the latter state our figures are depicted, and I possess analogous specimens from Theresopolis in Santa Catharina. — **chalcis** *subsp. nov.* approaches above the form depicted by HÜBNER by the extensive magnificent area, though it resembles beneath *domna* (111 d), except the brown parts being replaced by greenish bands and stripes and the distal zone of both the wings being paler and more faded. Paraguay. Valve about as in *P. antimache*, uncus more slender, penis narrower.

**P. luctuosus** *Walch.* A mythical species or form being, according to the primitive figure of the under surface, somewhat analogous to *P. chalciope* *Hbn.*; there is also a distant likeness with *P. demophon* resp. *antimache*-races of the Antilles. As its habitat the „East Indies“ are mentioned, which statement may be erroneous and may mean the West Indies.



*P. licomedes* exhibits above 3 transcellular blue spots and a relatively light, bright-glossy, compact blue region resembling rather *P. pheridamas* (112 a). We have to record only two areal forms; specimens of the Andine region differ only by the increased brown spotting of the under surface. — *licomedes* Cr. (111 d), first described from Surinam, but occurring in the whole Amazon district. MICHAEL writes about its habits: „The *licomedes* fly very swiftly and skilfully, but like to rest often on especially conspicuous trunks of trees, always with their heads downwards. As soon as any other butterfly dares to approach them, they dash at it, pursuing it in the most pertinacious way, whereupon they use to return to their former place and, in case it is already occupied by another butterfly, they chase away the intruder. In Itaituba I saw every day, at an especially adapted place, a specimen of *pheridamas* in a damaged condition. I caught it and, after having marked its wings, I let it fly away again, and then I observed this animal for two months day by day, and also repeatedly caught it again in order to ascertain whether it was the right one. Finally, one day, I missed it, after having at last been flying off already in such a condition that it would have been difficult to ascertain the species.“ — *scyrus* subsp. nov. denominates the race from the chain of the Andes, being of a more conspicuous habitus and beneath more richly decorated in brown and more prominently marked, with the type from Peru, where *scyrus* is not rare near Pozzuzo. There are also specimens lying before me from the Bolivian lowlands and FASSL took congruent specimens on the Upper Rio Negro in 800 m; appendage of the uncus of a most conspicuous shape, with a frontal indenture, generally resembling a minute vexil. Valve distally very much tapering, similarly to that of *P. demophon*.

*P. chromus*, a species peculiar of the Andine region, going only over to Venezuela in the west. It is the only species with entirely black upper surface of the forewings. The chain of ocelli on the hindwings is very variable, and the size of the ochre-yellow rings seems to increase from north to south so that Bolivian specimens are decorated the most profusely on the upper surface. Larva discovered by FASSL and described in the diagnosis of the genus. — *chiliarches* subsp. nov. excels Colombian specimens in size. The blue area of the hindwings is somewhat lighter, decidedly narrower and longer. The eye-spots of the hindwings almost without a diaphanous ochreous periphery. The distal part of the under surface of both the wings preponderantly grey instead of brown, the median band with its silvery gloss and the greyish-white dusting on the hindwings and the whitish-grey clouding on the forewings more extensive. Venezuela. — *chromus* Guér. (= *hercules* Dbl.) from Colombia has the smallest blue discal spot on the upper surface of the hindwings and the lightest grey basal zone of the under surface. Both the wings resemble beneath *P. synchronoma* (114 a) the most. The very rare ♀ has two forms: the one similar a ♂ without the blue fragmentary bands of the forewings and the intensely ochre-yellow ringletted ocelli of the hindwings; and fa. *ochracea* Fassl with accumulations of light brown scales beginning in the anal angle of the forewings and advancing about as far as to the wing-centre. It was found in the Cañon del Tolima (Central Cordilleras, about 1700 m). Male specimens from Ecuador are larger than the Colombian ones and already form a transition to *xenarchus* subsp. nov. with the nomenclatural type from Pozzuzo (Peru). Forewing more pointed, hindwing likewise longer than in *chromus*. The blue discal spot anally more extensive. Under surface with less markings and colours. Basal zone of a lighter grey, distal half preponderantly greenish-grey, without prominent brown clouds. Instead of a broad brown median band only a greenish stripe. — *fassli* Rüb. (112 a as *chromus*), the Bolivian local form, beneath somewhat more variegated than *xenarchus*, approaching more the Ecuador form. The white median band of the hindwings, like in *xenarchus*, confined upon a fragment, reaching but the subcostal. Valve more slender than in *P. chalciope*. Uncus characteristic by two unciform appendages curved downwards.

*P. priene* resembles *P. chromus* above, the forewings, however, exhibit again the usual magnificent band, but no blue subapical spots. Wings narrower than in *chromus*, apex of the forewings not prominent. Under surface, according to the locality, with or without whitish or yellowish parts in the distal area of both the wings. — *priene* Hew. resembles above *synchronoma* (114 a) from which it differs by a darker under surface. The submarginal band being distinct in *synchronoma* is hardly indicated. Of the ocelli on the hindwings only the two anal ones are blue-pupilled. Colombia, very rare, only 1 ♂ in the Coll. FRUHSTORFER. — *synchronoma* Stgr. (114 a) is said to originate from Blumenau in Santa Catharina, but the form has not been found there anymore since 30 years. I, therefore, presume that the locality has been mistaken, and should much rather consider the Andine region to be its habitat. The direction of the variation corresponds exactly to that of *P. chromus xenarchus*, so that *P. synchronoma* has presumably come from Peru and may be expected again from there. This supposition is supported by the presence of a ♂ from Huancabamba (Peru) in the Coll. FASSL having the blue reflection of the forewings already indicated in its beginnings or rudiments.

#### Section Prepona Bsd. Scent-tuft of the hindwings yellow.

*P. pylene* is an interesting, most variable species, greatly inclined to forming local races, of Central and Southern Brazil. Its scent-tufts do not always stay jet-black, but occasionally they are coloured in grey, reddish and sometimes almost yellowish, by which it forms a transition from the *P. demophon*-group to the



*P. laërtes*-group. The peculiar under surface, with abundant tortous and interrupted lines, is already entirely of the *laërtes*-character, exhibiting among other marks also the two large apaturoidal ocelli of the hindwings. The character of the upper surface is shown by our figure 112 c (*bahiana*), that of the under surface 112 d (*proschion*). The northernmost branch *bahiana* Fruhst. (112 c) has beneath the greatest likeness with *P. eugenes bahiana*. (112 b), though the ochre-yellow hue in the submedian zone of the forewings is absent and the black post-discal interrupted band considerably broader. The specimen figured by us is a ♀ (no ♂ as stated in the table). The blue area of the upper surface throughout paler than in the more southern forms. From Bahia in my collection. — *santina* Fruhst. beats the Bahia-race in its size; the blue zone of the upper surface remains darker, besides of a more intense lustre, and in the ♂♂ there is always a forewing-band going as far as to the costal margin. The under surface differs from *bahiana* by a darkening of the submarginal zone of both the wings, similar as in *proschion*. Espiritu Santo. — *pylene* Hew., an extremely rare form resembling *santina*, though it has no transcellular blue spots of the forewings, the under surface being always overhued by reddish instead of grey. — *miranda* Stgr. resembles *pylene* from which it is only distinguished by the presence of subapical spots on the upper surface. Very rare in Santa Catharina, 2 ♂♂ from Theresopolis to the south of Blumenau in Coll. FRUHSTORFER. — *proschion* Fruhst. (112 d) forms the extreme with the narrowest bands among the collective species. I have specimens at hand with scarcely half as extensive blue band of the upper surface as we find it in *bahiana*. The transcellular spots are absent as a rule, though there are ♂♂ as well as ♀♀ with small blue splashes, but also as a rarity ♀♀ with 3 imposing maculae. The under surface is decidedly paler brown than in *miranda* and the submarginal heart-spots considerably smaller. Rio Grande do Sul, very rare, especially in a good condition: but there are 11 ♂♂, 6 ♀♀ in Coll. FRUHSTORFER \*).

*P. eugenes* differs from *P. pylene* above by the light yellow hair-tuft. Some local races are, however, so closely allied with *P. pylene* that I did not yet recognise it in 1904. The most essential mark is formed by the pregnant silver-spotting of the under surface being distally bordered by the small median black strokes of the forewings. The submarginal reniform or cordiform spots of the forewings are smaller and scarcer than in *pylene*. *P. eugenes* is more widely distributed than *pylene*. It is met from the Amazon to Bolivia and Paraguay, and in South Brazil as a great rarity in Santa Catharina. The most noted geographical race is *eugenes* Bates (112 b). The ♂ has above very nearly the appearance of *laërtes* Hbn. the blue bands of which are, however, on the forewings costally somewhat broader. The colour of the band is in the middle of a greenish light-blue which turns dark-blue at the margin. Otherwise the wings are unicolorously jet-black. Under surface: The wing-base is of a silvery white, as well as the apex of the cell and a discal row of 5 very irregular white spots being proximally bordered in broad black. At the base we notice a broad black semi-circle surrounding the precostal, and being similar though fainter in *pylene bahiana* Fruhst. and *pylene santina* Fruhst. On the hindwings we notice towards the apex a black streak, and between the ocelli there are 3 light-blue dots. Anal and subanal region of the hindwings densely set with fine white scales. Ground-colour of the wings yellowish-grey, but the centre of the forewings is traversed by a yellowish-brown region from the base into the anal angle. Palps and feet above black, below white. Eyes reddish-brown, antennae black. Head and thorax above black, below whitish-grey. Abdomen above black, below yellowish-grey. The ♀ exhibits above a somewhat broader blue band than the ♂, and also at the costal margin beyond the cell a large roundish blue macula. Occasionally there are also two small blue dots to be noticed yet beyond the cell. The under surface of the wings is somewhat more profusely white, the ground-colouring predominantly light yellowish-brown and on the hindwings the silvery white scales are concentrated to a distinctly noticeable submarginal band. The ocelli are distally provided with broader white ringlets. Known from Surinam, the Lower and Upper Amazon. FASSL has discovered ♂♂ on the Upper Rio Negro at an altitude of 800 m. — *simois* Fldr. an extremely rare territorial form of Western Colombia, differs from *eugenes* chiefly by a silvery grey, instead of ochre-yellow under surface. — *laërtides* Stgr. above more greenish blue, has larger silvery-white spots of the under surface of the forewings than *eugenes*. — *decorata* Fruhst. forms an intermediary between *eugenes diluta* from the Amazon, *eugenes* Bates and *laërtides* Stgr. from Paraguay. ♂: On the forewings the blue median band grows narrower in an upper direction, being continued to the costal margin in the shape of 3 small blue spots. The under surface of all the wings much lighter, the ground colour grey and only in the discal area and anal angle of the forewings yet loam-yellow. The discal silvery bands of both the wings broadened and coherent, thus not consisting of isolated spots as in *eugenes*. Furthermore, the whole hindwing-cell is covered with silvery white scales, while in *eugenes* only the cell-apex appears covered with silver. All the black zigzag-bands are greatly reduced. The marginal zone of the hindwings throughout with greyish-white scales, while in *eugenes* there are only in the anal angle some white dots seen. ♀: considerably larger than the *eugenes*-♀, decorated with duller blue bands being prolonged towards the costal margin in the shape of 3 broad blue dots. Under surface lighter than in *eugenes*, and decorated with broader silvery spots in the cell as well as in the discal area. The under surface of the hindwings still more profusely decorated, since the discal and basal silver-spotting is confluent in it, forming one single region. The discal zigzag-lines greatly reduced like in the ♂, instead of it the internerval submarginal cordiform spots of the under

\*) Valve conspicuously stunted. The Phyteuma-flower-head-like uncus-appendages smaller and neater than in the allied species.



surface of the forewings are extremely widened. *decorata* approaches *simois* Fldr., though it has above narrower blue bands and smaller blue subcostal spots, the 5 blue dots on the upper surface of the hindwings being also absent. Under surface: all the black bands and maculae thinner and more delicate, the silvery spots somewhat broader and standing more closely beneath each other. Hindwings of a more greyish than yellowish-brown ground-colour. The ocelli considerably smaller. Minas Geraes. — *argyria* *subsp. nov.*, the production of a province with a preponderantly dry climate, having above still more considerable and lighter blue magnificent bands than *decorata*. The ocelli of the hindwings extensively bordered by ochreous, as it is not noticed in any other race of *eugenes*. Under surface without the yellowish admixture in the basal region of an almost pure white and silvery gloss. The median spotted side of the forewings narrower than in *decorata*, but united more to the shape of a band, the black submarginal band extraordinarily strong, resembling *P. pylene bahiana* with which I even formerly united it. Bahia. — *transiens* Fruhst. This peculiar *Prepona* forms an intermediary between *eugenes* and *P. pylene*. With *eugenes* it has in common: the wing-contour, the apex being but somewhat prominent and the insignificantly developed anterior blue median spots of the forewings, as well as the distally ochreous-yellow ringleted anal ocellus on the hindwing shining distinctly through to the upper surface, and especially the yellow scent-tuft of the hindwings. The median band, however, is darker blue than in the *eugenes*-forms and harmonizes in the colouring with the *P. pylene*-races. Under surface: excepting the absent black dot between the little subcostal veins (just like in *eugenes*), the dark colour, especially of the distal half of the wings, coincides with the vicarious types of *P. pylene*. Environs of Theresopolis, Varge grande, at an elevation of about 2000 m in Santa Catharina. Hitherto only one specimen discovered and known. — *diluta* Fruhst. The blue bands on all the wings appear somewhat narrower than in *laertides* Stgr. and are on the hindwings, towards the anal angle, somewhat tapering. The under surface of *diluta* is lighter and provided with more diffuse markings, especially with respect to the black zigzag-discal-bands. The base of the hindwings more yellowish, instead of purely silvery-white as in *laertides*. The marginal zone of the hindwings with obsolete grey, instead of black scales. The ocelli with more indistinctly black pupils, bordered by a lighter and broader yellow. Paraguay. Valve (judging from a specimen of the *laertides* Stgr.-race) distinctly rounded off.

**P. laertes.** One of the best known species being still the most difficult to discuss, since it inclines to the most extravagant variations of all the representatives of the genus. Hardly any specimen is like the other, and even the characters of marking on the under surface are variable. The under surface resembles somewhat that of *P. eugenes*, *P. pylene* and *P. gnorima* (112 b), though it is immediately separable from all these species by the absence of series of white or silver-glossy spots at the median band of the forewings. The under surface, in general, equals our figure of *P. autolycus* (112 c) and varies in such a way that according to the locality there are specimens predominant either with extensive ochreous parts or with preponderantly grey parts. Most conspicuous is the variation of the yellowish median zone between the submarginal and the transcellular black zigzag-band. Sometimes these lines approach each other near the cell like in *autolycus* (112 c) on our figure, so that a narrow yellow or grey-tinged canal results, or the small zigzag-stripes are separated from each other so that there is a wide, broad opening somewhat similar to that in *neoterpe* (112 d). Interesting combinations of figures are also formed by the hepatic or cordiform spot between the middle or posterior median standing isolated or, as in 112 c in *autolycus*, touching the submarginal band or being entirely absorbed by it, so that peculiar broad serrated contours are being formed. On the upper surface we notice the constellations being also usually found in the black-tufted *Prepona* of the *meander-antimache*-group. The three transcellular spots depicted on our figures of *penelope* (111 a) and *pallidior* (111 a) may be existing in ♂ and ♀, or be missing altogether (fa. *antikleia* Fruhst.). Besides there are also intermediate forms with but one broadly-emanated costal spot, especially in the ♀♀, and small blue subapical splashes. The range of *P. laertes* is about the same as that of *P. antimache*. The offshoots of the collective species are found from Costa Rica to Bolivia and from Guiana to the southernmost parts of Brazil and Paraguay. — *pallantias* *subsp. nov.* The blue band of the forewings of the ♀♀ more uniformly broad, anteriorly more compact, more roundish. Under surface uncommonly extensively faded, ochreous. Shape entirely larger than in the more southern races from the Amazon and Guiana, Costa Rica, parts of Colombia, — *victrix* form. nov. forms the maximum of the luxuriant development of the blue magnificent area exhibiting besides, by means of two imposing transcellular spots and a very broad costal spot, a band-shaped prolongation as far as to the costal margin of the forewings. From the Upper Rio Negro from 800 m (East Colombia), sent to me for inspection by Mr. FASSL. — *ikarios* Fruhst. is a form occupying the whole Amazon basin up to the foot of the Andes and Guiana. Upper surface like in *autolycus*. *penelope* (111 a), but the blue bands shorter and broader. As *autolycus* Fruhst. a form is described without blue costal spots of the forewings. By the profusely dark-yellow under surface of the wings, *ikarios* is coloured according to the same scheme as *P. antimache demophoon* Hbn. — *agathus* *subsp. nov.* is based upon a large form found predominantly in Peru, but also appearing already in some parts of Ecuador. The magnificent areas of the upper surface surpass those of *penelope* (111 a) in extent. — *penelope* Fruhst. (111 a) is beaten in the habitus by *agathus*. The discal band of all the wings is of a darker blue and narrower than in the northern forms; the under surface exhibits fewer ochre-yellow places. — As *antikleia* Fruhst. a ♂-form was introduced without a blue preapical spot on the forewing. Bolivia. „The copulation-apparatus is (according to STICHEL) distinguished by two long lateral, somewhat curved, strongly chitinized prolongations below the



uncus, being somewhat thickened and set with irregularly arranged protuberances and spines. The uncus itself is rather long, in its appendage to the tegumen sharply pressed in like a saddle, then it runs straight on to its end which is curved and bent downwards with its tip, similar to the beak of a pelican. The clasping-organs, harpae, join two smaller lateral cones of the tegumen and form faintly chitinated, longitudinal-triangular tips, being exteriorly densely set with warts and tiny short hairs, but beside more sparsely set with hair of different length. Below the harpae, on both sides of the tegumen-ring, a trough-shaped sella protrudes, which is outside provided with many small, pointed protuberances, on which the slender, somewhat curved penis rests. The saccus is short and obtuse. All the parts are liable to slight variations. The saddle at the appendage of the uncus is more or less sharply pressed in, the uncus itself more or less strongly curved. The lateral appendages below it are more or less strongly clubbed at their ends, and the dents and protuberances longer or shorter developed, and irregularly arranged. The harpac exhibit more slender or more clumsy tips, dorsally at the base more or less gibbous, the long hairs stronger or more sparse, sella longer or shorter. This variability of the single parts of the organ is not bound to one and the same form, so that it repeats itself in the same or nearly the same way in *laërtes typicus* and *penelope* on the one hand, and in *antikleia* on the other hand. — **pallidior** *Fruhst.* (111 a), the Paraguay-race of *laërtes* bears the same relationship to the typical *pallidior*. form as *eugenes diluta* *Fruhst.* to *eugenes Bates* from the Amazon River, for on the under surface of the hindwings we notice an obliteration of all the black spots and markings. The yellowish colouring of the anal angle of the forewings is also very much faded and the distal half of the hindwings is tinged in a faded grey, instead of the intense brownish-grey distinguishing *laërtes* from Brazil. The ocelli are less distinct and the black submarginal band of the forewings is less dentate. On the upper surface, the blue discal bands are more profusely and deeply parted by the black ground-colour, the band itself being somewhat lighter blue. Paraguay, Rio Grande do Sul. — The name of *laërtes* *Hbn.*, finally, is transferred to the Brazilian subspecies on account of different analogies of the under surface. I do not possess specimens fully corresponding with HUEBNER's figure (as depicted in WYTSMAN's edition Table 70). But relatively large black submarginal dots of the forewings exhibited in the said figure make almost the impression of an aberrative, especially dark specimen. ♂♂ from Brazil are relatively small with only one blue costal spot. ♀♀ remarkably large, with one large, distinct, and two effaced transcellular spots, distal part of both the wings beneath intensely grey with few ochreous patches. Not of very frequent occurrence from Espirito Santo to Theresopolis in Santa Catharina, while specimens from Rio Grande do Sul approximate already *pallidior* from Paraguay.

**P. omphale.** A wonderful form which we are not justified in calling a species, since in *P. laërtes penelope* *Fruhst.* there occur already specimens with traces of a black, proximal blue reflection on the blue median area of the forewings. On the other hand, the uncommonly pointed wing-contour and the exclusive occurrence of *omphale* on the Antilles and in Honduras, where *laërtes* does not occur, argue in favour of a certain independence. In any case *omphale* — and even if it were only a form — has, for nearly 125 years, been misconceived by us. CRAMER has figured it wonderfully, though only its under surface, adding a short, but fully sufficient diagnose running thus: „Over the black ground of the wings there is yet a dark violet reflection.“ Nevertheless he denominated it in 1775 as *demophon*, which name was already preoccupied by LINNÉ in 1764. HUEBNER who, in 1816, attempted a revision of *Prepona* in his list of noted butterflies, was quite right in denominating CRAMER's figure as *omphale*. In 1823 when GODART published his celebrated Encyclopedia, HUEBNER's denomination was overlooked, and GODART introduced for *omphale* *Hbn.*, the new name of *demodice*. This denomination grew to be popular on LUCAS figuring successfully the upper surface in his „Lépidoptères exotiques“ in 1835, to which BOISDUVAL supplied another second figure of the under surface. KIRBY in his Catalogue, added the species as a synonym to *laërtes* *Hbn.*, from which STAUDINGER, supplying again a figure, disconnected it, denominating it *demodice* and taking *gnorima* *Bates* to be an aberration of it. That is the reason why *omphale* is labelled as *gnorima* in all the collections. From *laërtes* with which KIRBY unites it, *omphale* differs above by the reddish instead of yellow scent-tufts of the hindwings \*). The blue median band, especially of the ♀, runs more rectilinearly as well as the black streaks secluding the cellule distally on the under surface of the hindwings and being generally more strongly prominent. Mr. MICHAEL reports in a letter addressed to me about the habits: „On September 28th 1904, I found, near Juanjui on the Upper Huallaga, at a place with an especially delicious or flavoured odour, crowded together into a heap, far more than 30 *Prepona* of all the species occurring there, and — most amazingly — in the midst of them in the thickest scuffle there was an *Agrias beatifica* (resp. *beata*). The *Prepona* were so voracious in their feast, that I could quite easily pick out first the *Agrias* with my fingers, then I chose the best *Prepona*, at first 2 specimens of *omphale*, some *amphimachus*, 3 *dexamenus*. Only after I had thus grasped about 10 of the best with my fingers, some of the others began to fly away.“ The most characteristic mark of the species, the wonderful violet reflection

\*) The clasping-organs differ but quite slightly from *P. laërtes* by a ventrally somewhat more convex valve. Most interesting is a chitinous thickening near the base of the valve likewise occurring in *Agrias claudina*.



- which may be put on only in the basal region, but also in the distal half of the forewings, is absent in the ♀♀ being extremely rare and immediately distinguishable from the ♀ of *P. laërtes* by a conspicuously light-blue band and the almost quite white under surface of the hindwings. — *omphale* *Hbn.*, the name-type, is found on the Amazon near Obidos. The blue magnificent area of the forewings only proximally defined by violet. Under surface of the forewings with an intensely ochre-yellow subanal area. Under surface of all the wings light grey except the yellowish anal angle of the forewings. Blue median band of the forewings with a proximal and distal reflection. Specimens with such double-rowed reflection have been mentioned by GODART from Surinam and Brazil, by STAUDINGER from Pebas and the Ueayali. They are lying before me from Surinam and Bahia, and seem to be forms of particularly hot and dry periods. — *amesia* *Fruhst.* denotes the Andine race; specimens from there are somewhat larger than those of the plains of the Amazon and Surinam; the blue median band grows narrower, because the black ground-colour increases in extent. The under surface reminds us of BOISDUVAL's figure (t. 7. Spée. Gén. Lép. 1836) by the sharply defined silvery white basal half and the brownish-grey distal region of all the wings, which is powdered only with few white scales, but the intermedian. small ocelli of the hindwings are absent, whereas the apical and anal ocelli are more strongly developed. Specimens with only a proximal violet reflection are predominant. There occur, however, also such that correspond to *demodice* and *louisa* in which we notice also on the hindwings the magnificent violet hue. This aberration is called fa. *dives* *Fruhst.* (112 b). Blue median bands of the wings with two-sided blue reflection. Corresponds to the forma *demodice* *Godt.* and differs from *demodice* by the light blue median band on the upper surface of the hindwings, being also decorated with a double-rowed violet reflection. The figured specimen originates from Peru, but I possess similar ♂♂ also from Colombia and from Panama. Certainly the Peru-♂♂ on their under surface do not attain the brilliant beauty of the blue eye-spots which decorate the Colombian ♂♂ of *dives*. Mr. FASSL has taken magnificent ♀♀ in the Rio Aquaca Valley in the Colombian West Cordilleras, from an altitude of 2000 m. Under surface throughout silvery grey without the yellow anal area of the forewings. Hindwings likewise with proximal blue-pupilled ocelli and between them small, fine, oblong submarginal lunular-spots. — *octavia* *Fruhst.*, a relatively small geographical race with narrow blue bands and dark violet proximal hue of the forewings. ♀ immediately separable from the ♀ of *laërtes pallantias* by the magnificent silvery white under surface of the hindwings and its more imposing blue eye-spots. Honduras. — *louisa* *Btlr.* exhibits the most extensive violet decoration of the upper surface, whereby it even outshines *dives* in beauty. Cuba, rare. — *rhenea* *subsp. nov.* we meet in Bolivia and further inland in Mato Grosso. The specimens are already excelled by those of Colombia in size and richness of colours. The blue median area is narrowed, the proximal reflection is more extensive, but no more so magnificently blue as in *amesia*. Also the under surface grows darker, especially the intensely grey distal part of both the wings. Whereas three Colombian *amesia* exhibit blue bands running through as far as the costal border, only one ♂ among 9 Bolivian specimens has this luxuriant decoration. If I remember rightly, Mr. FASSL has sent me for inspection, together with fa. *dives*, also analogous specimens. — *abulonia* *subsp. nov.* resembles above the figured *dives*, except the band being prolonged as far as the costal of the under surface of the forewing analogous to *demodice* from Surinam, though with a light grey distal part of both the wings and extremely reduced ochre-yellow subanal spot. *abulonia* may be considered the local race with the lightest under surface of the whole species. Bahia. Similar specimens may occur in Minas Geraes, while Rio de Janeiro may be the home of a presumably darker geographical form. Specimens from the latter province have become known to me only from the statements in literature.
- gnorima*. *P. gnorima* closely approximates above *P. omphale*, and the violet hue seems always to be confined to the basal zone. The most characteristic under surface (112 b) which approaches rather *P. eugenes*, differs from *P. laërtes* and *P. omphale* by the silver-glossy trimming of the black median band. The species is very rare and within 25 years I have not succeeded in obtaining more than 3 specimens among the 450 *Prepona* of my collection. Only three geographical deviations are to be mentioned: *gnorima* *Bates* (= *demophile* *Fldr.*) (112 b). ♂: above as a rule with a very broad blue median area of the hindwings, although there are also ♂♂ with a narrower band. As for instance, also the types of FELDER that lay before me, are somewhat different: one ♂ has a light chocolate under surface of the wings, which, in the second specimen, are of a more yellowish-brown tinge. The chocolate ♂ has above very narrow blue bands, and I believe that this specimen is the real type. The second specimen is congruent with a ♂ from Colombia in my collection and has broader blue discal bands of the upper surface. It is not impossible that these specimens come from another locality, maybe another river-valley or range of mountains. — *philetas* *Fruhst.* differs from *gnorima* by the paler under surface of the wings, being still lighter than in *jordani* *Fruhst.* The region outside the submarginal band is set with broad white diffuse spots. The black discal band of the under surface of the forewings similar to *jordani*, only bordered with quite narrow white. The hindwings are extremely light, and the black discal band appears distally broader and more coherently decorated in white than in *gnorima*, the ocelli grow also much larger. Honduras, very rare: besides observed in Guatemala and on the volcano Chiriqui. — *jordani* *Fruhst.* ♂ 43 mm, against 50 mm of *gnorima* from Colombia. Blue median band of the forewings shorter, broader and darker. Under surface: all the wings lighter, especially the greyish-yellow region between the submarginal and median bands. The silvery white trimming of the median band being so characteristic of *gnorima*, especially also beneath, consi-



derably reduced. All the black dots and comma-like streaks in the white basal area of all the wings more pregnant. Ecuador, from 1000 m.

**P. dexamenus** was formerly known only from Peru and the Upper Amazon, but was discovered by my collector JULIUS MICHAELIS also near Obidos, in Surinam, as well as in Espiritu Santo and lately also in Mato Grosso. Marking of the upper surface plain. ♂♂ without preapical spots, ♀ always with a moderately large transcellular spot and one or two indistinct blots. Hindwing with an anal eye-spot showing through from beneath, being in the ♀ sometimes surrounded by an ochreous periphery. The under surface resembles that of *P. amphimachus* (112 c) from which it differs by the presence of 2 blue-pupilled ocelli, being characteristic of the *P. laërtes*-group. Four local forms are to be registered: **krates** *Fruhst.* (112 b) a geographical form of *krates*. small habitus: the gorgeous area of the upper surface somewhat darker and narrower than in specimens of the Andine region. Under surface rather uniform, the distal half loam-yellow. Surinam, Lower Amazon. — **leuctra** *Fruhst.*, an eminently differentiated race with still more advanced darkening and narrowing of the blue bands. Under surface in 5 specimens of my collection uniformly dark grey, something like in *P. gnorima* (112 b). All the black markings of the under surface besides more strongly arranged and the black areas in the submedian zone of the forewings nearly again as broad as in *leuctra*. So far only known from Espiritu Santo, *leuctra* is presumably found yet in Minas Geraes and perhaps in the state of Rio de Janeiro. — **psacon** *subsp. nov.* forms the transition from *leuctra* to *dexamenus*. The gorgeous area of the upper surface more extensive than in the other individuals lying before me, the shape considerably larger. Distal colour peculiarly greyish-brown and especially strongly contrasting with the basal zone, being conspicuously decorated in a wonderful silvery white. Mato Grosso. — **dexamenus** *Hpff.* (112 a, ♀ instead of ♂), originally *dexamenus* described from the Chanchamayo in Peru, lies before me from Bolivia from whence also our figured ♀ originates, which Mr. FASSL has discovered there. The ♂♂ are surpassed in size by those from Mato Grosso; the magnificent area is lighter, of a brighter lustre than in the races of the Atlantic region of the continent. The distal half of the under surface of both the wings either darker loam-yellow than in *krates*, or light coffee-brown as in the ♂♂ of *psacon* from Mato Grosso. The ♀ from Bolivia has, contrary to the black eyespotted ♀♀ of *krates* and *leuctra*, an ochre-yellowish defined ocellus on the upper surface of the hindwings. In the Coll. STAUDINGER there are specimens from Colombia. *dexamenus*.

**P. neoterpe**. An imposing species of the Andine region, approximating above *P. dexamenus*, beneath more *P. gnorima*, *eugenes* and *pylene* by an especially luxurious median silvery band of the forewings. The alliance with *P. omphale* and *P. gnorima* is, furthermore, indicated by a magnificent violet hue in the basal zone of the forewings. Claspings-organs with very long uncus. Valve somewhat like in *laërtes*, but still a little more slender; the club at the uncus considerably longer and more robust; oedeagus broader. Two areal forms: **neoterpe** *Honr.* (112 d). Beneath sometimes reddish ochre-yellow, occasionally also more fallow, more loam-coloured, as in our figure having been depicted according to a ♂ from Pozuzo. The ♀ which we represent by a figure, is in the collection of Mr. ROBERT BIEDERMANN. The type originates from the Chanchamayo. — **photidia** *Fruhst.* A northern areal race, considerably differing from the Peruvian name-type by the conspicuously stunted, scarcely half as broad and besides much darker blue median bands of all the wings. On the under surface, however, there are no differences noticeable. *photidia*, by the colouring of the upper surface, forms a transition to *P. lygia* *Fruhst.* from Chiriqui (Iris XVII, Table 6, fig. 2), which seems to replace *neoterpe* in Central America. From the Upper Rio Negro, from an altitude of about 800 m, discovered by A. H. FASSL. *neoterpe*.

**P. lygia** *Fruhst.* In *lygia* the melanotic reduction of the blue magnificent band of the upper surface is still further advanced than in *photidia*, and in it the otherwise resistant under surface takes also part in the sombre discoloration, the ochre-yellow of *neoterpe* turning into a greyish-black and the transcellular silvery spots on the forewings disappearing, too. It is now most likely that another *Prepona* will be discovered also in the Western Cordilleras of Colombia, losing the character of *neoterpe* still more than *photidia* and establishing a more complete transition to *P. lygia*. In case this should come true, *P. lygia* would no more be rightly called a species, but degraded to the northernmost branch of *neoterpe*. *Lygia* has above little likeness with *omphale* and *gnorima* *Bates* and reminds us beneath somewhat of *P. gnorima* but without being in any way allied to it. The forewings bear a long-stretched and pointed apex, but the hindwings are narrow oval and very little undulated. On the forewings there is a very narrow dark-blue, glossy discal band running from the anal margin anteriorly, growing narrower in order to dissolve into minute blue grains of dust between the anterior medians. On the hindwings the band is somewhat broader and is reduced in width towards the anal angle. The blue discal band on the forewings is proximally surrounded by a magnificent, extensive, dark violet reflection being continued on the hindwings towards the base, as a narrow zone. The ocelli of the under surface show through above, otherwise the wings are without any markings. On the under surface, the basal third of the forewings is of a silvery white, with a slight grey tinge in the basal part of the cellule of both the wings. Beyond the cellule we notice a large, dark brown spot being encircled by black. Above this there is a silvery white macula at the costal margin like in *gnorima*, and 3 white spots are beyond the cell as a distal bordering of the black discal band. The submarginal band of the forewings is strongly curved, though not so serrated *lygia*.



as in the other species of the *laërtes*-group. This band is downwards reddish-brown and towards the apex bordered by a broad dark grey region and towards the anal by a somewhat narrower reddish-brown region. Chiriqui, Central America. Mr. ROEBER presumes that there exist two temporal forms of *P. lygia*, and writes about it: „Of this magnificent animal I possess 1 ♂ from Chiriqui which corresponds well above with the figure in Iris XVII, Table VI, fig. 2. The under surface, however, is considerably different, since instead of the cuneiform white submarginal spots of the forewings there is only a blurred whitish band slightly contrasting with the ground-colouring, and the black band before it is very much serrated, similarly as in *eugenes* Bates, but the submarginal cordiform black markings in *eugenes* are in my specimen of *lygia* represented only by three white dots being encircled by a thick black. It might be possible that this form though entirely deviating belongs to another generation but the specimen according to which Mr. FRUHSTORFER has described this species. But it would be premature to denominate this form, because it is just as well possible that *lygia* varies in one and the same generation. These questions could be decided only by means of further ample material with the dates of the captures.“

**P. pheridamas**, an entirely isolated, extremely constant species, without any close allies, bearing about the same relationship to the group of *P. laërtes* as *P. chalciope* and *P. lycomedes* to the series of *P. demophon*. Claspings-organs considerably shorter than in the allied species, the phyteuma-like club at the uncus remarkably stunted, valve extremely densely set with long black bristles. Upper surface distinguished by an uncommonly broad blue magnificent area; ♀ with a somewhat strangulated and duller blue band and a larger apical spot beneath which there are, as a rule, one or two blurred, insignificant maculae embedded. The under surface varies according to the habitat of the butterflies from light loam-yellow to effaced greyish brown. We so far know only three territorial forms extending from Colombia to Bolivia, and from Guiana to Central Brazil. *pheridamas* Cr. (112 a), depicted according to a ♂ from Surinam. The form remains unchanged in spite of its extensive range, and beside the specimens from Cayenne, Surinam, Obidos, Mato Grosso and Ecuador of my collection there are also specimens known to me from Villavicencio in East Colombia from 400 m, from the whole Upper Amazon and Peru. — **phila** Fruhst. (112 a) surpasses *pheridamas* in the extent of the blue magnificent spots of the upper surface; the preapical macula also appears nearly again as large. The under surface differs from *pheridamas* by a more reddish-yellow upper surface being more profusely decorated with silvery white spots. Minas Geraes, Espiritu Santo, very rare. — **attalis** *subsp. nov.* is based upon ♀♀ from Bolivia, which Mr. FASSL has sent from there. The blue bands of the upper surface are narrowed, and the under surface is preponderantly coloured in grey instead of yellow.

**P. deiphile** Godt., the best-known of the variegated species, inhabiting Central Brazil. I have before me specimens from Espiritu Santo, and v. BOENNINGHAUSEN knew Petropolis in the Organ Mountains as their habitat. The upper surface resembles *P. xenagoras*-♂ (113 a), but the black costal dot in the series of orange-yellow spots of the hindwings is absent. The violet zone of the upper surface more extensive, and beyond the cell there is in the ♀ a grey or whitish violet diffuse spot. Under surface reddish-brown, otherwise like in *xenagoras* (113 a).

**P. xenagoras** Hew. (113 a ♂♀) differs somewhat in the extent of the violet part of the forewings of the ♀♀. Thus I possess a specimen with almost entirely brown forewings exhibiting but a faint violet lustre. The ♀ is generally by one third larger than the rather large ♂ of this species. The black of the upper surface somewhat more subdued. Of the magnificent violet of the ♂ there is only yet a narrow stripe of 1 cm width left on forewings and hindwings, being more profoundly dark ultra-marine blue and bordered indistinctly. The yellowish-brown submarginal spots nearly again as large as in the ♂, on the hindwing also the 3 most proximal ones exhibit black dots between the ocelli, which are lacking the ♂. The costal margin of the forewing being faintly indicated yellowish-brown in the ♂, is much more sharply and distinctly prominent in the ♀, as well as the white fringes of both the wings. The under surface analogous to the ♂ of a deep dark rust-brown; the white enamel spotting just as conspicuously prominent. Bolivia. The figures of this species were depicted by the directions of Mr. ROBERT BIEDERMANN according to specimens of his collection.

**P. garleppiana** differs from *P. xenagoras* by the appearance of a light blue band of the upper surface of the forewings. We have to distinguish two territorial forms: **garleppiana** Stgr. (112 d ♂, 113 a ♀) from Bolivia. The ♀ was discovered by FASSL and described as follows: very different from the *P. xenagoras*-♀; especially of a considerably larger size (expanse of wings 106 mm). Upper surface likewise of a dull black, but the violet reflection of the ♂ is absent and there remains only the blue, very narrow *Prepona*-band, very short in the forewing, reaching upwards only to the anterior median, being downwards widened and terminating at the proximal margin, bent somewhat proximally; it is, therefore, not identical with the quite differently coloured and shaped band of the ♀ of *xenagoras*. In the hindwing the blue band corresponds to that of the ♂, the violet reflection likewise absent. The yellow submarginal spots of the forewing similar to those in the ♀ of *xenagoras*; costal margin, however, far less intensely yellow. The submarginal macular-band of the hindwing obviously differing from that of the ♀ described above, the two eye-spots on both the surfaces nearly again as large, but the 3 interjacent yellow spots of the band not black eye-spotted as in the former; on the under surface these spots show through, though but in the shape of 3 whitish-blue, minute dots. The brown colour of the under



surface much lighter ochreous than in the ♀ of *xenagoras*. The silvery white spotting which, moreover, varies extremely also in the ♂♂ of both the forms, very large and distinctly pronounced. The ♂ of *P. garleppiana* being one of the very greatest rarities of the South American Nymphalidae, the sole ♀ taken in February 1913 in the North Yungas of Bolivia at an altitude of 1700 m will probably stay unique for a long time. — **sphacteria** *sphacteria*. *subsp. nov.* is a Peruvian race of a smaller habitus, with narrowed blue bands and almost extinct orange spots of the forewings. Type in the Tring Museum.

**P. brooksiana** *Godt.* replaces *P. garleppiana* in Mexico. Upper surface still more gorgeous by an almost *brooksiana*. again as broad light blue band, compared to *P. garleppiana*, reaching besides the costal margin of the forewings. The orange spots longer, though of a more oblong than square shape. The foremost, subapical one is absent, all the maculae of the hindwings, however, are black-pupilled. The under surface approximates that of *P. deiphile* *Godt.*, being preponderantly reddish-brown and having also the white transcellular spot of the forewings in common with *deiphile*, which is absent in *P. xenagoras* and *P. garleppiana*. There are only 3 specimens known to a certainty. 1 ♀ (the type) from Coatepec (Mexico); a second ♀ in the Paris Museum and a third damaged specimen in the Coll. SCHAUS. ♂♂ have not yet been discovered.

**P. praeneste** forms the transition from the genus *Prepona* to the red species of the genus *Agrias*. *praeneste* and its southern vicarious type, *P. buckleyana*, are the sole representatives of their magnificent genus with red transverse bands of the forewings and a series of red spots on the hindwings. The under surface is reddish-brown with a light red median stripe and a black submedian zone of the forewings. The hindwings may be unicolorously reddish-brown or exhibit greyish-white decorative spots looking like dewy pearls or like precious stones mounted therein. **praeneste** *Hew.* (113 c) is found as a great rarity in Colombia. There *praeneste*. exist ♂♂ with white median spots of the under surface of the hindwings, as HEWITSON and STAUDINGER have depicted them. In the latter author's collection of the Berlin Museum, however, I saw also ♂♂ from the Rio Dagua without this decoration: this is **privata** *form. nov.*, whereas ♂♂ from the Cauca Valley always exhibit *privata*. this decoration. — Of the ♀ we figure (113 b) a form **paradisiaca** *Fassl* with a violet lustre on the upper surface *paradisiaca*. of the hindwings. There exist, however, also unicolorous ♀♀ without the blue discus of the hindwings. A. H. FASSL writes about their capture:

*praeneste* seems to fly only in the raining period, as I was collecting here for a longer time in the dry period without catching sight of a single specimen; finally I succeeded in taking several specimens, whereat I had also occasion to experience the extraordinary intelligence of the animal in judging a danger. An entirely faultless specimen one day timidly flew away from the bait up as far as to the crown of an enormously high tree of the primeval forest. I posted myself in a hidden place near by and after about a quarter of an hour, I was happy to see the red animal flying quickly down to the ground in large spirals: it inspected, however, most closely the whole surroundings and even came quite near me, but it seemed not to like me, although I kept standing still as if made of stone. At last the butterfly sat down on the tip of a twig about 10 m vertically above the bait, so that only the antennae being stretched out forward and the head were looking out over the outermost rim of the leaf. In this position the beautiful butterfly viewed the whole surroundings and I thought it advisable to retire further back. But it could not resist the strong odour of the bait, and after having been flying for a long time timidly about, it once more settled down on the lure. Now I could easily approach it from the shelter and capture it.

**praenestina** *subsp. nov.*, a more southern race which has of late come oftener to Europe than the northern *praenestina*. *neste*. ♂♂ immediately separable from Colombian ♂♂ by the band of the forewings being distally considerably broadened and pushing back the violet margin quite close to the middle median, growing broader also anteriorly beyond the cellule and fully absorbing the red submarginal spot in the anterior median space. — **confusa** *confusa*. *Niep.* is a form belonging to the species, with large subapical spots. From the Chanchamayo in Peru.

**P. buckleyana** *Hew.* (113 b) differs from *P. praeneste* by the absence of the red intra-radial submarginal spots of the forewings in both the sexes. The red maculae of the hindwings are more uniform, broader and are united to a more compact band. Beneath, *buckleyana* is separable from the more northern vicarious type by a silvery white spot before the cell-apex of the forewings. There exist specimens with a white median decoration of the hindwings and also without it. „The ♀ of *P. buckleyana* is somewhat larger than the ♂ of this form and somewhat more subdued blackish-brown in the ground-colour. All the markings being purple-red in the ♂ are light scarlet (thus not orange-brown as in the ♀ of *praeneste*); the red bow of the forewing in its innermost part brightened up whitish. Instead of the deep violet reflection of the ♂, we notice in the ♀ a large spot of a light blue gloss spread over each of the discal parts of the wings, which, in the forewing, extends towards the apex somewhat over the red bow leaving in the hindwing a broad black margin of about 7 mm free after the red band. The under surface greatly resembles that of the ♂; the silvery spots are also especially distinct. The shape of the wings also similar as in the ♂ somewhat broadly stretched and thereby, as everybody knows, distinctly differentiated also from *P. praeneste* being looked at as the original form, so that, without counting the differences in the markings, with respect to the very different shape of the wings, *P. buckleyana* may be considered as a proper species \*). The ♀ of *buckleyana* may justly be called the most beautiful of all the Nymphalidae existing. The peculiarly light-blue reflection, especially where it is spread over the delicate pink-red, is of such a magnificent effect that no other butterfly, not even the most beautiful *Agrias*, can be compared with this animal. „I captured the sole, extremely rare and beautiful specimen here in the densest primeval forest of the mountains, after having been searching for it in vain for several months at the capturing-place of the ♂♂ of this form. A fortnight after having written the article above, I succeeded in capturing the

\*) Uncus relatively short, its clubs, however, broader, more compact and more sharply armed than in any other of the species examined hitherto.



second ♀ of *buckleyana* differing considerably from the above described specimen by the absence of any blue reflection. We thus have the analogous case as in *P. præneste* from Colombia which likewise possesses two different ♀♀-forms, one with plain colours and one (much rarer) with an intensely light-blue reflection which I described as *P. præneste* ♀ ab. *paradisiaca* once before" (FASSL). The corresponding second ♀-form of the *olympica*. Bolivian race with the light-blue gloss on the wings mentioned above was described as *olympica* FASSL (113 b). *elevata*. — A most interesting alpine form has been described as *elevata* Fassl (113 b), with yellow instead of red bands on the upper surface of both the wings. Its author writes about this alpine race: „But what struck me, was the uncommonly high habitat of the animal at the ridge of a mountain-chain of the Cordilleras at an elevation of 2000 m, thus being the highest spot where I ever took *P. buckleyana*; all the others originated from altitudes of 700 to 1700 m. It may be possible that this conspicuous, beautiful aberration of the otherwise purple *Prepona* represents a constant alpine form of it. Unfortunately the said habitat is eternally surrounded by fogs and clouds, so that I have little hope to take some more specimens of this new species on further excursions into this deserted, marshy, reedy and entirely impassable district of the primeval forest of the Bolivian high mountains. Moreover, as to the considerable altitude up to which the red *Prepona* as well as the two forms mentioned first fly which, with their magnificent and variegated upper surfaces evidently do not at all belong to the other butterflies surrounding them there, a comparison of the animals when sitting on the ground, results in a most amazing likeness of the combination of colours on their under surfaces, consisting of silvery white dots and streaks on an ochreous, reddish or black ground. I captured, for instance, on a path of 4 km length, which I had constructed myself in the dark primeval forest of the North Yunga of Bolivia in an altitude of 1700 m, the following species of butterflies in the course of 6 months: *Adelpha saundersi*, *Prepona buckleyana*, *xenagoras*, *garleppiana*, *Opoptera bracteolata*, *Eryphanes zolvizora*, *Caligo phokilides*, *Lymanopoda albomaculata* and *albocincta*, several species of *Pedaliodes* with „mildew“-spots on the under surface, *Daedalma dinias* etc. I wonder whether these white and silvery spots on the under surface of the above-mentioned animals are perhaps adapted to the water-drops of their home in the alpine primeval forest being eternally damp and dripping with wet? The *Prepona* flying 800 m further down in the forest of the hot valleys, in spite of their much greater number of species, do not exhibit one single under surface, being so intensely dark and decorated with silver, nor does any *Adelpha*, *Brassolida* or *Satyrida* show such a conspicuous homogeneousness of colours on their under surface, as the above-mentioned alpine animals of the same genera" (FASSL). In conclusion I beg to thank Mr. ROBERT BIEDERMANN of Winterthur for the readiness shown in permitting to have some rare specimens out of his collection — among them also the first 8 figures of plate 113 — photographed and coloured from the original for our work.

### 58. Genus: *Agrias* Dbl.

In this magnificent tropical genus, upon which nature seems to have showered all her abundance of most brilliant colours, and which is, therefore, justly called the „princely race“ of the *Nymphalidae*, we are most surprised to meet a repetition of two genera of not less abundant colours: the *Callithea* and *Catagramma*, except that the *Agrias*-species greatly excel the latter in size and magnificent colours, and only the ♂♂ of this genus bear a sexual distinction in the shape of a hair-brush on the hindwings. Some of them, like the famous *A. sardanapalus*, having been first discovered by BATES in the Amazon Valley, are of an absolutely charming beauty, and the contrast of its purple-red forewings beaming through a blue lustre hues over them as if in a violet purple gloss, with the brilliantly sapphire-blue hindwings, is undoubtedly one of the most magnificent sights that nature has ever produced in the whole world of butterflies. By the structure of the organs and by the veins, *Agrias* is so nearly allied to *Prepona* that there exist but slight differences between the two genera. Both the subgenera, besides, are interosculating by forms as those already mentioned in *Prepona*, *P. deiphile* Godt. and *P. præneste* Hew., the larva being very similar, too.

*Agrias* differs from *Prepona* only by the shorter, but otherwise similarly haired and scaled palpi and the weaker and thinner antennae which, without a distinct club, gradually grow thicker up to the point. The forewings are broader, not protracted in the shape of a sickle, the hindwings more rounded. The cells of both the wings are just like in *Prepona* closed by a fine posterior discocellular. In all the species, however, there exists a highly developed hair-tuft of the hindwings, being of a rudimentary shape in but some species of *Prepona*. This scent-brush is placed near the origin of the submedian and corresponds with a pocket at both sides of the abdomen, the interior of which is densely filled up with claviform, modified scales. Such scent-apparatuses are rare in the *Nymphalidae*; but we likewise find them in the *Prothoe* of Indo-Australia, though somewhat less luxuriantly formed.

The globular egg is almost of the same size as that of *Saturnia pyri*; yellowish-white, of a subdued gloss and without a visible structure of the surface.

The small larva creeps out after 8 days; it is greyish-green, posteriorly tapering in the shape of a wedge



and set with fine hairs. The tracheae are bordered in black. The head of the larva remarkably large and broader than the trunk. The larva itself with high obtuse horn at the head and two very long cones at the anus. On the first segment two white dots; the fourth segment somewhat thicker than the others. Pupa with 2 long rather pointed horns. (Description according to blown-out specimens of *A. claudianus* in the British Museum.)

According to Dr. HAHNEL, *Agrias* are not so restless as their allies, the *Prepona*, and although their flight is sufficiently swift, they still do not disclose that rapidity by which the *Prepona*, being superior in size and wing-contour, distinguish themselves. Especially remarkable is the persistence with which they cling to their once chosen resting-place, a leaf high up projecting freely into the road. There one may observe them motionless for a long time, and even if they fly off, they return exactly to the same spot. In this unswerving rest they allow us, without fear, to approach the net by means of a long stick, and on hitting then energetically in the direction in which they want to fly off, we mostly have the butterfly safe in our net. The height in which they usually rest, varies from 5 to 10 m, so that the odour of the bait laid out does not always come near them.

FASSL writes (in the Soc. Ent. 1911 p. 27) about the habits of the Colombian species, „that *Agrias* have a swift and very timid flight, appearing mostly only on very hot days at noon and always single, in the extensive primeval forests and rarely at altitudes of more than 1000 m.“ „While *Prepona* often cross rapidly the forest already at 9 a. m. and even when the sky is somewhat cloudy, I so far saw *Agrias* only in the greatest heat at noon. Several times I also chanced to see them dashing in circles round high crowns of trees, and even when they approach the bait on the ground, they come down from above in wide spirals, often encircling yet the place for a minute, in which one can recognize only a red line, owing to the swiftness of their flight. The latter has repeatedly been compared to that of *Prepona*, but I cannot quite approve of this, since *Prepona* have a decidedly slower motion, in which they often produce a whizzing noise, similar to that of large Hesperids. There exists, however, a remarkable likeness in the flight of *Agrias* and in their whole behaviour, with *Smyrna* which genus is also very similar in the habitus and the representatives of which are not alone widely distributed but also locally quite common in Tropical America.“

The single individuals of *Agrias* are subject to great variability of colours, what is already proved by our 38 figures belonging only to seven species. The sexual dimorphism is more pronounced than in *Prepona*, the shape of the wings of the ♀♀ is inclined to considerable variations in the contour of the forewings. In both the sexes there occurs dichroism, and we know ♂♂ with red and with ochre-yellow basal spot of the forewings independent of the locality. In one species we notice intermittingly, according to the locality, an orange or blue basal spot. The extent of the celebrated blue reflection is likewise subject to great deviations, being either rudimentary or luxuriant, or sometimes even absent altogether. The markings on the under surface, however, are extremely constant, forming a welcome hint for the grouping of the polychromatic territorial races; but also here there are again coloristic motives without importance, yellow and red varying ad libitum; besides, the basal spot may in one race cover half the upper surface of the wings (*beatifica*) or be confined upon narrow streaks (*beata*). Just like the spots of the wings, the colour of the scent-tufts also varies from light yellow to reddish-brown (*sardanapalus*, *claudianus*), from orange to greenish (*hewitsonius*, *beatifica*).

Considering the great variability of the *Agrias* it is not to be wondered at that their specific valuation has been most varying. KIRBY in 1871 knew already 7 species, of which, according to the notions of to-day, one form *beatifica* Hew. (1869), is to be inserted in *hewitsonianus* Bates (1860), so that there remain de facto only 6 species. One of them (*A. claudia*) was already known since 1776, remaining forgotten for more than a century, until my explorer JULIUS MICHAELIS discovered it again in 1894. From 1776 to the epoch-making voyage of BATES in the middle of the last century, there was only one *Agrias* yet discovered in Colombia. BATES succeeded in discovering 4 distinct species and several geographical races. Then there was again a standstill, until Dr. HAHNEL, together with his pupils, brought a number of interesting areal forms to our knowledge. Thus it arrived that STAUDINGER in 1888 believed to be justified in enumerating no less than 14 species with 5 sub-forms. In 1897, I confined this number, in spite of the discovery of new local forms, to 12 species which STAUDINGER reduced once more, a year afterwards, to 10 collective species. Of these 10 species there are again two immediately to be eliminated as sub-forms, so that we must to-day return to the number of collective species in KIRBY'S Catalogue, because since BATES there has come again but one fully qualified species to Europe: *A. narcissus*. We may, therefore, assume that we now know all the really existing species, but we have yet to expect a great number of sub-forms of which there are new ones discovered by every important entomological expedition. The chief range of our magnificent genus is congruent with the watercourses of the Amazon in its whole enormous extension. 6 species have their habitat there; a seventh species (*narcissus*) was first observed in Surinam, later on in Cayenne, but ascertained also for Obidos by my collector MICHAELIS. Thus there remains but one non-Amazonic species, *aedon* F., which occurs exclusively in Colombia and on the volcano of Chiriqui.



Of the 7 species only two cross the real equatorial zone: first of all the oldest species, *claudia*, which has reached Southern Brazil on the Atlantic Ocean. Beside it, a second expansible species (*amydon*) advances in the east as far as Bolivia, while in the west, it does not cross Central Brazil anymore. Curiously enough, Venezuela is not inhabited by any *Agrias*, while we know 2 species from Cayenne and 2 species from Surinam.

As to their exterior, the *Agrias* are to be divided into two groups: the species with a red upper surface, and those with a variegated upper surface, being beneath spotted preponderantly with yellow or green. Both the groups are united by *A. amydon* with partly reddish-, partly already yellowish-coloured ♀♀.

**A. claudia.** The oldest species, the red *Agrias par excellence*; ground-colour above black, sometimes with a yellowish preapical brightening of the forewings. The latter always with a red basal area varying in intensity of colour and in size according to the areal form. Hindwings with a large red disk diminishing in size from north to south, thus attaining its natural maximum in Surinam, its minimum in Santa Catharina. In the Andine branches of the collective species and most of the forms of the Amazon, the red disk of the hindwings is replaced by a small blue spot, and one might be attempted to consider such races as a proper species, unless there occurred a vicarious type in Mato-Grosso uniting both the coloristic motives. — *claudia*. *claudia* Schulz resembles above in the male sex a ♂ of *sahlkei* (115 d), but the black subanal spot of the forewings remains very small and does not extend beyond the submedian. The ♀ approximates the ♀ of *croesus* (115 b), though the proximal margin of the forewings is also covered with red and the yellow subapical band of the forewings is absent. The ♀ has been known already since 1776, the ♂ I first found in the Museum in Stuttgart in 1895, and obtained myself the first specimens by J. MICHAELIS who by my orders and at my cost went to Surinam chiefly on account of these *Agrias*. — *sahlkei* *Honr.* (115 d) is an areal form distinguishable from *claudia* by the black spot of the forewings advancing as far as to the posterior median. In the ♀ the red disk of the hindwings is sometimes stunted so that only a narrow red streak remains. Cayenne. Figure according to a ♂ in the Coll. FRUHSTORFER. — On the Amazon there occurs a most similar subspecies, *croesus* *Stgr.* (115 b) recognizable by the three relatively large yellow spots before the apex of the forewing. The ♀ was figured according to a specimen discovered near Para, in the Coll. RIFFARTH; a ♂ belonging to it was described by STAUDINGER as a variety of *A. sardanapalus*, from the Itaituba on the Lower Amazon. MICHAEL reports about the capture of this butterfly (Iris 1894):

„One day I saw a magnificent *Agrias* sitting on the said liana which I visited day by day; judging from the under surface I took it to be *sardanapalus*, but I was greatly surprised on discovering, when I took it out from the net, that it was the long looked for, fabulous ♂ of *claudia*. This *claudia* from the Amazon is indeed very easy to mistake for *sardanapalus* on the under surface; above, however, the difference is very great, since *claudia* exhibits on the hindwings a large red spot being proximally bordered by blue. Although I was now eagerly in search also for this butterfly, I only succeeded in capturing a second specimen of this magnificent animal 3 years later, having returned to Itaituba; and it was most wonderful how I came into possession of it. It was during my last stay at Itaituba in spring 1893, when all of a sudden at noon, just on the point of leaving the mentioned place, I saw an *Agrias* at a considerable height, though soon settling on a leaf. My longest net-poles were unfortunately much too short: in my haste I could not find a suitable stick in the woods, and only after having been searching for a long while I found a little slender tree of about 20 feet length which was fit for a net-pole. But on fastening the net to it, the thin pole moved to and fro, and it was really a wonder that I anyhow got the butterfly into the net, after having remained sitting on the leaf for almost 15 minutes, until I had found the said pole.“

*amazonica*. *amazonica* *Stgr.* is a ♀ from the Lower, northern Amazon, which was discovered near Faro, in the Brazilian part of Guiana. It has an almost entirely black upper surface of the hindwings, bearing scattered small red scales only in the cellule; the veins are likewise covered with red towards the base. MICHAEL writes about this form:

„When I was walking along a path on the beach, I suddenly noticed a red ray dashing through the air and soon recognized a magnificent *Agrias* which for some moments encircled the branch of a tree, about 8 m above me, in order to settle finally down on it. At first I did not know what to do. But fortunately I noticed a small slender tree in some distance, on which I hurriedly climbed up. But on arriving on top I was rather annoyed to discover that the net was still too short. I nevertheless attempted, leaning forward as far as I could, a desperate blow and was happy to see the beautiful being soon jerking about in the net. It was rather difficult to get down again. After having reached the ground, I began to inspect my most interesting booty and discovered something quite new to me. As I, however, knew only *phalcidon* and *sardanapalus*, I took the animal to be the ♀ of the latter, and even Dr. HAHNEL remained for some time in the dark about it; but it soon proved to be the ♀ of *claudia amazonica*.“

*vesta*. *vesta* *Fruhst.* is a ♂-form the forewings of which agree with those of *A. claudia*, but the red of the forewings is more intense, and there are already the beginnings of a blue gloss beyond the cellule noticeable. The hindwings exhibit a smaller dark-violet disk at the cell-wall. The under surface resembles that of *claudia*, only the transcellular grey short band of the forewings is somewhat broader and the total colouring darker. Obidos *maxentia*. *maxentia* *Fruhst.* from Marcapata (Peru) approximates *croesus* *Stgr.*, the red of the forewings, however, is darker, the discal macula of the hindwings somewhat blurred. Under surface of more intense colours than in *vesta*. *infernalis*. Type in the Coll. STAUDINGER. — *infernalis* *Fruhst.* shows on the forewings an increase of the red zone. The hindwings, however, are above quite black with slightly rouging veins near the cell-wall. British Guiana, *godmani*. New Amsterdam. — *godmani* *Fruhst.* (115 b), a gigantic form and at the same time the most variable of all



the *claudia*-races. By the appearance of an extensive blue reflection at the periphery of the red spotting, a resemblance of *sardanapalus* is created. The yellowish macular band of the forewings shown by our figure of the type from GODMAN's collection, may be absent, the red of the forewings sometimes extends to a broad patch resembling *claudia*, without black indentation at the submedian. The red disk of the hindwings may also increase in extent (fa. **phoenix** Niep.). Besides there exist specimens resembling still more *A. sardanapalus* *phoenix*. by the absence of the red disk being replaced by a dull ultramarine blue discal spot (fa. **semirubra** Niep.). *Habitat* of the wonderful race Mato Grosso. — **claudina** Godt. (115 a as claudianus-♀ and a ♂) is found in Central *claudina*. Brazil, according to specimens of my collection in Espirito Santo, Minas-Geraes, and Rio de Janeiro. The ♂♂ differ from *claudianus* (115 a) by the presence of a yellow brightening of the forewings, like in *godmani*, which remains beneath almost purely white. The basal area is lighter carmine and it may sometimes be at the submedian quite untouched by the black indentation, so that such ♂♂ with an area being cut off at the submedian as if with a ruler, resemble the ♀ of *croesus* (115 b). The ♂ bears a scent-pencil being slightly rouged at the tip, described, however, already by GODART. The red discal spot of the hindwing is somewhat more extensive than in *claudianus* and placed nearer to the distal margin, which was likewise noticed and called attention to by GODART. The ♀ (115 a 3 misprinted into *claudianus*) has generally a larger red disk than our figure and it is, compared with ♀♀ from more southern provinces, on the forewings brighter though pale red, and the second transeellular median band of the under surface of the hindwings light grey instead of blackish violet-grey as in *claudianus*. — The ante-terminal black band of the hindwings is of variable width; it is very narrow in a ♀ from Minas Geraes, uncommonly strong in a ♀ from Rio de Janeiro. The subapical oblique band of the forewings is likewise variable, almost white as chalk in a ♀ from Minas, pale ochre-yellow in a Rio-♀. According to statements of BOENNINGHAUSEN, *claudina*, though rare in the Province of Rio de Janeiro, is, however, sometimes found in the Botanical Gardens and on the Corcovado. — **pallantis** Fruhst. ♀ above very *pallantis*. closely allied to *A. claudia claudina* Godt. from Rio de Janeiro, Espirito Santo and Minas-Geraes of my collection. The three blurred yellowish preapical spots of the forewings are somewhat narrower than in the ♀♀ of my collection, the red area of the forewings, however, considerably larger, so that the transcellular spot does not appear anymore triangular, but square, and reaches as far as close to the costal. At the submedian there remains but a narrow black segment. On the hindwings all the veins from the anterior radial to the middle median have a reddish hue. The postdiscal red spot more than again as broad as in *A. claudina*-♀. The under surface of the hindwings somewhat lighter than in the ♀ from Rio de Janeiro, the lighter blue-pupilled submarginal spots are placed in a more greenish yellow area, and the anteterminal black band is hardly half as broad. Presumably from one of the Brazilian North Provinces, ♀-type in the Geneva Museum, from the Coll. JURINE, which is already more than a century old. The butterfly, however, is still just as fresh as the specimens having been for 15 and 20 years in my collection. *A. pallantis* (denominated according to an epithet for Aurora) forms a transition from *A. claudina* to *A. claudia* from Surinam, and most probably some more intermediate forms will be discovered yet, approximating still more the old *A. claudia* Schulz by a larger red disk of the hindwings. — **plausibilis** subsp. nov. forms the transition from *claudina* to *claudianus*. It has above already *plausibilis*. the character of *claudianus* and, contrary to the more northern forms, a dark carmine, purple-tinged and more crescentiform red basal part of the forewings. This part is cut out by the submedian from the black inner margin in the shape of a segment. The red discal spot of the hindwings still more broadly effused than in *claudianus* (115 a). The under surface approximates *claudina* by a whitish-grey subapical band, instead of hazy yellowish as in *claudianus*. The hindwings also rather exhibit the attributes of the Rio-form than those of *claudianus*, the transcellular median band remains light yellow, the distal one nearly whitish grey and narrower than in the more northern and more southern vicarious type. The black ocelli of the hindwings decidedly smaller than in the sister-races. Habitat unknown, but presumably São Paulo or Paraná. — **claudianus** Stgr. (115 a) *claudianus*. is incorrectly depicted in our figure by the red discal spot of the hindwings being laid out too broad. In fact it is hardly indicated on the upper surface of the hindwings. The ♀ also exhibits above only an insignificant reddish, black-powdered diffuse spot of the hindwings. The preapical oblique band of the forewings in both sexes yellowish, the submarginal zone of the hindwings surrounding the blue-pupilled eye-spots greenish brown, the median band close at the cell brownish-grey, the postdiscal band greyish-violet as well as the cell-area. Santa Catharina. *claudianus* has scarcely ever been captured as imago, but been bred from larvae. Its occurrence beyond Blumenau was hitherto not ascertained, but JULIUS MICHAELIS has discovered it yet near Thereopolis, thus farther to the south. The larva, according to JUL. SCHEIDEMANTEL's drawing, resembles that of a *Prepona*; the warts on the rings 3 and 5 seem to be absent, but the not paired protuberance on the fourth ring is present. The larva ends into a furcated tail similar to that of *Prepona laertes*. — **sardanapalus** was understood by KIRBY and myself to be a local race of *A. claudia*. The occurrence of decided *claudia*-forms, beside quite typical *sardanapalus*, however, might induce us to revert to the assumption of BATES that *sardanapalus* is a distinct species. Without counting the larger size compared to all the *claudia*-forms (except *A. godmani* Fruhst.), one might oppose the wing-contour of the forewings being always more roundish and the much more imposing scent-pencil being more purely and lighter yellow haired, as distinction-marks. The decisive under surface, however, does not offer any prehensible differential characters. The presence of the semi-arc-streak



at the costal margin of the hindwings beginning at the precostal, and then swinging distally along as far as to the middle of the costal, to which STAUDINGER attached such great importance, exists constantly complete in *sardanapalus*, but we find it in *claudia* itself and in *claudianus* both in the ♂♂ as well as in the ♀♀ sometimes in exactly the same development. It may, however, be also dissolved into two isolated maculae, like in a *claudia*-♀, while the ♂ possesses it yet as a complete arc. Claspings-organs with a somewhat broader valve than in *A. claudia* and *claudina*; the club at the uncus more robust, with stronger spines. The range of *A. sardanapalus* is much more limited than that of *A. claudia*, since it is met only from the Upper Amazon to Bolivia. The southern forms are beneath modified entirely analogous to the South Brazilian races.

BATES says about the *sardanapalus*:

„This magnificent butterfly is one of the most variegated of the whole entomological world. I found it at different places of the Upper Amazon, but always only in sunny clearings of the primeval forests and in oppressively hot weather between the wet and dry season. It flies similarly as the *Prepona* and it is, therefore, quite impossible to capture it except when it is sitting. The first specimens I saw were baited by the sap exuding from a tree where a dense crowd of other beautiful butterflies, such as *Prepona*, *Paphia* (*Anaea*), *Siderona*, *Gynaecia* and others were daily assembled. But the continual coming and going of the greedy animals made the wonderful *Agrias* extremely timid and wary, so that I could not grasp it. When being met alone in the roads sitting on defilements, it was much easier to capture, but only 3 or 4 times during the long years I succeeded in meeting it in such a position.“

Dr. HAHNEL writes:

„By far more precious than the *Panacea* flying in open spaces, appeared to us some few specimens of the large *sardanapalus* clad in purple and blue, which we captured at the bait in the forest and which is not exceeded in beauty (?) by any other butterfly. For although some Indian Ornithoptera and the Morphids flying on the Amazon surpass it in the development of single attributes, such as size and splendour of colours, they do not come up to its abundant and most thoroughly accomplished markings of the under surface expressing the Nymphalid-type the most perfectly in *sardanapalus*. But above all other excellencies it was adorned by the noble descent, belonging to a genus being in every way unblemished by vulgarity, the species of which are rarities to such an extent that none of the existing large collections is able to boast of possessing all of them in completion.“

*sardanapalus*, clad in purple and blue, is fond of flying about very high between the sunny tops of trees and it comes down only sometimes when scenting something that appears especially piquant to it. On being chased up, it has the same dashing flight of lightning-speed as the *Prepona*, and nothing is seen but a sparkling of red, violet and blue. The rare deep-blue *stuarti* shows quite different movements. It also flies rather swiftly, but it has the same elegant, gliding flight as *phalcidon* and *pericles*, exhibiting the most brilliantly the magnificent deep blue, surrounded by the grand primeval forest. But few have been granted the pleasure of enjoying this charming sight, and even the collector is not very enthusiastic about it, unless he succeeds in obtaining the butterfly. — *sardanapalus* Bates (113 d) is characterized by the extensive transcellular red of the forewings and the light sparkling blue occupying by far the greatest part of the hindwings, being otherwise black. ♀♀ are very rare and not yet described from the Amazon district. Hitherto known only from the Upper Amazon. It is always rare, although the species occurs all the year round near São Paulo and Pebas.

„Here in Manicoré, I had, in the beginning of October, the chance of capturing my first *Agrias sardanapalus*; this capture I shall likewise never forget. On that day I was walking along my road as usually, when all of a sudden I saw a wonderful butterfly sitting directly in front of me on a small heap of excrements. But unfortunately too late, for I could just get a glimpse yet of the magnificent red and blue of its upper surface, when it was already dashing off in the swiftest flight. I noticed it, however, resting on a thick tree near by, though at a considerable height, with its head downward, like the *Prepona*. Now I looked about for a suitable hiding-place and began to wait, since I was quite certain that it would surely return to that delicacy. More than half an hour elapsed and I began to grow impatient. Now it moved its wings, but remained yet for a minute, slowly opening its wings, in this position. Finally, apparently once more enticed by the scent, it flew off and after having first cautiously been circling round the said place for some time, like an eagle, it finally settled down on it, fluttering restlessly. Now I succeeded also in stalking it and capturing it by covering it carefully with the net. That was the first specimen of this truly royal animal, and you may well imagine my pleasure when, on opening the wings, I saw the magnificently sparkling red and blue. In spite of all my efforts in baiting it, I succeeded only 4 weeks hereafter in obtaining the second specimen, and in the next month only the third and last specimen.“

*Sardanapalus* seems to be one of the most widely spread species of *Agrias*, as I saw one specimen near Manáos on the yonder bank of the Amazon River, and another on the Rio Negro, while I captured it in Manicoré, as well as in São Paulo de Olivença and Iquitos, besides the species has been found in the Cordilleras.“ (Dr. HAHNEL.)

- sara*. *sara* Fruhst. has lost the blue reflection distal from the cell of the forewings, the red transcellular spot of the forewings is very much decreasing, whereas the black distal margin gains the same extent as in *A. bolivianus* (113 c). The under surface, however, inclines to a brighter hue; the type in the Coll. OBERTHÜR has even a broad white median band of the hindwings. From Sarayacu and other places in Ecuador. — *lugens* Stgr. denotes a geographical variety of Southern Peru which has occasionally come to us from Pozzuzo especially in the last years. The type originates from the Chanchamayo. According to the 10 specimens of my collection about half of the specimens have no blue reflection at all beyond the intensely red area the others having a blackish-darkened, partially indistinct steel-blue reflection. The blue disk of the hindwings is sometimes receding (= fa. *hades*. *hades* Lathy at first reported from Northern Peru); and if it is absent altogether, we have the form *decyanea* *decyanea* Niep. — As *lugina* Fruhst. the Bolivian race was denominated, because the name of *bolivianus* Stgr. (113 c) collides with *A. amydon boliviensis* Fruhst. *lugina* is in its size inferior to the Peruvian geographical race, and



the design of markings of the under surface (113 d ♂) follows the tendency of the South Brazilian forms of *claudia* in as much as the yellowish- or greenish-grey areas at the base of the hindwings of *lugens* and *sardanapalus*, as well as the median bands of them, are peculiarly discoloured into greyish-violet. The distal margin of the hindwings likewise participates in this modification, and the submarginal zone surrounding the ocelli assumes a deeper brown analogous to *claudianus*. Another thing remarkable is an uncommonly broad, almost purely white subapical band of the forewings, followed by a transcellular spot of the same colour. *lugina*, in its variability, is better known than *lugens* and undoubtedly subject to greater differences in colouring than the Peruvian race. ♂♂ have, as a rule, no blue reflection whatever distal from the red basal area. — Specimens with a magnificent blue band of the forewings, as we figure 113 c, are rare and have been denominated **sardanapaloides** *sardanapaloides*. *Fassl.* The blue spot of the hindwings in this form leaves free only a narrow black distal margin. But specimens with a reduced blue disk are of more frequent occurrence, and we may even expect ♂♂ without any at all, although none has been discovered so far. A specimen captured by *Fassl.* is interesting for possessing in the blue spot of the hindwing at the end of the discocellular another small oblong red diffuse spot, thus forming already the transition to *A. godmani Fruhst.* the habitat of which is further inland. The ♀♀ generally resemble the ♀ of *A. amydon* (113 d), but the forewings exhibit a much narrower, darker red covering and an insignificant whitish, instead of yellowish, diffuse spot before the apex. The ♀, being by far the most common, is certainly that with unicolorously brown-black hindwings. *Fassl.* captured also such a specimen, though only one, in which the white-blue double pupil of the ocellated band in the anal angle of the hindwing shows very distinctly through above. A second ♀ form is that with traces of red in the hindwing. One specimen has, analogous to the extent of the large blue spot of the *bolivianus*-♂ (113 c), a uniformly red tinge at the hindwing; in another specimen the red is confined upon a slight hue across a short distance in the median of the hindwing. The third ♀-form, finally, with blue in the hindwing, thus retrograding to the colouring of the ♂, has a faint discal blue tinge of the hindwings. Sometimes the blue spot of the hindwing is of almost the same size and intensity as in the ♂ of *bolivianus*. This magnificent ♀ form, with extensive blue in the hindwings, is denominated **thusnelda** *Fassl.* We might mention yet a ♀ with unicolorously black hindwings possessing, however, a faintly blue tinged apex above the red arc of the forewing; it may be a cross-breed between a richly coloured *sardanapaloides*-♂ and a poorly coloured *lugina*-♀. *thusnelda.*

**A. aedon**, the third of the red species, has uncommonly pointed wings in the ♂ and resembles above a very dark *sardanapalus*. The red area of the forewings remains relatively narrow, it is covered with a dark purple hue, the inner margin of the forewings being broadly bordered with black. The magnificent spot of the hindwings darker blue than in *A. sardanapalus*, the scent-pencil with reddish tips of its hairs. The under surface is most peculiar and cannot be confounded with any other *Agrias*. Both the wings, except the pale reddish median area of the forewings, of a peculiar bluish grey. Forewing with two brown oblique bands; hindwing with three red-brown longitudinal stripes, being proximally bent inwards between the medians. Between the bands there is no variegated filling at all, like in the other *Agrias*. The basal area likewise exhibits only a most scarce brown spotting. The ♀ has round wings, is larger than the ♂, above unicolorous with a red median area being distally lightened by yellowish. Two local races: **aedon** *Hew.* (115 a) is based upon an abnormally coloured ♂ which we copied according to *HEWITSON*'s figure. The ground-colour of the under surface is greenish instead of light brown, and the black eye-spots do not exhibit a white pupil as in the ♂♂ of my collection. The latter mark is presumably quite individual, whereas the greenish colouring indicates a local or temporal form which rarely comes to Europe. *STAUDINGER*, moreover, seems to have had before him specimens of both the different colourings, because he mentions that the under surface may be dark green or bluish-grey. The ♀ uncommonly approximates the ♀ of *A. amydon* (113 d), but the yellow preapical band is absent altogether, and the red median spot expands beyond the cell in Chiriqui-specimens. There are but few specimens known, that of the Coll. *GODMAN* having been shot down with a gun, since it always remained at a height not approachable with the net. Colombia and the Volcano Chiriqui where the species occurs yet at a rather considerable elevation. — **salvini** *Fruhst.* (113 c) is a light, local form of *A. aedon* *Hew.*, differing in the ♂ on the upper surface by the bright red discal band resembling the ♂ of *claudia* and on the hindwings by the larger blue discal spot. Forewing beneath grey as in *aedon*, but with obsolete subapical bands and nearly disappearing dots in the cell. Hindwing with very small white-pupilled submarginal ocelli, without any submarginal band, and red-brown discal bands and spots. ♀: larger than the ♂, with lighter, yellowish-red discal spots which are of a much narrower shape than those of *aedon* owing to the extensive black ground-colour of the forewings, being especially conspicuous at the inner margin which is bordered by a much broader black. Hindwings like those of the ♂, but more roundish and with intense red-brown discal bands and dots in the cell which are blackish in the ♀ of *aedon* lying before me from the Chiriqui. Legs, palps and thorax whitish-grey, much lighter than in *aedon*. Description according to a couple from Manauré in Colombia. Collection *GODMAN*. *aedon.* *salvini.*

**A. amydon**, a species distributed from Colombia to Surinam and the whole Amazon district as well as Central Brazil and advanced along the Andes as far as Bolivia, of the utmost individual modifiability



and inclined to give way to every geographical and climatic influence. In *amydon*, at least in the Colombian specimens, we have to register the interesting fact that the red area of the forewings may proceed from the base of the wing as in *Agrias claudia* and *A. sardanapalus*; but that it is also proximally displaced by the black ground-colour, so that instead of a convergent area, there remains only yet a band-like brightening reaching from the costa to the inner margin. The median area of the forewings intermits from yellow to red, but we hitherto know yellow-banded ♂♂ only from Colombia and Bolivia. The under surface is of plainer markings than in *A. claudia* and *A. sardanapalus*; it is on the hindwings, also in the specimens being above red, yellow with black rosettes, without a variegated filling between the black bands. The ocelli are black with blue-white pupils, in one form (*trajanus*) almost white. Of a very constant extent is the black antemarginal band of the hindwings, the distal margin itself is yellowish, with the exception of *ferdinandi* where it appears preponderantly whitish. Less constant is the preapical band of the under surface of the forewings. It appears very narrow in some Colombian forms, uncommonly broad in *boliviensis*, and remains yellow in all the Andine specimens, white in those from Central Brazil. The upper surface of the hindwings is subject to by far the greatest influences, numbers of specimens exhibiting a sparkling blue sardanapaloid disk and others showing an insignificant blue spot being distally and anally displaced; then there are specimens without any discal spotting, with a unicolorous cover of the hindwings and, finally, such with greenish or yellowish small adnerval stripes of the submarginal zone.

There are no exact statements about the habits. FASSL has seen them circling round the tops of high trees, and even when they approach the bait on the ground, they come down from above in a wide spiral, flying for a minute round the bait, whereat only a red line is recognizable owing to their nimbleness. The ♀♀ seem to prefer resting on the ground, at least my traveller MICHAELIS has surprised a ♀ in Surinam drinking from a puddle.

- amydon*. **amydon** Hew. is a form resembling our figure 115 d. but differing from it by the absence of the whitish spots of the forewings and a considerably larger and lighter blue disk of the hindwings; the chain of ocelli on the under surface of the hindwings appears also coherent, not dissolved into single components as depicted in our figure. There exist specimens with a red area, running through from the base as far as close to the inner margin of the forewings, exhibiting generally somewhat less blue on the hindwings than in the name-type presented by HEWITSON. Such ♂♂ were denominated **muzoënsis** Fruhst. Specimens with a narrow oblique band from the costal to the inner margin of the forewings, which may be pale reddish-yellow or almost orange-yellow were separated as **frontina** Fruhst. *frontina* stands between *amydon* Hew. and *zenodorus* Hew. Upper surface like in *zenodorus*, but the apical spot somewhat more obsolete and the discal band orange, sometimes chrome-yellow, but never carmine as in *amydon* nor bright yellow as in *zenodorus*. This discal area is exactly as in *zenodorus*, but narrower than in *amydon*. The discal spot of the hindwings somewhat smaller than in *zenodorus*, but considerably larger than in *amydon*. The under surface of the wings completely agrees with *amydon*, except the lighter colour of the disk of the forewing. Described according to 5 specimens in GODMAN's collection and 1 ♂ of my collection. This subspecies of *amydon* was collected by SALMON near Frontino in Colombia. HEWITSON's collection likewise contained 1 specimen which was arranged together with an *Agrias ferdinandi* and two *amydon*, labelled „*amydon*“. Of late some more ♂♂ were discovered nearly without a blue disk of the hindwings, inhabiting preferably the eastern slope of the East Cordilleras of Colombia, whereas on the Upper Rio Negro at an altitude of about 800 m above the sea-level likewise at the eastern slope of the East Cordilleras, ♂♂ have been observed without any marks of a blue spotting and denominated **larseni** Fassl. The ♀ of *amydon* remained extremely rare and was only recently discovered by FASSL. It is half as large again as a normal ♂, of a more compact shape and more rounded forewings as well as hindwings. The ground-colour is not so intensely black, but more a dark greyish brown. The red arc of the forewings is duller and without the sparkling lustre. The three small subapical spots being obsolete in the ♂ are almost as large again and distinctly yellowish white, but separated by the veins, on the under surface, however, not broader than in the ♂ and likewise forming a band. Upper surface of hindwings entirely dark greyish-brown, without a trace of blue or red. Scent-tuft absent as in all the *Agrias*-♀♀. Anal angle very obtuse, nearly rounded off. Under surface almost just as glaring as that of the ♂; the marking hardly different, only the black ocellated band broader and more coherent, the white-blue ocelli being of the same size and not differently shaped as in the ♂. FASSL found the ♀ of *amydon* in the company of *Anaea panariste*-♀, *pasibule*-♀, *Coenophlebia archidona*-♀, *Prepona neoterpe*-♀ and the dimorphous ♀ of the red *P. praeneste*, and the unproportionately large ♀♀ of *Agrias aedon* and *A. amydon* were considered the most precious booty from those wild primeval forest valleys into which the discoverer had several times retired as if forced by magic power, in spite of the violent fevers he had undergone there, and notwithstanding the numerous poisonous snakes and the worst victualling to be thought of. — As **bogotana** Fruhst. there is a specimen in the British Museum approximating *A. ferdinandi* (115 c). It is, above all, larger than *ferdinandi*, has less dentated hindwings, a lighter red discal band of the forewings and a lighter under surface. Furthermore, the bands on the hindwings are considerably broader than in *ferdinandi*, so that the yellow ground-colour is compressed to narrow bands, and the blue eyespot-pupils of the black submarginal band are somewhat larger than in Brazilian specimens. — **amydonius** Stgr. (115 d) was based upon a ♂ from Pebas on the Upper Amazon. The magnificent purple-red of the forewings, small carmine basal spots and three anteterminal yellow streaks of the hindwings distinguish this local race. We have figured the



under surface 114 b, but the red is paler and there is yet a conspicuous, prominent subapical yellow band. — As *tryphon* *subsp. nov.* two ♂♂ are introduced which are in STAUDINGER's collection; the one from São Paulo, *tryphon*, the other from the discharge of the Ucayali. Both specimens lack the small yellowish streaks before the distal margin of the hindwings. The ♂ from the Ucayali shows at any rate no trace of blue, whereas the Olivença-♂ exhibits a rather large blue spot parted black by the veins, being about of the size as in the ♂ figured by HEWITSON. In both, moreover, the red of the forewings appears more extensive, extending down as far as to the submedian, while in *amydonius* it is cut out in the shape of a segment. — *trajanus* *Fruhst.* denotes a *trajanus*, very much differentiated territorial form of the Lower Amazon. Habitus smaller than that of all the vicarious types lying before me, above conspicuous by a pale, nearly yellow-red basal area and a prominent subapical yellow macular series of the forewings. The hindwings are overpowdered by dark red as far as to the middle of the cell, the subanal streaks are short, broadly confluent and of a bluish-grey colour. The forewings are beneath almost orange-yellow, with a very broad light sulphur-yellow preapical band. The hindwings exhibit a very broad black submarginal band with white instead of blue ocelli. The proximal band reduced to a thin yellow line. ♀ larger than the ♂, the wing-contour more roundish; the purple spot of the forewings less deeply strangulated, and the paler yellow apical spots flown together to a rather broad band. Base of the hindwings more extensively blackish, dusted with orange. The 5 subanal maculae somewhat more obsolete than in the ♂. The under surface of the hindwings is especially distinguished by a dark orange-red discal band which is hardly indicated in the ♂ and absent altogether in *amydonius*. The type of *amydonius* *Stgr.* of which only one ♂ was known till 1897, originates from Pebas situate on the Upper Amazon at 72 degrees Longitude. 1 ♂ and 1 ♀ of *trajanus* were captured by JULIUS MICHAELIS near Obidos on the Lower Amazon at 56 degrees, in August and September 1899. A second ♂ from Obidos was taken in July 1900. Type in the Coll. FRUHSTORFER. — *aurantiaca* *Fruhst.* (114 b ♀) resembles *trajanus* by a rather narrower bluish-grey dusting of the *aurantiaca*, subanal zone of the hindwings. Upper surface of the forewings with a large, orange-yellow basal part, a broad black apex and a black distal margin being narrowed between the second median vein and the submedian, growing somewhat broader at the distal angle above the submedian and running along towards the inner margin. In the apical part 3 oblique large yellowish spots. Hindwing above deep velvety black with a straw-coloured costal margin, dark orange dusted base and 2 pair of bluish-green short streaks embedded divergently between the first and second median veins. The ciliae of all the wings are yellow. Under surface of the forewings like above, the orange, however, is somewhat lighter and the black apical space is traversed, beginning somewhat below the costal margin, by a segmentary broad yellow band. The subcostal veins are likewise slightly covered with yellowish. The black at the anal angle is less broad than above and consists of thinly strewn scales. At the median vein near the base of the wing there is a black, short and thick stripe. The basal area of the hindwings is filled up with 3 black and 4 yellow bands the two outer ones of which are strongly bent, generally rather equalling those of *zenodorus*. Antennae black with a yellowish tip. Head black with yellow palps; the red-brown eyes stick in a whitish collar. Thorax black, above brown-orange, beneath whitish haired. Abdomen anteriorly and above brown with a black point, beneath on all the segments covered with white scales being divided into white areas by a black longitudinal line and the black ringlets round the segments. Legs above black, beneath yellow. By the brown colouring of the thorax and abdomen, *aurantiaca* greatly contrasts with *zenodorus* *Hew.* and the local form *boliviensis* *Fruhst.*, in which these parts of the body are provided with jet-black scales. The under surface of the hindwings is rather analogous to that of *zenodorus*, but darker than in *boliviensis*. Length of forewings of my ♀ 42 mm. *aurantiaca* was surprised at a defiled puddle from which the magnificent being was eagerly drinking, which habit is also preferably indulged in by its allies, the Indian *Charaxes* which are by no means inferior to them. As an almost true copy of *aurantiaca*, *Catagramma sinamara* *Hew.* ♀ \*) appears, which was captured beside the *Agrías* of the same colours. Surinam. — *zeno-* *zenodorus*, *dorus* *Hew.*, having hitherto been known only in some specimens from Ecuador, was founded upon a ♀ form forming the transition from *A. amydon* from Colombia to *A. amydon boliviensis*. The forewings exhibit a light orange oblique band sending forth only a narrow spur along the costal towards the base. This area, however, is somewhat larger than in *boliviensis*. The morpho-blue disk of the hindwings fills up the whole distal part of the latter and is surpassed in extent only by *A. sardanapalus*. But HEWITSON already knew a ♀ in which the disk already exhibits a reduced blue, and also in the Coll. HONRATH there was a specimen in which the magnificent spot did not surpass the extent of the disk of the wings of *A. amydon*. The ♂ of *zenodorus* seems to have been recently discovered in Ecuador, according to a photograph before me from Mr. HEIL in Frankfort on the Main. It resembles above entirely the ♂ of *amydonius* (115 d), but the hindwings bear only two adnerval strigae and above them at the posterior median yet a darkened accumulation of scales about the colour of which nothing was communicated to me. The under surface of this ♂ is the most closely allied to that of our *amydon-♂* (115 d). — In some parts of Ecuador another, remarkably modified areal or temporal form is found, deviating from *A. zenodorus* and approximating rather the Colombian *amydon*-type. This is *eleonora* *Fruhst.* *eleonora*, (115 c). The ♀ type originates from Ecuador, a ♂ of it from Bolivia. The upper surface of the ♂ resembles that of *amydon muzoënsis* *Fruhst.* and *boliviensis* fa. *amydonides* *Fruhst.* The subanal blue spot of the hind-

\*) Cf. Figure *codamannus*, table 101 B e, f.



wings attains but a moderate extent. The ♀ resembles certain ♂♂ of *A. amydon* to such an extent that I found it arranged among such in the Coll. GODMAN. The ♀ stands between *zenodorus* Hew. and *frontina* Fruhst., and it resembles *frontina* in the colour and the course of the discal band of the forewings, though it has pale yellow spots before the apex, like *zenodorus*. The under surface of the forewings is lighter than that of *amydon* with a broader yellow apical band. In the basal area we distinctly notice a yellow tinge near the distal margin, being absent in *amydon*. Entirely different from *amydon*, however, is the under surface of the hindwings which show the greatest likeness with *A. boliviensis* Fruhst. described above. The bands in the cell are greatly reduced, so that the yellow ground-colour is everywhere predominant, and the blue-pupilled submarginal spots, being fused into a broad band in *amydon*, stand dissolved forming a macular band interrupted by yellow. — *ozora* *subsp. nov.* is the race from Peru presented by us as *amydon* (115 d). The forewings somewhat resemble those of *amydonius* Stgr. (115 d), but the red basal area of the forewings is reduced. The subapical spots at the apex of the forewing are in nature not so prominent as in the figure. The hindwings bear a discal, not subanal spot as in *eleonora* and *boliviensis*. The under surface forms a transition from that of *A. amydonius* to *A. boliviensis*. The forewings are more richly striped in yellow than in the ♂♂ of *amydonius*, and on the hindwings the eyespot-bands are more broadly spread and their components confluent in nature, not isolated as in our figure. The name-type originates from Charapajos (Peru) and was collected in 1889 by DE MATHAN for CH. OBERTHÜR. Similar specimens are in the Coll. STAUDINGER from Yurimaguas (Peru), besides also the fa. *larseni* Fassl as a rare aberration, and furthermore specimens approximating the ♀ of *zenodorus* by a remarkably large magnificent spot of the upper surface of the hindwings. They belong to the fa. *athenais* Fruhst. — In Bolivia the collective species is represented by a considerably modified territorial form, *boliviensis* Fruhst. (114 b). It agrees with *eleonora* by the anally dislocated discal spot of the hindwings, which characteristic mark may be more noteworthy than it was considered hitherto. If by the discovery of the early stages or by morphological proofs the forms with subanal blue should be entitled to be considered as a proper species, they would have to be placed by the type of *A. eleonora*, the modified under surface of which and its occurrence from Ecuador to Bolivia sets one thinking. According to FASSL, *amydon* occurs in Bolivia especially in the yellow form of *boliviensis* Fruhst. The ♂♂ vary in the shape of the yellow spot of the forewings, but also the blue anal spot of the hindwing grows very dark violet and reduced in some specimens, and FASSL does not doubt that we may also capture *A. boliviensis* with quite black hindwings, analogous to those of *amydon* of which FASSL found his form in East Colombia without any blue at all, describing it as fa. *larseni*. The under surface of *boliviensis* is likewise rather variable, especially the black band enclosing the row of eyespots may be increased or reduced. Another interesting fact is that nearly all the *boliviensis* taken by FASSL on the Rio Songo before the rainy period (in October until December 1912) belonged to a small pygmean or famished form, probably created by the extremely dry winter in Bolivia (the dry period is May to September) of the year 1912. A ♂ of this collection is not larger than a respectable *Catagramma aegina* from the same habitat, and the sole ♀ figured 114 b (first figure) is by more than a third smaller than the two other ♀♀ captured after the rainy period. All the three correspond with the sole ♀ of *boliviensis* known already before, in the resemblance with the ♂♂, thus being also decorated with large blue anal spots of the hindwings, being therefore quite contrary to those of genuine *amydon*-♀♀ all of which exhibit not a trace of blue. — *amydonides* Fruhst. (= *songoënsis* Fruhst. being regarded but as a rare red aberration of *boliviensis*, lay before FASSL only in 5 specimens so far; it is very rare among the yellow forms and pretty well distinguishable from the *amydon*-forms of other localities by the red band being peculiar on the under surface, since its colour is exactly the intermediary between the red of genuine *amydon* and the yellow of *boliviensis*. Perhaps we may succeed yet in capturing also the ♀ of it whereby its alliance with *A. boliviensis* could be better cleared up. In judging especially the forms with a reduced blue, the position of this magnificent spot of the hindwings ought to be above all decisive for the assignment of the animal, for by this blue discal or anal spot of the hindwing certain forms are much more sharply separated from each other than by the most variable bands of the forewings or the extremely detailed helical markings of the under surface, by which for instance some butterflies being very different above (such as *amydon*, *amydonius* and *ferdinandi*), are not at all to be separated from each other on the under surface. „Who-soever, like myself, had the chance to capture personally, for instance, *Agrias amydon* in greater numbers and at different places, will have to own that the reduced blue in the poorly-coloured varieties (*muzeoënsis* and transitions to *larseni*), which finally consists only yet of a narrow longitudinal streak in the anal angle and parallel to the anal margin, presupposes an entirely different development of the distribution of colours, as the blue spot of *Agrias lugens* receding always entirely centrally (discally), however much some *sardanapalus*-specimens may make the impression that the blue is chiefly distributed towards the anal.“ (FASSL). — *ferdinandi* Fruhst. (115 c) deviates from all the noted *amydon*-races by the absence of every discal spotting of the upper surface of the hindwings, and is very near to being considered a proper species. Beneath it is characterized by the black marking in the cell of the hindwings not forming a fork but a more plain, peculiar figure comparable to the swollen ring of an earth-worm. The row of eye-spots consists of a rather loose joining. The ground-colour of all the wings is deep velvety black. ♂-upper surface: base of the forewings with a broad, intensely carmine



spot extending somewhat beyond the cell and gradually narrowing towards the distal margin without reaching it and leaving a black space free at the anal angle. Before the apex there are 3 large oblong, straw-coloured, very distinct spots. Between these and the basal spot a delicate, dark blue reflection is noticeable, being seen in some specimens also on the hindwings, beyond the scent-organs. Hindwing at the costal margin bordered by pale yellow with fringes of the same colour. Under surface: On the forewings, the red commences only in the cell and leaves a broad black stripe free at the posterior margin. Before the apex a broad, whitish-yellow band beginning at the costal and extending in the shape of an arc towards the distal margin as far as close to the first median. Before the rise of the third subcostal vein a narrow, small, yellow spot and two yellow streaks in the middle of the upper and lower radials. The under surface of the hindwings resembles that of *amydon* Hew., from which it is, however, easily distinguishable by the much lighter and broader yellow bands. The blue-pupilled eye-spots are isolated — especially the upper ones — where they are flown together to a very broad band just in *amydon*; the eyespot-pupils of *ferdinandi* are also considerably larger than those of *amydon*. The ♀ is larger than the ♂, with more roundish wings, larger yellow subapical spots and without a trace of blue reflection on the hindwings. But on the latter, at the base and in the cell, a slight red dusting is noticeable whereby a connection with *A. claudia* Schulz is established, with which species *ferdinandi* agrees also by the shape and the appearance of the row of eye-spots on the under surface. An especially fresh und faultless ♂ is distinguished from the others by a deep dark-brown band encircling decoratively the red basal spot beyond the cell, and resembles thereby the ♂ of *A. claudia* (*sardanapalus olim*), of which specimens are before me in which the blue subapical band traverses almost the whole wing, while it is in some reduced to a small spot. Head black with 4 white hair-tufts between the eyes. The brown eyes stick in a white hairy ruffle. Palps outside yellow, inside black. body and abdomen black, in both sexes beneath white, ♂ above black, ♀, however, partly with red hair. Feet black, beneath with yellow hair. Antennae black with a reddish-brown tip. Expansion of the ♂♂ 59—69, of the ♀♀ 80 mm, judged by 6 specimens discovered by Mr. HAENSCH in the Province of Bahia across which he travelled on my advice. *A. ferdinandi* flew there in woods of high trees where the butterflies rarely left their airy domicile under the leaves on top of the high trees, in order to bustle about in the „picades“ as the Brazilians call their roads through the forests. They flew so vehemently past our observer that their presence was just for one moment disclosed like a flash, only by the red glimmer of their wings. And even when they were greedily drinking from an Aphrodisian bait, the least noise of a foot stepping forward carefully scared away the nimble animals. Except from Bahia, *ferdinandi* has come also from Minas Geraes where Mr. HAENSCH found one ♀, and recently from Mato Grosso where *ferdinandi* flies beside *A. godmani*. In the British Museum there are specimens denoted „Colombia“, presumably a wrong habitat.

*A. pericles* forms a magnificent transition from *A. amydon* to the group of *A. hewitsonius* (114 c) and *A. phalcidon* (114 d). The upper surface of *pericles* resembles yet certain races of *amydon*, but we already notice a further decorative mark, consisting of green festoons of the upper surface, while on the under surface the light yellow or greenish yellow filling or foundation of the hindwings disappears in order to be replaced by a lighter or darker green according to the geographical situation of the habitat. We know three territorial forms: *pericles* Hew. resembling above our figure of *pericles xanthippus* (114 c as *pericles*), but the forewings *pericles*. are, distally from the orange basal area, at first decorated with a *sardanapalus*-blue band and then with an emerald-green band. On the hindwings the blue advances further into the cell and the subanal green ornamentation is somewhat more pronounced. Very rare, discovered by BATES near Teffé (formerly called Ega), where Dr. HAHNEL did not find it anymore because the primeval forest had been in the meantime destroyed afar from the place. HAHNEL, however, found some time later on, near Itaituba on the Rio Tapajos, a local race *xanthippus* Stgr. (114 e as *pericles*) differing from the proper *pericles* by the lighter orange, magnificent *xanthippus*. area of the forewings which is distally hardly bordered by blue and green. The ♀ of *xanthippus* is a little larger than the ♂♂, with more rounded forewings, a more extensive yellow basal area and without any trace of a blue decoration on the forewing. The hindwings are towards the base powdered with brownish as far as to the apex of the cell. O. MICHAEL writes about the discovery of *A. xanthippus* (Iris 1894 p. 202):

„One day I saw a butterfly unknown to me, apparently of a yellowish-brownish colour darting along in a swift, elegantly floating flight; but where the free space grew narrower, it suddenly returned and flew back again; after having flown to and fro 4 or 5 times it finally settled on a leaf far from me, in order to start flying once more after a longer rest. Now I struck out desperately at it with my large Morpho-net and, to my great joy, I saw it jerking about in it. But alas! The silk net was so firmly entangled in the acanaceous twigs of a finely pinnated acacia-tree that it was entirely impossible to get loose. Without hesitation I let go the net and climbed up the slender stem: the little tree shook perilously to and fro under my weight, but I recklessly climbed up to that part from where I could disentangle the net. But I first killed the butterfly which was darting furiously about in the net, in which, however, I succeeded only after great efforts, since I was forced to hold fast with one hand in order not to fall down. Finally, after having arrived at the bottom again with my lucky prey, I was somewhat disappointed on examining it, for I had in my hands a damaged, rather unicolorous butterfly: the finely marked under surface seemed to suggest an interesting capture, but I as yet did not attach so much importance to it as to the magnificent *Morpho Menelaus* of a light blue gloss, which I most eagerly tried to capture. But on delivering the butterfly at noon, I was surprised to see Dr. HAHNEL who was otherwise very quiet, being wild with excitement.

„Here you have, in my opinion, taken quite a new animal!“ he finally said after having examined the specimen from all sides. It indeed turned out later on to be a variety hitherto unknown of the magnificent *Pericles xanthippus* Stgr.



The fiery red of *Pericles* is replaced by a pale bronze yellowish brown and the magnificent blue of it simply indicated by faint marks."

*mapiri.* **mapiri** *Fassl* originates from the Rio Mapiri, where the Yungas forest-valleys extend already into the lowlands of East Bolivia. The animal having an expanse of 65 mm is of the size and shape of an *A. amydonius*-♂ and has also similarly coloured forewings with glaring-red (not blue-tinged), strongly indented red arcs reaching as far as to the base, and a very conspicuous yellowish-white subapical band being parted by 2 veins and much broader and more conspicuous than in all the red forms of *Agrias* lying before me. The blackish-grey hindwings exhibit red dusting at the base of the discocellular; besides there extends from the anal angle a dark blue, oblong spot being sharply defined towards the distal margin of about 1½ mm width and turning here into greenish, thus looking like the remains of the hindwing of *Agrias*. This blue spot is not identical with the anal spot of the *amydon*-forms, but owing to its more submarginal extension, it makes the impression as if the colour of an originally quite blue hindwing had been reduced to this small extent. The under surface exhibits in the otherwise entirely undimmed red arc a black stripe at the lower part of the median. The marking of the under surface of the hindwing is much more concentric than in *amydon*, and the light zone bordering first of all on the ocelli turns somewhat into red-brown in an upward direction. I do not dare to decide to which forms this new animal is to be assigned though I presume that it might be an extremely southern offshoot of *Agrias pericles*.

*phalcidon.* **A. phalcidon** *Hew.* (114 d) occurs exclusively in the district of the Lower Amazon. Geographical races are not known for certain, but only two, presumably individual forms. *A. phalcidon* is, according to HAHNEL, somewhat larger than *Callithea lepreuri* (99 d) which it resembles on the whole, and like that blue with a pale, silvery grey margin, the under surface, however, with a strong banded marking and a row of blue and white pupilled eye-spots. According to MICHAEL, the deep cyanean is of the most magnificent effect in the midst of the tropical vegetation.

"When the sun has risen half the way to the zenith, *A. phalcidon* begins its flight about at the same time with *Morpho cisseis*, a little earlier than *Prepona*. The height at which they use to stay being very considerable, varying between 5 and 10 metres, the scent of the bait we occasionally applied did not penetrate to them, and we got all of the few *phalcidon* we caught sight of, down from the tips of their leaves, whereas in the same road, the *Prepona* repeating their flight much oftener and occasionally coming further down to the ground, scent the bait much easier and are then easily captured on it."

The ♀ has somewhat less blue colouring, in one specimen of the Coll. STAUDINGER it is absent. Both the ♀ forms, however, exhibit on all wings more extensive, verdigris bands before the distal margin. — In Villa *paulus.* Bella (the Paritins of to-day) a ♀ form was found (**paulus** *Stgr.*) with quite blue, not black-interrupted fore-  
*anaxagoras.* wings. The verdigris bands of the hindwings are absent. — **anaxagoras** *Stgr.* is an aberration with yellow basal third of the forewings and almost entirely blackened hindwings, captured near Itaituba.

*narcissus.* **A. narcissus** *Stgr.* (115 c, d) is considered by its author to be the most beautiful *Agrias*, „a capital feast to the eyes“, as I described it in 1897. STAUDINGER knew only one ♀ from Surinam which he came across in SOMMER's collection. Later on Mr. SAHLKE who collected for HONRATH in Cayenne discovered two couples at the beginning of November and at the end of December 1884 and at the end of April 1885. My traveller JULIUS MICHAELIS succeeded in finding a ♂ near Obidos on the Lower Amazon, of which we represent the under surface. The ♂ is a *sardanapalus* with reverse colours, because there prevails a wonderful, intense cyanean blue across which a relatively narrow red band is laid on the forewings. Hindwings nearly quite blue with a relatively narrow, jet-black very sharply delimited distal margin. The scent-pencil is smaller, but just as beautiful and of a pure yellow as in *A. sardanapalus*. On the dark moss-green under surface of the hindwings are two conspicuous orange spots at the basal margin.

**A. hewitsonius** has brought us so far the greatest coloristic surprises of which the *Agrias* are capable. Nature has squandered the most magnificent shades of blue, green, yellow and red upon this collective species occupying the Upper Amazon from where it has advanced to Ecuador and South Peru. **hewitsonius** *Bates* (114 c), the nomenclatural type, was discovered by its author near Teffé (the former Ega). It has remained extremely rare and is at once recognizable by the chrome-yellow basal part of the upper and under surfaces of both wings. — It is geographically approximated by **olivencia** *Stgr.* from São Paulo de Olivença, situated somewhat higher than Teffé on the Amazon. There are hitherto known only three ♂♂, without a yellow base  
*stuarti.* and an entirely blue surface of the forewings. — **stuarti** *Godm.* from Pebas and Iquitos forms the transition to *beatifica* (114 d). The green zone of the forewings, however, is very narrow. The basal half of the under surface of the hindwings is undeterminedly reddish or orange. On the under surface of the hindwings there are some black spots dispersed in the yellow part, which vary in size. Sometimes they are absent or there are 2 or 3 being distally bordered by greenish and not standing entirely in red or yellow. The ♀ of *stuarti* has above a black basal half of all the wings followed at first by a broad green band and, before the distal margin, by a narrower grey band. Beneath, the base of the wing is orange, the eye-spots are white-pupilled.  
*beatifica.* There is a striking resemblance with *Callithea buckleyi* (99 e) and *degandei* (99 f). — **beatifica** *Hew.* (114 c, d) is a very rare form from Ecuador with a very broad verdigris terminal band of the upper surface of both



wings. The blue basal area of the forewings is slightly intermixed with black. The under surface is brick-red and in the green distal area there stand three series of entirely black spots. — Near Yurimaguas and Rio Hualaga, O. MICHAELIS has discovered another race, *pherenice* *subsp. nov.*, with less extensive orange colouring *pherenice*. in the basal part of the under surface of the hindwings. The black spots of the green distal zone are more pronounced than in *beatifica* and *olivencia*, and MICHAEL believes that higher up in the mountains we may find yet specimens forming a transition to *beata*. Mr. MICHAEL wrote me about the habits, from Iquitos in 1910:

On the 28th of September 1904, I found more than 30 *Prepona* sitting together near Inanui, on the Upper Hualaga. The day being very hot, the woods dry and nowhere a refreshment for thirsty butterflies, I found, at an especially malodorous spot the said number of *Prepona* and in the midst of them in the greatest scuffle there sat an *Agrias*, allied to *A. beatifica* resp. *beata*. The *Prepona* were so madly eager after their meal that I could quite carelessly pick out with my fingers first the *Agrias*, then only I chose the best *Prepona*.

*beata* *Stgr.* (114 d) forms the southernmost known geographical extreme of the whole species and is certainly *beata*. but a territorial form, although its author stood the most energetically for its specific rights. *beata* originates from the Chanchamayo in Peru and seems to be very rare, since but few specimens are known. On the upper surface the darkening of the blue area and of the green marginal band is very far advanced, and beneath the basal area is only yet covered with narrow red stripes. The scent-pencil is somewhat darker yellow than in *A. narcissus*. In the Coll. FRUHSTORFER there is a ♂ without certain habitat according to which the figure was depicted.

### 59. Genus: **Coenophlebia** *Fldr.*

In spite of the great difference in the exterior, this genus is nearly allied to the palaearctic genus of *Charaxes*, being the most nearly allied to the following *Polygrapha*, which is likewise formed by but one species. The outward appearance is, as the figure shows, so peculiar that it is impossibly confounded.

**C. archidona** *Hew.* (116 a), the only species, has hitherto been found in Colombia and Peru, but it *archidona*. presumably occurs also in Ecuador and is very rare. The ♀ discovered by Mr. A. H. FASSL in East Colombia (in March at an altitude of 800 m) is somewhat larger than the ♂, above and beneath of paler colours and markings, and with a somewhat broader, light yellowish-brown costal-marginal border of the hindwings; all the dark markings are likewise somewhat lighter dark-brown, and the under surface with the silvery dots of a still more striking resemblance with a faded, bedewed leaf. — **magnifica** *Fruhst.* from Bolivia is considerably *magnifica*. larger and beneath with more pronounced and darkened markings.

### 60. Genus: **Polygrapha** *Schatz.*

As mentioned above, this genus is likewise nearly allied to *Charaxes* which is also expressed already by the outward appearance. But the shape of the palps exhibits again an alliance with *Anaea*, whereby its affinity with *Charaxes* is manifested again. *P. cyanea* was also at first taken to be a species of *Anaea*. The difference in the structure of the veins, compared with that of the genus of *Charaxes*, is but very insignificant, so that *Polygrapha*, if its habitat were in the Old World, would probably not be separated from *Charaxes*. The early stages are still unknown.

**P. cyanea** *S. and G.* (116 a), the only species of this genus, has hitherto been found in Ecuador and *cyanea*. Peru, and is still considered a great rarity. The magnificent blue, silk-glossy reflection on the upper surface can scarcely be depicted in the proper way. Very contrary to the upper surface is the plain, striated under surface which is to be considered as a protective attire. The ♀ is still unknown to us, and probably not known at all.

### 61. Genus: **Siderone** *Hbn.*

This genus, to which but few species belong, is likewise characterized already by its outward appearance which is better distinguished by the figures than by words; it is impossible to confound it with other genera. The genus is distributed from Mexico to South Brazil and occurs also in the Antilles. The larva of *nemesis* has a shape similar to that of the *Prepona*-larvae, the pupa being hardly different from that of *Anaea* \*).

**S. marthesia** *Cr.* from Surinam and the Lower Amazon, is presumably the yellowish-brown form *marthesia*. of **confluens** *Stgr.* (116 a), likewise from the Amazon. — **nemesis** *Ill.* (= *ide* *Hbn.*) (116 b) is widely spread, for *confluens*. *nemesis*.

\*) Claspings-organs of an extremely primitive, clumsy and ugly shape, tegumen as if inflated, uncus bent like a finger, short. Valve basally very broad, somewhat tapering anteriorly. The distal margin running like in *Zaretas*, concave in the middle, valve long, with bristly hair, besides densely set at the end with bacilliform scales being indented at the tips. oedeagus broader than in any of the *Nymphalidae* examined so far, skinny. The segments of the coarse abdomen narrow, skinny at their joints, their upper surface covered with leaf-like scaly plates, being deeply indented at the top. The differences of the valve between *Siderone ide* from Brazil and *Siderone mars* from Peru are so insignificant that a specific connexion of the two forms is possible. (H. FRUHSTORFER.)



it occurs in the Antilles and in the whole district of Colombia and Venezuela as far as South Brazil. The scarlet oblique band of its forewings is broadly united with their red basal part at the cell-end. — The larva, according to W. MUELLER, lives in South Brazil on *Casearia silvestris*, has at each side of the head a short, slightly outwardly bent horn, being split at the top into three short dents; at the 5th ventral segment the dorsum is the highest, slanting obliquely and inclining gradually towards the rear, so that, at the beginning of the 5th ventral segment, the frontal line of the dorsum appears sharply broken. The head is in the last stage uniformly blackish-brown, as well as the ground-colour of the body, the whole part before the 5th ventral segment is of a velvety black. From the dorsal point on the 5th ventral ring, a dark line runs posteriorly, turning into a shadow beneath, the first 4 ventral rings have a light lateral line. In the first four stages the larva attaches pieces of leaves to the stripped rib of the leaf. The pupa is very compact and the segments 7 to 12 are so much drawn in that they form a flat cone; it is green, diaphanous, the posterior part as well as the wing-case above the carina coloured with green, the carina of the wings and stigmata are brown. The pupa hardly moves, the eggs are almost spherical like a ball of which two differently large segments have been cut off; thus two plains are formed, the smaller one of which serves for the affixture; the larger one is finely dentate at its edge.

*thebais*. — **S. thebais** Fldr. (116 b) flies in Colombia, together with *nemesis*. It is not yet decided whether it is a proper species or an aberrative form of *nemesis*. The forewings resemble those of *nemesis*, but the hindwings have an irregular, vertical band, whereas the preceding species exhibits only a small, preapical square spot. — **galanthis** Cr. occurring according to CRAMER in Surinam, according to KIRBY also in Colombia (?) and being apparently an entirely lost species, has, according to CRAMER's figure, entirely rounded hindwings, but quite a similar marking of the upper surface as *thebais*, whereas the marking beneath differs from all the *Siderone*-species, because it fully corresponds with the upper surface and exhibits only duller colours. It is, therefore, very doubtful whether *galanthis* belongs into this genus at all.

*mars*. — **S. mars** Bates (116 b) from Chiriqui, Colombia, the Upper Amazon, and Peru is undoubtedly a species different from *nemesis* and *thebais*. Here the forewings exhibit a large transverse, scarlet crescentiform spot, similarly as we find the distribution of the red in different *Agrias*. — **polymela** G. and S. from the Chiriqui has a faint, blue reflection of the black-coloured part of the forewings with the exception of the apex of the wings, and of the distal margin, whereas **syntyche** Hew. from Mexico and Guatemala has a reduced red area of the forewings and a broad area of a gorgeous blue reflection round the red basal part. — In **vulcanus** Fldr. from Colombia, the red crescentiform band is narrowed by the base of the area between the first and second median veins, and a narrow stripe at the base of the wing along the median in the discocellular remaining black.

## 62. Genus: **Zaretas** Hbn.

Up to some decades ago, this genus had been united with *Siderone* from which it does not differ in the structure of the organs, but very considerably by the habitus and the sexual dimorphism as well as by the entirely corresponding scheme of markings. Egg, larva and pupa are of a shape quite similar to those of *Siderone nemesis*, the food-plant is also the same (*Casearia silvestris*). A. SEITZ says about the habits of the butterflies of *Z. isidora* that they make use of their leaf-like under surface and rest, like the *Kallima*, on bushes with dry leaves, placing the tail-like appendages of the hindwings on the stalk of the leaf, so that they appear themselves as a dry leaf. The development from an egg to the imago lasts for about 9 to 10 weeks, according to W. MUELLER. — The genus contains only 2 species one of which varies extraordinarily.

*syene*. — **Z. syene** Hew. (116 c) is known only from Colombia; the ♀ seems not yet to be known. The ♂ is above yellowish-brown, with dark markings, in the centre of the forewings mostly two small hyaline spots of varying size.

*isidora*. — **Z. isidora** Cr. (116 c) from Surinam, Colombia, but occurring also still much more to the south, has in the male sex no hyaline spots of the forewings, in the female sex two of them. Whereas *syene* has a darkened marginal half of the hindwings, *isidora* exhibits a broad black distal margin of the forewings. — *russeus*. **russeus** Fruhst. lying before us from Colombia, has a somewhat less black marking of the upper surface and a small hyaline spot between the first and second median veins. — *zethus*. **zethus** Westw. (= *strigosus* Gmel.?) from the Lower Amazon and Paraguay, is in the male sex very similar to *cyclopia*, but it has 2 hyaline spots. The ♀ has the same markings except that it lacks the hyaline spots but it has a reddish-yellow ground-colouring.

*itys*. — **itys** Cr. from Surinam is a female aberrative form in which the black costal-marginal spot of the forewings is prolonged as far as into the black apical distal margin. — *ellops*. **ellops** Mén. from Central America, Colombia and Venezuela is a form being in both sexes pale-coloured and little marked, with two hyaline spots. — *strigosa*. **strigosa** Stgr. (116 c) is the most common, South Brazilian form. — The largest form of this species is **cacica** Stgr. (116 d) from Peru and Bolivia. The number of the hyaline spots is variable, these spots may also be absent altogether.

*leopoldina*. — **leopoldina** Fruhst. (116 c) from the Brazilian colony of *Leopoldina* makes the impression of a special species,



since not only the upper surface, but also the lower one differs greatly from the other forms. Whether only this form occurs in *Leopoldina*, we do not know; most of the forms described above are not bound to a certain locality. — The grown-up larva of *strigosus* has a blackish-grey head, a dull brownish-green ground-colouring of the body with a reddish tinge, the dorsal line of a deep black, the other dorsal part blackish-green, at the sides there are blurred pale stripes. The pupa is most similar to that of *nemesis*.

### 63. Genus: *Hypna* Hbr.

This genus is nearly allied to *Protoponius*, differs, however, already exteriorly by the shape of the forewings exhibiting either a normally shaped or but little prolonged apex; the shape of the hindwings also differs considerably from that of *Protoponius*. From the latter as well as from *Anaea* to which it is closely allied, the under surface likewise differs by its silvery spots. This genus, being distributed from Central America to South Brazil, contains but few species very similar to each other. Of the early stages only the pupa is known, resembling that of *Protoponius drurii*. According to A. SEITZ, the butterfly has a clumsy, irregular, but still hurried flight. The butterflies are to be met nearly all the year round.

*H. clytemnestra* Cr. from Surinam differs from the South Brazilian form (occurring also in Panama?) *clytemnestra*. *huebneri* Btlr. (116 d, 117 a) only by the presence of at most one of the white subapical spots on the upper surface of the forewings. — In *globosa* Btlr. from Bolivia the basal part of the upper surface of the forewings is greenish, whereas *negra* Fldr. from the Rio Negro exhibits a less protracted apex of the forewing and a shorter tail of the hindwing. — *velox* Btlr. from Veragua has more robust tails of the hindwings, and *elongata* Btlr. from Santa Martha an obtuse apex of the forewing and a greenish under surface. *huebneri*. *globosa*. *negra*. *velox*. *elongata*.

*H. rufescens* Btlr. (116 d) from Venezuela is to be regarded as a proper species, because it occurs without any transitions at the same place with *clytemnestra*. The under surface resembles on the whole that of *clytemnestra*, but the hindwings exhibit much red-brown marking. — *forbesi* G. and S. from Pernambuco is smaller and has a purely white band of the forewing. *rufescens*. *forbesi*.

*H. iphigenia* H. Schöff. (116 d) from Cuba has larger metal-spots on the under surface than *rufescens* *iphigenia*. from which it also differs considerably above, as is shown by the figure; the ground-colour is a bright red-brown. Of the ♀♀ only those of *huebneri* and *iphigenia* are known; they do not exhibit any sexual difference.

### 64. Genus: *Protoponius* Hbn.

We regard all the hitherto described members of this genus, being distributed from Mexico to South Brazil, as forms of but one species. The animals are so well characterized by their outward appearance that it is quite impossible to confound them with other genera. Although the butterflies exhibit a sight quite different from the *Anaea*, yet, by the inner structure of the butterfly as well as by the shape and habits of the larva it is evident that they are closely allied to the *Anaea*. By the colouring and marking the butterflies greatly resemble certain species of *Heliconius* from which they differ, however, at first sight by the very peculiar shape of the wings. — The larva was known already to the early authors, for STOLL gives the following report about them: „The larva is dark green and has a brown, nearly black stripe across the back, also at the sides such spots and stripes (on each of the anterior and posterior rings two, on each of the 4 middle rings 3 longitudinal stripes, and on the last segment 2 transverse stripes). The feet are dark green. The head has a black colour with green stripes and is decorated with two obtuse horns. On the upper part of it there are two, and next to the first ring, on both sides, three yellowish round maculae. It feeds, though only at night, on the leaves of a kind of pepper (*Piper nigrum*). During the day it hides in a leaf, the rims of which it draws in by means of its spinning and rolls it up. It seems to live there like under a roof and to protect itself against the heat of the sun. After the last skinning it turns into a short stout chrysalis hanging down freely. The latter is of a pale grey colour marked with brown spots and stripes. The imago appears generally after eleven days.“ These statements refer to the form from Surinam, *hippona* F. According to SEPP, the larva is said to live also on *Mespilus americana*, whereas the South Brazilian form *drurii* Btlr., according to W. MUELLER, has been found on *Piper gaudiehaudii* Miqu. The larva of this form differs by the lateral stripes being flown together into one single broad interrupted stripe which is coloured black-red. The pupa bears on its head 2 very flat coniform appendages, is green diaphanous and on the rings 7 to 10 tinged white. The flight of the butterflies, according to A. SEITZ, by the irregularity of the movements of the wings, reminds us rather of some *Satyridae* than of that of the *Nymphalidae* darting along by jerks with their wings stretched. According to A. SEITZ, the genus *Protoponius* is doubly protected: while at rest, the butterfly resembles a long-petioled dry leaf, while flying, it agrees with *Heliconius narcaea* (72 a).



**P. hippona.** Of the following 21 forms we take 11 to be local races (subspecies), the others to be aberrative forms, according to our rather quite insufficient material. O. STAUDINGER presumed 4 species: *drurii*, *cecrops*, *bogotanus*, and *hippona*. But since there occurs nowhere more than one principal form, the larvae of the Surinam-form *hippona* and of the South Brazilian *drurii* exhibiting but slight differences which do not justify the presumption of separate species, we are hardly wrong in combining all the forms to one species. We have to consider **hippona** F. (= *fabius* Cr.) (117 a) from Surinam and the Amazon as the type of the species, varying considerably in the width of the yellow band of the forewings as well as in the size and number of the subapical spots. — **ochraceus** Btlr. from Cayenne is an aberrative form in which all the light markings are ochre-yellow; the submarginal spots of the hindwings, however, have the usual yellow colouring. — In ab. **castaneus** Btlr. from Ega the colour of the broad inner-marginal band of the forewings and hindwings except the black distal margin is a beautiful chestnut-brown. — ab. **butleri** Stgr. from Pebas on the Amazon River has a greatly reduced dark yellow median band and well developed, mostly prolonged yellow submarginal spots of the forewings. — ab. **fulvus** Btlr. (117 e), likewise from Pebas, is characterized by a broad brown median band and 4 brown submarginal spots of the forewings. — **cecrops** Dbl. and Hew. (117 a) from Mexico, Guatemala, Nicaragua and Costa Rica exhibits beside the differences of the upper surface a darker under surface than *hippona*; it flies in Mexico (in November). — **bogotanus** Btlr. from Colombia, being the first form of this species described, must be regarded as the type of the subspecies, differing from ab. **tithoreides** Btlr. (117 b) by exhibiting but two yellow subapical spots. — In ab. **albinotatus** Btlr. from Colombia the marginal spots and the median band of the forewings are white, the latter is also reduced to 3 smaller spots. — From the Chiriqui we have before us 1 ♀ with a complete median band, somewhat reduced marginal spots, and in the distal part broad light yellow brightened basal half of the forewings, as well as a reduced yellow spot in the black marginal band of the hindwings reaching in the anterior part hardly as far as to the subcostal. If this form should be constant, it would have to be separated as **chiricanus** subsp. nov. — A small form with very complete markings is **fassli** subsp. nov. (117 b) from the Cauca Valley (West Colombia, Upper Matagany, 1000 m, A. H. FASSL). The under surface is very light, owing to a great deal of light violet markings. — **lilops** Btlr. from Venezuela has, at the distal margin of the hindwings, 4 yellow-bordered white spots; according to O. STAUDINGER this form is hardly separable from *tithoreides*. — **trinitatis** subsp. nov. (117 a) from the Island of Trinidad is, as shown by the figure, above considerably different and is distinguished from the most closely allied continental form (*ochraceus* Btlr.) especially by more numerous submarginal spots. The under surface, especially also of the forewings, is very light. — **divisus** Btlr. from East Peru is compared by the author with *bogotanus*, while O. STAUDINGER who got this form also from Bolivia, takes it to be an aberrative form of **quadridentatus** Btlr. (117 b) with a dissolved median band and 4 small yellow marginal spots. The latter form occurs in Bolivia and has to be regarded as the type of the subspecies. — In ab. **immaculatus** Stgr. (147 c) from Peru the marginal spots are absent and the median band is more or less dissolved or vanished. — ab. **diffusus** Btlr. (117 b) from Ecuador, according to O. STAUDINGER also from the interior of Peru, shows a coherent yellow median band the posterior part of which is confluent with the end of the brown basal band having turned broad yellow. — **aequatorialis** Btlr. (117 c) from Ecuador and Peru exhibits a greatly reduced yellow median band and in contrast with it well developed marginal spots; the marginal spots of the hindwings are white. — ab. **peruvianus** Stgr. from Peru has a much broader median band, but smaller marginal spots. — **semifulvus** Btlr. (117 c) from Ecuador is presumably nothing else but a very conspicuous aberrative form which has no yellow marking whatever and in which the ample posterior half of the hindwings is black. — **drurii** Btlr. (117 d) from South Brazil has to be considered as a good subspecies. It is distinguished by broad spatulate tails of the hindwings, a large white subapical spot of the forewings and white submarginal spots of the hindwings. — The scheme of markings of the under surface is the same in all the forms, but the colouring is lighter in the one form, darker in the other. — Sexual differences are noticed neither in the shape, nor marking nor colouring. About the larva and pupa cf. the diagnosis of the genus.

#### 65. Genus: **Anaea** Hbn.

The numerous species of this genus are distributed from the Southern States of North America to South Brazil, some species are found also in the Antilles; they occur, however, at the northern frontier of their range in but one species, in the south in but few species, whereas most of the species are at home in the tropical districts. Although the species differ extremely in the shape of the wings as well as in the marking and colouring, still even species deviating in their exterior are easily recognized as members of this genus. The subcostal of the forewings is 5-branched, but there exist great differences in the course of these veins; they partly run freely, partly they merge into each other and partly they branch off again in order to run into the costal margin as minute, short veins. Considering this variability in the structure of the veins, it is inappropriate to found genera upon small differences. We, therefore, combine *Cynatogramma* Dbl. and Hew. and *Pyrghanaea* Schatz with *Anaea*; the latter genus is anyhow synonymous with *Anaea*, since its author presupposed the type of *Anaea* (*trogodyta*) as type for *Pyrghanaea*. The sexual dimorphism is extremely different; there are species with but slightly different sexes, whereas others, being not in the least similar on the upper surface, are also considerably different beneath for which reason the sexes of one and the same species have often been considered and described as different species (as for instance *indigotica-zelica*, *panariste-bertha*).



We can by no means affirm that these conditions are fully cleared up, for of many „species“ only one sex is known; it is, therefore, not unlikely that by the result of future investigations several „species“ will have to be abolished. The variability is also extremely great in many species in both sexes; according to several authors there occur in one and the same species forms with a plain or protracted apex of the forewing, a straight or curved distal margin, a straight or more or less deeply indented proximal margin of the forewing, with smooth or angled or even tailed hindwings. Thus it is in many cases very difficult to define sharply the single species, so that even authors having abundant material at their disposal (e. g. O. STAUDINGER) were not able to discern whether certain specimens were to be regarded as deviating specimens of a species or as representatives of another species. As we have of most of the species no abundant material at our disposal, which might contribute to the clearing up of these questions, we must confine ourselves to the approval of the statements of other authors. In the following discussion of the species we shall, therefore, chiefly follow the revision of the genus *Anaea* by HERBERT DRUCE published in the year 1877.

According to W. MUELLER, the larvae live on *Piper obliquum*, *Piper robrii*, *Nectandra vaga*, *Goeppertia hirsuta*, *Camphoromoea litsaeifolia* and *Croton* (*staminosus*? *macrobotrys*?); they are slender, in the anterior third somewhat thickened and have small short horns on the head; they live in cases which they construct by rolling up a leaf. The pupae are short and stout, of a shape similar to that of *Charaxes jasius*. A. H. FASSL discovered the eggs, larvae and pupae of several species; the eggs are globular, smoothly shelled, and of a light colour.

Dr. SEITZ also reports in a letter about the striking biological resemblance of *Anaea* with the palaearctic *Charaxes*: „Not quite a fortnight after having carefully observed the *Charaxes jasius* on the banks of the Tajo, I came across the *Anaea* in Brazil already on my first excursion, and I was quite surprised at the striking homogeneity in the behaviour of these two genera. The mere rumbling, shaking flight of an *Anaea* dashing off (the so-called „rushing“ flight) is exactly like that of a *Charaxes* after which one has struck in vain. It scarcely resembles the partly fluttering, partly dangling flight noticed in both of them on making their reconnoitring expeditions, when they leave their lookout on dry branches or leafless posts in order to fly about for a short while. Quite uncommon is the way in which *Anaea* and *Charaxes* often rest on the under surface of thick, leafless branches of trees. Also the wings being generally quite or almost closed and being often intermittently opened but quite slightly (so that one may just peep into them), are hardly met in any *Nymphalidae* of other groups and quite impossible in *Vanessa*, *Precis*, *Apatura*, *Limenitis*, *Ageronia* etc. I never saw a *Charaxes* or *Anaea* with its wings spread out as seen daily in the *Nymphalidae*, and the two always kept at an altitude just to be reached yet with the net, unless they were forced down by hunger. Both are characterized by a certain awkwardness and unyieldiness in spite of all their strength and swiftness, whereby they contrast remarkably with the most graceful *Apatura* and just those other *Nymphalidae* with which they agree in the splendour of the reflection on the wings, as for instance the *Caligramma*, *Myscelia*, *Nessaea* etc. I was extremely struck also by the resting *Anaea* as well as *Charaxes* raising the forewings strangely far out from the closed hindwings. Unfortunately I was not able to see whether in the *Anaea* this is called forth by the excision of the wings at the proximal margin, the hook at the posterior angle attaching itself on behind the hindwing. Still it is remarkable that this excision of the wings is found also in some *Charaxes* (such as *lichas*) and that the morphological results by which REUTER was induced to place *Charaxes* and *Anaea* closely together, are confirmed by biological observations.

In open spaces in the woods where one has once observed *Anaea*, one may be certain to meet some more specimens of the same species: they are mostly met at the same spot of the clearing, often even at the same tree, just like in *Charaxes*.“

According to A. SEITZ, the behaviour of the species with a leaf-like under surface shows that they are well aware of this protection, for they rest on the branches in such a way that they show solely their under surface, whereby they become similar to their surroundings and are thus not conspicuous; other species without this protection of the under surface keep — though rarely — their wings open in sitting. The *Anaea* are partly common and widely distributed, others are confined to small districts where they are not rare, others, however, widely distributed and everywhere scarce. Mr. A. H. FASSL wrote the following statements about the occurrence and habits of single species: *Anaea* inhabits in the groups of *xenocles*, *phidile*, *artacaena*, *glauce*, *panariste* the hot zone below 1000 m, whereas *nessus*, *tyrianthina*, *nesea*, *titan*, *moeris*, *lineata*, *pasibula*, *polyxo* are decidedly mountainous animals, occurring mostly about 2000 m. At the highest elevation (2000 m) I captured *moeris* and *rosae*. The *Anaea* come to the bait, but less to places near brooks; but sometimes I also took them on the exudation of damaged trees. The flight is, at least in the tailed forms, somewhat limping, but rather swift. The ♀♀ of *panariste* and its allies imitate the *Lycorae* flying quite similarly and slowly like them (also like their other imitators *Protogonius*, *Papilio bacchus* and *Castnia simulans*); but if they are pursued, they immediately begin with a tearing pace like the *Nymphalidae*, and then (of course mostly too late) one only knows what butterfly it was in fact. — PAUL HAHNEL says: It is a special peculiarity of the *Anaea* to rest not so much on leaves, but preferably on branches and small twigs, particularly on those with dry leaves, where they are then splendidly masked by their dark, leaf-like under surfaces.

**A. troglodyta** F. (117 d) from Jamaica and Hayti is known to us only in the male sex. Beneath *troglodyta*, it is monotonously grey compared with *cubana* Salv. (117 d) having beneath a great deal of greyish-black *cubana* marking. The violet reflection of *troglodyta* is absent in *cubana*. — **astinax** Cr. from the Island of St. Thomas *astinax*, is a fiery-red form with broad black marginal and median markings; in the anal angle of the hindwings there is a large black spot; the tails are long. — Whether **portia** F. (117 d) from Jamaica and Florida is to be *portia*, considered as a form of *troglodyta* or as a proper species, we must leave undecided. On the under surface both the grey ground-colour and the red colour on the posterior part of the forewings are darker than in *troglodyta*. — **andria** Scudd. (117 e) from the United States, for instance Oklahoma (the specimens before us were cap- *andria*.



- ops.* tured in August), has above more dark marking and is also less fiery coloured than *ops* Druce (117 e) from Texas.
- morrisoni.* — *morrisoni* Edw. (117 e) is probably only a ♀ form of *andria* being more prominently marked in dark and
- aidea.* with more contrasting colours. — *aidea* Guér. (118 a) from Honduras and Nicaragua is remarkable, because the forewings are not like in the other forms produced into a point, which is, however, again the case in
- appiciata.* *appiciata* Stgr. i. l. from Mexico being also somewhat more brightly coloured. — The larva lives on *Croton capitatum*, is light green, irrorated in dark green, especially above, and has on each segment 2 or 3 white dots, the stigmata being also bordered by white, the dorsum being set with small blackish bristles. The pupa is green, at the sides yellowish, at the borders of the abdominal rings, of the wing-case and on the ribs of the wings reddish-brown, of the same colour are the stigmata and the cremaster. — In the southern parts of North America the butterfly hibernates in hollow trees.
- halice.* In *A. halice* Godt. (118 a) from South Brazil (for instance Santa Catharina) the forewings are more or less drawn out into a point; the ♀ has tailed hindwings. Sometimes the dark spots in the middle of the forewings are only indicated.
- chrysophana.* *A. chrysophana* Bates (= *pyrrhothea* Fldr.) (118 a) from Costa Rica, Veragua, Panama, Colombia and Peru, as well as South Brazil, has also in the male sex tailed hindwings. The dark parts of the forewings exhibit a fine blue reflection. The ♀ has no reflection, but large white spots. According to SALVIN and GODMAN rare.
- moretta.* *A. moretta* Druce (118 b) from North Brazil resembles *chrysophana*, but it has no blue reflection. The under surface is grey, irregularly and densely strewn with brown scales and all the wings have a submarginal row of very small white spots.
- hirta.* *A. hirta* Weym. The description runs as follows: ♂ length of body 15 mm, of a forewing 25 mm (thus somewhat smaller than the ♂ of *chrysophana*). This species is in its colours the most closely allied to *A. helie* L., but not in the shape of the wings. The forewings are deeply cut out at the outer part of the inner margin, like in *moeris* Fldr. (119 c), so that the inner margin forms in the middle a sharp corner and at the distal margin a pointed tooth. The apex of the forewings forms a right angle. The distal margin is otherwise straight. The hindwings exhibit a caudal point of 6 mm length and 1 mm width, being somewhat broader only at its base and rounded at the tip. The ground-colour of the forewings is reddish-brown extending, however, only across the posterior part of the discocellular, the base of cellule 3, the greatest part of the cellules 2 and 1 b, and half of the cellule 1 a, but towards the base and at the inner margin it is covered with a violet reflection. The other part of the wing, thus a part of the base, the whole costal margin, the apex, the distal margin and the outer part of the inner margin are blackish-brown. In the dark space before the apex there lies a broad violet band of 10 mm length and 2 mm width extending almost horizontally through the cellules 6, 5 and 4, touching, however, neither the costal margin nor the distal margin. The reddish-brown ground-colour of the hindwings likewise has towards the base a violet reflection. The base itself and the distal margin are brown. The latter, however, does not quite reach the border, so that a narrow stripe of the reddish-brown ground-colour separates it from the border. It is anteriorly broad, posteriorly narrower and ends at the brown caudal point. In each of the cellules 3, 2 and 1 c there is a black dot before the border. The cellules 1 a, 1 b and half of the cellule 1 c are yellowish-grey. In the adjoining part of cellule 1 c a brown stripe extends as far as to the base. The under surface is brownish-yellow, finely marbled in whitish in the basal half. On the forewings, from the middle of the inner margin, a straight white stripe extends towards the apex, being proximally accompanied by a dark brown line, disappearing, however, at the vein 5. A triangle coloured somewhat lighter than the ground-colour adjoins distally this band and occupies the space as far as to the inner angle. The inner margin itself is dotted dark-brown at this place before the excision, as well as the costal margin at two places in the discocellular and before the apex. The hindwings exhibit a similar, somewhat curved white stripe running from the middle of the costal margin to the inner angle and bordered in its anterior half proximally by dark brown. The tip of the minute tail is beneath dark brown. The three black dots in the cellules 1 c, 2 and 3 are like above, there is besides yet an irregular dark brown dotting at the costal margin in the cellules 6 to 8. Brazil.
- ryphea.* *P. ryphea* Cr. (118 b) is very widely distributed, for it has been found in Mexico, Guatemala, Nicaragua, Costa Rica, Veragua, Ecuador, Bolivia, Peru, Venezuela and Colombia. There occur specimens without tails as well as with tails, also transitional forms. Under surface light yellowish brown, tinged reddish, forewing with a yellowish, dark-shaded oblique line from the apex to the middle of the inner margin, hindwing sooty black in the disk, the margins with a rosy hue.
- phidile.* *P. phidile* Hbn. (118 b) distributed from Costa Rica to South Brazil, has mostly smoothly-edged, rarely angled hindwings; the paler yellowish-brown ♀♀ have tails of the hindwings, no violet reflection and yellow subapical spots of the forewings. According to W. MUELLER, the larva lives on *Croton* (*staminosus*? and *macrobotrys*?); it has only at the head small short horns and protuberances, but is otherwise smooth, almost cylindrical and somewhat thickened only in the first third; at the head there are white stripes, below the horns there is a reddish transverse band but faintly indicated, the horns are black, the protuberances yellow, the ground-colour of the body is yellowish-red, below the line of the stigmata white, the lateral stripe and the transverse band on the 5th segment are carmine; the lateral stripe is most variable; shortly before



the pupation the animal grows diaphanous green. In the first 3 stages the larva mostly attaches small pieces of leaves to the browsed middle rib of the leaf between which it is somewhat protected. The pupa is short, stout, of a shape similar to that of *Charaxes jasius*; it has no excision of the wings. After the 3rd skinning the larva constructs from a piece of a leaf drawn together at its rims a cylindrical funnel lined with spun threads and being just large enough as to shelter the stretched animal; in this funnel it remains hidden in the 4th and 5th stages, while at rest. The species is common.

**A. helie** L. (*Clerck*) seems not to have been found again or to be a very doubtful species, since it *helie*, has no more been mentioned by any author for nearly 100 years; only DRUCE mentions that it may be the ♀ of *ryphea* or *phidile*.

**A. erythema** Bat. (118 c) is said to occur on the Upper Amazon. HERBERT DRUCE considers *erythema*. *erythema* to be synonymous with *phidile*. O. STAUDINGER takes it to be an insignificant local form. We have figured a Colombian specimen which corresponds well with the description of *erythema*, but we are unable to decide whether *erythema* is a proper species or a local or aberrative form of *phidile*. — BATES says about the ♀: shape like that of the ♂, but hindwings with a long, spatulate tail being outwardly obliquely expanded. The colouring is the same, but the upper surface has no purple gloss and the irregular sealing on the under surface is much coarser.

**A. euryphile** Fldr. (118 c), distributed from Mexico to Brazil, differs from *phidile* by the short tails *euryphile*. of the hindwings. The upper surface of the hindwings is mostly lighter than in *phidile*, but it may be just as dark as in the latter. The under surface also shows hardly any constant differences. Whether it is a proper species?

**A. sosippus** Hpffr. (118 c) from Peru Chanchamayo) and Ecuador has a dull violet reflection. The *sosippus*. under surface is brown with numerous, small white scale-spots and two parallel dark oblique bands on the hindwings. The ♀ seems to be still unknown.

**A. cratais** Hew. from Bolivia does not lie before us. This species is smaller than *glycerium* which *cratais*. it resembles, though it has a band of white spots on the under surface of the hindwings.

**A. glycerium** Dbl. and Hew. (118 c) from Mexico, Guatemala, Nicaragua, Costa Rica, Chiriqui, *glycerium*. Panama, Veragua, Colombia and Venezuela, is in some places very common, but the ♀ is very rarely captured. DRUCE states that the specimens from Mexico are the smallest and darkest, but that they agree the best with specimens from Colombia and Venezuela. — The form from Bolivia (Coroico, leg. A. H. FASSL) exhibits stronger colours, more and more coherent dark markings, often a considerable blue reflection and an under surface with much more pronounced dark markings, exhibiting also often a series of white glossy spots in the middle of the hindwings. We denominate this form **ornata** *subsp. nov.* *ornata*.

**A. echemus** Dbl. and Hew. (= *pocy* Lef.) (118 d) is said to occur, according to DOUBLEDAY and *echemus*. HEWITSON as well as DRUCE, in Honduras, which is, however, contradicted by O. STAUDINGER. The figured specimens originate from Cuba. The species is remarkable for its colour of the upper surface, the black distal part of which, on the forewing, gradually changes into the fiery red basal part, and for the marking of the under surface reproduced by our figure. It is the type of the genus *Cymatogramma* Dbl. and Hew.

**A. verticordia** Hbn. the habitat of which is stated by several authors to be Cuba, occurs in Hayti *verticordia*. according to other authors. According to GODMANN and SALVIN it differs from **dominicana** G. and S. (118 d) *dominicana*. from the Island of Dominica chiefly by the absence of the yellow spots near the inner angle of the forewings. Both are, therefore, presumably forms of one and the same species.

**A. nobilis** Bat. from the valleys of Central Guatemala has a somewhat curved costal margin and *nobilis*. pointed forewings, the distal margin being somewhat sinuous before the inner angle, the inner margin straight, the distal margin of the hindwings slightly undulated, the tail long and somewhat widened at the tip. Forewing above of a prominent dark purple-red, 2 curved lines from the costal margin (behind the discocellular) towards the inner margin, all the veins blackish, hindwings blackish, at the base of a deep purple-red, near the tail a series of whitish spots being encircled by black. Under surface reddish, glossy, with a slight, irregular dark brown, hindwings with 2 dark and indistinct oblique stripes. ♀ of a shape and colouring similar to the ♂, but the forewings with 2 curved oblique series of brownish-white spots, distal margin of the hindwings lighter with a gloomy brown shine, the submarginal spots larger and more complete. Under surface like in the ♂, but much lighter. Seems to be very rare or to occur only in little frequented places; as for instance on the Salama Plateau, near San Geronimo.

**A. nessus** Latr. (= *cleodice* Fldr., *tempe* Fldr.) (118 d) occurs in Colombia, Peru, Ecuador, Bolivia *nessus*. and Venezuela. The ♂♂ are frequently captured, the ♀♀ rarely. The ♂ exhibits a blue reflection being very intense on the longitudinal band and near the inner margin of the forewings. The ♀, as is shown by the figures, differs extremely, exhibiting the broad white median band of the upper surface of the forewings also on the under surface, where it is, however, strewn with small brown spots. Otherwise the under surface resembles entirely that of the ♂.



- nesea*. **A. nesea** Godt. (= *centaurus* Fldr.) (118 d) has so far been known only from Colombia. The ♀ seems to be still unknown. In the ♂ the magnificent fiery bands of the forewings are absent, the latter, however, have often vitreous median spots.
- strymon*. **A. strymon** Weym. from Ecuador (900 to 1500 m) is smaller than *nesea*, it has quite similarly shaped forewings, but the hindwings are not tailed. The upper surface is violet with broad dark margins and the same median spots of the forewings. The under surface is greyish-yellow with 3, partly shortened brown bands of the forewings and 2 brown bands of the hindwings running parallel to the distal margin. The forewings have a broad brown distal border of which, however, the apex of the wing and the inner angle remain free.
- titan*. **A. titan** Fldr. (118 e) has been described according to Colombian specimens, but according to HERBERT DRUCE it occurs also in Costa Rica. The Costa Rica form is much darker than the Colombian. The figured ♀ has been discovered by Mr. A. H. FASSL in East Colombia (Upper Rio Negro, 800 m); it has, like the ♂♂ of *nesea* and *tyrianthina*, 2 half-diaphanous spots in the middle of the forewings.
- rutilans*. The typical form of **A. rutilans** Btlr. from East Peru has no tails of the hindwings, whereas in the figured form of **A. caudata** subsp. nov. (118 e) from the Chanchamayo, they are relatively just as long as in *titan*. The under surface is quite similar to that of *titan*, but it lacks the white submarginal spots on all the wings. *titan* and *rutilans* are presumably forms of one and the same species.
- tyrianthina*. **A. tyrianthina** S. and G. (118 e) from Bolivia and Peru is the largest and most beautiful species of this group. It resembles *nesea* pretty much, but it has no tails of the hindwings. The ♀ of this rare species seems to be still unknown.
- onophis*. **A. onophis** Fldr. (118 e) is distributed from Guatemala to Colombia, Ecuador and Peru, and has recently been found also in Bolivia (Coroico, Rio Songo). The ♀ has a more compact shape, paler colours and a larger yellowish spot at the costal margin of the hindwings. Beneath the species is similarly decorated with dark and silky bands as *pithyusa* (118 f), but the dark inner half is distally more irregularly defined and projects in thick obtuse teeth behind the cellule of the forewing.
- eubaena*. **A. eubaena** Bsd. (118 f) from Central America has more pointed forewings, being more sinuated at the distal margin; the ground-colouring is, compared with *onophis*, more brownish than black and the forewings seem always to exhibit only 4 blue submarginal spots. The under surface is lighter than in *onophis*, but scarcely different in the scheme of markings.
- arginussa*. **A. arginussa** Hbn. (120 B a) occurs, according to O. STAUDINGER from Peru to South Brazil (Rio de Janeiro). DRUCE denotes it as rare in Minas Geraes; in Peru it is common. It greatly resembles *onophis* above, but the white submarginal dots of the hindwings are also beneath very prominent. — **A. onophides** Stgr. from the Chiriqui has only 4 blue submarginal spots of the forewings. — **A. concolor** we denominate the South Brazilian form (Santa Catharina, São Paulo) in which on the upper surface all the wings are hardly differently coloured on the basal area, as on the outer part of the wings, whereas typical *arginussa* exhibit a bright blue reflection at the base.
- amenophis*. **A. amenophis** Fldr. from Bahia, according to DRUCE also occurring in Guatemala, Colombia, East Peru and on the Lower Amazon, has been described as follows: ..♀ above like *laertes* (= *morvus*-♀, 119 a), but everything coloured in steel-blue, a large basal area and a regular subapical band steel-blue, as well as on the hindwings a large discal area, without dots. Under surface like in *iphis*. We doubt whether this species is here at the right place.
- perenna*. **A. perenna** S. and G. (= *amenophis* Druce nec Fldr.) (118 f) from Colombia, Guatemala, Peru and, as stated, also from the Lower Amazon, differs from all the species of this group by the blue marginal marking of the hindwings.
- pithyusa*. **A. pithyusa** Fldr. (118 f) from South Mexico, Guatemala, Veragua and Costa Rica, is the smallest form of this group. It differs from the similar species chiefly by the shape: distal margin and proximal margin of the forewings are much less deeply sinuous, so that the inner angle does not project so much; the apex of the forewings likewise decreases in intensity thereby. The ♀ is, according to DRUCE, much larger than the ♂, the base of the wings is bluer and the spots on the forewings are larger and mostly white. In many places common.
- lemnos*. **A. lemnos** Druce (120 B a) from Peru (Chanchamayo) differs from the species having above similar markings by the deviating under surface which is much more variegated with reddish and white embeddings in the middle especially of the hindwings. The ground of the wings is beneath also lighter, so that the dark bands are more sharply contrasting. Above the whole proximal half of the wings is of a bright blue lustre, the blue distal spots are very large. The inner-marginal excision at the forewing very slight.
- appias*. **A. appias** Hbn. (118 f) from South Brazil (Espírito Santo, São Paulo, Rio Grande do Sul), discovered by Mr. A. H. FASSL also in Colombia (Upper Rio Negro and Muzo), seems to be a species of little variability.



It has a characteristic marking of the under surface of the forewings. — **appiades** *subsp. nov.* (120 B a, b) *appiades*. of which there are lying before us from the collection of Mr. A. H. FASSL: 2 ♂♂ from West Colombia (Aguaca-Valley, 2000 m), 1 ♀ from Colombia (Muzo, 400 to 800 m), 3 ♀♀ from East Colombia (Upper Rio Negro, 800 m) and 2 ♀♀ from Bolivia (Rio Songo, 750 m). The ♂♂ are intensely blue or green on the basal half of all the wings, and the light spots are all of a pure blue (not partly white). The ♀♀ have likewise a much more distinctly blue basal part of the wings and are on the distal half darker than in *appias*.

**A. artacaena** *Hew.* (120 B a) is distributed all over Central America as far as Colombia, but everywhere *artacaena*. very rare. Both sexes possess a white band of the forewing being pierced behind the cellule, whereby the species is at once recognizable. It is also beneath distinguished by a light tinge which strongly contrasts with the dark proximal part of the forewing.

**A. eribotes** *F.* occurs on the Lower Amazon and in Guiana. In the ♂, a bright rust-brown distal *eribotes*. part of all the wings sharply contrasts with the black basal third exhibiting a blue gloss; the apex of the forewing is black. The ♀ is of a dull slate-grey, the base of the forewings broad light blue, near the apex of the wing a short, undulate, dirty-white shine. Distal margin of the forewings slightly sinuate, the under surface with distinct black spots. — The larva has the usual shape of the *Anaea*-larvae, it is black and has single white, small bristles standing on small white warts, two rows of which are on each side of the dorsum and one row below the stigmata; the small, short, black horns on the head have in the middle a white streak, another similar one at each side of the face and 2 more intersecting ones in the middle of the face. The pupa is relatively slender with black and red markings.

**A. porphyrio** *Bates* (119 a) from the Amazon is characterized by its peculiar colouring of the upper *porphyrio*. surface. It is very common in the forests of Peru.

**A. testacea** *spec. nov.* (119 a) from Peru (Coll. A. H. FASSL) has on the basal part of all the wings *testacea*. the same violet reflection as *porphyrio*, from which, however, it differs greatly beneath; the under surface is buff with small brownish and blackish spots; the centre of the hindwings is traversed by a very hazy brownish band; the distal margin is brownish, hazy, from the inner angle to the tail there stand black small spots bordered by a broad whitish one.

**A. leonida** *Cr.* from Surinam is a dubious species; DRUCE takes it to be the ♀ of *eribotes* which *leonida*. supposition however, is erroneous according to O. STAUDINGER. It has brown distal margins of all the wings. CRAMER figures specimens as ♂ and ♀ which are presumably both ♂♂ and belong to different species; they are said to originate from Surinam. We do not possess any material of it.

**A. xenocles** *Westw.* (= *xenoclea* *Stgr.*) (119 a) is distributed from Guatemala to Bolivia and Rio de *xenocles*. Janeiro and seems to be very common. Here the basal parts of the wings are of an intense metal-blue gloss; the submarginal row of spots on the forewings, however, is irregular, approaches the distal margin at the inner angle and is continued on the hindwings in the shape of obsolete internerval, diffuse spots before the border. Under surface finely, though brightly silvery irrorated. The ♀ has a lighter blue base of the wings and only two white subapical spots of the forewings. — **subbrunnescens** *Stgr. i. l.* from Bolivia seems to be only *subbrunnescens*. an aberrative form being beneath, especially on the hindwings, scaled more in brown.

**A. octavius** *F.* the patria of which has been reported by the author to be India by mistake, has *octavius*. not been seen in nature by any of the modern authors. The description, being entirely insufficient, runs as follows: wings tailed, black, a shortened green band; beneath grey, a red-brown stripe.

**A. morvus** *F.* (= *laertes* *F.*) (119 a) is a widely spread and greatly variable species. The figured *morvus*. specimens originate from the Amazon. Here the submarginal spots are entirely absent, the basal half of the forewings, however, is of a very bright metallic gloss. — **mortua** *Stgr.* (not *Druce*) is the Central American and *mortua*. Colombian form with obsolete spots. — By far larger Colombian specimens, distinguished also by a far more greenish gloss at the distal margin of the forewings, were denominated **pseudiphis** by O. STAUDINGER. — It *pseudiphis*. is still undecided which form has to be considered as **iphis** *Latr.* (119 a, b). We have figured a Colombian speci- *iphis*. men of that form, which is generally thought to be *iphis*. It is a large butterfly with long tails and a very much falciformly protracted inner angle of the forewings, the apical part of which exhibits bright blue spots being, however, not continued along the distal margin. Beneath the light small scales are arranged to a narrow marginal band and an oblique line cutting off the part of the inner angle. — **morpheus** *Stgr.* (119 b) from *morpheus*. Upper Amazon, Bolivia and Peru, is generally larger than *morvus* and has blue spots at the distal margin of the forewings. The under surface is darker (brownier).

**A. arachne** *Cr.* from Surinam, which was united with *morvus* as being synonymous by several authors, *arachne*. is certainly another species. Shape about like that of *morvus*, though we cannot ascertain from CRAMER's figure whether the inner margin of the forewings is sinuate; nothing is said about this in the description. The hindwings, except the narrow black border, are entirely green, the forewings green on the basal half, all the wings, however, are traversed by a moderately broad black subbasal band; a large green spot is in the apex of the forewing. The under surface is brown with whitish markings near the base of the hindwings, and all the wings are traversed by a rather broad bluish submarginal band; the under surface is, therefore, rather variegated.



- oenomais*. **A. oenomais** Bsd. (119 c) from Mexico, Costa Rica and Chiriqui makes the impression of a small, little marked *iphis* to which the under surface is also quite similar. — **lina** *form. nov.* from Panama (Lino, 800 m) may be a temporal form of *oenomais*. The basal colouring of the upper surface is not blue, but green (glossy), occupying also a larger part of the wings. The under surface is brown and less irrorated in white.
- cicla*. **A. cicla** Mschr. from Surinam, of which apparently only 1 specimen has become known so far, according to which the species has been described, seems to be allied to *oenomais*. It has the same shape of the wings, but the inner margin of the forewings is straight. The larger inner half of the wings is above of a light blue silver with a greenish shine; in the dark border there is a small blue, subapical spot; before the small tail of the hindwing there stands a black spot with a blue pupil. The under surface seems likewise to agree well with *oenomais*.
- herbacea*. **A. herbacea** Btlr. from Costa Rica is presumably a form of *glauce* (119 c). The basal part of all the wings is green and less extensive; except a green subapical spot and 3 white dots at the distal margin of the hindwings, the upper surface has no marking. The under surface essentially corresponds with *glauce*.
- acaudata*. **A. acaudata** *spec. nov.* (119 d) from Bolivia at first sight makes the impression of a *felderi* (119 d) without tails. The shape of the wings, however, is still quite different: the apex of the forewings is more rounded, the distal margin is almost straight, there is no trace whatever of the small tail and the inner angle of the hindwing is rounded. The marking of the forewings is almost the same as in *felderi*, but the greenish-blue colouring of the hindwings expands further distally. The under surface is generally lighter than in *felderi*, through the wings, from the middle of the costal margin of the forewings towards the middle of the inner margin of the hindwings, runs a blurred dark band; in a basal direction from this band the wings are darker than on the distal part; from below the apex of the wings to the first median vein of the forewings runs a greyish-brownish band and the hindwings have a blurred greenish-blackish submarginal band in the reddish-grey distal part; between the second and third median veins there is a small black, submarginal dot.
- hedemanni*. **A. hedemanni** Fldr. from Mexico (Potrero, January) has been described as follows: smaller than *glauce* (119 c), apex of the forewing greatly protracted, pointed sickle-shaped, hindwings without tails, but distinctly angled at the third median vein. All the wings above steel-bluish black with 5 steel-blue submarginal spots, beneath of a glossy greyish white reddish brown, striated in white, with a median band being angled at the third median vein and fading away proximally, on the forewings with a submarginal, greyish green stripe, on the hindwings with almost disappearing black dots being interiorly marked in blue.
- moeris*. **A. moeris** Fldr. (119 c) from Colombia is conspicuously marked in intense green. The hindwings have very long tails, and the inner angle of the forewings forms a pointed sickle. Whether it is a proper species or a form of *morvus*, we cannot decide.
- alberta*. **A. alberta** Druce (119 d) from Peru has a glossy brown under surface with thick dark and light brown spots. Not known to us in nature. According to the figure, the forewings exhibit more distinctly the blue spots of the forewings which are in *moeris* continued from the apical district along the distal margin; the sickle of the inner angle is just as pronounced as in *moeris*, but the hindwings have only a short tooth instead of the long spatulate tails.
- glauce*. **A. glauce** Fldr. (119 c) from the Upper Amazon and Colombia varies in the colouring of the markings above between green and blue. The ♀ is, as is shown by the figure, considerably different from the ♂, by having long spatulate tails, with a strongly falcated tornus of the forewing and a more abundant metallic covering. — **glaucome** Fldr. are according to O. STAUDINGER little marked specimens of *glauce*. — In **felderi** *subsp. nov.* (119 d) from Ecuador the greenish-blue basal area is reduced, whereas the submarginal marking of the same colour is more developed. The under surface is lighter, though more contrasting, on the outer part of the hindwings greenish. — **glaucina** Stgr. (119 d) from Colombia is perhaps a proper species. The upper surface is shown on the figure: the under surface is rather monotonous. — As **centralis** *subsp. nov.* (120 B b) we describe, according to two specimens from Panama (Lino, 800 m, Coll. A. H. FASSL), a form being smaller and more slender and having a greatly reduced, green basal colouring, particularly of the hindwings; the under surface is much lighter (grey with a slight reddish shine) and has less dark markings.
- florita*. **A. florita** Druce (120 B b) from Peru (Chanchamayo) is a neat little animal with pronounced blue markings. The under surface is light brown, irregularly scaled in brown and white; from the apex of the forewing to the middle of the inner margin runs an indistinct white line. The hindwings are the darkest at the base and behind the middle, at the distal margin there are 6 indistinct white spots.
- praxias*. **A. praxias** Hpffr. from Peru is somewhat larger than *glauce* (119 c) with the same colouring, but only one plain little apical spot of the forewings below which there is sometimes another small blue spot parted by a vein, before the middle of the distal margin. Hindwing without tail or tooth.
- vicinia*. **A. vicinia** Stgr. (119 d) from the Upper Amazon has sometimes another pair of blue spots at the distal margin. The under surface resembles that of *anassa* (120 A e), though it is browner. The hindwing has no tailed continuation, but its anal angle is extended to an obtuse point by which it is distinguished from all the similarly coloured species. — **iphimedes** Stgr. i. l. from Bolivia has more and greenish blue markings of the upper surface and a paler brown under surface.



**A. beatrix** Druce (120 C b) from Chiriqui is an imposing species. The ♀ is beneath much greyer *beatrix*. than the ♂. Seems not to be rare.

**A. cleomestra** Hew. (120 C a) from Nicaragua and Veragua is a very rare species. The hindwings *cleomestra*. are tailed and the inner margin of the forewings deeply sinuate. On the blackish-brown ground there is across the forewing and hindwing a broad blue band before which there are also two blue subapical spots. The under surface is very plain, yellowish-grey with yellowish and blackish, small strokes.

**A. ates** Druce (119 d, e) from Bolivia, Peru and Ecuador, reported also from Rio. ♂♂ are often *ates*. captured, whereas the ♀♀ seem to be very rare. Above greatly resembling *felderi*, whereas the under surface is marked like in *iphis* (119 b); it differs from *iphis*, however, by the purer tinge of the under surface and the much smaller size. The Bolivian specimens have also greenish-blue submarginal spots near the inner angle of the forewings.

**A. drucei** Stgr. (119 e) from the Upper Amazon has only short teeth instead of the tails of the *drucei*. hindwings and a considerably different under surface, but above all the margin of the forewing of the ♂ is conspicuous for its broad blue gloss.

**A. cerealis** Druce (119 e) from Peru (Chanchamayo) seems to be a rare species. Instead of green, *cerealis*. the marking of the upper surface seems to be just as often dark blue. Resembles extremely *ates* Druce.

**A. phila** Druce (120 A a) from Colombia and Honduras seems to vary greatly, for a specimen from *phila*. Honduras before us exhibits a very obsolete subapical and submarginal marking. The distal part of the upper surface of the wings is of a deep velvety black and delimitates straightly, not marginally convex towards the metal-glossy basal part of the forewings.

**A. boliviana** Druce (120 B b, c) from Bolivia is of very dim colours. The ♂ is above deep bluish black, *boliviana*. the lightest is the basal area of the forewings, near the apex of the forewing starts a band consisting of 3 spots and running towards the inner margin. The ♀ is beneath lighter brown than the ♂ and has 3 grey spots between the tail and the anal angle. The metal gloss of the upper surface has not the bright shine of the preceding species, but it remains considerably duller, particularly in the ♂.

**A. psammis** Fldr. from Colombia agrees with *moryus* (119 a) in the habitus. ♂ above blackish-brown, *psammis*. steel-blue, basal third of the forewings greenish leaden grey, 4 to 6 light steel-blue submarginal spots, distal margin light steel-blue, discal area of the hindwings dusted in greenish leaden grey, anal margin light steel-blue, leaden grey submarginal spots gradually decreasing in size.

**A. sthenon** Prittw. (119 e) from South Brazil (Santa Catharina where it flies at the end of April. Rio *sthenon*. Grande do Sul, Sao Paulo) and Paraguay. O. STAUDINGER takes it to be the Brazilian representative of *moryus*, whereas DRUCE considers *sthenon* to be a proper species. In the ♂ of *sthenon* the whole upper surface is almost uniformly tinged with a dull violet-blue, without any real metallic spotting, the violet hue in the basal third of the hindwing hardly growing somewhat more intense. — According to W. MUELLER, the larvae live on different Laurineae: *Nectandra vaga* Meissn., *Goeppertia hirsuta* Nees and *Camphoromoea litsaeifolia* Meissn.; it has the same shape as that of *phidile*; ground-colouring dirty orange, in the last stage the dark lateral stripe grows so faded that it is hardly discernible. The habits of the larvae are the same as of *phidile*, except that the animal always severs the piece of the leaf out of which it forms its funnel, altogether from the living leaf and fastens it again by web-threads so that the piece of the leaf dries up. By this demeanour the animal deviates from the 3 other *Anaea*-larvae observed by W. MUELLER and from the larva of *Protogonius drurii*. Pupa in the shape similar to *phidile*, being purely green diaphanous with white and dark green spots.

**A. otrere** Hbn. (120 A a) from South Brazil (Rio de Janeiro, São Paulo, Rio Grande do Sul) is beneath *otrere*. like the preceding species, but somewhat more marked. Except in front of the apex there are blue reflecting spots also before the middle of the border of the forewing; but they are much further away from the border than in similar species.

**A. uzita** Druce (120 B b) from Cayenne is a neat species. It is known to us only from the description *uzita*. and figure, according to which the blue subapical spots on the upper surface of the forewings are extant, though reduced, and on the under surface of the hindwings the centre is traversed by a series of punctiform spots of the shape of ocelli.

**A. pleione** Godt. from the Antilles (?) has not been in the hands of any modern author. The translated *pleione*. description runs as follows: expansion of wings between 5.4 to 8.6 cm. Upper surface of the wings deep yellowish brown, border of the forewings blackish brown marked, with two yellowish brown spots, which are more or less distinct. Inner margin of the hindwings bordered by a blackish line, being curved and double opposite the distal angle. Under surface of the 4 wings yellowish, with reddish brown meshy markings and in the middle traversed by a brown stripe along the inside of which a faint mother of pearl colouring is noticeable, which colouring is also seen at the beginning of the costal margin of the forewings. Body above yellowish brown, beneath yellowish, with 4 white dots on the head. Antennae rust-coloured. — The statement that the butterfly has white dots on its head, is very strange. Such a marking does not occur in any of the *Anaea* known to us, probably in none whatever, and we may, therefore, assume that *pleione* does not belong into this genus.

**A. philumena** Dbl. and Hew. (= *hauxwelli* Drc.) (120 A a) from the Upper Amazon and from Co- *philumena*.



lombia is in the male sex but little marked on the upper surface. The under surface of the ♂ resembles entirely that of *ates* (119 e), in the ♀ it is much greyer.

*lorna.* **A. lorna** Druce (120 A a) from Bolivia and Ecuador seems to be known only in the male sex. The Ecuador form figured by us has on the fore- and hindwings a somewhat broader green marking than the Bolivian specimen figured by DRUCE. Characteristic is the broad light blue margin of the hindwing being sparsely dusted in dark. — Of **A. placida** Druce (120 B c) from Bolivia we reproduce the original figure. The author himself admits the possibility that *placida* may be not a proper species, but an (aberrative) form of *lorna*. If, however, the figure of the under surface is correct, *placida* may be also a special species, all the more since the shape of the wings is neither like that of *lorna*. The coloristic difference consists above all in the reduction of the light blue wing-margin and of the subapical spots on the forewing of *placida*.

*grandis.* **A. grandis** Druce (120 B e), habitat unknown, has been described and figured according to a ♀. According to the original figure we reproduce the under surface. Large, upper surface almost exactly as in *proserpina*, broad and obtuse wings, with a short broad spatulate tail of the hindwing, the blue of the basal half of the hindwing light and bright. The dirty sand-coloured, yellowish-brown under surface is irregularly irrorated in a sooty colour.

*offa.* Of **A. offa** Druce (120 A a, b), described and figured according to a ♀ from Ecuador, we have furnished figures of both sexes according to specimens taken by Mr. A. H. FASSL in East Colombia (Upper Rio Negro, 800 m). Very much like the preceding genus, but the distal spot before the apex is double and there is mostly also a diffuse spot before the middle of the border of the forewing.

*cluvia.* **A. cluvia** Hpffr. from Bolivia resembles very much *chaeronea* (120 A b, c) above, from which, however, it deviates greatly beneath; the forewings have only one band running into the apex of the wings, which parts the wing into two, quite differently coloured halves, the inner half being dark brown, the outer half, however, whitish with brown marbling.

*catinka.* **A. catinka** was described and figured by DRUCE (120 B c) according to a ♀ of unknown habitat. Easily recognizable by the very light blue of the upper surface being brightened to white in the disk of the forewing.

*morta.* **A. morta** Druce (120 A b) from Honduras has been described as follows: Upper surface brownish-black, the basal half of all the wings of a glossy blue, above extremely similar to *offa*, but without the submarginal spots on the hindwings. The under surface is very different; it is pale greenish-brown, near the base of the forewing irregular with white scales, both wings in the middle from the apex to the inner margin with an undulate, pale ochre-yellow band. The figured specimens originate from East Colombia (Aguaca-Valley, 2000 m, A. H. FASSL). — A. H. FASSL says about the egg: I observed the ♀ depositing the eggs, in the midday-sun, on a bush in the primeval forest with large, rough leaves (like our burdock). The egg greatly resembles that of *pasibula*, but is somewhat smaller and more whitish.

*victoria.* Of **A. victoria** Druce (120 B c, d) from Rio de Janeiro we can only reproduce the original figures. The base of the forewing is of a very bright blue in the ♂ as far as to the middle, in the ♀ beyond the middle. Under surface dirty greyish-brown with very sparse, irregular irroration. Before the apex the usual spots.

*chaeronea.* **A. chaeronea** Fldr. (120 A b, c) does certainly not differ specifically from **indigotica** Salv. (♀ = *zelica* *indigotica*. Salv. (120 A c, 120 C b). The former occurs in Colombia, the latter in Chiriqui, but from Colombia there come also specimens hardly distinguishable from the Chiriqui-form. On the under surface *indigotica* seems to be somewhat more scaled in white, on the posterior part of the hindwing. — **peruviana** Strand from South East Peru having been described only according to one ♀, differs from the ♀ of *indigotica* by the yellow band of the forewing being separated from the costal margin only by a line of hair's breadth and reaching also to the inner angle by a millimetre's breadth. The marginal band of the hindwing of the same colour is continued, though

*peruviana.* obsolete, as far as to the inner angle. Beneath the dark stripes are more developed. — **corita** Fruhst. from Brazil (Espírito Santo) is known only in the female sex. The yellow longitudinal band of the forewings is nearly as broad again and lighter. The hindwings exhibit a red-yellow marginal band which does not discontinue before the tails as in *indigotica*, but extends as far as to the submedian. — A. H. FASSL says about the egg of *chaeronea*: „From a ♀ captured on the 19th of April 1910 on the Upper Rio Negro at an elevation of 1200 m I got a deposit of eggs. The egg, as probably in all the *Anaea*, is of a globular shape, wax-coloured; somewhat iridescent, and of about the same size as that of *Papilio machaon*.“ The same author reports about the pupa: „The pupa has the typical compact shape of the other pupae of *Anaea* known to me and is best to be compared with a pupa of *Theclida*, except that the abdominal rings are still more drawn in and the point of the cremaster, on being seen from above, lies about in the middle of the fourth segment. The large hollow space formed beneath by the bend is anteriorly connected by the wing-case. The pupa is of an ivory white with an enamel gloss, the eyes yellowish, the leg-cases behind each other with two pair of dark dots. The ribs stand out as if watery. In the forewing there are three dark concentric curved lines visible of half a mm breadth each, which do not correspond to the future marking of the butterfly. The dorsal line seems to be coloured just as watery as the veins of the wings; the first 4 segments, however, exhibit besides three pair of greyish-brown streaks of about half a mm breadth being posteriorly divergent. The pupa is 17 mm long and at the greatest breadth (above the third abdominal ring) 10 mm in diameter. I found it on the 13th of July 1911 with its head down



spun on to the under surface of a large hard leaf belonging to the lowest branch of an enormous tree of the primeval forest. The said pupa yielded, on the 26th of July, the ♀ butterfly differing greatly from the ♂, with the broad, red-brown bands." — Seems to be not rare.

Of *A. xenica* Bat. (= *xelia* Stgr.) (120 B e) from Guatemala only the ♀ was known for a long time. *xenica*. In all probability it is a local form of *chaeronea*.

*A. promenaea* G. and S. from Mexico (Cordova) is said to be closely allied to *xenica* (120 B e), but *promenaea*. the base of the wings is more blue in the ♂, more purple in the ♀. Differing from the ♂ of *indigotica* by the absence of the slate-blue bands on the upper surface.

*A. proserpina* Salv. (= *pedile* Druce) (120 B e) from Guatemala and Costa Rica lies before us in a ♀ *proserpina*. from Costa Rica (Orosi, 1200 m, Coll. A. H. FASSL). We reproduce the figures from the „Biologia centrali-americana“. Here the spots before the apex of the wing converge to a preapical oblique band, and the hindwings are margined in dull lightblue.

*A. basilia* Cr. from the Upper Amazon River is a rare species which seems to have been captured *basilia*. last by BATES in the fifties of the last century. According to DRUCE it greatly resembles the following species and has only somewhat more and lighter blue colouring. — *phantes* Hpffr. (120 A e), only a local form of *basilia*, *phantes*. from Peru and Bolivia, is in both sexes rather variable above, because there may be abundant as well as little submarginal marking; the under surface, however, is rather constant. The ♂♂ also vary greatly in size. If the ♀♀ connected by us with this species belong here indeed, we have to state yet Panama (Lino, 800 m, Coll. A. H. FASSL) as habitat. ♂♂ from Panama are not lying before us.

*A. memphis* Fldr. from Colombia and the Amazon is known only in the male sex. According to the *memphis*. author, this species is the most closely allied to *iphis*, but its size, shape of the forewings and marking of the upper surface greatly resemble *basilia*. — *montana* subsp. nov. from Central Peru (Hunamobamba, 1500 m, *montana*. A. H. FASSL) is the larger alpine form with much more subapical and submarginal marking of the upper surface. The under surface is lighter blue and less irrorated in white.

*A. mora* Druce from Colombia and Guatemala has been described as follows: Upper surface greenish- *mora*. black, basal half of the forewing of a dim green, a green spot near the apex of the forewing and an indistinct spot near the anterior angle of the hindwings, being slightly tinged in greenish. Hindwing without a tail, basal half and distal margin green, a row of 4 small whitish spots from the anal angle to the apex. Under surface dark brown, all the wings spotted in chestnut brown, with greyish scales along the costal margin of the forewing, all the wings with a submarginal row of indistinct white spots.

*A. orthesia* G. and S. (= *mora* Druce p. p.). ♂ forewing purple-black, dusted in blue at the base, the *orthesia*. margin of the forewing indistinctly blue. Under surface chestnut-brown, everywhere irrorated in rust-reddish and white. Forewing very pointed, hindwing without a tail. ♀ brownish-black, at the base blue, forewing with a blue spot near the apex, under surface brown, with a reddish tinge, irrorated in brown and white; hindwings with tails. The ♀ resembles greatly *A. oenomais* (119 c) but the wings are more pointed and their basal area of a more intense blue colour. Deviating from *mora* by a more purple hue of the wings, the blue of the basal area being less tinged greenish etc. Mexico, Guatemala.

*A. cambyses* Druce from Peru (Chanchamayo) is above deep black, the basal third of the forewing *cambyses*. green, two small green apical spots standing closely together; the basal third of the hindwing bluish-green, a submarginal row of 5 indistinct green spots, the anal angle and inner margin red-brown. Under surface dark brown, at the base, at the costal margin and at the apex of the forewing thickly covered with greenish-white scales, base and inner margin of the hindwing irregularly spotted in white, a submarginal row of small white spots.

*A. lyceus* Druce (120 B d) lies before us in several ♂♂ from West Colombia (Cauca-Valley, and 1 *lyceus*. pair from the Aguaca-Valley, 2000 m) and 3 ♀♀ from Bolivia (Rio Songo, 750 m, A. H. FASSL), according to DRUCE this species occurs also in Ecuador. While in the Colombian ♀ the violet-blue basal part occupies only scarcely the half and the subapical marking is very insignificant and blurred, the Bolivian ♀♀ have a larger and greenish-blue basal part and greatly developed subapical and also some submarginal marking. Beneath these ♀♀ are browner and have a much more silky gloss. We denote this form as *lynceus* subsp. nov. *lynceus*. (120 A d).

*A. schausiana* G. and S. (120 C a b) from Coatepek in Mexico is a peculiar species because both sexes *schausiana*. are above almost the same. It is known to us only from the figures in the „Biologia centrali-americana“ which are depicted according to specimens of W. SCHAUS. Approximates *beatrice* (120 C b).

*A. odilia* Cr. (= *polycarnes* F.) (120 A d, 120 B d) is a rare species from the Upper Amazon. The *odilia*. upper surface is lighter or darker, but always unmarked. The under surface exhibits more or less white scaling. The ♀ is above greyish-brown with glossy blue scaling, except dull margins; several indistinct bluish subapical spots. Under surface light greyish-brown with a slight cloudy marking on the hindwings and small white spots at the distal margin of the hindwings. — The statements made by older authors about the larvae are incorrect.



*nenia*. **A. nenia** Druce (120 C a) from the Upper Amazon (São Paulo) has another shape of the wings (a less sinuous inner margin of the forewings), and the under surface differs considerably from that of *odilia*, being dull dusty-grey, irrorated in white, with a darker median band and marginal band the latter of which exhibits on the hindwing light clouded spots.

*laura*. Of **A. laura** Druce (120 A d, 120 B d) from Veragua and Colombia (Muza, 400 to 800 m, A. H. FASSL), only ♂♂ seem to be known. They are above intensely black with an indistinct, dull greenish tinge growing somewhat more prominent at the base of the forewing. The under surface is also chestnut-brown with silvery white scaling; before the apex of the hindwing there is a large silvery white costal spot, in front of it a light undulate band composed of silvery interspersed, small scales.

*rosae*. **A. rosae** Fassl (120 C d) from West Colombia (Rio Aguaca Valley, 2000 m) is one of the best discoveries made by the author during his investigating and compiling work of many years in tropical South America. The ♂ is extremely distinguished from its allies of this genus especially by the sight the under surface affords being not nearly attained by any other species of *Anaea*; nevertheless the ♀ carries off the palm, since it is besides fitted out with a beautiful upper surface. Mr. A. H. FASSL also captured a ♂ in which the greyish-blue marking of the upper surface of the forewings is especially well developed, whereby an intermediate stage has been created between the appearances of the upper surface of both sexes. — ♀♀ with an almost doubly broad band on the upper surface of the forewings are denominated ab. **laticincta** Fassl. — This species has hitherto been found (by Mr. A. H. FASSL) only in the western valley of the Aguaca Valley at an altitude of 1800 to 2200 m. The stay in this part of Colombia is especially injurious to health. — The discoverer gives the following statements about the early stages of this species: The egg of this prominent new species is about as large as an egg of *Pergesa elpenor*, light-green, diaphanous in yellowish, with fine longitudinal ribs. The larva, about the size of a grown-up larva of *Phalera bucephala*, is jet-black, naked, between the rings where the interior of the body shines through, dark carmine; head black, glossy: on each ring stands a girdle of about 6 snow-white pretended pointed, but not thorny spines. The larva lives on a poorly-leaved tree with hard, lanceolated foliage which it rolls up from outside towards inside and fastens it together loosely; only in the evening it comes out from this case and visits the nearest leaves for its meal. The pupa rests on the upper surface of a leaf being slightly drawn in in the shape of a boat and is spun on with the cremaster. Having the size of a pupa of *Limnitis populi*, it is of the well-known compact shape of the *Anaea*-pupae (lycaenid-like), but of an extremely conspicuous and singular colour and marking. On an ivory, white-shining ground it is symmetrically covered on the whole surface with jet-black dots and streaks, the detailed description of which would be too circumstantial; the wing-cases bear 5 long black wedge-shaped streaks based at the distal margin of the forewing. The pupa was apparently motionless and dead; after 6 weeks it yielded a ♂ of *A. rosae*. The size of the female larva and pupa may be about again as large as that of the male, according to the proportion of the size of the butterflies.

*anassa*. **A. anassa** Fldr. (= ada Btlr.) (120 A e) from Veragua and Colombia is known to us only in the male sex. This form seems to be very constant. It is not rare. — **aulica** subsp. nov. from Chiriqui is smaller, has broader and more coherent blue marking on the forewings; the margin of the hindwings is more greenish and proximally more sharply defined. The under surface is darker without any rust-brown marking at the inner angle, it is more profusely scaled in whitish and the brown bands on the hindwings are absent.

*clara*. **A. elara** G. and S. (120 C b, c) from Costa Rica is allied to the *anassa*, but still it shows such differences that it has to be considered a proper species: it resembles beneath *proserpina* (120 B c), whereas the upper surface resembles that of *ambrosia* (120 D a). On the under surface, however, *ambrosia* is less irrorated in white, of a more monotonous brown, especially on the hindwing. The ♀ of *elara* has tails like most of the following species; the species seems to be rather rare or very local.

*lineata*. **A. lineata** Salv. (= vestina Hew., betillina Hpffr.) (120 A e) from Bolivia, Peru and Ecuador is a species of very different sexes. The upper surface of the ♀ resembles that of a *schausiana* (120 C a), but it has a fainter blue decoration, especially on the hindwing and the apical part of the forewing is without spots. The under surface is marked like in *indigotica* (120 C b), of which it has also the faint hue of violet-pink which is spread across the under surface and is of an especially magnificent lustre in the sun.

*vicinalis*. **A. vicinalis** spec. nov. (120 A e) from South Brazil (Rio de Janeiro, Espiritu Santo, Santa Catharina) greatly resembles *lineata*, but those parts of the wings which are above green in *lineata*, are blue in *vicinalis*. Also the ♀♀ of the two species greatly resemble each other, but the under surface shows differences in both sexes. It is not impossible that *lineata* and *vicinalis* are subspecies of one and the same species.

*magdalena*. **A. magdalena** Weym. i. l. (120 b e) from East Colombia (Upper Rio Negro, 800 m) and Bolivia (Coroico, 1200 m, A. H. FASSL) is somewhat larger, but it has, with the exception of a small tooth at the third median vein of the hindwing which is hardly noticeable with the naked eye, the same shape of the wings and above almost the same marking as *drucei* (119 e), from which it is, however, as shown by the under surface, entirely different. The ♀ has lustrous light-blue basal halves of all the wings, bluish-white subapical spots



of the forewings and minute blue submarginal spots of the hindwings. The under surface is yellowish grey with the same markings as in the ♂, but without a lustre. — *elegans form. nov.* from East Colombia (Upper Rio Negro, 800 m, A. H. FASSL) is either a temporal form of *magdalena* or a proper species. It is much more imposing, the colour of the basal part of the forewing and of the greatest part of the hindwing is verdigris, of which colour all the larger subapical and submarginal spots are, too. The under surface is paler and the sub-basal band of the forewing is absent.

*A. vestina* Hew. from Ecuador not lying before us, according to the description of *magdalena* (120 C c), *vestina* greatly resembles *magdalena* (120 C c) beneath, but the under surface is apparently browner. The upper surface of the forewings has a brown distal margin and the hindwings are red-brown with a broad bent green longitudinal band. Otherwise the upper surface agrees with *magdalena*.

*A. forreri* G. and S. (120 D e). Wings bluish-black; forewing at the basal area of a bright blue and with a blue subapical band from the costal margin as far as nearly to the border, as well as two confluent blue spots near the anal angle. Forewings very pointed, hindwings without tails. Beneath of a pale brown, irrorated with brown and grey, and especially in the anal angle of the forewings thus marbled, the forewings with a rusty-reddish hue in the discal area. ♀ like the ♂, but the hindwing with a spatulate tail. Mexico; Guatemala.

*A. ambrosia* Druce (120 D a) from Chiriqui seems to be very constant above and beneath, since the 4 ♂♂ lying before us do not exhibit any differences. The ♀ is unknown to us. It has on the hindwings bright metallie marginal spots standing between the chief veins, on the so-called intermediate veins.

Of *A. phoebe* Druce (120 C c) from Bolivia we reproduce a copy of the original figure. It seems to be the Bolivian representative of *ambrosia*. Above the blue margin of the forewings is broader and more uniformly connected with the subapical band and the internerval diffuse spots of the margin of the hindwing are united to an uninterrupted marginal band; the under surface is more chequered by being more traversed by light cloudy bands. It is, furthermore, of a quite different shape of the forewings and hindwings.

*A. chorophila spec. nov.* (120 D a) from East Colombia (Upper Rio Negro, 800 m) and Bolivia (Rio Songo, 750 m, A. H. FASSL). We cannot decide for certain whether the figured ♀ (from Bolivia) belongs to this species. It is beneath rather pale: brownish-grey with a faint greenish shine, on the forewings there runs from the apex towards the middle of the inner margin a series of obsolete blackish spots, a larger spot of the same colour at the end of the discocellular, somewhat brightened at the distal margin. The hindwings exhibit 2 obsolete broad dark oblique bands in the outer half of the wings, and between the tail and the inner angle some obsolete whitish-reddish spots.

*A. polyxo* Druce (120 D a, b) from the Upper Amazon, from Colombia, Peru, Bolivia, and according to DRUCE also from Rio is a very attractive species with a pretty and most characteristic under surface. The specimen before us from Bolivia (Coroico, 1200 m, A. H. FASSL) is beneath much lighter. The ♀ is unknown to us.

*A. dia* S. and G. ♂ wings greenish-black; the forewings at the base of a hardly stronger green colour, with a lustrous light-green curved subapical band of 3 to 5 mm breadth, being parted by the veins, reaching the anal angle, touching the margin in the posterior half of the border and being continued on the hindwings as the same marginal band and reaching their anal angle. Fringes white; hindwings without tails. The under surface is without markings, dark silky brown, the apex of the forewing and the margin of the hindwing grey, the dorsal area of the hindwing somewhat lighter. — The most closely allied with the Brazilian *polyxo*, differing, however, by the colouring of the upper surface of both wings, which are more green than blue. Panama. On the whole, the upper surface greatly resembles that of *A. florita* (120 B b), but instead of the spots before the apex there is a small oblique band with a more intense blue lustre than the blue basal part. — *A. divina* Stgr. i. l. (120 D b) from Bolivia (Coroico, 1200 m, A. H. FASSL) and the Upper Amazon resembles the preceding species above and beneath, though it is much more imposing. The magnificent upper surface is equalled by the entirely different under surface. The ♀ is unfortunately not known to us. It is very rare.

*A. aureola* Bates (120 D b) from Guatemala, Panama (Lino, 800 m) and Colombia (Muzo 400 to 800 m, A. H. FASSL) vies with *rosae* in the beauty of the under surface. In the ♀ being extraordinarily different, the broad white band of the upper surface of the forewing is noticed also beneath where it is distally broadened and blurred, on the whole yellowish and with single brown small spots; the hindwings exhibit 2 large and 3 small golden spots in the shape of a row being geniculated in the middle and turned towards the inner margin.

*A. pasibula* Dbl. and Hew. (120 D c ♀) occurs in two subspecies, the figured *fassli subsp. nov.* (120 D c) from East Colombia (Upper Rio Negro, 800 m) and Central Colombia (Cañon del Tolima, 1700 m, A. H. FASSL) with a bluish-black upper surface and reduced, more bluish marking and a somewhat darker under surface, and *pasibula* from West Colombia (Rio Aguaca Valley, 2000 m, A. H. FASSL, and Cauca Valley) with a greenish-



black upper surface and broader greenish markings, being more coherent on the forewings. The ♀ of *pasibula*, one of the most remarkable discoveries of Mr. A. H. FASSL, differs entirely from the ♂ in the marking of the upper surface, resembling much rather the ♂ of *falcata* in a conspicuous way. On the under surface it is considerably lighter than the ♂, reddish grey with the same markings as the ♂. — The ♂♂ are very common at their habitat, the ♀♀, however, just as rare. — The egg is, according to FASSL, but slightly larger than the egg of *Papilio machaon*, globular, greenish yellow and glossy.

*falcata*. **A. falcata** *Hpffr.* (120 D c) from Peru (Chanchamayo) and recently also found in Ecuador, is the sole species of *Anaea* with a blue median band of the ♂♂. Most of the specimens have on the under surface of the hindwings a short straight band not like the figured specimen in which there is a distal continuation of this band. — The species is very rare.

*xenocrates*. **A. xenocrates** *Westw.* (120 D d) from Peru is a very rare species. The marking of the upper surface varies from green to bluish-grey and has a metallic lustre. The ♀ seems not yet to be known. According to STAUDINGER, the spots of the forewings are sometimes confluent and the metallic lustre may also be seen at the distal margin of the forewings.

*elina*. **A. elina** *Stgr.* (120 D d) from the Rio Dagua (West Colombia) is a very rare species of which but few specimens are known so far. — A specimen captured by Mr. A. H. FASSL in Muzo (400 to 800 m) is probably to be included in *miranda* *Warr.* (120 D d). This specimen has a very short small tooth—hardly noticeable with the naked eye — of the hindwings; the orange-yellow band of the forewings is distally rounded regularly, proximally and posteriorly rectilinear and anteriorly conspicuously narrower than posteriorly; the blue spot of the hindwings begins already before the posterior radial and reaches almost as far as to the submedian, being also broader and, therefore, much larger than in *elina*. The under surface is in the interior part of the wings much more scaled in black, in the median area of the forewings more yellow with some black scale-spots, and at the distal margin of the hindwings broad band-shaped dark greenish-grey with some black marginal spots of which the one at the small marginal tooth stands in a reddish halo.

*anna*. **A. anna** *Stgr.* (120 C d) is nearly allied to the preceding species, as is shown by the figures. It comes from the Upper Amazon and is known only in few specimens. The orange-yellow spot of the forewing of *elina* is in *anna* scarlet and the hindwing does not exhibit a circumscribed lustrous spot, but is covered in the disk with a duller blue reflection.

*panariste*. **A. panariste** *Hew.* (♀ = *bertha* *Druce*) (120 D d) from Colombia (Muzo, 400 to 800 m, A. H. FASSL) forms, together with the following 3 species, a special group owing to the shape of the wings and the more tender structure of the body. — **A. ludmilla** *Fassl* (103 f) from the Upper Rio Negro (800 m) forms a local form distinguished in the male sex by a broad rust-brown cover of the inner margin and of the neighbouring parts of the hindwings. The differences of the ♀ are to be seen from the figure. — The species is rare, particularly the ♀♀ belong to the greatest rarities.

*jansonii*. Whether **A. jansonii** *Salv.* (110 A d) from Nicaragua and from the Volcano Chiriqui has to be regarded as a proper species or as a subspecies of *panariste*, we cannot decide. The under surface is in both sexes somewhat darker than in *panariste*, but it does not exhibit a different marking. The ♂ shows the whole inner-marginal area of the hindwings light yellow, like in the ♂ of *panariste*.

*excellens*. **A. excellens** *Bates* (110 A d) from Guatemala is an extremely rare species. It resembles the following species *electra*, but it is pale brownish-yellow, on the veins striated in black. The apex of the forewing is slightly prolonged and the tail of the hindwing broad, but scarcely spatulate.

*electra*. **A. electra** *Westw.* (103 f) is distributed from Mexico to the Volcano of Chiriqui (2000 m). The ♂ is somewhat smaller, has more prolonged apices of the forewings and a darker distal margin, the under surface being darker than in the ♀. Rare.

*callidryas*. **A. callidryas** *Fldr.* (116 a) from Guatemala has a dull-green upper surface turning distally yellowish on the hindwings. Extremely rare; maybe because it is very difficult to distinguish the animal from among the pale yellow *Catopsilia* flying in great numbers in its patria.

*opalina*. **A. opalina** *Salv. and Godm.* (= *clara* *Stgr.*) (116 b) from the Volcano of Chiriqui is a rare species. The ♀ seems not yet to be known. — Presumably *callidryas* and *opalina* form only subspecies of one and the same species.

*splendida*. Note. This seems to us to be the place where the species **splendida** *Rothsch.* belongs, for which the author has founded a proper genus, *Anaeomorpha*. In my opinion the marks stated are insufficient for establishing a special genus, FRUHSTORFER likewise finds fault with this claim, but he inserts *splendida* in the *Prepona*. See further details on p. 553 and the figure table 103 e.



## Additions

to the American Nymphalidae.

The American Nymphalidae s. s. are the most favourably classified into 4 subfamilies: 1. Acraeinae, 2. Heliconiinae, 3. Clothildinae, and 4. Nymphalinae. Thus they would have to be enumerated:

P. 358 Acraeinae (1. subfamily). P. 402 Clothildinae (3. subfamily).

P. 375 Heliconiinae (2. subfamily). P. 403 Nymphalinae (4. subfamily).

### Heliconinae.

Mr. H. NEUSTETTER (Vienna) has subsequently denominated some additional Heliconies and, besides, most kindly sent me some corrections to the Chapter of *Heliconius*:

To *H. narcaeus* (p. 378) we must remark that the extreme specimens of *narcaeus* are all ♂♂, whereas the specimens denoted as ab. *connexa* with a broad black oblique band, distal to the yellow band of the forewing, are always ♀♀. The name ab. *connexa* is, therefore, to be eliminated. — The specimens exhibiting the band of *connexa* tempered or narrowly interrupted, may be ♂♂ as well as ♀♀. — ab. *phystea* occurs particularly in the ♂, but not exclusively, so that the name may remain. — ab. *brunnescens* Neust. from Rio de Janeiro *brunnescens*. exhibits the oblique band of the forewing and the median band of the hindwing dusted with red-brown.

To *H. ismenius* we must add: ab. *albofasciatus* Neust. differs by the confluency of the discal white spots of the forewings forming a broader median band; presumably from „Bogotá“, which is undoubtedly a mistake. *albofasciatus*.

To *numata* (p. 379) we must remark that RIFFARTH describes the ♀ of the form *guiensis* with such a broad median band of the hindwing that it is in the middle confluent with the costal margin, whereas in the ♂♂ of *numatus* it does not touch the costal margin. Guiana. — RIFFARTH denominates as *sincerus* a form like *superioris* Btlr. in which the small yellow apical spots of the upper surface of the forewings are altogether absent, thus creating a resemblance with *hippola* Hew. (72 c) in which, however, the median oblique band of the hindwing is not yellow, but rusty brown like the ground-colour. Venezuela. *sincerus*.

*silvana*: According to NEUSTETTER (i. l.), his *hopfferi* is not identical with *ethra* Hbn.; it corresponds, however, to our figure of *ethra* (72 c), but not to HUEBNER's figure which is identical with our figure of *silvana* (72 c). NEUSTETTER (i. l.) confines the name *silvana* to those specimens in which the yellowish spots in the distal part of the forewing are larger than in our figure of *silvana*, so that they almost touch each other; in typical *silvana* the hindwings are also more blackened before the middle of the border.

— *brasiliensis* Neust. is a form of *ethra* from Espiritu Santo in which the median band of the hindwings is brown, instead of light yellow, about the same difference as between *satis* and *narcuea*. *brasiliensis*.

As a synonym add to the form *silvana-diffusa*: (= *divisus* Kaye). Insert behind *mentor* (p. 380), before *numismaticus*:

— *orchamus* Weym. Similar to *mentor*, larger with entirely black unspotted apical part of the forewing; the basal half darker, more red-brown; on the hindwing the red-brown bands of the under surface extend only from the inner margin to the middle of the wings. Villavicencio. *orchamus*.

To *novatus* (p. 381) we have to add *artemis* Riff. which stands between typical *novatus* (72 f) and *lenaeus* *artemis*. (78 e). The darker dots of the row beyond the middle of the hindwings are enlarged to small spots, but scarcely half as large as those in *novatus*; the cone extended proximally between the median veins by the black distal margin, does not cohere with the apical black in *artemis*; the sulphur-yellow oblique band is yellower than in *novatus*, but not so extensively yellow as in *lenaeus*. Bolivia.

To the 18 forms enumerated of *aristiona* (p. 381) we have to add yet:

ab. *lepidus* Riff. from Ecuador which, however, flies also in Colombia with other forms of *aristiona*, *lepidus*. greatly resembles *euphrasius* (73 b); the forewings are almost exactly as in the latter, though lighter, brighter.



more like in *tarapotensis*, the yellow band of the forewing, at the costal margin broader than in *euphrasius*, the hindwings at the base and in the part of the median veins not so abundantly overshadowed. Ecuador. — *gracilis*. ab. **gracilis** Riff. from Peru, taken by FASSL also in Colombia, denotes specimens in which the median band of the hindwing is as narrow as in *tarapotensis*, though coherent; the marginal band only half as broad as in *lepidus*, coherent and rather sharply defined; from Peru.

*confluens*. *idalion* with entirely confluent bands are ab. **confluens** Neust., and in **euphone** a denomination (*con-*  
*euphone*. *fluxus* Neust. i. l.) is suggested for specimens in which the median and marginal bands of the hindwings are  
*nephele*. confluent; we denote them as ab. **nephele**, ab. nov.; the type in the Coll. NEUSTETTER originates from Medina in East Colombia.

*hero*. P. 283. — *H. ithaca hero* Weym. Here the apical row of white spots on the hindwings is continued as far as to the inner margin by a red-yellow submarginal band of about 3 mm width being traversed by the black veins; discovered by FASSL in Villavicencio. — ab. **cajetani** Neust. is distinguished by the bifurcation of the upper black median spot of the forewing and being united in cellule 4 with the black of the distal margin. From Colombia. — (In **vittatus** Neust., likewise from Colombia, there are no yellow spots in the apical part.)

Of *clara* (73 f), being closely allied to *anderida*, there exists a deviation in which the yellow oblique band of the forewing is torn up into 4 or 5 yellow, single spots by means of black embeddings (resp. enlargement of the spots round the cell-end); this is **zygia** Riff. from Colombia. — In **euchoius** Weym. the small, (in typical *clara*) light yellow spot before the inner angle (which is sometimes absent) is red-yellow, above the inner margin there is often a black stripe, the black marginal band of the hindwing is but half as broad as in *clara*, and the hindwing is traversed by a median band, like in typical *anderida*. Colombia. — **rebeli** Neust. resembles *H. holcophorus* (74 b), but the lemon-coloured spot in cellule 3, which in the ♂ is cut off from the sulphur-yellow median band (and which is altogether absent in the ♀ of *holcophorus*) is much larger, the black submedian band of the forewing is still broader, towards the base not so much pointed. On the hindwing the black median band, especially in the ♀, is much broader, on the under surface the white marginal spots are large. „Bogotá“ (?). — From *zuleika*, the form **dentata** Neust. was branched off, in which the black marginal band of the hindwing bends in between the veins into the hindwing in large dark arcs, so that the brown ground-colour extends towards the margin in long points on the veins. Panama.

Of *cydno hermogenes* (74 d) a ♀ has been discovered now, with only yellow spots of the forewings (NEUSTETTER). Whether this is the sole or typical ♀ of HEWITSON's *hermogenes*, or whether there are also ♂-like ♀♀ (i. e. with yellow and white spots of the forewings) is still uncertain. Further *cydno*-forms are: — *cydno* **cordula** Neust. and **mediocydno** Neust. The latter has the forewings like *cydno*, the hindwings of *epicydnides*. Colombia. Furthermore *punctata* Neust. — From *galanthus* (74 d) the form **exornata** Riff. is branched off, in which the forewings are like in *galanthus* itself, also with a just as broad white spot, whereas the white marginal spots of the hindwings are augmented. But at the same place with them fly all the transitions from our figure of *galanthus* (74 d) to such forms that have scarcely 1 small spot in the apex of the hindwing. — Of *alitheia* there occur specimens in which the band of the forewing is greatly reduced and dissolved into spots; all of these spots are situated behind or beneath the cell. Above, this reduction has made more progress than beneath where the band remains better preserved. This is **egregia** Riff. It occurs in typical *alitheia* with a yellow band of the forewing as well as in the form *haenschi* with a white band of the forewing. Both are found in Ecuador *neustetteri*. (Balzapamba) and were captured by RICH. HAENSCH. — **neustetteri** Riff. (= minor Neust.). Pygmean specimens, the forewings being only 30 mm long (instead of 70 as in *alitheia*). Black with a faint blue lustre, band of the forewing quite narrow, the marginal band of the hindwing only half as broad (3½ instead of 7 mm as in *alitheia*). Ecuador. — In an aberrative form of *gustavi*, ab. **flavomaculata** Weym. i. l., from the Rio Acuaca Valley in Colombia, there are yet remainders of the yellow *cydno*-band before the inner angle of the forewing.

Regarding *H. rubellias* Hew., Mr. NEUSTETTER writes:

„Here I beg to remark that the animal figured on t. 74 f as *rubellius* S. and K. is certainly no *rubellius* (I refer to the original figure); I also possess a typical *rubellius*. The forewings are like in *heurippa*, the hindwings exhibit a somewhat obsolete macular band right across the middle. The figured specimen agrees completely on the upper surface with *melpomene-karschi* Riff. I occasionally showed Mr. FASSL this form which entirely agrees with the figure. Mr. FASSL, however, told me that the said figured specimen has brown transverse bands on the under surface of the hindwings, as is the case in all the *cydno*-forms as well as in *rubellius*, it can, therefore, neither be *karschi* Riff., for the latter has no brown transverse bands, but is beneath exactly like *melpomene*. We have, consequently, a new form before us, which belongs to the group of *rubellius-wernickei* seitz. and for which I should like to propose the name of **seitzii** m. My *rubellius* originates from Venezuela.“



The following forms are to be added yet to *melpomene* (p. 385—6):

— *funebria* ab. **obscurata** Riff. differs from *cybele* Cr. (75 c) only by the sulphurous spots round the cell-end *obscurata*, being more prominently dusted in dark; especially the spot in the cell. From Berg en Dal in Surinam.

— *aglaope* ab. **cognata** Riff. from Pozzuzo in Peru is like *aglaope*, but the yellow band of the forewing is narrow- *cognata*, er. more irregular, sometimes the spots forming it separated. The red basal band on the hindwing broader, the rays more in the shape of a wedge than of a nail. Transitions to typical *aglaope* are not rare.

The form **timareta** Hew. quoted on p. 385 and 386, has in its typical form only a large irregular, sul- *timareta*, phurous cell-end-spot greatly varying in the shape, so that its outward appearance reminds us of a yellow, instead of white spotted *hecale* (73 a) without submarginal maculae; it comes from Ecuador; we may form an idea of its appearance by imagining all the red in its side-form *richardi* (76 b) being replaced by black, or by the absence of the red tornus-spot in the forewing and of the small yellow basal band in the hindwing, in *pluto* (76 a); it is approximated the most closely by *contigua* (p. 386) and *virgata* exhibiting only narrow radiate rays of the hindwings. — ab. **insolita** Riff. approximates *timareta* (p. 386), especially its form *contigua* from *insolita*, which it differs by the yellow spot of the forewing lying outside the cell and being at most accompanied by few small scales of yellow within the cell. HAENSCH brought it along from Ecuador.

— *vulcanus* (p. 387). The form **sticheli** Riff. is to be added yet. Resembles *cythera* Hew. According *sticheli*, to the figure by RIFFARTH in Deutsch. Ent. Zschr. 1907, t. 5 fig. 10, it is larger than *cythera*, the red band of the forewing is twice as broad, its inner margin only with traces of white, the costal marginal area of the hindwing broad whitish-grey in the ♂. It is described from Ecuador where it was collected in February (in the dry period).

*xenoclea-microclea*. Mr. NEUSTETTER writes about these species being only exteriorly similar, that the former may be taken to the *melpomene*-group. Of the other side-forms of *xenoclea* the very fine *iris* Riff. *iris*, is to be mentioned yet. It greatly approximates *aglaope*, but the yellow spot of the forewing is placed nearer to the apex and is of the same shape as the red-yellow spot at the same place in *plesseni*; it is also margined in red at its distal border, whereby a transition is formed between the *plesseni*-(*microclea*) forms and the group of *melpomene-aglaope*. From Ecuador.

In *niepelti* Riff. (see p. 385) which was in the meantime figured in the „Lepidoptera Niepeltiana“, the red spots of *xenoclea* are white, but the whole inner area of the forewing, from the inner spot to the base, is fiery-red, and in the cell of the hindwing there are the beginnings of short, small rays. — In *adonides* Niep. these red rays of the hindwing are continued beyond the lower cell-margin, and the distal spot of the forewing is bordered rosy on the outside; from Jibara in Ecuador. — **adonis** Riff., a form of *plesseni*, comes *adonis*, from Ecuador (Pastaza) and resembles *unimaculata* (75 f), but the spot of the forewing is white, and the cell of the forewing is, before its end, traversed by another white band-like spot. — In *rubicunda* Niep. the two *rubicunda*, spots are similarly placed, but they are red instead of white; **pura** Niep., on the contrary, exhibits them all *pura*, white, without a reddish margin or an interspersation of small yellow scales. All these aberrations occur in the same district (Pastaza). — *isolda* Niep., likewise from Jibara, stands between *niepelti* and *aglaope*, being difficult to explain, according to NEUSTETTER (i. l.). „The small dark spot in the cell of the forewing in *niepelti* is more prominent in *isolda* (especially the ♂) at the proximal border of the *plesseni*-spot, whereby the latter is more isolated . . . The white apical band-like spot in both sexes slightly margined in crimson within its proximal contour.“ (Niepelt). — *rubripicta* Niep. is an *isolda*-form in which the remaining white of the discal spot outside the cell, as well as the apical band-like spot being white in *isolda* are greatly strewn with red scales, like in *plesseni-rubicunda* Niep.; Canelos, Ecuador; based upon 1 ♂. — *gisela* Niep. approximates *adonides* and represents, according to Niepelt, a transitional form from *aglaope* to *plesseni-pura*. „The *plesseni*-spots of the forewings are here white on top, the discal spot at its proximal border strewn with black scales and bordered by a strong black spot. Hindwings like in *adonides*, as well as the under surface, the *plesseni*-spots of a pure white“ (NIEPELT). Based upon 1 ♀. From Jibara.

On the whole, *microclea* and *xenoclea* (76 c) are probably composed of a great number of transitional forms running parallel to each other like the forms described first, belonging, however, as already mentioned, to different groups. NEUSTETTER enumerates (i. l.) the following forms of *xenoclea*: *niepelti*, *plesseni*, *adonides*, *adonis*, *isolda*, *rubripicta*, *gisela*. All of these probably belong, like *xenoclea* itself, to the *melpomene*-type and are closely allied to its *aglaope*. — *microclea* belongs to quite a different type, and we quote yet the following forms of it: **feyeri** Niep. resembling *niepelti* by the fiery-red basal area of the forewing and the red rays of the hindwing, but the proximal spots situate before the cell-end of the forewing are already prominently tinged in red, and the half-band behind the cell-end exhibits a pinkish inner margin. According to a ♂ from Canelos in Ecuador. — **beata** Riff. resembles *aoede* (76 f) by the red-yellow tinge in the forewing and in the rays of *beata*, the hindwing; but instead of the yellow conglomeration round the cell-end we find here 2 reddish-white spots



*rosacea*. like in *notabilis*, i. e. the anterior spot is distally carmine. Ecuador. — *rosacea* Riff. stands between *notabiles* and *ochracea*, the discal spots being more confluent; no basal red on the forewing and no rays on the upper surface of the hindwing. Ecuador. — *ilia* Niep. forms a transition from *notabilis* to *estrelle* Bates (= *vestalis* Stgr.) and was, therefore, commented upon by us together with *feyeri*, *ochracea* and *rosacea* (p. 393). From the forms of the groups of *xenoclea* and *microclea* we might undoubtedly be able to form a similar series as the one collected by OBERTHUER for the *vesta*-group; but if we would denominate all these intermediate forms, we would get to an immense amount. — On p. 385 a form *fraterna* Niep. was yet mentioned which we were unable to explain according to the description. In the meantime, a figure of it has been published in the fine small work „Lepidoptera Niepeltiana“, which we reproduce on table 110 A e.

*H. hecuba*. NEUSTETTER (i. l.) remarks to this species having been dealt with on p. 388, that the specimen figured as *cassandra* on t. 76 e is not the typical *cassandra* itself, but its form *intermedia* Riff. representing already a transition to *hecuba*. Genuine *cassandra* are smaller, and the yellow macular band of the hindwing is narrower. This last mentioned form was taken in Ecuador together with *choarina*. —

*H. aoede*. The specimen figured t. 76 f. is not typical, but it belongs to the form *aoede jaleria* Fruhst. In the typical *aoede* the lemon-coloured spots of the forewings are smaller, farther remote from each other so that the black space encompassed by them appears larger. (NEUSTETTER).

*H. xanthoclea*. The form newly discovered by FASSL was described by NEUSTETTER already before our number appeared and denominated *fassli*. This name, therefore, has the precedence.

*H. xanthocles* (p. 389). The second form quoted here is called *vala* (as it says also in the figure), not *vola*.

*H. burneyi*. According to NEUSTETTER (i. l.), the specimen of *huebneri* figured on t. 77 a is not typical, since the lemon-coloured oblique spot in the middle of the forewing is too large, the red rays of the hindwings, however, too narrow. This form represents a side-form from Mato Grosso which might be denominated specially.

*petiverana* and *hydara*. On p. 392 we have expressed our opinion that both forms are connected with each other by the close affinity of the *hydara*-form *colombina* with the *petiverana*-form *demophoon*; for completeness' sake we state here that, while STICHEL and RIFFARTH do not even mention the great resemblance of the two adjoining forms, Mr. NEUSTETTER writes „he cannot find any essential difference at all between *demophoon* and *colombina*“, although hundreds of specimens went through his hands. Thus, *colombina* would have to be eliminated as a synonym of *demophoon*, and the latter would have to be placed as a connecting link between *petiverana* and *hydara*.

*ochracea*. Exactly between *feyeri* and *lativitta* stands *ochracea* Riff. forming a connection between the *erato*-(*delila*)-group and the *microclea*-forms (NEUSTETTER i. l.). *ochracea* exhibits quite uniformly ochreous spotting. *fuliginosa*. Hereto belongs also *fuliginosa* Riff., differing from the typical *vesta* Cr. by the yellow macular group of the forewings being prominently dusted in black: Guiana.

*helena*. In the *phyllis*-like forms we must also mention the *cybelinus*-form *helena* Riff. being closely allied to *amalfreda* (p. 393), but the distal yellow spots of the forewings are sometimes altogether absent. From Berg-en-Dal in Surinam and from Obidos on the Amazon.

We must add to *cyrbia* (p. 392) that specimens with an extremely narrow red band of the forewing were denominated *bela* Riff.

In *phyllis* the following forms are to be mentioned yet:

*anaëtis*. P. 394 the *anacreon*-form *anaëtis* Riff. forming the transition from the typical *anacreon* (78 e) to *artifex* Stichel, from the former of which it differs by the absence of the glaring-red basal area of the forewing and the thinner rays of the hindwing. South Bolivia.

*differens*. — ab. *differens* Riff. is a *phyllis* in which the red band of the forewing extends far into the cell; there is mostly also red noticeable between the lower median vein and the submedian. Peru and Bolivia.

*sperata*. — ab. *sperata* Riff. approximates *amata* Stgr., but the red spot of the forewing is inside tinged with an intense yellow. Hindwings with traces of the yellow anterior band. Bolivia, South Peru.

*athene*. — *athene* Neust. approximates *amata* Stgr. (p. 394) from Bolivia, but all the yellow is absent here, so that the hindwings are unicolorously blackish-brown with a red transverse band of the forewing; similar to *hydara* (p. 392), but the band is light red, not scarlet. Bolivia.

To *H. hortense* (p. 395) we must add yet Mexico as habitat.

*flavopunctatus*. *H. clysonimus*. Of this butterfly FASSL has published two more forms: *flavopunctatus* and *fischeri*; *fischeri*. both from Colombia.



*H. telesiphe*. Mr. NEUSTETTER says about it:

„Here a new form lies before me from the Coll. TOSSIZZA which I denominate **cretacea**. In this interesting *cretacea* form, the bands of the forewings as well as the band of the hindwings are of a pure white. In *telesiphe* and *sotericus* they are red on the forewings, in *telesiphe* white, in *sotericus* yellow on the hindwings. One specimen from French Guiana.“

In *Eueides lumpeto* (p. 396) we must add to the form *fuliginosa*: ab. **pallida** Riff. from Pastaza (Ecuador). *pallida*. Forewing similar to *carbo*, but the ground-colour intensely brightened, outside almost whitish. Described according to 1 ♀.

To *Eueides isabella hübn. var. olga* subsp. nov. differs from *hübneri* by a sulphurous transverse band being noticed on the hindwing between the costal margin and the median band. The veins in it red-brown like the ground-colour. The subapical band consists of somewhat smaller spots than in *hübneri* Mén. Otherwise there are no differences. One ♂ from Chanchamayo (Peru).“

### Nymphalinae.

#### 1. Genus: *Euptoieta* (p. 404).

P. 404 for *bogotana poaria* read *poasina*; the same correction is to be made on table 86 f (last figure).

#### 3. Genus: *Melitaea* (p. 431—434).

By the kindness of Mr. DYAR and Mr. SKINNER in America, and the investigations of Mr. BARNES and Mr. SYNDER who were kind enough to control the models, I subsequently came into the possession of a number of authentic specimens figured on t. 103 b and c.

**M. quino** Behr. The ♂ is easier to distinguish than the ♀ greatly resembling *chalcedon*; its upper surface is darker, with smaller spots and with red-brown macular chains between the yellow ones. — We figure t. 103 b both surfaces of the ♂ according to a specimen kindly sent by Mr. DYAR.

**M. beani** Skinn. The figure on t. 103 has been procured from Mr. DYAR according to a specimen of *beani* his collection. It distinctly exhibits the differences, especially regarding the position of the yellow macular bands. The form is, especially by the reduction of the red-brown, considerably darker than *anicia*. — **brucei** *brucei*. Edw. from Colorado, is a still darker form in which the upper and under surfaces are overshadowed by a sooty black. Seems to be very rare. The figure was done according to a specimen which Mr. BARNES kindly controlled.

**M. bollii** Edw. (103) from Arizona and **definita** Aaron (103) from Texas we figure according to kindly sent specimens of which that of *bollii* was controlled by Mr. N. BEYER, of *definita* by Mr. W. BARNES. Both approximate more *leanira* than *thekla*, but they distinctly differ from the former: In *bollii* the lighter median band of the hindwing is very regular, towards the inner margin hardly narrowed, not acuminate; *definita* resembling a darkened *wrighti* (88 f) above, has a greatly shifting under surface of the hindwings which is traversed very much by black.

**M. maria** Skinn. which we only briefly mentioned p. 434, probably most closely approximates *brucei*, *maria*. but the macular chains above are somewhat differently arranged, and on the under surface of the hindwings we are at once struck by the difference of the submarginal, light-yellow helmet-spots being more than twice as broad in *maria*. Mr. A. J. SNYDER had the kindness to control a specimen we figure on t. 103.

Of **M. gilettei** Barnes we figure t. 103 both surfaces of the type which Mr. BARNES had painted for us. *gilettei*. The animal originates from the Yellowstone Park and is immediately recognizable by a strange obliteration and the uniformity of the dull red-brown distal band. Mr. DYAR places it between *quino* and *nubigena*.

**M. neumoegeni** Skinn., reproduced on t. 103 according to a specimen in the Coll. A. KOEBELE originating from the Argus Mountains in California, has, therefore, a wider distribution and reminds us in the colouring of the upper surface of *palla* (88). (A. SEITZ.)

#### 4. Genus: *Phyciodes*.

P. 443 *Ph. archesillea*: r. *archesillea*.

P. 448, line 23 from above, for *Ph. philyra* read *P. phillyra*.

*Phyciodes ildica heliconiformis* Strand from Ecuador (Macas) differs from *fassli* by the entire absence of the red-yellow colouring of the hindwings. (J. RÖBER.)

*Phyciodes callonia callonioides* Strand from South East Peru differs by the reduction of the black markings being dissolved on the hindwings into spots except the costal marginal stripe. (J. RÖBER.)



5. Genus: *Chlosyne* (p. 451).

*eumeda*. In *Chlos. eumeda* G. and S. from Mexico the yellow band is still broader than in *marina* and *fasciata*, *dryope*. and the red spots of the hindwings are joined to a broad scarlet band. — *dryope*, likewise from Mexico, forms the transition to it.

*endeis*. P. 452, *Chlos. marina*: *endeis* G. and S. are *marina*-♂♂ in which the spots of the forewings flow together to a broad yellowish-white band. — In the similar form *hylaesus* G. and S. the whitish-yellow band is likewise rather broad and besides strongly curved, especially on the forewing. From Durango City (Mexico).

9. Genus: *Polygonia*.

P. 456 *P. gracilis*: the name of the Asiatic *P. agnicula* is misprinted into *agricula*.

10. Genus: *Vanessa* F.

P. 451, line 21 from below, for *cyonomelas* read: *V. cyanomelas*.

11. Genus: *Pyrameis* F.

P. 451, line 21 from above, for *fulva* read: *fulvia*.

12. Genus: *Hypanartia* (p. 460).

*lindigii*. As *lindigii* Fldr. a somewhat aberrative ♀ of *kefersteini* was figured on t. 44 c. We figure on t. 103 d the genuine *lindigii* according to a couple captured by Mr. A. H. FASSL. We notice immediately the characteristic difference in the wing-contour, especially of the hindwing. Another difference is conspicuous, though not distinctly noticeable, on the figure: the spots of the forewings are in *kefersteini* scaled in white, but in *lindigii* glassy, without any scales at all, and transparent. Consequently, *lindigii* approximates greatly *kefersteini*, though it is no form of it.

14. Genus: *Napeocles* (p. 462).

*dumnorix*. The large form figured by us as *jucunda* has been separated by FRUHSTORFER as *N. dumnorix*, confining the name *jucunda* to the more northern specimens occurring for instance in Colombia. They are smaller and beneath of a lighter grey, the blue median band has a more distinct white centre.

18. Genus: *Vila* (p. 466).

For *caecilia* Cr. read: *caecilia* Fldr.

20 Genus: *Megalura* (p. 468).

For *merops* Bsd. read: *merops* Bch.

For *harmonia* Dbl. and Hew. read: *harmonia* Klug.

26. Genus: *Megistanis* (p. 472).

New material sent to me by Mr. A. H. FASSL shows that we are wrong in the supposition that the normal ♀ of *baeotus* has a yellow band of the upper surface. It has, however, a blue band and almost exactly the same colouring and marking as the ♂, only it is larger. Nor is *deucalion* different in the sexes, ♂ as well as ♀ with yellow bands. Both are, therefore, probably good species.

41. Genus: *Eunica* (p. 484).

Line 19 from below for *caerulea* read: *caerulea* G. and S.

43. Genus: *Catagramma* (p. 593—6).

*aerias*. *Catagramma aerias* S. and G. is the Panama-representative of *salamis*, above the same, but beneath the yellow band does not reach to the base of the forewing. Differing from *lyca* by a larger blue gloss of the hindwings. Not rare.

*rutila*. *C. rutila* S. and G.; the ♀ exhibits a larger red area of the forewing than typical *patelina*. — Mexico.

*casta*. *C. casta* Salv. from Oaxaca. Described according to 1 specimen from an altitude of 3000 ft.; probably a form of *patelina* with which it agrees in the under surface of the hindwings, though the lines are more delicate there. (A. SEITZ.)

*zyxina*. *C. texa zyxina* Fruhst. from Venezuela differs from the Colombian form by a twice as broad red-yellow preapical spot of the forewing and a narrower red zone of the hindwing. Under surface considerably more different by a narrowed subapical band of the forewings which exhibit besides a considerably expanded black median area. The yellowish antemarginal band of the hindwings is scarcely half as broad as in *texa*, the black submarginal band more extensive and bordered in a darker blue. — *heroica* Fruhst. from South Mexico is in the male recognizable by larger black spots and smaller yellow bands and stripes. — *maximilla* Fruhst. from Espiritu Santo differs from *texa* and *zyxina* by a smaller shape, as well as by darker and above extraordinarily reduced red areas. The under surface might easily be mistaken with that of *titania*, but the black basal spot of the forewing extends farther into the cellule.



*C. codomannus otheres* Fruhst. from Colombia (presumably Muzo) deviates in the male by a shorter *otheres*. red area of the hindwings. Under surface extremely different: the hindwings preponderantly yellow with very narrow black spots and bands prominently adorned with light blue. The marking of the hindwings with its isolated eye-spots resembles much more *cynosura*. The yellow subapical spot of the forewings is more extensive than in *codomannus* from Obidos and Brazil.

*C. eunomia triteia* Fruhst. from Ecuador (Hacienda Anna-Maria, Quevido) differs from *eunomia triteia*. by the narrowed red area of the forewings being confined to a vertical band of a finger's breadth, because a black basal zone extends as far as to the middle of the cellule.

*C. cynosura neocles* Fruhst. from Ecuador differs by reduced red spotting at the wing-base of the *neocles*. hindwings. The preapical spots of the forewings smaller. Under surface easily recognizable by extremely reduced black bands and spots of the hindwings.

*C. sorana menesa* Fruhst. from Bahia is in the male considerably smaller than specimens from Para- *menesa*. guay and Southern Brazil. All the red bands and spots are narrowed. The under surface of the hindwings is duller greyish-black with almost white zigzag-lines. The eye-spots are separated from each other by uncommonly broad yellow bands. Seems to be the product of a dry region.

*C. pygas ophis* Fruhst. from Bahia is in the male larger than specimens from Espiritu Santo and *ophis*. Rio Grande do Sul. The blue submarginal spotting of the hindwings is almost entirely extinct, but the red area of the forewings especially beyond the cell is considerably larger. The under surface has a narrower black apical zone of the forewings and a considerably larger blue spot of the forewings. — *agrianes* Fruhst. from Rio *agrianes*. Grande do Sul differs in the male by the almost entire effacement of the light-blue marking on the upper surface of the forewings and the reduced white dotting of the forewings. Beneath, the deviation is still more conspicuous by the entire discoloration of the hindwings. They appear almost sulphurous with extremely blurred black stripes and reduced eye-spots which, however, are, considering their small size, extraordinarily ornamented in light-blue. — *paragrias* Fruhst. from Bahia deviates from all the *pygas*-races by an extensive though dull *paragrias*. dark bluish-violet reflection on the upper surface of the hindwings, so that a resemblance has been created with *cyllene*, as depicted on t. 102 A a. By the distribution of colours of the upper surface, a certain agreement in the colours has been attained with *Agrias claudianus* Stgr. The under surface forms an intermediary between *pygas* and *pygas agriades*, but the upper surface of the hindwings is of a more intense yellow and the blue spots are more prominent and lighter than even in *pygas ophis*. The specimens are remarkably large, whereby they approximate *ophis*. — *C. cyllene* (p. 495) *forma oberthüri* Niep. from Ecuador is an aberrative form differ- *cyllene*. *oberthüri*. ing only by the under surface where all the blue is darker and more expanded, the white pupils being absent, the yellow subapical band narrower, the blue apical band, however, broader, the yellow distal margin of the hindwings broader, the black submarginal band without blue lunae, but at the proximal border there are seven closely adjoining spots being encircled by black arcs and reaching as far as to the black-framed median markings, the inner angle exhibits a blue, black-shaded spot.

*C. claudinides* Fruhst. from Paraguay greatly resembles above *cyllene* (102 A a). The red area of *claudinides*. the forewings is considerably more reduced than in *cyllene*. The under surface of the hindwings is more faded grey, the two submarginal bands are likewise faded and without blue spots. — *eucale* Fruhst. from Santa Catha- *eucale*. rina (Blumenau) differs from the forms of more northern patriae by the expansion of the black inner margin of the forewings, which sometimes fills up the whole basal third of the cellule. The under surface is much lighter than in *agrianes*, particularly the light yellow preapical band of the forewings is nearly always twice as broad as in *agrianes* and *pygas*. The black submarginal lines of the hindwings effaced. The eyespot-markings of the hindwings are often surrounded only by a very narrow black ring.

*C. hydaspes delmas* Fruhst. from Paraguay is distinguished from the form from Espiritu Santo and *delmas*. Bahia by a narrowed band of the forewings and the considerably reduced blue-iridescent area of the hindwings. The preapical band of the under surface of the forewings is nearly twice as broad.

*C. peristera delna* Fruhst. from Peru (Chanchamayo) is in the male above just as extensively carmine *delna*. as the ♀ of *peristera*. The under surface also approximates that of the ♀ of *peristera*.

*C. atacama manova* Fruhst. from Colombia differs from the Ecuador-specimens by the much narrower *manova*. yellow zone of the forewings and the blue spot of the hindwings reaching only to the cell-apex. The under surface is characterized by a very extensive black submarginal area of the forewings and the widened black longitudinal bands of the forewings. — *carnania* Fruhst. from Peru has a but slightly narrower orange median *carnania*. area than *atacama*. The magnificent spot of the hindwings, however, is still less expanded than in *manova*. The under surface of the hindwings exhibits more extensive black longitudinal stripes than the Colombian race, so that the yellow bands are still more strangulated than in *atacama* from Ecuador and Colombia. — *ronata* Fruhst. from Venezuela exhibits the orange band of the forewings still more incised and narrower than *ronata*.



in *manova*. The blue spot of the hindwings is shorter, broader and darker. The yellow preapical band of the under surface of the forewings is more undulate, narrower than in Colombian specimens, the two antemarginal bands of the hindwings, however, are broader.

J. RÖBER.

45. Genus: *Callicore* (p. 501).

*doris*. As *Callitaenia doris* a *Callicore* was described by FELDER in 1861, which was considered by the author to be a proper genus and formed KIRBY's genus *Mesotaenia*. Appearance and size agree with *Callicore*, but the under surface of the hindwings exhibits dots instead of the cipher. Wings above black, the forewings with a blue basal stripe and a blue oblique discal band, on the hindwings a blue submarginal band. Beneath, all the stripes (2 before the margin and one at it) are black, the forewings in the basal half hemochrome, then a narrow blue band and the apical border silvery white, hindwings silvery white with a red costal margin, with 2 black stripes and 6 black dots. Ecuador. — The animal does not lie before me, so that I cannot give any further details about it.

*asteria*. *C. asteria* G. and S. as above *astala*, but the blue spot in the forewing is absent, but the small white apical spot is much larger; beneath, the forewing is much less red, the hindwing towards the base lighter; only 1 ♂ from Mexico (aberration?).

P. 509: Place the number I. before the heading **Limenitidi**.

49. Genus: *Adelpha* (p. 510).

To *A. melanthe* (p. 512) must be added that the form *melanippe* G. and S. is figured t. 109 d.

*A. ximene* Fldr. is figured t. 109 a.

*A. justina* Fldr.: cf. t. 109 a.

In numbering the genera place:

P. 545: 55. Genus *Chlorippe* (instead of 53).

„ 549: 56. „ *Asterocampa* (instead of 54).

„ 550: 57. „ *Prepona* (instead of 55).

„ 566: 58. „ *Agrias* (instead of 56).

A. SEITZ.

62. Genus: *Zaretas* (p. 578).

*pseuditys*. P. 578, 579. — H. FRUHSTORFER distinguishes yet the following *zaretas*-forms: *zaretas isidora pseuditys* Fruhst. from Espiritu Santo. ♂ forewings nearly rectilinear, apex scarcely prominent. Ground-colour darker than in any other *Zaretas* known hitherto, peculiarly dull and deep red-brown with a somewhat darker tinge at the apex of all the wings. Beneath about as in *cacica* Stgr., but much more intensely red-brown and more densely speckled in black. On the under surface of the hindwings the transverse lines are absent, which in the other *Zaretas* start from the median stripes and bear a striking resemblance to the lateral ribs of a dry leaf.

*anzulella*. ♀ somewhat larger than the ♀ of *itys*, the distal border of the hindwings more extensively black. — *anzulella* Fruhst. from Mexico is the least marked local form known hitherto. Habitus larger than of *ellops*, forewings almost without any spotting, hindwings only with a thin submarginal band. ♀ light yellow with a double, red-brown submarginal band of the hindwings and a red-brown, though single and strongly angled band of the

*bisaltina*. forewings. — *russeus* ♀-fa. *bisaltina* Fruhst. Like *isidora*, but the cellular spot is merged into the distal border

*foliaca*. by a band-like continuation. Resembles *Doleschallia bisaltide* Cr. from Java. — *russeus* ♀-fa. *foliaca* Fruhst. probably belongs to a dry period form. Forewings of a monotonous yellowish-brown, without a transcellular brightening. Hindwings strongly undulated, all the markings obsolete reddish instead of black. Surinam, Obidos,

*vulpecula*. Lower Amazon. — *vulpecula* Fruhst. from Bahia. Smaller than the preceding ones, agreeing in the wing-contour with *vulpina*. Colouring of the wings considerably lighter, only quite blurred reddish apical tinge and entirely reduced red spots and markings. Beneath faded light yellowish-brown, hardly speckled in black. ♀ pale yellow, forewings with some isolated spots at the cell-end and a thin median band being scarcely noticeably continued

*vulpina*. on the hindwing. Dry period form. — *vulpina* Fruhst. from Paraguay has come to Europe in great numbers some years ago. ♂ somewhat lighter than *itys* Cr. from Surinam, apical border of all the wings, however, brownish-violet instead of jet-black and thereby resembling the Brazilian races. The other markings are very much faded. Under surface lighter than in the ♂♂ of *itys* and in *isidora* Cr., darker than in the Brazilian forms. The ♀ exhibits the marks of a dry period; almost light yellow with a broad reddish-violet apical cover and fine red-brown bands on all the wings. Beneath but slightly speckled in red-brown. Margin of the wings strongly undulated like in other forms of the dry period.

J. RÖBER.



## Alphabetical List

with reference to the original descriptions of the forms of the American *Nymphalidae*.

\* signifies that the form is also figured at the place cited.

abana Act. *Hew.* Exot. Butt. 4 (Acr. 6). \* *P36*  
 abas Phyc. *Hew.* Exot. Butt. 3 (Eresia 5). \*  
 aberrans Phyc. *Röb.* Seitz. Macrolep. V, p. 448. \*  
 abia Ad. *Hew.* Ann. Mag. Nat. Hist. (2) 6, p. 436. \*  
 abnormis Mel. *Wr.* Butt. West-Coast. \*  
 abrupta Phyc. *Röb.* Seitz. Macrolep. V, p. 439. \*  
 abulonia Prep. *Fruhst.* Seitz. Macrolep. V, p. 562.  
 abyta Ad. *Hew.* Ann. Mag. Nat. Hist. (2) 6, p. 437. \*  
 abylyna Ad. *Fruhst.* Seitz. Macrolep. V, p. 524.  
 acacates Eu. *Hew.* Equat. Lep., p. 22.  
 acastus Mel. *Edw.* Trans. Am. Ent. Soc., 5, p. 16.  
 acaudata An. *Röb.* Seitz. Macrolep. V, p. 586. \*  
 acea Chlor. *Fldr.* Reise Novara. Lep., p. 435. \*  
 acesas Phyc. *Hew.* Exot. Butt. 3 (Eresia A.). \*  
 aesta Calliz. *L. Mus.* Ulric., p. 298.  
 aeta Phyc. *Hew.* Exot. Butt. 3 (Eresia A.). \*  
 acheronta Coea *F.* System. Entom., p. 501.  
 acipha Act. *Hew.* Exot. Butt. 2 (Acr. 2) \*. \* *3*  
 aeonius Caton. *L. Mant.*, p. 537  
 aeraeina Phyc. *Hew.* Exot. Butt. 3 (Eresia 3.). \*  
 aetnotina Phyc. *Röb.* Seitz. Macrolep. V, p. 449. \*  
 adamsi Callithea *Lathy.* Entomolog. 36, p. 105. \*  
 adelina Chlos. *Stgr.* Verh. Zool.-Bot. Ges. Wien 1875, p. 102.  
 adiante Arg. *Boisd.* Lep. Calif., p. 61.  
 adiate Arg. *Edw.* Butt. North Amer. 3. \*  
 adjutrix Chlos. *Scudd.* Bull. Buffalo Soc. 2, p. 269.  
 adonis Hel. *Riff.* Deutsche Ent. Ztschr. 1907, S. 507. \*  
 adoxa Act. *Jord.* Novit. Zool. 17, p. 465. \*  
 adrastra Ep. *Hew.* Exot. Butt. (Epiph. 2). \*  
 adriana Act. *Hpf.* Stett. Zg. 35, S. 345. \* *P34*  
 adstrieta Ad. *Fruhst.* Seitz. Macrolep. V, p. 518.  
 adusta Eu. *Stich.* Berl. Ent. Ztschr. 48, p. 11.  
 aea Ad. *Fldr.* Reise Novara. Lep., p. 416.  
 aeclus Megist. *F.* Syst. Ent. p. 522.  
 aedon Agr. *Hew.* Proc. Zool. Soc. Lond. 1848, p. 46.  
 aegina Ag. *Fruhst.* Seitz. Macrolep. V, p. 544.  
 aegina Cat. *Fldr.* Wien. Ent. Mon. 5, p. 107.  
 aegon Phyc. *F.* Spec. Ins. 2, p. 130.  
 aelia Prep. *Godm. & Salr.* Ann. Mag. Nat. Hist. (6), p. 355.  
 aenaria Pyrr. *Fruhst.* Stett. Zg. 1908, p. 37.  
 aenea Per. *Röb.* Seitz. Macrolep. V, p. 497.  
 aeolia Ad. *Fldr.* Reise Novara. Lep., 3, p. 419.  
 aequatorialis Phyc. *Röb.* Seitz. Macrolep. V, p. 442. \*  
 aequatorialis Prot. *Bllr.* Proc. Zool. Soc. Lond. 1875, p. 35. \*  
 aequatorialis Pyrr. *Wgn.* Sitz.-Ber. Acad. Münch. 1870, p. 171.  
 aereta Act. *Jord.* Entomologist 1913, Nr. 2. \* *P35*  
 aërotome Hel. *Fldr.* Wien. Ent. Mon. 6, p. 79. \* *P35*  
 aeshrion Eun. *Fruhst.* Soc. Entom. 22, p. 33.  
 aethalia Ad. *Fldr.* Reise Novara. Lep. 3, p. 419.  
 agacles Dyn. *Dalm.* Anal. Entom., p. 47.  
 aganisa Did. *Bsd.* Spec. Gén. 1, pl. 9. \*  
 agatha Tem. *F.* Mant. Ins. 2, p. 54.  
 agathina Chlor. *Cr.* Pap. Exot. 2, pl. 167. \*  
 agathis Chlor. *Godt.* Encycl. Méthod. 9, p. 377.  
 agathus Prep. *Fruhst.* Seitz. Macrolep. V, p. 560.  
 agele Eun. *Seitz.* Macrolep. V, p. 487. \*  
 agilla Ad. *Fruhst.* Ent. Ztschr. 21, p. 172.  
 aglaope Hel. *Fldr.* Wien. Ent. Mon. 6, p. 79. \* *385*  
 aglaopeia Hel. *Stgr.* Iris 9, p. 305. \* *385*  
 aglaura Ness. *Dbl. & Hew.* Gen. Diurn. Lep., pl. 29. \*  
 agnata Hel. *Slich.* Gen. Ins. Nymph. Hel. p. 46.  
 agnes Dyn. *Röb.* Seitz. Macrolep. V, p. 506. \*  
 aidea An. *Guer.* Ic. Règne Anim. Ins., p. 478.  
 aides Eu. *Stich.* Berl. Ent. Ztschr. 48, p. 30.  
 alala Ad. *Hew.* Ann. Mag. Nat. Hist. 1847 (20), p. 261. \*  
 alalia Act. *Fldr.* Wien. Ent. Mon. 4, p. 105. \* *P3*  
 alaskensis Arg. *Holl.* Entomol. News 11, p. 383.  
 alaskensis Arg. *Lehm.* Seitz. Macrolep. V, p. 424. \*  
 alba Hel. *Riff.* Berl. Ent. Ztschr. 45, p. 208.  
 alberta An. *Dre.* Proc. Zool. Soc. Lond. 1876, p. 234. \*  
 alberta Arg. *Edw.* Canad. Ent. 12, p. 113.  
 albescens Phyc. *Röb.* Seitz. Macrolep. V, p. 444. \*

albicornis Ag. *Stgr.* Exot. Tagf. 1, p. 127.  
 albidula Dyn. *Weeks.* Canad. Ent. 33, p. 266.  
 albifasciata Ep. *Röb.* Seitz. Macrolep. V, p. 478.  
 albifida Ad. *Fruhst.* Ent. Ztschr. Stuttg. 21, p. 172.  
 albimaculata Hel. *Stgr.* Iris 9, p. 294.  
 albina Ad. *Fruhst.* Seitz. Macrolep. V, p. 519.  
 albinea Hel. *Riff.* Berl. Ent. Ztschr. 43, p. 408.  
 albinotatus Prot. *Bllr.* Proc. Zool., Soc. Lond. 1873, p. 775. \*  
 albigennis Per. *Bllr.* Cistul. Entom. 1, p. 160.  
 albiplaga Mel. *Aaron.* Papilio 4, p. 175.  
 albiplumetata Hel. *Riff.* Berl. Ent. Ztschr. 45, p. 199. \* *383*  
 albiplumetata Phyc. *Röb.* Seitz. Macrolep. V, p. 444. \*  
 albiplumetata Phyc. *Röb.* Seitz. Macrolep. V, p. 441. \*  
 albiplumetata Act. *Hew.* Equat. Lep., p. 23. \* *P365*  
 albucella Hel. *Bal.* Ent. Month. Mag. 3, p. 88. \* *P35*  
 albula Hel. *Riff.* Berl. Ent. Ztschr. 45, p. 208.  
 alestis Arg. *Edw.* Trans. Am. Ent. Soc. 5, p. 289.  
 alebiades Meg. *Stgr.* Verh. Zool.-Bot. Ges. Wien 25, p. 104.  
 aleione Act. *Hew.* Exot. Butt. 4 (Acr. 1.). \* *P362*  
 alemena Eun. *Dbl. & Hew.* Gen. Diurn. Lep. 1, pl. 28. \*  
 alethes Phyc. *Bal.* Ent. Month. Mag. 1, p. 82.  
 alexon Phyc. *G. & S.* Ann. Mag. Nat. Hist. (6) 3, p. 353.  
 alicia Ag. *Bat.* Journ. Entom. 2, p. 312. \*  
 alicia Ast. *Edw.* Butt. Unit. Stat. (1868), p. 135.  
 alicia Per. *Hew.* Exot. Butt. 4 (Catagr. 12.). \*  
 aliphara Eu. *Godt.* Enc. Méth. Zool. 9, p. 246.  
 alithea Hel. *Hew.* Equat. Lep., p. 10. \* *P384*  
 alla Act. *Jord.* Novit. Zool. 17, p. 465. \* *P38*  
 alma Mel. *Streck.* Lep. Rhop. Het., p. 135.  
 alma Phyc. *Stgr.* Exot. Tagf. 1, p. 93. \*  
 alpais Eun. *Godt.* Enc. Méthod. 9, p. 416.  
 alpheios Ag. *Fruhst.* Seitz. Macrolep. V, p. 545. \*  
 alsina Phyc. *Hew.* Trans. Ent. Soc. Lond. 1869, p. 33.  
 altissima Pyrr. *Ros et Tth.* Trans. Ent. Soc. Lond. 1913.  
 alycia Eun. *Fruhst.* Stett. Zg. 1909, p. 210.  
 amalfreda Hel. *Riff.* Berl. Ent. Ztschr. 45, p. 212.  
 amandus Hel. *Sm.-Ky.* Rhop. Exot. 1. \* *386*  
 amaryllis Hel. *Fldr.* Wien. Ent. Mon. 6, p. 80. \* *387*  
 amata Eun. *Dre.* Cistul. Entom. 1, p. 285.  
 amata Hel. *Stgr.* Iris 9, p. 301.  
 amatheia Anart. *L. Syst. Nat.* (X), p. 478.  
 amathusia Hel. *Cr.* Pap. Exot. 2, p. 124. \* *390*  
 amazona Hel. *Stgr.* Iris, p. 306.  
 amazonica Dyn. *Röb.* Seitz. Macrolep. V, p. 505. \*  
 amazonica Agr. *Stgr.* Iris 1898, p. 362.  
 amazonica Pan. *Fruhst.* Entom. Rundsch. 29, p. 46.  
 amazonica Phyc. *Bat.* Journ. Entomol. 2, p. 190.  
 amazonica Tem. *Fruhst.* Stett. Zg. 68, p. 232.  
 ambrosia An. *Dre.* Cistul. Entomol. 1, p. 288.  
 amelia Eun. *Cr.* Pap. Exot. 2, pl. 136. \*  
 amenophis An. *Fldr.* Reise Novara Lep., 3 p. 449.  
 americana Arg. *Strd.* Rep. Norv. Arct. Exp. Fram (3), p. 30.  
 anesia Prep. *Fruhst.* Iris 17, p. 290.  
 amida Act. *Hew.* Trans. Ent. Soc. Lond. 1854 (2), p. 245. \* *P366*  
 amoena Act. *Jord.* Seitz. Macrolep. V, p. 364. \*  
 amoena Eu. *Stich.* Berl. Ent. Ztschr. 48, p. 13.  
 amor Hel. *Stgr.* Exot. Schmett. 1, p. 78. \* *386*  
 amphichloë Ag. *Bsd.* Lepid. Guatémala, p. 27.  
 amphiktion Prep. *Fruhst.* Seitz. Macrolep. V, p. 556.  
 amphilecta Act. *Jord.* Seitz. Macrolep. du Globe, V, p. 366.  
 amphimachus Prep. *F.* System. Entom., p. 457.  
 amphinome Ag. *L. Syst. Nat.* 2, p. 779.  
 amphira Pyrr. *Bat.* Journ. Entomol. 2, p. 319.  
 amphitrite Hel. *Riff.* Berl. Ent. Ztschr. 46, p. 157.  
 amphira Dyn. *Hew.* Exot. Butt. 2 (Eubagis 3.). \*  
 amyela Eun. *Godt.* Encycl. Méthod. 9, Supplém., p. 823.  
 amydon Agr. *Hew.* Exot. Butt. 1 (Agr. et Sid.). \*  
 amydonides Agr. *Fruhst.* Entom. Ztschr. Guben 1898, p. 166.  
 amydonius Agr. *Stgr.* Exot. Tagf. 1, p. 164. \*  
 anymone Cyst. *Nén.* Cat. Mus. Petr. Lep., p. 123. \*  
 anacreon Hel. *Sm. & Ky.* Rhop. Exot. 1. \*  
 anactorie Hel. *Dbl.* Gen. Diurn. Lep. 1, p. 103. \*

adonides V *Niop* 385



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 anicia Mel. *Dbl.* & *Hew.* Gen. Diurn. Lep. 1, p. 179.  
 anieta Phy. *Hew.* Exot. Butt. 3 (Eresia 6).  
 anna An. *Stgr.* Iris 10, p. 149.\*  
 anna Arg. *Blch.* Gay Faun. Chil. 7, p. 23.  
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 anna Hel. *Neust.* Verh. Zool.-Bot. Ges. Wien 58, p. 276. *385*  
 annetta Hel. *Riff.* Berl. Ent. Ztschr. 45, p. 187. *P.283*  
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 apicalis Cyst. *Stgr.* Exot. Tagf. 1, p. 130.  
 apicalis Phy. *Röb.*, Seitz, Macrolep. V, p. 447.\*  
 appiades An. *Röb.*, Seitz, Macrolep. V, p. 585.\*  
 appias An. *Hbn.* Smmlg. Exot. Schmett.\*  
 appiciata An. *Röb.*, Seitz, Macrolep. V, p. 582.  
 approximata Mel. *Streck.* Lep. Rhop. Het. Suppl. 3, p. 23.  
 apsendes Hel. *Hbn.* Zutr. Smmlg. Exot. Schmett. 1, p. 25.\*  
 aquilia Ad. *Fruhst.* Seitz, Macrolep. V, p. 531.  
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 aristomache Hel. *Riff.* Berl. Ent. Ztschr. 46, p. 131. *390*  
 arizonensis Linn. *Edw.* Papilio 2, p. 22.  
 arquatus Eu. *Stich.* Berl. Ent. Ztschr. 48, p. 9.\*  
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 arthemis Linn. *Drury* Ill. Exot. Ent. 2, pl. 10.\*  
 artifex Hel. *Stich.* Entom. Nachr. 25, p. 30.  
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 astinax An. *Cr.* Pap. Exot. 4, pl. 337.\*  
 astraea Hel. *Stgr.* Iris 9, p. 311. *389*  
 astrieta Ect. *Fruhst.* Stett. Zg. 1908, p. 43.  
 astyanax Linn. *F.* Syst. Entom., p. 447.  
 astydamia Hel. *Erichs.* Schomburgk Reis 3, p. 595. *389*  
 atacama Cat. *Hew.* Exot. Butt. (Catagr. 1).  
 atalanta Pyr. *L.* Syst. Nat. (X), p. 478.  
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 attalis Prep. *Fruhst.*, Seitz, Macrolep. V, p. 564.  
 attilis Hel. *Dbl.* Gen. Diurn. Lep. 1, p. 102. *388*  
 attica Ad. *Fldr.* Reise Novara Lep., 3, p. 421.  
 aufidia Ad. *Fruhst.*, Seitz, Macrolep. V, p. 525.  
 augusta Eun. *Bat.* Entom. Month. Mag. 3, p. 135.  
 augusta Hel. *Riff.* Berl. Ent. Ztschr. 45, p. 2.  
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 augustina Mel. *W.* Butt. West-Coast.\*  
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 aveyrona Phy. *Bat.* Journ. Entom. 2, p. 192.\*  
 azeca Villa *Dbl.* & *Hew.* Gen. Diurn. Lep., p. 407.\*  
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 berania Meg. *Hew. Exot. Butt.* (Timetes 1).  
 berenice Phy. *Fldr. Wien. Ent. Mon.* 6, p. 110.  
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 biblis Did. *F. Syst. Entom.*, p. 505.  
 biederimanni Ad. *Fruhst., Seitz, Macrolep. V.* p. 530.  
 biplagiata Viet. *Fruhst. Stett. Zg.* 68, p. 13.  
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 bipupillata Dyn. *Röb., Seitz, Macrolep. V.* p. 507.  
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 blomfieldia Sm. *F. Spec. Insect.* 2, p. 84.  
 boeotia Ad. *Fldr. Reise Novara Lep.* 3, p. 422.  
 bogotana Cyst. *Fldr. Reise Novara Lep.* 3, p. 451.  
 bogotana Eupt. *Stgr. Exot. Tagf.* 1, p. 90.  
 bogotanus Prot. *Bttr. Proc. Zool. Soc. Lond.* 1873, p. 773.  
 boisduvallii Arg. *Dup. Lep. Fr. Suppl.* 1, pl. 20.\*  
 boliviana An. *Dre. Proc. Zool. Soc. Lond.* 1877, p. 642.\*  
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 boneardi Phy. *G. & S. Proc. Zool. Soc. Lond.* 1878, p. 268.  
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 bonreieri Callic. *Guen. Mém. Phys. Gen.* 22, p. 385.  
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 brevimaclata Hel. *Stgr. Iris.* 6, p. 292.  
 brevipalpis Callic. *Guen. Mém. Phys. Gen.* 22, p. 390.  
 brome Cat. *Bsd. Cuv. Règne anim. Ins.* 2, pl. 138.\*  
 broneus Hel. *Stich. Wytzm. Insect. Nymph. Hel.*, p. 21.  
 brooksiana Prep. *G. & S. Biol. Centr.-Amer. Rhop.* 2, p. 695.\*  
 brucei Mel. *Edu. Canad. Ent.* 20, p. 81.  
 brunhilda Chlos. *Stgr. Exot. Tagf.* 1, p. 96.  
 brunhilda Phy. *Röb., Seitz, Macrolep. V.* p. 447.\*  
 brunnea Eu. *Stich. Berl. Ent. Ztschr.* 48, p. 6.\*  
 brunnea Eun. *Salv. Ann. Mag. Nat. Hist.* (4) 4, p. 174.  
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 buckleyi Callith. *Hew. Equat. Lepid.*, p. 29.  
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 butleri Dione. *Stich. Wytzm. Gen. Ins., fasc.* 63, p. 18.  
 butleri Prot. *Stgr. Exot. Tagf.* 1, p. 186.\*  
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 callista Hel. *Riff. Berl. Ent. Ztschr.* 45, p. 212.  
 callonia Phy. *Stgr. Exot. Tagf.* 1, p. 92.\*  
 callyceopsis Hel. *Cr. Pap. Exot.* 2, p. 143.\*  
 calymma Act. *Jord. Entomologist* 1913, No 2.  
 cambyas An. *Dre. Proc. Zool. Soc. Lond.* 1877, p. 646.  
 camelita Per. *Hew. Exot. Butt.* 5 (Catagr. 13).  
 camilla Prep. *G. & S. Biol. Centr.-Amer. Rhop.* 1, p. 321.  
 camillus Phy. *Edu. Trans. Am. Ent. Soc.* 3, p. 268.  
 campana Eun. *Fldr. Wien. Ent. Mon.* 5, p. 104.  
 campaspe Per. *Hew. Exot. Butt.* 4 (Cybd. 4).  
 campeda Ad. *Fruhst., Seitz, Macrolep. V.* p. 532.  
 cana Cyst. *Er. Schomburgk. Reisen* 3, p. 599.  
 candrena Callic. *Godt. Encycl. Méthod.* 9, p. 425.  
 caninia Ad. *Fruhst., Seitz, Macrolep. V.* p. 516.\*  
 canoma Per. *Dre. Trans. Ent. Soc. Lond.* 1874, p. 156.  
 canthara Pseud. *Dbl. Gen. Diurn. Lep.* 1, p. 226.  
 canuleia Ad. *Fruhst., Seitz, Macrolep. V.* p. 526.  
 canutia Act. *Hpfjr. Stett. Zg.* 35, p. 345.  
 capenas Mysc. *Hew. Exot. Butt.* 2 (Cybd. 3).  
 eaphira Ad. *Hew. Trans. Ent. Soc. Lond.* 1869, p. 73.  
 eapnodes Act. *Jord., Seitz, Macrolep. V.* p. 360.  
 earabaia Act. *Jord. Novit. Zool.* 17, p. 463.  
 earalis Eun. *Hew. Exot. Butt.* 2 (Cybd. 3).  
 earbo Eu. *Stich. Berl. Ent. Ztschr.* 48, p. 13.\*  
 eardases Per. *Hew. Exot. Butt.* 4 (Cybd. 4).  
 eardni Pyr. *L. Syst. Nat.* (X), p. 175.  
 earesa Eun. *Hew. Exot. Butt.* (Cybd. 3).  
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 earias Eun. *Hew. Exot. Butt.* 2 (Cybd. 3).  
 carica Act. *Weym. Stübel's Reise.* p. 73.  
 earigia Phy. *Schs. Proc. Un. Stat. Mus.* 24, p. 395.  
 earme Phy. *Dbl. & Hew. Gen. Diurn. Lep.* 1, pl. 20.\*  
 earmela Ad. *Fruhst., Seitz, Macrolep. V.* p. 529.  
 earmen Callic. *Guen. Mém. Phys. Gen.* 22, p. 392.  
 earyeina Act. *Jord., Seitz, Macrolep. V.* p. 373.\*  
 earye Pyr. *Hbn. Smmlg. Exot. Schmiett.* 1.\*  
 easiphia Phy. *Hew. Equat. Lepid.*, p. 25.  
 eassandra Hel. *Fldr. Wien. Ent. Ztschr.* 6, p. 419.  
 cassiopea Phy. *G. & S. Ann. Mag. Nat. Hist.* (5) 2, p. 262.  
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 castilla Phy. *Fldr. Wien. Ent. Mon.* 6, p. 419.  
 eatablymata Ag. *Fruhst., Seitz, Macrolep. V.* p. 542.  
 eatachlora Prep. *Stgr. Exot. Tagf.* 1, p. 162.  
 eatharinae Hel. *Stgr. Exot. Schmiett.* 1, p. 79.  
 eatharinae Pyr. *Stgr. Exot. Tagf.* 1, p. 131.  
 catinka An. *Dre. Proc. Zool. Soc. Lond.* 1877, p. 644.\*  
 catochaera Act. *Jord. Novit. Zool.* 17, p. 468.  
 catula Phy. *Hpfjr. Stett. Zg.* 1874, p. 350.  
 catulus Meg. *Feldr. Wien. Ent. Mon.* 5, p. 108.  
 cauea Act. *Jord., Seitz, Macrolep. V.* p. 371.  
 caudata An. *Röb., Seitz, Macrolep. du Globe.* V, p. 584.\*  
 ceecrops Prot. *Dbl. & Hew. Gen. Diurn. Lep.* 1, p. 314.\*  
 celedes Act. *Jord. Entomol.* 1913, Nr. 2.  
 celesmina Phy. *Röb., Seitz, Macrolep. V.* p. 448.\*  
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 centralis An. *Röb., Seitz, Macrolep. V.* p. 586.\*  
 centralis Cat. *Stgr. Exot. Tagf.* 1, p. 108.  
 centralis Prep. *Fruhst. Iris* 17, p. 284.  
 cephalenia Hel. *Fldr. Novara Lep.* 2 (2), p. 373.  
 ceraehates Ad. *Fruhst., Seitz, Macrolep. V.* p. 521.  
 cerealia An. *Dre. Proc. Zool. Soc. Lond.* 1877, p. 642.\*  
 cerquita Phy. *Dogn. Ann. Soc. Ent. Belg.* 38, p. 680.  
 cerrita Mel. *Wr. Butt. West-Coast.*\*  
 ceryx Callic. *Hew. Exot. Butt.* 3 (Catagr. 10).  
 cestus Ad. *Hew. Ann. Mag. Nat. Hist.* 1847 (20), p. 261.\*  
 chaeronea An. *Fldr. Wien. Ent. Mon.* 5, p. 110.  
 chalcodon Mel. *Dbl. & Hew. Gen. Diurn. Lep.* 1, p. 180.  
 chalciope Prep. *Hbn. Smmlg. Exot. Schmiett.*\*  
 chalciope Prep. *Fruhst., Seitz, Macrolep. V.* p. 557.



- chalcotea Pan. *Hew. Ent. Month. Mag.* 4, p. 170.  
 chancha Ad. *Stgr. Exot. Tagf.* 1, p. 144.  
 chara Mel. *Edw. Canad. Entom.* 15, p. 209.  
 chariclea Arg. *Schn. Neu. Mag.* 5, p. 588.  
 charitonia Hel. *L. Syst. Nat. (XII)* 2, p. 757.  
 charlotti Arg. *Brs. Canad. Entom.* 29, p. 39.  
 chaseba Per. *Hew. Exot. Butt.* 1 (Catagr. 5).  
 chea Act. *Drc. Ann. Mag. Nat. Hist.* 7 (12), p. 220. *P. 364*  
 chelone Pol. *Schz. Iris* 1902, p. 324.  
 chernbina Chlor. *Fldr. Reise Novara Lep.* 3, p. 435.  
 chestertoni Hel. *Hew. Exot. Butt.* 5.\*  
 chiliarches Prep. *Fruhst., Seitz Macrolep. V.* p. 558.  
 chionens Hel. *Bat. Ent. Month. Mag.* 1, p. 58. *P. 364*  
 chiricannus Prot. *Röb., Seitz, Macrolep. V.* p. 580.  
 chiron Meg. *F. Syst. Ent.*, p. 452.  
 chironides Meg. *Stgr. Exot. Tagf.* 1, p. 134.  
 chitone Arg. *Edw. Canad. Entom.* 11, p. 72.  
 chloë Ag. *Cr. Pap. Exot. Suppl.*, pl. 5.\*  
 chlorochroa Eun. *Salv. Ann. Mag. Nat. Hist.* (4) 4, p. 172.  
 chlorotaenia Chlor. *Röb., Seitz, Macrolep. V.* p. 546.  
 choarina Hel. *Hew. Ent. Month. Mag.* 9, p. 83. *P. 366*  
 chorienes Eun. *Fruhst. Stett. Zg.* 1909, p. 212.  
 chorophila An. *Röb., Seitz, Macrolep. du Globe, V.* p. 591.\*  
 chromis Caton. *Dbl. & Hew. Gen. Diurn. Lep.*, pl. 27.\*  
 chromis Phy. *G. & S. Ann. Mag. Nat. Hist.* 5 (2), p. 260.  
 chromus Prep. *Guér. Ic. Règne anim. Ins.*, p. 478.  
 chrysantis Hel. *G. & S. Biol. Centr.-Amer. Rhop.* 1, p. 146. *P. 366*  
 chryseis Dyn. *Bat. Journ. Entom.* 2, p. 322.\*  
 chrysites Ep. *Latr. Humb.-Bonpl. Observ. Zool.* 1, p. 245.\*  
 chrysophana An. *Bat. Ent. Month. Mag.* 3, p. 152.  
 chrysoptera Pol. *Wr. Butt. West-Coast.\**  
 cibyra Ad. *Fruhst., Seitz, Macrolep. V.* p. 529.  
 ciela An. *Mschlr. Verh. Zool.-Bot. Ges. Wien* 26, p. 319.\*  
 cillene Col. *Cr. Pap. Exot.* 3, pl. 215.\*  
 cinara Eun. *Hew. Stett. Zg.* 1909, p. 215.  
 cinetus Prep. *Fruhst. Iris* 17, p. 280.  
 clara Act. *Jord., Seitz, Macrolep. V.* p. 372.  
 clara Hel. *F. Ent. Syst.* 37 (1), p. 161. *P. 366*  
 clara Phy. *Bat. Journ. Entom.* 2, p. 192.  
 clarescens Hel. *Btlr. Ann. Mag. Nat. Hist.* (4) 15, p. 223. *P. 377*  
 claudia Eupt. *Cr. Pap. Exot.* 3, pl. 69.\*  
 claudia Hel. *G. & S. Biol. Centr.-Amer. Rhop.* 1, p. 145. *P. 366*  
 claudia Agr. *Schulz. Naturforscher* 9, p. 100.\*  
 claudianus Agr. *Stgr. Exot. Tagf.* 1, p. 164.\*  
 claudina Agr. *Godt. Encycl. Méthod.* 9, p. 421.  
 claudina Phy. *Esch. Kotzeb. Reise* 3, p. 212.\*  
 clasa Act. *Hew. Exot. Butt.* 4 (Acr. 6). *P. 362*  
 cleobaea Eu. *Hbn.-G. Zutr. Smmlg. Exot. Schmett.* 1, p. 7.\*  
 cleomestra An. *Hew. Exot. Butt.* 4 (Paphia 2).  
 elio Arg. *Edw. Trans. Am. Ent. Soc.* 5, p. 106.  
 elio Phy. *L. Mus. Uric.*, p. 229.  
 elisithera Per. *Hew. Boliv. Butt.*, p. 7.  
 cloelia Per. *Hew. Exot. Butt.* 4 (Catagr. 11).  
 clothilda Chlor. *Fldr. Reise Novara Lep.* 3, p. 437.\*  
 cluvia An. *Hpfjr. Stett. Zg.* 1874, p. 354.  
 cluvia Phy. *S. & G. Biol. Centr.-Amer. Rhop.* 1, p. 198.\*  
 clymena Gallie. *Cr. Pap. Exot.* 1, pl. 24.\*  
 clysonymus He. *Latr. Humb.-Bonpl. Obs. Voy.* 2, p. 128.\*  
 clytemnestra Hypna *Cr. Pap. Exot.* 2, pl. 137.\*  
 elytia Eun. *Hew. Exot. Butt.* 1. (Cybd. 1).  
 elytia Hel. *Cr. Pap. Exot.* 1, p. 103. *P. 390*  
 eocala Ad. *Cr. Pap. Exot.* 2, pl. 242.\*  
 eocalina Ad. *Fruhst., Seitz, Macrolep. V.* p. 516.\*  
 eodemannus Cat. *F. Spec. Ins.* 2, p. 57.  
 eoeades Dyn. *Burm. Descr. Rép. Argent.* 5, p. 170.  
 eoela Phy. *Druce Ent. Month. Mag.* 11, p. 37.  
 eoelinula Gallie. *Guén. Mém. Phys. Gen.* 22, p. 389.  
 coenia Prec. *Hbn. Smmlg. Exot. Schmett.* 2, p. 32.  
 coenus Dyn. *F. Entom. Syst.* 3 (1), p. 308.  
 coerulea Eun. *G. & S. Proc. Zool. Soc. Lond.* 1877, p. 64.  
 cognata Hel. *Riff. Deutsche Ent. Ztschr.* 1907, p. 506.  
 colada Ad. *Fldr. Wien. Ent. Mon.* 6, p. 116.  
 collina Ad. *Hew. Ann. Mag. Nat. Hist.* 1847 (20), p. 262.\*  
 colombina Hel. *Stgr. Iris* 9, p. 295.  
 colon Hel. *Weym. Stett. Zg.* 51, p. 291.  
 colon Mel. *Edw. Papilio* 1, p. 45.  
 colonia Mel. *Wr. Butt. West-Coast.\**  
 columbana Caton. *Stich. Berl. Ent. Ztschr.* 44, p. 41.  
 columbia Arg. *Edw. Pacif. Coast. Lep.* No 26 (1877).  
 columbiana Cat. *Stgr. Exot. Tagf.* 1, p. 263.  
 columbiana Tem. *Fruhst. Stett. Zg.* 68, p. 230.  
 comma Pol. *Harr. Ins. Inj. Veget.*, p. 221.  
 commena Per. *Hew. Exot. Butt.* 4 (Catagr. 11).  
 completa Ad. *Fruhst. Ent. Ztschr. Stuttg.* 21, p. 172.  
 comta Act. *Jord. Novit. Zool.* 17, p. 466. *P. 366*  
 concinna Hel. *Stich. Wytsm. Gen. Ins. Nymph. Hel.*, p. 28. *P. 387*  
 concolor An. *Röb., Seitz, Macrolep. V.* p. 584.  
 conoordia Eun. *Hew. Exot. Butt.* 1 (Cybd. 1).  
 conours Hel. *Weym. Iris* 6, p. 317. *P. 385*  
 conferta Phy. *Fldr. Reise Novara Lep.*, 3, p. 394.  
 conflua Phy. *Röb., Seitz, Macrolep. V.* p. 442.  
 confluens Act. *Jord., Seitz, Macrolep. V.* p. 365.  
 confluens Sid. *Stgr. Exot. Tagf.* 1, p. 182.\*  
 confusa Prep. *Niep. Lepidoptera Niepeltiana.* p. 31.\*  
 congener Hel. *Weym. Stübels Reise Lep.*, p. 117. *P. 348*  
 consobrina Callie. *Guér. Ic. Règne anim. Ins.*, p. 482.  
 conspiciua Act. *Jord. Entomologist* 1913, No 2. *P. 394*  
 consticta Prec. *Fldr. Reise Novara Lep.* 3, p. 401.  
 contigua Hel. *Weym. Stübels Reise Lep.*, p. 118. *P. 386*  
 cooperi Mel. *Behr. Proc. Calif. Ac. Sci.* 1863, p. 90.  
 copiosus Eu. *Stich. Wytsm. Gen. Ins. Lep. Nymph. Hel.*, p. 57.  
 cora Ad. *Fruhst. Ent. Ztschr. Stuttgart* 21, p. 172.  
 cora Arg. *Luc. Ann. Soc. Ent. Fr.* 1850, p. 249.  
 coralii Hel. *Btlr. Cistul. Entom.* 2, p. 151.  
 coreyra Ad. *Hew. Ann. Mag. Nat. Hist.* 1847 (20), p. 262.\*  
 corduba Act. *Hew. Boliv. Butt.*, p. 6. *P. 362*  
 core Dyn. *Röb., Seitz, Macrolep. V.* p. 504.  
 coresia Meg. *Godt. Encycl. Méthod.* 9, p. 359.  
 corinna Meg. *Latr. Humb.-Bonpl. Observ. Zool.* 2, p. 84.\*  
 corita An. *Fruhst. Societ. Entom.* 1916, p. 14.  
 corita Meg. *Ww. Gen. Diurn. Lep.*, p. 263.  
 cornelia Arg. *Edw. Canad. Entom.* 24, p. 106.  
 coronis Arg. *Behr. Proc. Calif. Ac. Sci.* 2, p. 173.  
 corviana Cyst. *Btlr. Proc. Zool. Soc. Lond.* 1901, p. 713.  
 corybassa Phy. *Hew. Boliv. Butt.*, p. 6.  
 coryneta Ad. *Hew. Boliv. Butt.*, p. 8.  
 cotyora Per. *Hew. Boliv. Butt.*, p. 7.  
 crameri Pyrr. *Aur. Kong. Svensk. Vet. Akad. Handl.* 9, p. 98.  
 crassina Prep. *Fruhst. Insektenbörse* 1904, p. 126.  
 crassinia Act. *Hpfjr. Stett. Zg.* 35, p. 345. *P. 369*  
 eratais An. *Hew. Boliv. Butt.*, p. 9.  
 cretaea Chlor. *Stich. Berl. Ent. Ztschr.* 1900, p. 147.\*  
 crethion Meg. *F. Gen. Ins.* p. 252.  
 erina Phy. *Schs. Proc. Un. Stat. Mus.* 24, p. 392.  
 erispus Hel. *Stgr. Exot. Tagf.* 1, p. 76. *P. 388*  
 erithona Phy. *Salv. Ann. Mag. Nat. Hist.* (4) 7, p. 415.  
 eroeale Chlos. *Edw. Trans. Amer. Ent. Soc.* 5, p. 17.  
 croesus Agr. *Stgr. Iris* 1895, p. 374.  
 erneis Act. *Jord. Entomologist* 1913, No 2. *P. 392*  
 eubana An. *Salv. Trans. Ent. Soc. Lond.* 1869, p. 396.  
 eubana Luc. *Fruhst. Entomol. Rundschau* 29, p. 14.  
 euellinia Chlor. *Fruhst. Stett. Zg.* 1907, p. 250.  
 euparina Pyrr. *Bat. Journ. Entom.* 2, p. 318.  
 eupidineus Hel. *Stich. Wyts. Gen. Ins. Nymph. Hel.*, p. 31.  
 envieri Lib. *Godt. Encycl. Méthod.* 9, p. 171.  
 cuyaba Ad. *Fruhst., Seitz, Macrolep. V.* p. 522.  
 cyananthe Mysc. *Fldr. Reise Novara Lep.*, p. 408.\*  
 cyane Chlor. *Latr. Humb.-Bonpl. Observ. Zool.* 2, p. 82.\*  
 cyanea Act. *Jord., Seitz, Macrolep. V.* p. 361.  
 cyanea Polygr. *G. & S. Ann. Mag. Nat. Hist.* (4) 2, p. 148.  
 cyaniria Mysc. *Dbl. & Hew. Gen. Diurn. Lep.*, p. 222.\*  
 cyanomelas Mysc. *Röb., Seitz, Macrolep. V.* p. 482.\*  
 cyanomelas Van. *Dbl. & Hew. Gen. Diurn. Lep.* 1, p. 201.\*  
 cybele Arg. *F. Syst. Ent.*, p. 516.  
 cybele Hel. *Cr. Pap. Exot.* 2, p. 139. *P. 385*  
 cybelina Hel. *Stgr. Iris* 9, p. 304.\*  
 cyclopia Zar. *Röb., Seitz, Macrolep. V.* p. 578.  
 cyclops Cat. *Stgr. Iris* 4, p. 68.  
 cydnides Hel. *Stgr. Exot. Schmett.* I, p. 77. *P. 384*  
 eydno Hel. *Dbl. Gen. Diurn. Lep.* 1, p. 103. *P. 384*  
 cyllene Cat. *Dbl. & Hew. Gen. Diurn. Lep.*, pl. 28.\*  
 cyneas Phy. *G. & S. Proc. Zool. Soc. Lond.* 1878, p. 269.  
 cynisea Phy. *G. & S. Biol. Centr.-Amer. Rhop.* 1, p. 191.\*  
 cyno Phy. *G. & S. Ann. Mag. Nat. Hist.* (6) 3, p. 354.  
 cynosura Cat. *Dbl. & Hew. Gen. Diurn. Lep.*, pl. 28.\*  
 cypris Arg. *Edw. Butt. North Amer.* 3.\*  
 cyrbea Hel. *Godt. Enc. Méthod. Zool.* 9, p. 203.  
 cythera Hel. *Hew. Equat. Lep.*, p. 9. *P. 387*  
 cytherea Ad. *L. Mus. Uric.*, p. 305.  
 cytheris Arg. *Drury. Ill. Exot. Entom.* 2.\*  
 daceleia Ad. *Fruhst., Seitz, Macrolep. V.* p. 523.  
 dagana Ad. *Fruhst., Seitz, Macrolep. V.* p. 521.\*  
 dagon Ad. *Fruhst., Seitz, Macrolep. V.* p. 531.\*  
 daphnia Ag. *Fruhst., Seitz, Macrolep. V.* p. 541.  
 daphnis Ag. *Stgr. Exot. Tagf.* 1, p. 128.



- datis Phy. *Hew. Exot. Butt.* 3 (Eresia 3).  
 datis Sm. *Fruhst. Int. Ent. Ztschr.* Guben 1, p. 319.  
 davisii Ad. *Btlr. Ann. Mag. Nat. Hist.* (4) 20, p. 124.  
 decimia Dyn. *Hew. Exot. Butt.* 2 (Eubagis 1).  
 decolorata Eu. *Stich. Berl. Ent. Ztschr.* 48, p. 3.  
 decorata Phy. *Röb., Seitz, Macrolep. V.* p. 450.  
 decorata Prep. *Fruhst. Insektenbörse* 1904, p. 125.  
 decyanea Agr. *Niep. Lepidopt. Niepeltiana.* p. 30.\*  
 defasciatus Hel. *Neust. Verh. Zool.-Bot. Ges. Wien* 58, p. 264.  
 definitiva Mel. *Aaron Papilio* 4, p. 176.  
 degandii Callith. *Hew. Exot. Butt.* 2 (Call. 2).  
 deinia Hel. *Mschlr. Verh. Zool.-Bot. Ges. Wien* 26, p. 315.  
 deiphile Prep. *Godt. Encycl. Méthod.* 9, p. 408.  
 deleta Ad. *Fruhst., Seitz, Macrolep. V.* p. 518.\*  
 deleta Col. *Stich. Wytsm. Gen. Ins., fasc.* 63, p. 12.  
 delila Col. *F. Syst. Entom.*, p. 510.  
 delila Hel. *Hbn. Smmlg. Exot. Schmett.* 1.\* 390  
 delinita Ad. *Fruhst., Seitz, Macrolep. V.* p. 519.\*  
 delphia Phy. *Fldr. Wien. Ent. Mon.* 5, p. 103.  
 delphicola Ad. *Fruhst. Koch-Grünbergs Reise* II, p. 348.  
 demeter Hel. *Stgr. Iris* 9, p. 310.\*  
 demialba Ad. *Btlr. Cistul. Entom.* 1, p. 77.  
 demonia Act. *Hpfjr. Stett. Zg.* 35, p. 345. P. 368  
 demophon Prep. *L. Mus. Utric.*, p. 215.  
 demophon Hel. *Mén. Cat. Acad. Imp. Pétersb. Lep.* 2, p. 86.\*  
 demophon Prep. *Hbn. Smmlg. Exot. Schmett.*\*  
 denina Cat. *Hew. Exot. Butt.* (Catagr. 1).  
 depuiseti Callith. *Fldr. Wien. Ent. Mon.* 5, p. 107.  
 desmiala Act. *Jord. Entomologist* 1913, No 2. P. 365  
 despoliata Ad. *Fruhst., Seitz, Macrolep. V.* p. 521.\*  
 deucalion Megist. *Fldr. Wien. Ent. Mon.* 4, p. 238.  
 dexamene Arg. *Bsd. Bull. Soc. Entom. Fr.* 1859, p. 157.  
 dexamenes Prep. *Hpfjr. Stett. Zg.* 1874, p. 352.  
 dia An. *G. & S. Proc. Zool. Soc. Lond.* 1881, pl. 34.\*  
 diademata Ad. *Fruhst., Seitz, Macrolep. V.* p. 530.\*  
 diadochus Ad. *Fruhst., Seitz, Macrolep. V.* p. 531.  
 diallas Phy. *G. & S. Ann. Mag. Nat. Hist.* (5) 2, p. 260.  
 diana Arg. *Cr. Pap. Exot.* 1, pl. 98.\*  
 diana Hel. *Riff. Berl. Ent. Ztschr.* 45, p. 204. P. 385  
 dianasa Eu. *Hbn. Smmlg. Exot. Schmett.* 1.\*  
 diasia Ag. *Fruhst., Seitz, Macrolep. V.* p. 541.  
 diatonia Met. *Fruhst. Entom. Rundsch.* 29, p. 14.  
 diatrete Ad. *Fruhst., Seitz, Macrolep. V.* p. 525.  
 diecus Act. *Latr. Humb.-Bonpl. Observ. Zool.* 2, p. 130. P. 365  
 diecoma Phy. *Hew. Exot. Butt.* 3 (Eresia 6).  
 dietynna Phy. *Röb., Seitz, Macrolep. V.* p. 438.\*  
 didia Ad. *Fruhst., Seitz, Macrolep. V.* p. 516.  
 dido Met. *L. Syst. Nat.* 1, p. 782.  
 diffuens Hel. *Riff. Deutsche Ent. Ztschr.* 1907, p. 513.  
 difformata Hel. *Riff. Berl. Ent. Ztschr.* 45, p. 209.  
 diffusa Hel. *Btlr. Cistul. Entomol.* 1, p. 168. P. 374  
 diffusus Prot. *Btlr. Proc. Zool. Soc. Lond.* 1875, p. 36.\*  
 dilatus Hel. *Weym. Iris* 6, p. 323. P. 382  
 dilecta Ep. *Röb., Seitz, Macrolep. V.* p. 478.\*  
 diluta Prep. *Fruhst. Iris* 17, p. 275.  
 dilutior Tem. *Fruhst. Stett. Zg.* 68, p. 233.  
 dinora Ep. *Fassl. Entomol. Rundsch.* 29, No 19.  
 dione Hel. *Neust. Verh. Zool.-Bot. Ges. Wien* 58, p. 267. P. 385  
 dione Hyp. *Latr. Humb.-Bonpl. Observ. Zool.* 2, p. 87.\*  
 diotima Per. *Hew. Exot. Butt.* 1 (Cybd. 2).  
 diotrepes Hel. *Hew. Trans. Soc. Lond.* 1869, p. 33. P. 384  
 diree Gyn. *L. Mus. Utric.*, p. 287.  
 direoides Gyn. *Sepp, Papil. Surinam* 3, pl. 145.\*  
 discoidalis Cat. *Guér. Règne anim. Ins.*, p. 486.  
 discomaculatus Hel. *Weym. Stett. Zg.* 51, p. 289. P. 382  
 dimorphina Phy. *Btlr. Cistul. Entom.* 1, p. 78.  
 dissoluta Eu. *Stich. Berl. Ent. Ztschr.* 48, p. 6.\*  
 diva Hel. *Stich. Wytsm. Gen. Ins. Nymph. Hel.* p. 47.  
 divalis Pan. *Bat. Ent. Month. Mag.* 4, p. 171.  
 divaricata Prec. *Fldr. Reise Novara* Lep. 3, p. 401.  
 divergens Per. *Btlr. Cistul. Entomol.* 1, p. 162.  
 diversa Act. *Jord., Seitz, Macrolep. V.* p. 363.  
 dives Prep. *Fruhst. Iris* 17, p. 290.\*  
 divina Ad. *Fruhst. Entom. Ztschr. Stuttg.* 21, p. 171.  
 divina An. *Röb., Seitz, Macrolep. V.* p. 591.\*  
 divinus Prot. *Btlr. Proc. Zool. Soc. Lond.* 1873, p. 775.  
 dodone Callic. *Guen. Mém. Phys. Gen.* 22, p. 387.  
 dominica Anart. *Skinn. Trans. Amer. Ent. Soc.* 16, p. 86.  
 dominicana An. *G. & S. Proc. Zool. Soc. Lond.* 1884, p. 316.\*  
 dominula Ad. *Mschlr. Verh. Zool.-Bot. Ges. Wien* 26, p. 317.\*  
 donna Prep. *Fruhst., Seitz, Macrolep. V.* p. 557.\*  
 donysa Ad. *Hew. Ann. Mag. Nat. Hist.* 1847 (20), p. 260.\*  
 d'orbigny Per. *Guér. Ic. Règne anim. Ins.*, p. 485.  
 doreas Cyst. *F. Syst. Entom.*, p. 508.  
 doris Callic. *Fldr. Wien. Ent. Mon.* 5, p. 107.  
 doris Hel. *L. Mant.*, p. 536. 390  
 dracaena Phy. *Fldr. Reise Novara* Lep. 3, p. 393.  
 draudti Micr. *Röb., Seitz, Macrolep. V.* p. 453.\*  
 drucei An. *Stgr. Exot. Tagf.* 1, p. 181.  
 drurii Prot. *Btlr. Proc. Zool. Soc. Lond.* 1873, p. 773.  
 druryi Chlor. *Hbn. Smmlg. Exot. Schmett.*\*  
 drusilla Phy. *Fldr. Wien. Ent. Mon.* 6, p. 110.  
 drusinilla Phy. *Röb., Seitz, Macrolep. V.* p. 441.\*  
 dryas Pol. *Edw. Trans. Amer. Ent. Soc.* 3, p. 17.  
 drymaea Phy. *G. & S. Proc. Zool. Soc. Lond.* 1878, p. 268.  
 dryope Chlos. *G. & S. Ann. Mag. Nat. Hist.* (6) 16, p. 96.  
 dryope Hel. *Riff. Berl. Ent. Ztschr.* 45, p. 212.  
 drypetis Phy. *G. & S. Proc. Zool. Soc. Lond.* 1878, p. 269.  
 duilliae Ad. *Fruhst., Seitz, Macrolep. V.* p. 531.\*  
 dulima Cat. *Guen. Mém. Phys. Gen.* 22, p. 410.  
 dumnorix Nap. *Fruhst. Entom. Rundsch.* 29, p. 14.  
 dymas Mel. *Edw. Canad. Entomol.* 9, p. 190.  
 dyonis Dyn. *Hbn. Zutr. Smmlg. Exot. Schmett.* (2) 9.\*  
 eanes Eu. *Hew. Journ. Entom.* 1, p. 155.\*  
 eanides Eu. *Stich. Berl. Ent. Ztschr.* 48, p. 30.\*  
 eavesi Lin. *H. Edw. Proc. Calif. Acad. Sci.* 7, p. 172.  
 eburnea An. *Fruhst. Societ. Entomol.* 22, p. 33.  
 echemus An. *Dbl. & Hew. Gen. Diurn. Lep.*, pl. 49.\*  
 ecuadorensis Hel. *Neust. Verh. Zool.-Bot. Ges. Wien* 58, p. 267.  
 edias Eu. *Hew. Journ. Entomol.* 1, p. 155.\*  
 editha Mel. *Bsd. Ann. Soc. Ent. Fr.* 1852, p. 304.  
 edocla Pyrr. *Dbl. & Hew. Gen. Diurn. Lep.*, p. 253.\*  
 edwardsii Arg. *Reak. Proc. Ent. Soc. Phil.* 6, p. 137.  
 egaea Dyn. *F. Syst. Ent.*, p. 496.  
 egeria Hel. *Cr. Pap. Exot.* 1, p. 54.\* 389  
 egerides Hel. *Stgr. Iris* 9, p. 311. 387  
 egina Meg. *Bat. Journ. Entomol.* 2, p. 123.\*  
 egleis Arg. *Bsd. Ann. Soc. Ent. Belg.* 12, p. 59.  
 egregia Hel. *Riff. Deutsche Ent. Ztschr.* 1907, p. 505.  
 ehrenbergii Morph. *Hbn. Smmlg. Exot. Schmett.* 3.\*  
 ehrhardt Ad. *Neubgr. Societ. Entomol.* 22, p. 50.  
 elada Phy. *Hew. Exot. Butt.* 4 (Eresia 7).  
 elaea Phy. *Hew. Equat. Lepid.*, p. 25.  
 elaphiaca Phy. *Hew. Exot. Butt.* 4 (Eresia 7).  
 elaphina Phy. *Röb., Seitz, Macrolep. V.* p. 439.\*  
 elara An. *G. & S. Trans. Ent. Soc. Lond.* 1897, p. 244.  
 elata Ag. *Fruhst. Stett. Zg.* 68, p. 15.  
 elatus Act. *Dre. Ann. Mag. Nat. Hist.* (7) 12, p. 220. P. 361  
 eleates Phy. *Weym. Iris* 20, p. 18.  
 electa Arg. *Edw. Field and Forest* 3, p. 143.  
 electa Ep. *Stgr. Exot. Tagf.* 1, p. 111.\*  
 electra An. *Ww. Gen. Diurn. Lep.*, p. 319.  
 elegans An. *Röb., Seitz, Macrolep. V.* p. 591.  
 elegans Eun. *Salv. Ann. Mag. Nat. Hist.* (4) 4, p. 173.  
 elegans Hel. *Weym. Iris* 6, p. 326. P. 381  
 eleonora Agr. *Fruhst. Entomol. Nachr.* 1895, p. 219.  
 eleucha Meg. *Hbn. Smmlg. Exot. Schmett.*\*  
 eleuchia Hel. *Hew. Exot. Butt.* 1.\*  
 eleusinus Hel. *Stgr. Exot. Schmett.* 1, p. 76.\*  
 elevatus Hel. *Nödn. Berl. Ent. Ztschr.* 46, p. 5. 385  
 elimaea Hel. *Erichs. Schomburgk Reis.* 3, p. 595.  
 elina An. *Stgr. Iris* 10, p. 150.\*  
 elinda Callic. *Guen. Mém. Phys. Gen.* 22, p. 385.  
 elis Chlor. *Fldr. Wien. Ent. Mon.* 5, p. 109.  
 ellops Zar. *Mén. Cat. Mus. Petr. Lep.* 1, p. 58.\*  
 elongata Hypna *Btlr. Proc. Zool. Soc. Lond.* 1866, p. 209.\*  
 elsa Hel. *Riff. Berl. Ent. Ztschr.* 34, p. 407. 391  
 eluina Callic. *Hew. Exot. Butt.* 1 (Call. 3).  
 elva Micr. *Bat. Ent. Month. Mag.* 1, p. 83.  
 emathia Ad. *Fldr. Verh. Zool.-Bot. Ges. Wien* 1869, p. 473.  
 emerantia Phy. *Hew. Exot. Butt.* 2 (Eresia 2).  
 emilia Ad. *Fruhst. Entom. Ztschr. Stuttg.* 22, p. 108.  
 emilia Vila *Cr. Pap. Exot.* 3, pl. 223.  
 emineus Callith. *Röb., Seitz, Macrolep. V.* p. 492.  
 eminens Per. *Oberth. Et. d'Entom.* 6, p. 27.\*  
 emma Hel. *Riff. Berl. Ent. Ztschr.* 46, p. 164.  
 emmelina Eun. *Stgr. Exot. Tagf.* 1, p. 109.  
 empyrea Eun. *H.-Schäff. Außer-Europ. Schmett.* 1.\*  
 encina Phy. *Fldr. Wien. Ent. Mon.* 5, p. 103.  
 endeis Chlos. *G. & S. Ann. Mag. Nat. Hist.* (6) 16, p. 97.  
 emilus Hel. *Weym. Stett. Zg.* 51, p. 283. P. 383  
 epaphus Viet. *Latr. Humb.-Bonpl. Observ. Zool.* 2, p. 74.  
 ephesa Ad. *Mén. Cat. Mus. Petr. Lep.* 2, p. 104.\*  
 epicaste Ep. *Hew. Exot. Butt.* 2.\*  
 epiclydides Hel. *Stgr. Iris* 9, p. 289. P. 384  
 emilia — — — — — P. 384



- epidaunna Ad. *Fldr.* Reise Novara Lep. 3, p. 424.  
 epimenes Ep. *Hew.* Exot. Butt. 2.\*  
 epinome Ag. *Fldr.* Reise Novara Lep. 3, p. 409.  
 epione Ad. *Godt.* Encycl. Méthod. 9, p. 405.  
 epione Phy. *G. & S. Ann. Mag. Nat. Hist.* (5) 2, p. 363.  
 epiphaea Act. *Jord.*, Seitz, Macrolep. V, p. 371.  
 epiphleia Ad. *G. & S. Biol. Centr.-Amer. Rhop.* 1, pl. 28.\*  
 epiphore Arg. *Bsd.* Ann. Soc. Ent. Belg. 12, p. 58.  
 epizygis Ad. *Fruhst.*, Seitz, Macrolep. V, p. 527.\*  
 epona Ad. *Fruhst.*, Seitz, Macrolep. V, p. 527.  
 eponina Ad. *Stgr.* Exot. Tagf. 1, p. 143.  
 equatoria Act. *Bat.* Ent. Month. Mag. 1, p. 59. *P.371*  
 equatorialis Per. *Guen.* Mém. Phys. Gen. 22, p. 395.  
 eranites Phy. *Hew.* Exot. Butt. (Eresia), pl. 2.\*  
 eratonia Hel. *Stgr.* Iris 9, p. 314.  
 erato Hel. *L. Syst. Nat.* (X) p. 467.  
 erehia Dyn. *Hew.* Exot. Butt. 1 (Eubagis I).\*  
 erebia Phy. *Röb.*, Seitz, Macrolep. V, p. 449.\*  
 erebius Hel. *Riff.* Berl. Ent. Ztschr. 45, p. 201.  
 eremita Mel. *W. R.* Butt. West-Coast.\*  
 eresia Act. *Fldr.* Wien. Ent. Mon. 6, p. 417. *P.366*  
 eresia Gnath. *Röb.*, Seitz, Macrolep. V, p. 454.\*  
 eresina Act. *Hpffr.* Stett. Zg. 35, p. 347. *P.366*  
 eribotes An. *F.* Syst. Entom., p. 684.  
 eriuua Arg. *Edw.* Canad. Ent. 15, p. 33.  
 erinome Act. *Fldr.* Wien. Ent. Mon. 5, p. 101. *P.360*  
 eriopsis Ep. *Hew.* Exot. Bntt. (Epiph. 1).\*  
 ernestina Ad. *Fruhst.*, Seitz, Macrolep. V, p. 518.\*  
 erodytes Chlos. *Bat.* Entom. Month. Mag. 1, p. 84.  
 erotia Ad. *Hew.* Ann. Mag. Nat. Hist. 1847 (20), p. 259.\*  
 erymanthis Ad. *G. & S. Biol. Centr.-Amer. Rhop.* 1, p. 302.\*  
 erythema An. *Bat.* Journ. Entom. 2, p. 342.  
 erythrea Hel. *Cr.* Pap. Exot. 2, p. 140.\*  
 esite Caton. *Fldr.* Verh. Zool.-Bot. Ges. Wien 1859, p. 472.  
 esora Phy. *Hew.* Exot. Butt. 2 (Eresia 2).\*  
 estrella Hel. *Bat.* Trans. Linn. Soc. Lond. 23, p. 560.  
 ethelda Ad. *Hew.* Exot. Bntt. 4 (Heterochroa 1).\*  
 ethilla Hel. *Godt.* Encycl. Méthod. Zool. 9, p. 219. *P.390*  
 ethra Hel. *Hbn.* Zutr. Exot. Schmett. 3, p. 35. *P.374*  
 ethusa *Myse.* Bsd. Cuv. Règne anim. Ins., pl. 2.\*  
 etia Phy. *Hew.* Exot. Bntt. 4 (Eresia 7).  
 etylus Hel. *Salv.* Ann. Mag. Nat. Hist. (4) 7, p. 414.  
 eubaena An. *Bsd.* Lépid. Guatémala, p. 50.  
 euboea Ad. *Fldr.* Reise Novara Lep. 3, p. 422.  
 euchroia Col. *Dbl. & Hew.* Gen. Diurn. Lep., pl. 20.\*  
 euelia Act. *Dogn.* le Naturaliste (2) 1, p. 173. *P.368*  
 eulides Callie. *Latr.* Humb.-Bonpl. Obs. Zool. 1, pl. 24.\*  
 eueomus Hel. *Hbn.* Zutr. Exot. Schmett. 3, p. 38. *P.380*  
 eudia Callith. *Röb.*, Seitz, Macrolep. V, p. 492.  
 eugenes Prep. *Bat.* Journ. Entom. 2, p. 335.  
 eulalia Hel. *Riff.* Berl. Ent. Ztschr. 45, p. 204. *386*  
 eunoda Chlos. *G. & S. Biol. Centr. Amer. Rhop.* 2, p. 672.\*  
 eunice Phy. *Hbn.* Smmlg. Exot. Schmett. 1.\*  
 eunomia Cat. *Hew.* Exot. Butt. 1 (Catagr. 2).\*  
 eupelia Act. *Jord.* Entomologist 1913, No 2. *P.370*  
 eupelia Callie. *G. & S. Ann. Mag. Nat. Hist.* (4) 2, p. 146.  
 euphemia Eun. *Godt.* Encycl. Méthod. 9, p. 418.  
 euphone Hel. *Fldr.* Wien. Ent. Mon. 6, p. 418. *P.392*  
 euphrasius Hel. *Weym.* Stübels Reisen Lep., p. 21. *P.381*  
 eupolema Ag. *Fruhst.*, Seitz, Macrolep. V, p. 542.  
 eurylea Per. *Dbl. & Hew.* Gen. Diurn. Lep., pl. 28.\*  
 euris Act. *Jord.* Novit. Zool. 17, p. 466. *P.363*  
 eurota Eun. *Cr.* Pap. Exot. 1, p. 37.\*  
 euryades Hel. *Riff.* Berl. Ent. Ztschr. 45, p. 205. *387*  
 euryas Hel. *Bsd.* Lépidopt. Guatém., p. 29. *387*  
 eurylenca Act. *Jord.* Novit. Zool. 17, p. 464. *P.360*  
 eurynome Arg. *Edw.* Trans. Am. Ent. Soc. 4, p. 66.  
 euryplute An. *Fldr.* Wien. Ent. Mon. 6, p. 119.  
 eurysaes Eu. *Hew.* Trans. Ent. Soc. Lond. 3 (2), p. 248.\*  
 eurytis Anart. *Fruhst.* Guben. Ent. Ztschr. 1, p. 112.  
 eutropia Phy. *Hew.* Ent. Month. Mag. 11, p. 56.  
 evanescens Phy. *Röb.*, Seitz, Macrolep. V, p. 438.  
 eyelide Eun. *Bat.* Journ. Entom. 2, p. 197.  
 exanima Ad. *Fruhst.*, Seitz, Macrolep. V, p. 523.  
 excellens An. *Bat.* Ent. Month. Mag. 1, p. 162.  
 exeelsa Enn. *S. & G. Proc. Zool. Soc. Lond.* 1877, p. 63.  
 exelsior Cat. *Hew.* Exot. Butt. 2 (Catagr. 7).\*  
 excelssissima Cat. *Stgr.* Exot. Tagf. 1, p. 121.\*  
 exelauationis Gnath. *Koll.* Denkschr. Ak. Wiss. Wien. Math. Cl. I, p. 359.\*  
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 exorata Hel. *Riff.* Deutsche Ent. Ztschr. 1907, p. 505.  
 exquisitus Caton. *Stich.* Berl. Ent. Ztschr. 44, p. 40.  
 equadoriensis *Neust.* *385*  
 extensa Act. *Jord.*, Seitz, Macrolep. V, p. 361.  
 extineta Phy. *Röb.*, Seitz, Macrolep. V, p. 145.\*  
 extineta Prep. *Stgr.* Exot. Tagf. 1, p. 162.  
 ezba Phy. *Hew.* Exot. Butt. 4 (Eresia 7).\*  
 ezra Phy. *Hew.* Exot. Bntt. 3 (Eresia 4).\*  
 fabaris Chlor. *Fruhst.* Stett. Zg. 1907, p. 253.  
 fabrieia Ad. *Fruhst.*, Seitz, Macrolep. V, p. 518.\*  
 falcata Ad. *G. & S. Proc. Zool. Soc. Lond.* 1878, p. 270.  
 falcata An. *Hpffr.* Stett. Zg. 1874, p. 353.  
 faleipennis Ad. *Fruhst.*, Seitz, Macrolep. V, p. 526.  
 fallax Ag. *Stgr.* Exot. Tagf. 1, p. 127.  
 fallax Phy. *Stgr.* Exot. Tagf. 1, p. 94.  
 farge Chlor. *Fruhst.* Stett. Zg. 1907, p. 253.  
 fariuulenta Ag. *Fruhst.*, Seitz, Macrolep. V, p. 542.  
 farragosa En. *Stich.* Berl. Ent. Ztschr. 48, p. 30.  
 fasciata Chlos. *Röb.*, Seitz, Macrolep. du Globe, V, p. 452.\*  
 fasciata Phy. *Hpffr.* Stett. Zg. 1874, p. 349. *P.365*  
 fasciatella Phy. *Röb.*, Seitz, Macrolep. V, p. 438.  
 fasciatus Hel. *G. & S. Proc. Zool. Soc. Lond.* 1877, p. 62. *P.378*  
 fassli Ad. *Fruhst.*, Seitz, Macrolep. V, p. 532.  
 fassli An. *Röb.*, Seitz, Macrolep. V, p. 591.\*  
 fassli Callith. *Röb.*, Seitz, Macrolep. V, p. 493.\*  
 fassli Cat. *Röb.*, Seitz, Macrolep. du Globe, V, p. 495.  
 fassli Chlos. *Röb.*, Seitz, Macrolep. V, p. 451.\*  
 fassli Ep. *Röb.*, Seitz, Macrolep. V, p. 479.\*  
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 faustus Phy. *G. & S. Trans. Ent. Soc. Lond.* 1897, p. 243.  
 favorinus Hel. *Hpffr.* Stett. Zg. 35, p. 348.  
 februa Ag. *Hbn.* Smmlg. Exot. Schmett.\*  
 felderi Ad. *Bsd.* Lépid. Gnatém., p. 45.  
 felderi An. *Röb.*, Seitz, Macrolep. V, p. 586.\*  
 felderi Cat. *Hew.* Exot. Butt. 3, 4 (Catagr. 12).\*  
 felderi Chlor. *G. & S. Biol. Centr.-Amer. Rhop.* 1, p. 313.  
 felderi Chlos. *Röb.*, Seitz, Macrolep. V, p. 451.\*  
 felderi Eu. *Stich.* Berl. Ent. Ztschr. 48, p. 31.  
 felix Hel. *Weym.* Iris 6, p. 315. *P.373*  
 fenestrata Phy. *Röb.*, Seitz, Macrolep. V, p. 450.\*  
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 ferentina Ag. *Godt.* Encycl. Méthod. 9, p. 428.  
 feronia Ag. *L. Mus. Ulric.*, p. 283.  
 ferox Ag. *Stgr.* Exot. Tagf. 1, p. 127.  
 ferrugata Act. *Jord.*, Seitz, Macrolep. V, p. 372.  
 fessonia Ad. *Hew.* Ann. Mag. Nat. Hist. 1847 (20), p. 260.\*  
 fietitia Ag. *Fruhst.*, Seitz, Macrolep. V, p. 541.\*  
 fidicula Ad. *Fruhst.*, Seitz, Macrolep. V, p. 517.  
 fillo Ad. *Fruhst.* Ent. Ztschr. Stuttgart. 21, p. 172.  
 flavescens Hel. *Weym.* Stett. Zg. 51, p. 292. *370*  
 flavia Phy. *Godt.* Encycl. Méthod. 9, p. 818.  
 flavibasis Act. *Jord.* Entomologist 1913, No 2. *P.364*  
 flavida Phy. *Hew.* Exot. Bntt. 4 (Eresia 7).\*  
 flavifascia Act. *Jord.*, Seitz, Macrolep. du Globe, V, p. 371.  
 flavilla Psend. *Hbn.* Smmlg. Exot. Schmett.\*  
 flavinaeula Phy. *Röb.*, Seitz, Macrolep. V, p. 442.\*  
 flavina Phy. *Röb.*, Seitz, Macrolep. V, p. 435.  
 flavofasciata Hel. *Weym.* Iris 6, p. 303. *P.380*  
 flavomaenata Hel. *Weym.* Iris 6, p. 341. *P.378*  
 flora Ast. *Edw.* Bntt. North Amer. 2 (1876).\*  
 flora Enn. *Fldr.* Wien. Ent. Mon. 6, p. 111.  
 florentina Ag. *Fruhst.*, Seitz, Macrolep. V, p. 543.  
 floridana Cyst. *Streck.* Lep. Rhop. Het. Snmpl. 3, p. 24.  
 floridensis Lim. *Streck.* Catal. Lepid. 1878, p. 143.  
 florida Hel. *Weym.* Iris 6, p. 329. *P.382*  
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 forbesi Hypna *G. & S. Biol. Centr.-Amer. Rhop.* 1, p. 357.  
 formosus Hel. *Bat.* Ent. Month. Mag. 3, p. 87. *380*  
 fornacalia Ag. *Fruhst.* Stett. Zg. 68, p. 15.  
 fornaria Ag. *Hew.* Exot. Butt. 1. *P.383*  
 fornax Ag. *Hbn.* Smmlg. Exot. Schmett. 2.\*  
 forreri An. *G. & S. Proc. Zool. Soc. Lond.* 1884, pl. 34.\*  
 fortunatus Hel. *Weym.* Stett. Zg. 45, p. 21. *P.382*  
 glaudivus *P.360*



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 freya Arg. *Thnbg. Diss. Ent. Suec.* 2, p. 34.  
 freyja Callith. *Röb., Seitz, Macrolep. du Globe, V.* p. 493.\*  
 frigga Arg. *Thnbg. Diss. Ent. Suec.* 2, p. 33.  
 frigga Callith. *Röb., Seitz, Macrolep. V.* p. 491.  
 frisia Phyl. *Poey. Cent. Lep. Cub.* p. 9.\*  
 frontina Arg. *Fruhst. Berl. Ent. Ztschr.* 1898, p. 293.  
 fruhstorferi Chlos. *Röb., Seitz, Macrolep. V.* p. 451.  
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 fruhstorferi Meg. *Seitz, Macrolep. V.* p. 468.\*  
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 frusina Ad. *Fruhst., Seitz, Macrolep. V.* p. 517.\*  
 fuffia Ad. *Fruhst., Seitz, Macrolep. V.* p. 516.\*  
 fuffina Ad. *Fruhst., Seitz, Macrolep. V.* p. 516.  
 fufela Ad. *Fruhst., Seitz, Macrolep. V.* p. 519.  
 fulgidus Hel. *Stich. Wytsm. Gen. Ins. Nymph. Hel.* p. 41.  
 fulgora Phyl. *G. & S. Ann. Mag. Nat. Hist.* 5 (2), p. 261.  
 fuliea Ad. *Fruhst., Seitz, Macrolep. V.* p. 517.  
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 fulva Caton. *Röb., Seitz, Macrolep. V.* p. 480.  
 fulvescens Calliz. *Btlr. Cistul. Entom.* 1, p. 163.  
 fulvia Pyr. *Dodge. Canad. Entomol.* 32, p. 92.  
 fulviplaga Phyl. *Btlr. Cistul. Entomol.* 1, p. 77.  
 fulvus Prot. *Btlr. Proc. Zool. Soc. Lond.* 1875, p. 35.\*  
 fumosa Ag. *Fruhst., Seitz, Macrolep. V.* p. 544.\*  
 funalis Ad. *Fruhst., Seitz, Macrolep. V.* p. 523.  
 fundania Ad. *Fruhst., Seitz, Macrolep. V.* p. 525.\*  
 fundania Ag. *Fruhst., Seitz, Macrolep. V.* p. 540.  
 funebris Hel. *Mschl. Verh. Zool.-Bot. Ges. Wien.* 26, p. 314.  
 fulvescens ———— *P. 381* 385  
 gabaza Callie. *Hew. Exot. Butt.* 1 (Catagr. 4).  
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 gabriellae Act. *Röb. Berl. Ent. Ztschr.* 46, p. 295. *P. 362*  
 galanthus Sid. *Cr. Pap. Exot.* 1, pl. 25.\*  
 galanthus Hel. *Bat. Ent. Month. Mag.* 1, p. 58. *P. 384*  
 g-argenteum Pol. *Dbl. & Hew. Gen. Diurn. Lep.* 1, p. 197.\*  
 garleppiana Prep. *Stgr. Iris* 1897, p. 355.  
 gaudialis Chlos. *Bat. Ent. Month. Mag.* 1, p. 84.  
 gavina Ad. *Fruhst., Seitz, Macrolep. V.* p. 529.  
 gelania Ad. *Godt. Encycl. Méthod.* 9, p. 378.  
 gellia Ad. *Fruhst., Seitz, Macrolep. V.* p. 523.  
 geminata Hel. *Weym. Iris* 6, p. 299. *P. 377*  
 geminia Phyl. *Hpfjr. Stett. Zg.* 1874, p. 351.  
 genoveva Prec. *Cr. Pap. Exot.* 4, pl. 290.  
 georgias Ad. *Fruhst., Seitz, Macrolep. V.* p. 520.  
 gerona Ad. *Hew. Exot. Butt.* 4 (Heterocluoa 1).  
 gervasia Ag. *Fruhst., Seitz, Macrolep. V.* p. 543.  
 gerwisa Eun. *Fruhst. Societ. Entomol.* 22, p. 34.  
 getae Dyn. *C. & S. Ann. Mag. Nat. Hist.* (5) 2, p. 264.  
 >gisela Phyl. *Röb., Seitz, Macrolep. V.* p. 442.  
 gisella Dyn. *Hew. Exot. Butt.* 2 (Eubagis 2).  
 glauce An. *Fldr. Wien. Ent. Mon.* 6, p. 119.  
 glauce Dyn. *Bat. Journ. Entom.* 2, p. 324.  
 glaucina An. *Stgr. Exot. Tagf.* 1, p. 181.  
 glaucone An. *Fldr. Wien. Ent. Mon.* 6, p. 119.  
 glaucanome Ag. *Bat. Ent. Month. Mag.* 1, p. 114.  
 globosa Hypna *Btlr. Proc. Zool. Soc. Lond.* 1866, p. 208.\*  
 glycera Dione *Fldr. Wien. Ent. Mon.* 5, p. 102.  
 glycerium An. *Dbl. & Hew. Gen. Diurn. Lep.* pl. 50.\*  
 gnorima Prep. *Bat. Journ. Entom.* 2, p. 336.  
 godmani Ad. *Fruhst., Seitz, Macrolep. V.* p. 530.\*  
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 godmani Hel. *Stgr. Proc. Zool. Soc. Lond.* p. 397.\* *388*  
 godmani Hyp. *Bat. Ent. Month. Mag.* 1, p. 85.  
 goeringi Per. *Drury. Cistul. Entomol.* 1, p. 358.  
 gordius Hel. *Weym. Iris* 6, p. 312. *P. 379*  
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 gracilis Pol. *Gr. Ann. N. York Lyc. N. H.* 8, p. 432.  
 gradatus Hel. *Weym. Iris* 6, p. 335. *P. 380*  
 grammica Act. *Jord., Seitz, Macrolep. V.* p. 371.  
 granadina Act. *Röb. Berl. Ent. Ztschr.* 46, p. 295.  
 granatensis Callie. *Guen. Mém. Phys. Gen.* 22, p. 387.  
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 grandis Ep. *Btlr. Cistul. Entom.* 1, p. 76.  
 graphica Phyl. *Fldr. Verh. Zool.-Bot. Ges. Wien* 1869, p. 470.  
 graphota Dione *Stich. Wytsm. Gen. Ins., fasc.* 63, p. 18.  
 >griseata Act. *Btlr. Cistul. Entomol.* 1, p. 170. *P. 360*  
 gisela Neep 386  
 gratiosa Neep 386  
 griseidis Chlor. *Fldr. Wien. Ent. Mon.* 6, p. 117.  
 griseobasalis Phyl. *Röb., Seitz, Macrolep. V.* p. 444.  
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 guatemalena Ag. *Bat. Ent. Month. Mag.* 1, p. 115.  
 guatemalena Cat. *Bat. Ent. Month. Mag.* 3, p. 134.  
 gudruna Phyl. *Röb., Seitz, Macrolep. V.* p. 447.  
 gudula Ag. *Fruhst., Seitz, Macrolep. V.* p. 539.\*  
 guenei Callie. *Röb., Seitz, Macrolep. V.* p. 502.  
 guérini Per. *Fldr. Reise Novara Lep.* 3, p. 410.\*  
 guiensis Hel. *Riff. Berl. Ent. Ztschr.* 45, p. 198. *P. 379*  
 gulina Prep. *Fruhst. Insektenbörse* 1904, p. 126.  
 gustavi Hel. *Stgr. Iris* 9, p. 287. *P. 384*  
 gynaesia Hel. *Hew. Ent. Month. Mag.* 11, p. 182. *388*  
 habanae Eun. *Seitz, Macrolep. V.* p. 485.\*  
 hades Agr. *Lathy. Entomol. Month. Mag.* 36, p. 29.  
 haemera Act. *Jord., Seitz, Macrolep. V.* p. 361.  
 haenseli Hel. *Riff. Berl. Ent. Ztschr.* 45, p. 200. *P. 384*  
 hagnodorus Pyrr. *Fruhst. Stett. Zg.* 1908, p. 39.  
 hahneli Act. *Jord., Seitz, Macrolep. V.* p. 370.  
 hahneli Hel. *Stgr. Exot. Schmett.* 1, p. 77. *P. 384*  
 hahneli Per. *Stgr. Exot. Tagf.* 1, p. 119.  
 haleone Arg. *Edw. Butt. North Amer.* 1, p. 83.  
 halice An. *Godt. Encycl. Méthod.* 9, p. 366.  
 harmonia Meg. (*Dbl. & Hew.*) *Klug. Neue Schmett.* pl. 2.\*  
 haroldi Pol. *Dev. Mitt. Münch. Entom. Ver.* 1877, p. 89.\*  
 harrisi Mel. *Scudd. Proc. Ess. Ins.* 3, p. 167.  
 hazzama Per. *Hew. Equat. Lepid.* p. 90.  
 hecalesia Hel. *Hew. Exot. Butt.* 1. *388*  
 heenba Dyn. *Schs. Proc. Zool. Soc. Lond.* 1913, p. 347.\*  
 hecuba Hel. *Hew. Exot. Butt.* 2. *388*  
 hedemanni An. *Fldr. Verh. Zool.-Bot. Ges. Wien* 1869, p. 473.  
 hegesia Eupt. *Cr. Pap. Exot.* 3, pl. 209.\*  
 heleita Mel. *Bsd. Lep. Calif.* p. 55.  
 helena Arg. *Edw. Trans. Am. Ent. Soc.* 3, p. 268.  
 helena Hel. *Riff. Deutsche Ent. Ztschr.* 1907, p. 354.  
 helepecki Ad. *Weeks, Trans. Am. Ent. Soc.* 27, p. 354.  
 heliconia Phyl. *Röb., Seitz, Macrolep. V.* p. 447.  
 heliconioides Eu. *Fldr. Wien. Ent. Mon.* 5, p. 102.  
 helie An. *L. Syst. Nat.* 1 (2), p. 773.  
 helvia Mel. *Scudd. Proc. Bost. Nat. Hist.* 12, p. 405.  
 hemichrysa Bat. *G. & S. Ann. Mag. Nat. Hist.* (4) 2, p. 147.  
 hepburni Mel. *G. & S. Biol. Centr. Amer. Rhop.* 2, p. 679.\*  
 hera Phyl. *Cr. Pap. Exot.* 3, pl. 253.\*  
 heraclea Ad. *Fldr. Reise Novara Lep.* 3, p. 421.  
 heraelitus Cat. *F. Ent. Syst.* 3 (1), p. 291.  
 heraelitus Eun. *Poey. Mem. Soc. Econ. Haban.* 1847, p. 178.  
 herbaea An. *Btlr. Cistul. Entom.* 1, p. 100.  
 herbita Ad. *Weym. Iris* 20, p. 21.  
 heredia Ad. *Fruhst., Seitz, Macrolep. V.* p. 521.\*  
 herennia Ad. *Fruhst., Seitz, Macrolep. V.* p. 522.  
 hermanni Hel. *Riff. Berl. Ent. Ztschr.* 43, p. 407. *P. 385*  
 hermas Phyl. *Hew. Exot. Butt.* (Eresia 5).  
 hermathena Hel. *Hew. Exot. Butt.* 1.\*  
 hermione Meg. *Fldr. Wien. Ent. Mon.* 5, p. 108.  
 hermogenes Hel. *Hew. Exot. Butt.* 2. *P. 384*  
 hermosa Mel. *Wr. Butt. West-Coast.*  
 hesperis Arg. *Edw. Proc. Ent. Soc. Philad.* 2, p. 502.  
 hesperis Cat. *Guér. Ic. Règne anim. Ins.* p. 479.  
 heurippa Hel. *Hew. Exot. Butt.* 1. *P. 384*  
 hewitsoni Callith. *Stgr. Exot. Tagf.* 1, p. 123.\*  
 hewitsoni Hel. *Stgr. Verh. Zool.-Bot. Ges. Wien.* 25, p. 98.  
 hewitsoni Ness. *Fldr. Wien. Ent. Mon.* 3, p. 269.\*  
 hewitsonius Agr. *Bat. Proc. Ent. Soc. Lond.* (2) 5, p. 111.  
 hierax Hel. *Hew. Equat. Lep.* p. 11. *380*  
 hierone Ag. *Fruhst., Seitz, Macrolep. V.* p. 540.  
 hieronica Ad. *Fruhst., Seitz, Macrolep. V.* p. 525.\*  
 hilaria Phyl. *Röb., Seitz, Macrolep. V.* p. 518.  
 hilarina Phyl. *Röb., Seitz, Macrolep. du Globe, V.* p. 448.\*  
 hilaris Prec. *Fldr. Reise Novara Lep.* 3, p. 400.  
 hilaris Act. *Jord. Novit. Zool.* 17, p. 467. *P. 386*  
 himera Ad. *Fldr. Reise Novara Lep.* 3, p. 418.  
 himera Hel. *Hew. Exot. Butt.* 4.\*  
 hippodrome Chlos. *Hbn.-G. Zutr. Smmlg. Exot. Schmett.* (2)  
 5, p. 17.\*  
 hippola Hel. *Hew. Exot. Butt.* 4. *P. 379*  
 hippolitus Eun. *Btlr. Cistul. Entomol.* 1, p. 169.  
 hippolyta Arg. *Edw. Canad. Entom.* 11, p. 81.  
 hippolyte Hel. *Bat. Trans. Linn. Soc. Lond.* 23, p. 559. *385*  
 hippona Prot. *F. Gen. Ins.* p. 265.  
 hirta An. *Weym. Iris* 20, p. 23.



- hoffmanni Mel. *Behr. Proc. Calif. Ac. Sci.* 1863, p. 89.  
 holophora Hel. *Stgr. Iris* 9, p. 285. *P.383*  
 holohroa Act. *Jord. Seitz. Macrolep. V.* p. 396. *P.369*  
 hondurensis Tem. *Fruhst. Stett. Zg.* 68, p. 229.  
 honorina Ag. *Fruhst. Seitz. Macrolep. V.* p. 540.  
 hopfieri Phyl. *Röb. Seitz. Macrolep. V.* p. 449.\*  
 horni Micr. *Röb. Verh. Zool.-Bot. Ges. Wien.* 1906, p. 377.  
 hortense Hel. *Guér. Icon. Règne anim.* 3. lus., p. 469.  
 hortensia Eupt. *Btch. Gay Fauna Chil.* 7, p. 23.  
 hnaseama Dione *Reak. Proc. Acad. Phil.* 1866, p. 243.  
 hübneri Chlor. *Röb. Seitz. Macrolep. V.* p. 547.  
 hübneri Ep. *Hew. Exot. Butt.* 2 (Epiph. 1).  
 hübneri Eu. *Mén. Cat. Acad. Imp. Pétersb. Lép.* 2, p. 116.\*  
 hübneri Hel. *Stgr. Iris* 9, p. 312. *P.389*  
 hübneri Tem. *Fruhst. Stett. Zg.* 68, p. 232.  
 huebneri Hypna *Bttr. Proc. Zool. Soc. Lond.* 1866, p. 208.\*  
 humboldtii Per. *Guér. Ic. Règne anim. Ins.* p. 483.  
 huntera Pyr. *F. Syst. Eutom.*, p. 499.  
 hyas Ad. *Bsd. Cuv., Règne anim. Ins.* 2, pl. 138.\*  
 hyas Hel. *Weym. Stett. Zg.* 45, p. 26.\* *389*  
 hydara Hel. *Hew. Exot. Butt.* 4.\*  
 hydarins Cat. *Godt. Encycl. Méthod.* 9, p. 124.  
 hydaspes Arg. *Bsd. Lep. Calif.*, p. 60.  
 hydraea Cat. *Drury Ill. Exot. Entom.* 3, pl. 15.\*  
 hygiaea Van. *Heydr. Verz. Europ. Schmett.*, p. 7.  
 hygiana Hel. *Hew. Exot. Butt.* 4.\*  
 hylaenus Chlos. G. & S. *Ann. Mag. Nat. Hist.* (6) 16, p. 97.  
 hylonomie Act. *Dbl. Ann. Mag. Nat. Hist.* 14 (1844), p. 418. *P.360*  
 hyperborea Van. *Seitz. Macrolep. V.* p. 457.\*  
 hyperia Chlos. F. *Entom. Syst.* 3, p. 119.  
 hypermanestra Cyst. *Hbn. Smmlg. Exot. Schmett.* 1.\*  
 hypochlora Bat. *Fldr. Wien. Ent. Mon.* 6, p. 113.  
 hypoxantha Bat. G. & S. *Ann. Mag. Nat. Hist.* (4) 2, p. 147.  
 hypsenor Ad. G. & S. *Proc. Zool. Soc. Lond.* 1879, pl. 14.\*  
 hypsenor Pyr. G. & S. *Biol. Centr.-Amer. Rhop. L.* p. 292.\*  
 hypsipetes Act. *Jord. Novit. Zool.* 17, p. 468. *P.367*  
 hystaspes Cat. F. *Spec. Ins.* 2, p. 57.  
 ianthe Phyl. F. *Spec. Ins.* 2, p. 80.  
 iblis Ep. *Fldr. Wien. Ent. Mon.* 5, p. 105.  
 icilia Ag. *Fruhst. Seitz. Macrolep. V.* p. 540.  
 idalia Arg. *Drury Ill. Exot. Entom.* 1, pl. 13.\*  
 idalion Hel. *Weym. Iris* 6, p. 337. *P.382*  
 idiographa Act. *Jord. Seitz. Macrolep. V.* p. 369.  
 idyja Ast. *Hbn. Smmlg. Exot. Schmett.*\*  
 ikarios Prep. *Fruhst. Insektenbörse* 1904, p. 126.  
 ilidea Phyl. *Hew. Equat. Lepid.*, p. 24.  
 ilia Per. *Röb. Seitz. Macrolep. V.* p. 499.\*  
 imatar Prep. *Fruhst. Seitz. Macrolep. V.* p. 555.  
 imitata Phyl. *Streck. Lep. Rhop. Het.*, p. 130.  
 immaculatus Prot. *Stgr. Exot. Tagf.* 1, p. 186.  
 immoderata Hel. *Stich. Wytsm. Gen. Ius. Nymph. Hel.*, p. 98. *P.370*  
 implicata Ad. *Fruhst. Seitz. Macrolep. V.* p. 521.  
 improba Arg. *Bttr. Ent. Month. Mag.* 13, p. 206.  
 inaehia Ad. *Fruhst. Seitz. Macrolep. V.* p. 514.  
 inea Arg. *Stgr. Iris* 7, p. 68.\*  
 incarnata Prec. *Fldr. Reise Novara Lep.* 3, p. 401.  
 indefecta Ad. *Fruhst. Seitz. Macrolep. V.* p. 523.\*  
 indigophana Eun. *Fldr. Wien. Ent. Mon.* 5, p. 104.  
 indigotica An. *Satr. Ann. Mag. Nat. Hist.* (4) 4, p. 180.  
 ines Dyn. *Godt. Encycl. Méthod.* 9, p. 421.  
 infirma Ect. *Fruhst. Stett. Zg.* 1908, p. 42.  
 infusca Prec. *Fldr. Reise Novara Lep.* 3, p. 401.  
 ingens Eun. *Seitz. Macrolep. V.* p. 486.\*  
 inornata Arg. *Edw. Trans. Am. Ent. Soc.* 4, p. 64.  
 insolita Hel. *Riff. Deutsche Ent. Ztschr.* 1907, p. 508.  
 insularis Ad. *Fruhst. Seitz. Macrolep. V.* p. 521.\*  
 insularis Ag. *Fruhst. Seitz. Macrolep. V.* p. 542.  
 insularis Meg. *Fruhst. Stett. Zg.* 68, p. 237.  
 insulicola Prep. *Fruhst. Entomol. Nachr.* 1897, p. 221.  
 intensa Act. *Jord. Novit. Zool.* 17, p. 463. *P.360*  
 intermedia Act. *Jord. Seitz. Macrolep. V.* p. 368.  
 intermedia Phyl. *Röb. Seitz. Macrolep. V.* p. 446.\*  
 intermedius Hel. *Riff. Deutsche Ent. Ztschr.* 1907, p. 509.\*  
 interrogationis Pol. F. *Entom. Syst. Suppl.* p. 424.  
 intricata Eun. *Fruhst. Stett. Zg.* 1909, p. 214.  
 inumbratus Chlor. *Fruhst. Stett. Zg.* 1907, p. 250.  
 iole Meg. *Drury Ill. Ent. Hist.* 3, pl. 38.\*  
 iphiela Ad. L. *Syst. Nat.* 1, p. 780.  
 iphileola Ad. *Bat. Ent. Month. Mag.* 1, p. 128.  
 iphigenia Hypna H.-Schäff. *Corr.-Blatt Regensburg* 16, p. 116.  
 iphimedes An. *Röb. Seitz. Macrolep. V.* p. 586.  
 iphimedia Ad. *Fruhst. Seitz. Macrolep. du Globe. V.* p. 523.  
 iphis An. *Latr. Humb.-Bonpl. Observ. Zool.* 2, p. 80.  
 ipthime Ag. *Bat. Ent. Month. Mag.* 1, p. 116.  
 irene Arg. *Bsd. Ann. Soc. Ent. Belg.* 12, p. 59.  
 iris Hel. *Riff. Deutsche Ent. Ztschr.* 1907, p. 506.  
 irisa Ad. *Fruhst. Seitz. Macrolep. V.* p. 517.\*  
 irma Ad. *Fruhst. Ent. Ztschr. Stuttg.* 21, p. 171.  
 irma Eun. *Fruhst. Stett. Zg.* 1908, p. 44.  
 irmina Ad. *Dbl. & Hew. Gén. Diurn. Lep.*, pl. 36.\*  
 isabella Eu. *Cr. Pap. Exot.* 4, p. 117.\*  
 isabellinus Hel. *Bat. Trans. Linn. Soc. Lond. Z.* 23, p. 554. *P.379*  
 isidora Zar. *Cr. Pap. Exot.* 3, pl. 235.\*  
 isis Ad. *Drury Ill. Exot. Ent.* 3, pl. 7.\*  
 ismeninus Hel. *Latr. Obs. Voy. Amer. Obs. Zool.* 2, p. 125.\* *P.378*  
 ismeria Phyl. *Bsd. & Lec. Lep. Am. Sept.*, p. 168.\*  
 ithaka Hel. *Fldr. Wien. Ent. Mon.* 6, p. 418. *P.382*  
 ithomoides Phyl. *Hew. Exot. Butt.* 3 (Eresia 3).  
 itys Zar. *Cr. Pap. Exot.* 2, pl. 119.\*  
 ixia Ad. *Fldr. Reise Novara Lep.* 3, p. 418.  
 isolda. *Nep.* *P.385*  
 jaeinthia Phyl. *Röb. Seitz. Macrolep. V.* p. 448.\*  
 j-album Pol. *Bsd. & Lec. Lép. Am. Sept.*, p. 185.  
 jana Phyl. *Fldr. Reise Novara Lep.* 3, p. 394.  
 janais Chlos. *Drury Ill. Exot. Entom.* 3, p. 22.\*  
 janeira Callie. *Fldr. Verh. Zool.-Bot. Ges. Wien.* 12, p. 476.  
 jansoni An. *Salv. Ann. Mag. Nat. Hist.* (4) 7, p. 165.  
 japeus Megist. *Stgr. Exot. Tagf.* 1, p. 174.\*  
 jarias Ad. *Fruhst. Seitz. Macrolep. V.* p. 527.  
 jatrophae Anart. L. *Syst. Nat.* 1, p. 779.  
 jona Ect. *Dbl. & Hew. Gen. Diurn. Lep.*, pl. 42.\*  
 jonas Hel. *Weym. Iris* 6, p. 307. *P.383*  
 jordani Ad. *Fruhst. Seitz. Macrolep. V.* p. 518.\*  
 jordani Prep. *Fruhst. Iris* 17, p. 292.  
 juani Pyr. *Stgr. Exot. Tagf.* 1, p. 131.  
 juba Arg. *Bsd. Lep. Calif.*, p. 60.  
 jueunda Act. *Jord. Novit. Zool.* 17, p. 466. *P.365*  
 jueunda Hel. *Bat. Ent. Month. Mag.* 1, p. 56. *P.373*  
 jueunda Nap. *Hbn. Smmlg. Exot. Schmett.* 1.\*  
 judith Chlos. *Guér. Icon. Règne anim. Ins.* p. 477.  
 julia Col. F. *Syst. Entom.*, p. 509.  
 jultia Ag. *Fruhst. Seitz. Macrolep. V.* p. 540.  
 juno Dione *Cr. Pap. Exot.* 3, pl. 215.\*  
 juno Hel. *Riff. Berl. Ent. Ztschr.* 45, p. 209.  
 juntanus Hel. *Riff. Berl. Ent. Ztschr.* 45, p. 196. *P.380*  
 jnrinci Per. *Guen. Mém. Phys. Gen.* 22, p. 306.\*  
 justina Ad. *Fldr. Wien. Ent. Mon.* 5, p. 109.  
 justinella Ad. *Fruhst. Ent. Ztschr. Stuttg.* 21, p. 172.  
 kalbreyeri Ep. *Fassl. Entom. Rundsch.* 29, No 19.  
 kallina Chlor. *Stgr. Exot. Tagf.* 1, p. 157.  
 karschi Hel. *Riff. Berl. Ent. Ztschr.* 45, p. 203. *P.385*  
 karwinskii Sm. *Hbn. Smmlg. Exot. Schmett.* 3.\*  
 kefersteini Hyp. *Dbl. Gen. Diurn. Lep.* 1, p. 194.\*  
 kershawi Pyr. *Mac Coy. Ann. Mag. Nat. Hist.* (4) 1, p. 76.  
 kheili Pyr. *Fruhst. Stett. Zg.* 1908, p. 34.  
 kolyma Cat. *Hew. Exot. Butt.* 1, (Catagr. 1).  
 korallion Tem. *Fruhst. Eutom. Rundsch.* 29, p. 14.  
 krates Prep. *Fruhst. Insektenbörse* 1904, p. 126.  
 kriemhild Arg. *Streck. Rept. Surv. Dep. Mo. App.* 1879.  
 lacina Ad. *Bttr. Lepid. Exot.*, p. 102.\*  
 lacinia Chlos. *Hbn.-G. Zutr. Exot. Schmett.* 2 (5), p. 21.\*  
 laetelavia Did. *Thm. Berl. Ent. Ztschr.* 49, p. 159.\*  
 laertides Prep. *Stgr. Iris* 1897, p. 358.  
 laeta Chlos. *Röb. Seitz. Macrolep. V.* p. 452.\*  
 laias Phyl. *Godm. Proc. Zool. Soc. Lond.* 1879, pl. 14.\*  
 lais Arg. *Edw. Canad. Entomologist* 15, p. 209.  
 l-album Pol. *Esp. Eur. Schmett. Abbild.* 1 (2).  
 lamis Peria *Cr. Pap. Exot.* 3, pl. 238.  
 lampethusa Ep. *Dbl. & Hew. Gen. Diurn. Lep.* pl. 27.\*  
 lampeto Eu. *Bat. Trans. Linn. Soc. Lond.* 23, p. 563.  
 lanice Per. *Hew. Exot. Butt.* 4 (Catagr. 12).  
 lanilla Ad. *Fruhst. Seitz. Macrolep. V.* p. 521.\*  
 lamsdorff Phyl. *Godt. Encycl. Méth.* 9, p. 209.  
 laothoe Temp. *Cr. Pap. Exot.* 2, pl. 132.\*  
 lapitha Act. *Stgr. Exot. Tagf.* 1, p. 82. *P.370*  
 lara Ad. *Hew. Ann. Mag. Nat. Hist.* (2) 6, p. 437.\*  
 larseni Agr. *Fassl. Societ. Entomol.* 26.  
 lathonioides Arg. *Btch. Gay. Faun. Chil.* 7, p. 22.\*  
 latifineta Au. *Fassl. Societ. Entomol.* 26.  
 latifascia Calliz. *Bttr. Cistul. Ent.* 1, p. 163.  
 latifasciata Ep. *Röb. Seitz. Macrolep. V.* p. 478.  
 latior Act. *Jord. Seitz. Macrolep. V.* p. 370.  
 lativitta Hel. *Bttr. Cistul. Entomol.* 2, p. 150.



## Alphabetical List of the American Nymphalidae.

609

- lativittata Ad. *Stgr.* Exot. Tagf., p. 142.  
 latoua Cat. *Btlr.* Cistul. Entom. 1, p. 16.  
 latus Hel. *Riff.* Berl. Ent. Ztschr. 45, p. 197. **P.380**  
 laura An. *Dre.* Proc. Zool. Soc. Lond. 1877, p. 647.  
 laura Arg. *Edw.* Canad. Entomol. 11, p. 49.  
 laure Chlor. *Drury* Ill. Nat. Hist. 2, pl. 17.\*  
 lanretta Chlor. *Stgr.* Exot. Tagf. 1, p. 158.  
 laurina Arg. *Wr.* Butt. West-Coast.\*  
 laurona Chlor. *Sehs.* Proc. Un. Stat. Mus. 24, p. 397.  
 laverua Act. *Dbl.* Gen. Diurn. Lep. 1, p. 142.\* **P.367**  
 lavinia Chlor. *Btlr.* Proc. Zool. Soc. Lond. 1866, p. 39.\*  
 lavinia Prec. *Cr.* Pap. Exot., pl. 21.  
 lavinia Vict. *F.* Syst. Entom., p. 450.  
 laxis Per. *Guen.* Mém. Phys. Gen. 22, p. 402.  
 lazuliua Meg. *Fruhst.* Stett. Zg. 68, p. 239.  
 leauira Mel. *Bsd.* Ann. Soc. Ent. Belg. 12, p. 27.  
 lebasii Per. *Guér.* Règne anim. Ins., p. 485.  
 leda Hel. *Stgr.* Iris 9, p. 306.  
 leilia Ast. *Edw.* Trans. Amer. Entom. Soc. 5, p. 103.  
 lelaps Ag. *G. & S.* Viol. Centr.-Amer. Rhop. 1, p. 270.  
 lelex Phy. *Bat.* Entom. Month. Mag. 1, p. 81.  
 lemnos An. *Dre.* Proc. Zool. Soc. Lond. 1877, p. 638.\*  
 lenaeus Hel. *Weym.* Stett. Zg. 51, p. 284. **P.381**  
 leona Mel. *Wr.* Butt. West-Coast.\*  
 leonida An. *Cr.* Pap. Exot. 4, pl. 388.\*  
 leoniua Ad. *Fruhst.* Seitz, Macrolep. V, p. 525.\*  
 leontine Act. *Weym.* Stübels Reise p. 48. **P.367**  
 leopardus Hel. *Weym.* Iris 6, p. 319. **P.381**  
 leopoldina Zar. *Fruhst.* Ent. Ztschr. 1909, p. 168.  
 leopoldina Zar. *Röb.* Seitz, Macrolep. V, p. 578. \*  
 lepidus Hel. *Riff.* Deutsche Ent. Ztschr. 1907, p. 503.\*  
 leprieuri Callith. *Feisth.* Rev. Zool. 1835, pl. 122.\*  
 leptia Cat. *Hew.* Exot. Butt. 4 (Catagr. 12).  
 leptogramma Act. *Jord.* Entomologist 1913, Nr. 2. **P.366**  
 lerna Ad. *Hew.* Ann. Mag. Nat. Hist. 1847 (20), p. 257.\*  
 lesbia Ad. *Stgr.* Exot. Tagf. 1, p. 142.  
 lethe Hyp. *F.* Entom. Syst. 3, p. 80.  
 letis Arg. *Wr.* Butt. West-Coast.\*  
 letitia Phy. *Hew.* Equat. Lep., p. 24.  
 leto Arg. *Behr.* Proc. Cal. Ac. Sci. 2, p. 173.  
 leucacantha Ad. *Fruhst.* Seitz, Macrolep. V, p. 514.  
 leucadia Hel. *Bat.* Trans. Linn. Soc. Lond. 23, p. 556.  
 leucas Ad. *Fruhst.*, Seitz, Macrolep. V, p. 525.  
 leucates Ad. *Fruhst.*, Seitz, Macrolep. V, p. 523.  
 leuce Hel. *Dbl.* Gen. Diurn. Lep. 1, p. 102.  
 leuceria Ad. *Dre.* Cistul. Entom. 1, p. 286.  
 leucocoma Ad. *Fruhst.* Seitz, Macrolep. V, p. 529.\*  
 leucocyanea Myse. *Fldr.* Wien. Ent. Mon. 5, p. 106.  
 leucoedema Phy. *Fldr.* Wien. Ent. Mon. 5, p. 103.  
 leucomelas Act. *Bat.* Ent. Month. Mag. 1, p. 59. **P.362**  
 leucopetra Ad. *Fruhst.* Seitz, Macrolep. V, p. 517.\*  
 leucophthalma Ad. *Latr.* Humb.-Bonpl. Obs. Zool. 1, p. 247.\*  
 leucothea Dyn. *Bat.* Journ. Entom. 2, p. 320.  
 leuetra Prep. *Fruhst.* Insekten-Börse 1904, p. 126.  
 leutha Ad. *Fruhst.* Seitz, Macrolep. V, p. 531.  
 levana Phy. *Röb.* Seitz, Macrolep. V, p. 440.\*  
 levioula Ad. *Fruhst.* Seitz, Macrolep. du Globe, V, p. 514.\*  
 levina Phy. *Hew.* Exot. Butt. 5 (Eresia 10).  
 liberia Tem. *F.* Entom. System. 3, p. 135.  
 libitina Eu. *Stgr.* Exot. Schmett. 1, p. 80.  
 lieomedes Prep. *Cr.* Pap. Exot. 2, pl. 158.\*  
 lidwina Callie. *Fldr.* Wien. Ent. Mon. 6, p. 114.  
 liliana Arg. *Edw.* Proc. Cal. Ac. Sci. 7, p. 170.  
 lilops Prot. *Btlr.* Proc. Zool. Soc. Lond. 1873, p. 774.  
 limbata Act. *Jord.* Seitz, Macrolep. V, p. 371.  
 limbata Phy. *Röb.* Seitz, Macrolep. V, p. 448.  
 linda Chlor. *Fldr.* Wien. Ent. Mon. 6, p. 117.  
 lindigii Hel. *Fldr.* Reise Novara Lep. 2 (2), p. 377. **P.389**  
 lindigii Hyp. *Fldr.* Wien. Ent. Mon. 6, p. 120.  
 lineata An. *Salv.* Ann. Mag. Nat. Hist. (4), 4, p. 179.  
 lineata Per. *Btlr.* Cistul. Entom. 1, p. 160.  
 lineatus Eu. *G. & S.* Ann. Mag. Nat. Hist. (4) 2, p. 145.  
 liria Ect. *F.* Ent. Syst. 3 (1), p. 239.  
 lrides Ect. *Stgr.* Exot. Tagf. 1, p. 126.\*  
 lirina Phy. *Röb.* Seitz, Macrolep. V, p. 435.\*  
 lriope Phy. *Cr.* Pap. Exot. 1, pl. 1.  
 lrisa Ect. *Godt.* Encycl. Méthod. 9, p. 406.  
 livia Prec. *Stgr.* Entom. Rundschau 29, p. 15.  
 livius Meg. *Ky.* Catal. Diurn. Lep. 1, p. 221.  
 lodis Act. *Jord.* Seitz, Macrolep. V, p. 372.  
 longarena Hel. *Hew.* Ent. Month. Mag. 11, p. 182. **P.388**  
 lorna An. *Dre.* Proc. Zool. Soc. Lond. 1877, p. 643.\*  
 lorquini Linn. *Bsd.* Ann. Soc. Ent. Fr. 1852, p. 301.  
 lorzae Ad. *Bsd.* Lépid. Guatém., p. 46.  
 lorzina Ad. *Fruhst.* Seitz, Macrolep. V, p. 516.  
 louisa Prep. *Bsd.* Lépid. Guatém., p. 52.  
 lucescens Hel. *Weym.* Iris 6, p. 321. **P.382**  
 lucia Hel. *Cr.* Pap. Exot. 4, p. 117. **P.385**  
 lucina Dione *Fldr.* Wien. Ent. Mon. 6, p. 110.  
 lucinda Hel. *Riff.* Berl. Ent. Ztschr. 45, p. 203. **P.385**  
 lueretius Hel. *Weym.* Stett. Zg. 51, p. 290. **P.389**  
 lucrezia Per. *Hew.* Exot. Butt. 4 (Catagr. 12).  
 luctuosus Prep. *Walch.* Naturforscher 7 (1775), p. 113.\*  
 ludmilla An. *Fassl.* Entom. Rundsch. 29, p. 85.  
 lugens Agr. *Stgr.* Exot. Tagf. 1, p. 163.  
 lugens Callith. *Dre.* Ann. Mag. Nat. Hist. 1903, p. 221.  
 lugubris Phy. *Röb.* Seitz, Macrolep. V, p. 450.\*  
 luminosa Hel. *Riff.* Berl. Ent. Ztschr. 46, p. 132.  
 lumnosus Eu. *Stieh.* Berl. Ent. Ztschr. 48, p. 16.  
 lunigera Pseud. *Fruhst.* Stett. Zg. 68, p. 233.  
 luteipicta Anart. *Fruhst.* Gub. Ent. Ztschr. 1, p. 112.  
 lutescens Phy. *G. & S.* Biol. Centr.-Amer. Rhop. 1, p. 199.  
 lutulenta Col. *Stich.* Wytsm. Gen. Ins. Fasc. 63, p. 12.  
 lybia Eu. *F.* Syst. Ent., p. 490.  
 lybioides Eu. *Stgr.* Verh. Zool.-Bot. Ges. Wien. 25, p. 99.  
 lyca Cat. *Dbl.* & *Hew.* Gen. Diurn. Lep. 1, pl. 28.\*  
 lycaon Ast. *F.* Entom. Syst. 3 (1), p. 228.  
 lyceus An. *Dre.* Proc. Zool. Soc. Lond. 1877, p. 646.\*  
 lyde Prep. *Fruhst.* Seitz, Macrolep. V, p. 555.  
 lydia Ad. *Btlr.* Ann. Mag. Nat. Hist. (3) 16, p. 298.\*  
 lygia Prep. *Fruhst.* Insektenbörse 1904, p. 125.  
 lyneus An. *Röb.*, Seitz, Macrolep. V, p. 589.\*  
 lyreus Hel. *Weym.* Stett. Zg. 51, p. 286. **P.389**  
 lysania Pyrr. *Fldr.* Wien. Ent. Mon. 6, p. 115.  
 lysimache Pan. *G. & S.* Biol. Centr.-Amer. Rhop. 1, p. 275.  
 lytrea Anart. *Godt.* Encycl. Méthod. 9, p. 299.  
 macaria Arg. *Edw.* Butt. North. Amer. 3.\*  
 macglashani Mel. *Riv.* Proc. Calif. Ac. Sci. 1889, p. 103.  
 macris Eun. *Godt.* Encycl. Méthod. 9, p. 417.  
 maculata Pyrr. *Stgr.* Exot. Tagf. 1, p. 131.  
 madeira Myse. *Röb.* Seitz, Macrolep. V, p. 483.  
 maeon Dyn. *Dbl.* & *Hew.* Gen. Diurn. Lep., pl. 30.\*  
 maeon Hel. *Weym.* Stett. Zg. 51, p. 287. **P.382**  
 magdalena An. *Röb.* Seitz, Macrolep. V, p. 590.\*  
 magnifica Coenophl. *Fruhst.*  
 magnifica Hel. *Riff.* Berl. Ent. Ztschr. 45, p. 211.  
 magos Prep. *Fruhst.* Seitz, Macrolep. V, p. 557.  
 maimuna Cat. *Hew.* Exot. Butt. 2 (Catagr. 8).  
 mainas Ad. *Fruhst.* Seitz, Macrolep. V, p. 512.\*  
 maira Ad. *Fruhst.* Seitz, Macrolep. V, p. 514.  
 maja Eun. *F.* Syst. Entom., p. 512.  
 majugena Chlor. *Fruhst.*, Stett. Zg. 1907, p. 245.  
 makkeda Ad. *Hew.* Trans. Ent. Soc. Lond. 1871, p. 165.  
 malea Ad. *Fldr.* Wien. Ent. Mon. 5, p. 109.  
 malvina Eun. *Bat.* Journ. Entom. 2, p. 195.\*  
 mamea Ad. *Fruhst.* Seitz, Macrolep. V, p. 518.  
 mamilla Ad. *Fruhst.* Seitz, Macrolep. V, p. 522.  
 mamita Act. *Burn.* Reise La Plata 2, p. 168. **P.387**  
 marcella Meg. *Fldr.* Wien. Ent. Mon. 5, p. 108.  
 marchalii Callie. *Guér.* Icon. Règne anim. Ins., p. 481.  
 marcia Ad. *Fruhst.* Seitz, Macrolep. V, p. 521.\*  
 marcia Phy. *Edw.* Trans. Amer. Ent. Soc. 2, p. 207.  
 margareta Hel. *Riff.* Berl. Ent. Ztschr. 45, p. 205. **P.386**  
 margaretha Phy. *Hew.* Exot. Butt. 5 (Eresia 10).  
 margarita Eun. *Godt.* Encycl. Méthod. 9, p. 406.  
 margitifera Eu. *Stich.* Berl. Ent. Ztschr. 48, p. 5.\*  
 maria Mel. *Skinn.* Canad. Ent. 31, p. 12.  
 mariana Vila *Bat.* Journ. Entom. 2, p. 316.  
 marianna Chlos. *Röb.* Seitz, Macrolep. V, p. 452.  
 marina Chlos. *Hbn.-G.* Zutr. Exot. Schmett. (2) 5, p. 20.\*  
 marinus Hel. *Weym.* Stübels Reise Lep., p. 21. **P.382**  
 markii Callith. *Hew.* Exot. Butt. 23.  
 marmarice Ag. *Fruhst.* Seitz, Macrolep. V, p. 542.  
 mars Sid. *Bat.* Proc. Ent. Soc. Lond. (2) 5, p. 112.  
 marsyas Pol. *Edw.* Trans. Amer. Ent. Soc. 3, p. 16.  
 marthae Act. *Jord.* Novit. Zool. 17, p. 465. **P.363**  
 marthesia Sid. *Cr.* Pap. Exot. 2, pl. 191.\*  
 massilia Ad. *Fldr.* Reise Novara Lep., p. 423.  
 massilides Ad. *Fruhst.* Seitz, Macrolep. du Globe, V, p. 523.  
 mavors Hel. *Weym.* Iris 6, p. 305. **P.379**  
 maxentia Agr. *Fruhst.* Entom. Rundsch. 29, p. 45.  
 mazaria Phy. *Fldr.* Reise Novara Lep. 3, p. 394.  
 meadii Arg. *Edw.* Trans. Amer. Ent. Soc. 5, p. 69.



- meander Prep. *Cr. Pap. Exot.* 1.\*  
 meehanitis Phy. *G. & S. Proc. Zool. Soc. Lond.* 1878, p. 269.  
 medellina Eun. *Fruhst. Stett. Zg.* 1909, p. 212.  
 mediatrice Chlos. *Fldr.* Reise Novara Lep., p. 584.  
 megabates Prep. *Fruhst. Seitz, Macrolep. V.* p. 556.  
 megacles Prep. *Fruhst. Seitz, Macrolep. V.* p. 556.  
 megala Ag. *Fruhst. Seitz, Macrolep. V.* p. 540.  
 mejicana Phy. *Röb. Seitz, Macrolep. V.* p. 446.  
 melampeplos Act. *G. & S. Biol. Centr.-Amer. Rhop.* 1, p. 141.\* *P.370*  
 melanarge Chlos. *Bat. Ent. Month. Mag.* 1, p. 85.  
 melania Tem. *Stgr. Exot. Tagf.* 1, p. 115.  
 melanippe Ad. *G. & S. Biol. Centr.-Amer. Rhop.* 1, p. 296.  
 melanippe Hel. *Riff. Berl. Ent. Ztschr.* 45, p. 204. *P.385*  
 melanops Hel. *Weym. Iris* 6, p. 304. *P.379*  
 melanthe Ad. *Bat. Ent. Month. Mag.* 1, p. 129.  
 melas Prep. *Fruhst. Seitz, Macrolep. V.* p. 557.  
 melete Hel. *Fldr. Reise Novara Lep.* 2 (2), p. 376. *389*  
 melina Act. *Jord. Novit. Zool.* 17, p. 464. *P.361*  
 mellior Hel. *Stgr. Iris* 9, p. 307. *389*  
 melitacoides Chlos. *Fldr. Reise Novara Lep.* 3, p. 396.  
 melittus Hel. *Stgr. Iris* 9, p. 307. *389*  
 mellosa Col. *Stieh. Wytzm. Gen. Ins. Fasc.* 63, p. 13.  
 mellyi Cat. *Guen. Mém. Phys. Gen.* 22, p. 413.  
 melona Ad. *Hew. Ann. Mag. Nat. Hist.* 20, p. 258.\*  
 melpomene Hel. *L. Syst. Nat. (X).* p. 467. *P.384 + 385*  
 melpomenides Hel. *Riff. Berl. Ent. Ztschr.* 45, p. 203. *P.383*  
 memphis An. *Fldr. Reise Novara Lep.* 3, p. 448.  
 mena Cat. *Stgr. Exot. Tagf.* 1, p. 120.  
 mentas Chlor. *Bsd. Lépid. Guatém.*, p. 48.  
 mentor Hel. *Weym. Stett. Zg.* 45, p. 22.\* *P.380*  
 mephistopheles Ad. *Bthr. Cistul. Entom.* 1, p. 7.  
 merida Callie. *Honr. Berl. Ent. Ztschr.* 28, pl. 7.\* *P.309*  
 meridana Act. *Jord. Novit. Zool.* 17, p. 465. *P.363*  
 meridionalis Ad. *Fruhst. Seitz, Macrolep. V.* p. 529.\*  
 meridionalis Callie. *Bat. Journ. Entom.* 2, p. 206.  
 meridionalis Dyn. *Röb. Seitz, Macrolep. V.* p. 508.\*  
 merops Meg. *Beh. Cuv. Règne anim. Ins.* 2, pl. 137.\*  
 mesentina Ad. *Cr. Pap. Exot.* 2, pl. 162.\*  
 messana Ad. *Fldr. Reise Novara Lep.* 3, p. 418.  
 messene Hel. *Fldr. Wien. Ent. Mon.* 6, p. 418. *P.382*  
 messeres Act. *Jord. Novit. Zool.* 17, p. 463. *P.362*  
 metabus Prep. *Fruhst. Seitz, Macrolep. V.* p. 556.  
 metalilis Hel. *Bthr. Cistul. Entomol.* 1, p. 167. *P.379*  
 metana Ad. *Fruhst. Seitz, Macrolep. V.* p. 517.\*  
 metaphorus Hel. *Weym. Stett. Zg.* 45, p. 24.\* *P.377*  
 metellus Hel. *Weym. Iris* 6, p. 290.\* *P.380*  
 metharme Hel. *Erichs Schomburgk. Reis.* 3, p. 595. *388*  
 metharmina Hel. *Stgr. Iris* 9, p. 315. *390*  
 metiscus Callie. *Dbl. & Hew. Gen. Diurn. Lep.* pl. 30.\*  
 mexicana Ag. *Luc. Rev. Zool.* 1853, p. 311.  
 michaeli Cat. *Stgr. Iris* 1891, p. 65.  
 microdryope Phy. *Röb. Seitz, Macrolep. V.* p. 448.\*  
 milberti Van. *Godt. Encycl. Méthod.* 9, p. 307.  
 miles Cat. *Bat. Journ. Entom.* 2, p. 207.  
 mileta Chlor. *Bsd. Lépid. Guatém.*, p. 47.  
 militaris Cat. *Stgr. Bull. Soc. Ent. Fr.* (5) 8, p. CLVII.  
 mima Chlor. *Fruhst. Stett. Zg.* 1907, p. 245.  
 mimulinus Hel. *Bthr. Cistul. Entomol.* 1, p. 168. *391*  
 minima Phy. *Röb. Seitz, Macrolep. V.* p. 445.\*  
 minna Mel. *Edw. Proc. Ac. Nat. Sci. Phil.* 1861, p. 161.  
 mionina Cat. *Hew. Exot. Butt.* 1 (Catagr. 5).  
 mira Eun. *G. & S. Proc. Zool. Soc. Lond.* 1877, p. 63.  
 mira Hel. *Weym. Iris* 6, p. 296.\* *P.360*  
 mirabilis Hel. *Riff. Berl. Ent. Ztschr.* 45, p. 205. *386*  
 mirabilis Mel. *Wr. Butt. West-Coast.*\*  
 miranda An. *Warr. Novit. Zool.* 4, p. 509.  
 miranda Prep. *Stgr. Exot. Tagf.* 1, p. 161.\*  
 mirificus Hel. *Stieh. Wytzm. Gen. Ins. Nymph. Hel.*, p. 12. *P.377*  
 misera Chlos. *Fldr. Verh. Zool.-Bot. Ges. Wien* 1869, p. 471.  
 missippus Hypol. *L. Mus. Ulric.*, p. 264.  
 mitama Act. *Schs. Proc. Un. Stat. Mus.* 24, p. 391. *P.374*  
 mnasyllus Cybd. *Dbl. & Hew. Gen. Diurn. Lep.* pl. 27.\*  
 moderata Col. *Stieh. Wytzm. Gen. Ins. Fasc.* 63, p. 12.  
 modesta Arg. *Blech. Cay. Fauna Chil.*, p. 24.\*  
 modesta Eun. *Bat. Exot. Month. Mag.* 1, p. 113.  
 modesta Hel. *Riff. Berl. Ent. Ztschr.* 45, p. 206. *387*  
 modica Chlor. *Fruhst. Stett. Zg.* 1907, p. 246.  
 moeris An. *Fldr. Reise Novara Lep.* 3, p. 449.\*  
 molina Hel. *Gr.-Sm. Ann. Mag. Nat. Hist.* (7) 2, p. 70.  
 monina Act. *Jord. Novit. Zool.* 17, p. 469. *P.365*  
 moneta Dione *Hbn. Smmlg. Exot. Tagf.* 2, pl. 20.\*  
 moneta Eun. *Cr. Pap. Exot.* 4, pl. 387.\*  
 montana An. *Röb. Seitz, Macrolep. V.* p. 589.  
 montana Arg. *Reed. Act. Soc. Chile* 1, p. 68.  
 montana Phy. *Behr. Proc. Calif. Ac. Sci.* 1863, p. 85.  
 montanus Hel. *Salv. Ann. Mag. Nat. Hist.* (4) 7, p. 414.  
 monticola Arg. *Behr. Proc. Calif. Ac. Sci.* 2, p. 175.  
 montinus Arg. *Seudd. Pros. Ess. Inst.* 3, p. 166.  
 montis Ast. *Edw. Papilio* 2, p. 7.  
 montivaga Arg. *Behr. Proc. Calif. Ac. Sci.* 2, p. 174.  
 mora An. *Dre. Cistul. Entom.* 1, p. 289.  
 morena Phy. *Röb. Seitz, Macrolep. V.* p. 443.\*  
 moretta An. *Dre. Proc. Zool. Soc. Lond.* 1877, p. 634.\*  
 moritziana Chlor. *Fldr. Reise Novara Lep.* 3, p. 436.  
 mormonia Arg. *Bsd. Lépid. Calif.*, p. 58.  
 morona Per. *Hew. Exot. Butt.* 4 (Catagr. 12).  
 moronina Per. *Stgr. Seitz, Macrolep. V.* p. 498.  
 morpheus An. *Stgr. Exot. Tagf.* 1, p. 180.  
 morpheus Phy. *F. Syst. Entomol.*, p. 529.  
 morrisoni An. *Edw. Papilio* 3, 1883.  
 morsina Ag. *Fruhst. Seitz, Macrolep. V.* p. 544.  
 morta An. *Dre. Proc. Zool. Soc. Lond.* 1877, p. 645.  
 mortua An. *Stgr. Exot. Tagf.* 1, p. 180.  
 morvus An. *F. Syst. Entom.* p. 484.  
 mucia Act. *Hyffr. Stett. Zg.* 35, p. 346. *P.371*  
 mucia Ad. *Fruhst. Seitz, Macrolep. V.* p. 525.  
 mundina Phy. *Druce, Proc. Zool. Soc. Lond.* 1876, p. 221.\*  
 murena Phy. *Stgr. Exot. Tagf.* 1, p. 92.  
 murriua Chlor. *Fruhst. Stett. Zg.* 1907, p. 246.  
 muson Prep. *Fruhst. Iris* 17, p. 284.  
 muzoensis Agr. *Fruhst. Berl. Ent. Ztschr.* 1898, p. 294.  
 muzoensis Hel. *Neust. Verh. Zool.-Bot. Ges. Wien* 58, p. 266. *P.384*  
 mygdonia Eun. *Godt. Encycl. Méthod.* 9, p. 416.  
 myia Chlor. *Fruhst. Stett. Zg.* 1907, p. 247.  
 myia Phy. *Hew. Exot. Butt.* 2 (Eresia 3).  
 mylitta Dyn. *Cr. Pap. Exot.* 3, pl. 253.\*  
 mylitta Phy. *Edw. Proc. Ac. Nat. Sci. Phil.* 1861, p. 160.  
 myrina Arg. *Cr. Pap. Exot.* 2, pl. 189.\*  
 myriana Pyr. *Dbl. & Hew. Gen. Diurn. Lep.*, p. 203.  
 myrlea Ad. *Fruhst. Seitz, Macrolep. V.* p. 532.  
 myrrhina Dyn. *Dbl. & Hew. Gen. Diurn. Lep.* 1, p. 235.  
 myrson Dyn. *Dbl. & Hew. Gen. Diurn. Lep.* 1, p. 235.  
 myrtis Eun. *Fruhst. Stett. Zg.* 1908, p. 46.  
 mythra Ad. *Godt. Encycl. Méthod.* 9, p. 374.  
 nadja Ad. *Fruhst. Ent. Ztschr. Stuttg.* 21, p. 172.  
 naina Ad. *Sm. Ann. Mag. Nat. Hist.* (7) 2, p. 71. *u/*  
 nais Ag. *Fruhst. Seitz, Macrolep. V.* p. 541.\*  
 nana Phy. *Druce, Trans. Ent. Soc. Lond.* 1874, p. 156.  
 nanna Hel. *Stieh. Entom. Ztschr. Guben* 12, p. 143. *387*  
 napensis Act. *Jord. Novit. Zool.* 17, p. 467. *P.365*  
 narcaea Hel. *Godt. Encycl. Méthod.* 9, p. 217. *P.378*  
 narcissus Agr. *Stgr. Exot. Tagf.* 1, p. 165.\*  
 narva Chlos. *F. Entom. System.* 3, p. 249.  
 naryce Ad. *Fruhst. Seitz, Macrolep. V.* p. 531.  
 nasica Pyr. *Stgr. Exot. Tagf.* 1, p. 132.  
 nattereri Hel. *Fldr. Novara Lep.* (2) 2, p. 375.\*  
 nauplia Phy. *L. Mus. Ulric.*, p. 309.  
 naura Act. *Dre. Cistul. Entomol.* 1, p. 358. *P.363*  
 nausicaa Arg. *Edw. Butt. North Amer.* 3.\*  
 nautica Pyr. *Fruhst. Stett. Zg.* 1908, p. 39.  
 nava Ad. *Fruhst. Seitz, Macrolep. V.* p. 519.  
 naxia Ad. *Fldr. Reise Novara Lep.* 3, p. 417.  
 nazaria Phy. *Fldr. Reise Novara Lep.* 3, p. 394.  
 neaerea Pyr. *L. Mus. Ulric.*, p. 297.  
 nebrates Phy. *Weym. Iris* 20, p. 18.  
 nebulosa Phy. *G. & S. Proc. Zool. Soc. Lond.* 1878, p. 269.  
 neetanabis Did. *Fruhst. Entomol. Ztschr.* 23, p. 41.  
 neglecta Callie. *Salv. Ann. Mag. Nat. Hist.* (4) 4, p. 176.  
 negra Act. *Fldr. Wien. Ent. Mon.* 6, p. 78. *P.369*  
 negra Ad. *Fldr. Wien. Ent. Mon.* 6, p. 115.  
 negra Hypna *Fldr. Wien. Ent. Mon.* 6, p. 118.  
 negra Prec. *Fldr. Reise Novara Lep.* 3, p. 399.  
 negrina Ad. *Fruhst. Seitz, Macrolep. V.* p. 515.  
 negrina Ep. *Fldr. Wien. Ent. Mon.* 6, p. 111.  
 negrina Per. *Röb. Seitz, Macrolep. V.* p. 498.  
 neis Pyr. *Fldr. Verh. Zool.-Bot. Ges. Wien.* p. 473.  
 neleus Act. *Latr. Humb.-Bonpl. Obs. Zool.* 2, p. 86.\* *P.361*  
 nemesi Sid. *Ill. Magaz.* 1, p. 203.  
 nenia An. *Dre. Proc. Zool. Soc. Lond.* 1877, p. 647.\*  
 neogermanica Caton. *Stieh. Berl. Ent. Ztschr.* 44, p. 36.  
 neoris Dyn. *Hew. Exot. Butt.* 2 (Eubagis 3).  
 neoterpe Prep. *Honr. Berl. Ent. Ztschr.* 1844, p. 207.\*  
 neria Phy. *Hew. Ent. Month. Mag.* 6, p. 98.



nesea An. *Godt. Encycl. Méthod.* 9, p. 365.  
 nessus An. *Labr. Humb.-Bonpl. Obs. Zool.* 2, p. 76.\*  
 neumoegeni Mel. *Skinn. Entom. News* 6, p. 113.  
 nevadensis Arg. *Edw. Trans. Am. Soc. Ent.* 3, p. 14.  
 niepelti Hel. *Riff. Deutsche Ent. Ztschr.* 1907, p. 507.\* 335  
 nigrella Phyl. *Bat. Entom. Month. Mag.* 3, p. 133.  
 nigrescens Chlos. *Wr. Butt. West-Coast.\**  
 nigripennis Phyl. *Salv. Ann. Mag. Nat. Hist.* (4) 4, p. 170.  
 nigrocaerulea Arg. *Ckll. Entom. News* 11, p. 622.  
 nigrofasciata Hel. *Weym. Iris* 6, p. 307.\* P385  
 ninetta Eun. *Fruhst. Societ. Entomol.* 22, p. 34.  
 nitoeris Arg. *Edw. Trans. Am. Soc. Ent.* 5, p. 15.  
 nitoris Chlor. *Fruhst. Stett. Zg.* 1907, p. 248.  
 niyeonotis Phyl. *Btlr. & Dre. Cistul. Entomol.* 1, p. 100.  
 nobilis An. *Bat. Entom. Month. Mag.* 1, p. 162. 387  
 nobilita Ag. *Fruhst. Seitz. Macrolep. V.* p. 542.  
 nocturna Hel. *Riff. Berl. Ent. Ztschr.* 45, p. 210.  
 nokomis Arg. *Edw. Proc. Acad. Nat. Sci. Phil.* 1862, p. 221.  
 nomia Ag. *Fruhst. Seitz. Macrolep. V.* p. 541.  
 norica Eun. *Hew. Exot. Butt.* (Eum. 2).  
 norica Meg. *Hew. Exot. Butt.* 1 (Timetes I).  
 notabilis Hel. G. & S. *Ann. Mag. Nat. Hist.* (4) 2, p. 145.  
 novatus Hel. *Bat. Trans. Ent. Soc. Lond.* (3) 5, p. 539. P388  
 nubifer Hel. *Btlr. Ann. Mag. Nat. Hist.* (4) 15, p. 224. P379  
 nubigena Mel. *Behr. Proc. Calif. Ac. Sci.* 3, p. 91.  
 nudeola Col. *Stich. Wytsm. Gen. Ins. Fasc.* 63, p. 12.  
 numata Hel. *Cr. Pap. Exot.* 4, p. 17.\* P379  
 numilia Caton. *Cr. Pap. Exot.* 2.\*  
 numismaticus Hel. *Weym. Iris* 6, p. 303.\* P380  
 nussia Phyl. *Druce. Zool. Soc. Lond.* 1876, p. 222.  
 nycteis Phyl. *Dbl. et Hew. Gen. Diurn. Lep.*, pl. 23.\*  
 nyctimene Per. *Hew. Exot. Butt.* 4 (Catagr. 11).  
 nyctimus Caton. *Ww. Gen. Diurn. Lep.*, p. 257.  
 nympha Mel. *Edw. Papilio* 4, p. 43.  
 nystographa Callic. *Guen. Mem. Phys. Gen.* 22, p. 385.

oberthüri Ad. *Bsd. Lépid. Guatém.*, p. 46.  
 oberthüri Hel. *Riff. Berl. Ent. Ztschr.* 47, p. 162.  
 obidona Ag. *Fruhst. Seitz. Macrolep. V.* p. 541.\*  
 oblita Phyl. *Stgr. Exot. Tagf.* 1, p. 93.  
 obnubila Ag. *Fruhst. Seitz. Macrolep. V.* p. 544.  
 obrinus Ness. *L. Mus. Ulric.*, p. 255.  
 obseura Hel. *Weym. Stett. Zg.* 51, p. 290. 390  
 obseurata Arg. *M. Licht. Journ. Linn. Soc. Lond.* 14, p. 110.  
 obseurata Hel. *Riff. Deutsche Ent. Ztschr.* 1907, p. 505.  
 obseurata Phyl. *Fldr. Verh. Zool.-Bot. Ges. Wien.* 1869, p. 471.  
 obseurior Hel. *Stich. Wytsm. Gen. Ins. Nymph. Hel.*, p. 15. B  
 obsoleta Linn. *Edw. Papilio* 2, p. 22.  
 obsoleta Mel. H. *Edw. Proc. Calif. Ac. Sci.* 7, p. 171.  
 obumbrata Ag. *Fruhst. Seitz. Macrolep. V.* p. 542.  
 oceana Pan. *Fruhst. Entomol. Rundsch.* 29, p. 46.  
 oecanneus Hel. *Stgr. Exot. Schmelt.* 1, p. 75.  
 oecia Eun. *Fruhst. Stett. Zg.* 1909, p. 211.  
 occidentalis Phyl. *Fasst. Entomol. Rundsch.* 29, No 19.  
 occidentalis Prec. *Fldr. Wien. Ent. Mon.* 6, p. 110.  
 ocellata Phyl. *Röb. Seitz. Macrolep. V.* p. 448.  
 ochracea Hel. *Riff. Deutsche Ent. Ztschr.* 1907, p. 511.\*  
 ochracea Prep. *Fasst. Entom. Rundsch.* 29, No 19.  
 ochraceus Prot. *Btlr. Proc. Zool. Soc. Lond.* 1873, p. 774.\*  
 ochrotaenia Act. *Jord. Seitz. Macrolep. V.* p. 369.  
 oetavia Hel. *Bat. Ent. Month. Mag.* 3, p. 86. 388  
 oetavia Prep. *Fruhst. Iris* 17, p. 290.  
 oetavius An. *F. Entom. Syst.* (3) 1, p. 73.  
 oculata Cat. *Guen. Mém. Phys. Gen.* 22, p. 411.\*  
 odilia An. *Cr. Pap. Exot.* 4, pl. 329.\*  
 odius Hist. *F. System. Entomol.*, p. 457.  
 oenoe Ag. *Bsd. Lépid. Guatém.*, p. 26.  
 oenomais An. *Bsd. Lépid. Guatém.*, p. 51.  
 ofella Phyl. *Hew. Exot. Butt.* (Eresia 3).  
 offa An. *Dre. Proc. Zool. Soc. Lond.* 1877, p. 644.\*  
 olancha Mel. *Wr. Butt. West-Coast.\**  
 olbia Ad. *Fldr. Reise Novara Lep.* 3, p. 416.  
 olivenca Pyrr. *Fruhst. Stett. Zg.* 1908, p. 40.  
 olivencia Agr. *Stgr. Iris* 11, p. 373.  
 olivencia Phyl. *Bat. Journ. Entomol.* 2, p. 191.  
 olympia Eu. *F. Ent. Syst.* 3 (1), p. 166.  
 olympias Eun. *Fldr. Wien. Ent. Mon.* 6, p. 111.  
 olynthia Ad. *Fldr. Reise Novara Lep.* 3, p. 424.\*  
 olynthina Ad. *Fruhst. Seitz. Macrolep. V.* p. 514.  
 omphale Prep. *Hbn. Verz. bekannt. Schmelt.*, p. 49.  
 onias Dyn. *Hew. Exot. Butt.* 2 (Eubagis 2).  
 onophides An. *Stgr. Exot. Tagf.* 1, p. 181.  
 onophis An. *Fldr. Wien. Ent. Mon.* 5, p. 110.

opalina An. S. & G. *Proc. Zool. Soc. Lond.* 1884, p. 354.\*  
 ophellias Ad. *Fruhst. Seitz. Macrolep. V.* p. 519.  
 ophellies Ad. *Fruhst. Seitz. Macrolep. V.* p. 513.\*  
 ophni Pyrr. *Btlr. Ann. Mag. Nat. Hist.* (4) 5, p. 362.  
 opis Arg. *Edw. Trans. Amer. Soc. Ent.* 5, p. 105.  
 oppellii Per. *Labr. Humb.-Bonpl. Observ. Zool.* 1, pl. 24.\*  
 ops An. *Dre. Proc. Zool. Soc. Lond.* 1877, p. 633.  
 optima Callith. *Btlr. Lepid. Exot.* 1, p. 12.\*  
 oreia Ep. *Hbn. Sammlg. Exot. Schmelt.\**  
 oreandra Eun. *Fruhst. Stett. Zg.* 1909, p. 215.  
 oreas Pol. *Edw. Trans. Amer. Soc.* 2, p. 373.  
 orinoco Ad. *Weeks, Canad. Entomolog.* 38, p. 76.  
 orion Hist. *F. System. Entom.*, p. 485.  
 orites Caton. *Stich. Berl. Ent. Ztschr.* 44, p. 39.  
 ornamenta Ad. *Fruhst. Seitz. Macrolep. V.* p. 531.  
 ornata An. *Röb. Seitz. Macrolep. V.* p. 583.  
 ornata Chlor. *Fruhst. Stett. Zg.* 1907, p. 249.  
 orobia Phyl. *Hew. Exot. Butt.* 3 (Eresia 4).  
 orphise Eun. *Cr. Pap. Exot.* 1, pl. 42.\*  
 orseis Phyl. *Edw. Trans. Amer. Soc. Ent.* 3, p. 206.  
 orsilochus Meg. *F. Gen. Ins.*, p. 252.  
 orsis Mysc. *Druce, Ill. Exot. Entom.* 3.\*  
 orthesia An. G. & S. *Proc. Zool. Soc. Lond.* 1884, pl. 34.\*  
 orthia Phyl. *Hew. Exot. Butt.* 3 (Eresia 0), pl. 4.\*  
 ortieas Phyl. *Schs. Proc. Un. Stat. Mns.* 24, p. 396.  
 ortygia Ag. *Fruhst. Seitz. Macrolep. V.* p. 545.  
 ossianus Arg. *Hist. Nat. Syst. Schmelt.* 10, pl. 270.\*  
 ostara Met. *Röb. Societ. Entomol.* 20, p. 177.  
 otanes Phyl. *Hew. Exot. Butt.* (Eresia 6).  
 othonis Tem. *Fruhst. Stett. Zg.* 1908, p. 231.  
 otolais Pyrr. *Bat. Ent. Month. Mag.* 1, p. 126.  
 otrere An. *Hbn. Zutr. Sammlg. Exot. Schmelt.* (3).  
 ottonis Hel. *Riff. Berl. Ent. Ztschr.* 45, p. 212.  
 ouma Per. *Dogn. Le Naturaliste* 1891, p. 85.  
 oweni Arg. *Edw. Canad. Entomologist* 24, p. 105.  
 ozomene Act. *Godt. Encycl. Méthod.* 9, p. 241. P362  
 ozora Agr. *Fruhst. Seitz. Macrolep. V.* p. 574.

pachinus Hel. *Salv. Ann. Mag. Nat. Hist.* (4) 7, p. 414. P384  
 pacifica Cat. *Bat. Ent. Month. Mag.* 3, p. 135.  
 pales Arg. *Schiff. Wien. Verz.*, p. 77.  
 palla Mel. *Bsd. Ann. Soc. Ent. Fr.* 1852, p. 305.  
 pallantias Prep. *Fruhst. Seitz. Macrolep. V.* p. 560.  
 pallens Eu. *Stich. Berl. Ent. Ztschr.* 48, p. 19.  
 pallens Prec. *Fldr. Reise Novara Lep. Rhop.*, p. 401.  
 palleseus Act. *Jord. Seitz. Macrolep. V.* p. 373.  
 palleseus Phyl. *Fldr. Verh. Zool.-Bot. Ges. Wien* 1869, p. 469.  
 pallida Eu. *Riff. Deutsche Ent. Ztschr.* 1907, p. 513.  
 pallida Vict. *Fruhst. Stett. Zg.* 68, p. 13.  
 pallidior Prep. *Fruhst. Insektenbörse* 1904, p. 126.  
 palliolata Ag. *Fruhst. Seitz. Macrolep. du Globe, V.* p. 545.  
 palmata Hel. *Stich. Wytsm. Gen. Ins. Nymph. Hel.*, p. 46.  
 pameus Prep. *Fruhst. Seitz. Macrolep. V.* p. 554.  
 panariste An. *Hew. Exot. Butt.* 1 (Paphia & Sider).  
 pandama Cycl. *Dbl. & Hew. Gen. Diurn. Lep.*, p. 219.\*  
 pauthalis Callic. *Honn. Berl. Ent. Ztschr.* 28, pl. 7.\*  
 paradisiaca Prep. *Fasst. Entomol. Rundsch.* 29, No 11.  
 paraëna Ad. *Bat. Journ. Entom.* 2, p. 331.  
 paraënsis Hel. *Riff. Berl. Ent. Ztschr.* 45, p. 197. P380  
 paraphes Act. *Jord. Entomologist* 1913, No 2. P373  
 paraplesius Hel. *Bat. Trans. Ent. Soc. Lond.* (3) 5, p. 540. 389  
 pardalina Phyl. *Röb. Seitz. Macrolep. V.* p. 447.\*  
 pardalinus Hel. *Bat. Trans. Linn. Soc. Lond. Z.* 23, p. 555. P382  
 parima Cat. *Hew. Exot. Butt.* 1 (Catagr. 1).  
 paroëca Ad. *Bat. Ent. Month. Mag.* 1, p. 127.  
 parva Chlor. *Röb. Seitz. Macrolep. V.* p. 546.  
 parvimaclata Hel. *Riff. Berl. Ent. Ztschr.* 45, p. 207. 391  
 pascocensis Phyl. *Wr. Butt. West-Coast.*  
 pasibula An. *Dbl. & Hew. Gen. Diurn. Lep.*, pl. 50.\*  
 pasira Did. *Dbl. & Hew. Gen. Diurn. Lep.*, p. 406.\*  
 pasithea Cat. *Hew. Exot. Butt.* 83 (Catagr. 10).  
 passithoe Hel. *Cr. Pap. Exot.* 1, p. 25.\*  
 pastazena Phyl. *Bat. Journ. Entomol.* 2, p. 189.  
 pastazza Cat. *Stgr. Exot. Tagf.* 1, pl. 121.  
 patara Per. *Hew. Exot. Butt.* 1 (Catagr. 1).  
 patelina Cat. *Hew. Exot. Butt.* (Catagr. 2).  
 pattenia Mysc. *Btlr. & Dre. Biol. Centr.-Amer. Rhop.* 2, p. 685.  
 paulauna Chlor. *Fruhst. Entomol. Rundsch.* 29, p. 14.  
 paulina Dyn. *Bat. Journ. Entom.* 2, p. 325.\*  
 paulus Hyp. *F. Ent. Syst.* 3 (1), p. 63.  
 paulus Agr. *Stgr. Exot. Tagf.* 1, p. 165.



- paupera Chlos. *Fldr.* Reise Novara Lep., p. 375.  
 pavana Eu. *Mén.* Cat. Acad. Imp. Pétersb. 2, p. 116.\*  
 pavira Callie. *Guen.* Mém. Phys. Gen. 22, p. 388.  
 pavon Chlor. *Latr.* Hmb.-Bonpl. Observ. Zool. 1, p. 197.\*  
 pehana Dyn. *Stgr.* Exot. Tagf. 1, p. 116.\*  
 pedaina Tem. *Fruhst.* Entomol. Rundsch. 29, p. 14.  
 pedrona Phy. *Moult.* Ann. Mag. Nat. Hist. 1909 (3), p. 103.  
 pelens Meg. *Stzr.* Abg. Gesch. Insekt. pl. 13.\*  
 pella Phy. *Hew.* Exot. Butt. 1 (Eresia 1).\*  
 pellenea Act. *Hbn.* Smmlg. Exot. Schmett. 2, pl. 18.\* **0.372**  
 pellenea Phy. *Röb.* Seitz. Macrolep. V, p. 450.\*  
 pellucidus Eu. *Srnka.* Berl. Ent. Ztschr. 29, p. 130.\*  
 pelonia Phy. *Hew.* Exot. Butt. 1 (Eresia 1).\*  
 pelops Phy. *Drury.* Ill. Exot. Entom. 1.\*  
 penelamande Hel. *Stgr.* Iris 7, p. 67.  
 penelope Hel. *Stgr.* Iris 7, p. 67. **386**  
 penelope Prep. *Fruhst.* Insektenbörse 1904, p. 126.  
 penelopcia Hel. *Stgr.* Iris 7, p. 67. **386**  
 penithia Caton. *Hew.* Exot. Butt. 2 (Ep. P.).\*  
 perenna An. *G. & S.* Proc. Zool. Soc. Lond. 1864, pl. 32.\*  
 perezi Chlos. *H.-Schäff.* Corr.-Bl. Zool.-Min. Ver. Regensburg, 16, p. 119.  
 perfulva Act. *Jord.* Seitz. Macrolep. V, p. 370.  
 perga Ad. *Fruhst.* Seitz. Macrolep. V, p. 527.  
 perieles Agr. *Bat.* Trans. Ent. Soc. Lond. (2) 5, p. 111.  
 perilla Phy. *Hew.* Exot. Butt. 1 (Eresia 1).\*  
 perisa Act. *Jord.* Entomologist 1913, No 2. **0.373**  
 peristera Cat. *Hew.* Exot. Butt. 1 (Catagr. 2).\*  
 perlula Phy. *Fldr.* Wien. Ent. Mon. 5, p. 104.  
 permagna Ad. *Fruhst.* Seitz. Macrolep. V, p. 519.\*  
 perna Phy. *Hew.* Exot. Butt. 1 (Eresia 1).\*  
 perpetua Dyn. *Bat.* Journ. Entom. 2, p. 326.  
 perse Mel. *Edw.* Papilio 2, p. 136.  
 persephone Eun. *Fldr.* Reise Novara Lep. 3, p. 406.  
 persis Dyn. *Hew.* Exot. Butt. 2 (Eubagis 3).\*  
 personata Eu. *Stich.* Berl. Ent. Ztschr. 48, p. 5.\*  
 perunana Phy. *Röb.* Seitz. Macrolep. V, p. 438.\*  
 peruviana An. *Strd.* Lepidoptera Niepeltiana, p. 32.\*  
 peruviana Callie. *Guen.* Mém. Phys. Gen. 22, p. 384.  
 peruviana Hel. *Fldr.* Wien. Ent. Mon. 3, p. 396.  
 peruvians Prot. *Stgr.* Exot. Tagf. 1, p. 186.  
 petiverana Hel. *Dbl.* Gen. Diurn. Lep. 1, p. 103.  
 phaedra Prep. *G. & S.* Biol. Centr.-Amer. Rhop. 1, p. 322.  
 phaesyle Cybd. *Hbn.* Zutr. Smmlg. Exot. Schmett.\*  
 phaeon Mel. *Drury.* Ill. Exot. Entom. 1, pl. 21.\*  
 phactusa Col. *Cr.* Pap. Exot., pl. 130.\*  
 phalaris Hel. *Weym.* Iris 6, p. 334.\* **0.381**  
 phalcidon Agr. *Hew.* Exot. Butt. 1 (Agr. et Nymph.).\*  
 phantes An. *Hpffr.* Stett. Zg. 1874, p. 353.  
 phaon Phy. *Edw.* Proc. Ent. Soc. Phil. 2, p. 505.  
 pharae Ad. *Fruhst.* Seitz. Macrolep. V, p. 523.  
 phasis Eun. *Fldr.* Wien. Ent. Mon. 6, p. 111.  
 phera Ad. *Fruhst.* Seitz. Macrolep. V, p. 523.  
 pherenice Agr. *Fruhst.* Seitz. Macrolep. V, p. 577.  
 pheridamas Prep. *Cr.* Pap. Exot. 2, pl. 158.\*  
 phiale Meg. *G. & S.* Proc. Zool. Soc. Lond. 1878, p. 270.  
 phidile An. *Hbn.* Zutr. Smmlg. Exot. Schmett. (5).\*  
 phila An. *Dre.* Proc. Zool. Soc. Lond. 1877, p. 642.\*  
 phila Prep. *Fruhst.* Insektenbörse 1904, p. 126.  
 philetas Prep. *Fruhst.* Insektenbörse 1904, p. 126.  
 phillyra Phy. *Hew.* Exot. Butt. 1 (Eresia 1).\*  
 philotima Callith. *Rbl.* Verh. Zool.-Bot. Ges. Wien 62, p. 218.\*  
 philumena An. *Dbl. & Hew.* Gen. Diurn. Lep., pl. 59.\*  
 phintias Ad. *Fruhst.* Seitz. Macrolep. V, p. 530.\*  
 phlegias Phy. *G. & S.* Biol. Centr.-Amer. Rhop. 2, p. 680.  
 phliassa Ad. *Godt.* Encycl. Méthod. 9, p. 373.  
 phlogea Callie. *Salv.* Ann. Mag. Nat. Hist. (4) 2, p. 147.  
 phlogeides Callie. *Röb.* Seitz. Macrolep. V, p. 501.  
 phoebe An. *Dre.* Proc. Zool. Soc. Lond. 1877, p. 648.\*  
 phoebus Prep. *Bsd.* Lépid. Guatém., p. 52.  
 phoenix Agr. *Niep.* Lepidoptera Niepeltiana, p. 29.\*  
 photidia Prep. *Fruhst.* Entom. Rundsch. 29, Nr. 19.  
 phylaea Ad. *Bat.* Ent. Month. Mag. 3, pl. 135.  
 phylacides Ad. *Fruhst.* Seitz. Macrolep. V, p. 520.\*  
 phyllidis Hel. *Sm.-Ky.* Rhop. Exot. 1.\*  
 phyllis Hel. *F.* Syst. Ent., p. 463. **0.378**  
 piecea Eun. *Fldr.* Wien. Ent. Mon. 5, p. 105.  
 pietia Phy. *Edw.* Proc. Ent. Soc. Phil. 4, p. 201.  
 pieteti Per. *Guen.* Mém. Phys. Gen. 22, p. 395.  
 pieridoides Dyn. *Fldr.* Reise Novara Lep., p. 410.  
 pione Ad. *G. & S.* Biol. Centr.-Amer. Rhop. 1, p. 309.\*  
 pitheas Cat. *Latr.* Hmb. et Bonpl. Observ. Zool. 2, p. 90.\*  
 pithysa An. *Fldr.* Verh. Zool.-Bot. Ges. Wien 1869, p. 473.  
 pithys Ad. *Bat.* Ent. Month. Mag. 1, p. 128.  
 pittheus Dyn. *Stgr.* Exot. Tagf. 1, p. 115.\*  
 placida An. *Dre.* Proc. Zool. Soc. Lond. 1877, p. 643.\*  
 plagiata Phy. *Röb.* Seitz. Macrolep. V, p. 446.  
 platina Arg. *Skinn.* Canad. Entom. 29, p. 154.  
 plausibilis Agr. *Fruhst.* Seitz. Macrolep. V, p. 569.  
 pleione An. *Godt.* Encycl. Méthod. 9, p. 366.  
 plesauze Ad. *Hbn.* Zutr. Smmlg. Exot. Schmett. (2).\*  
 plesaurina Chlor. *Btlr. & Dre.* Cistul. Entom. 1, p. 102.  
 plusios Ep. *G. & S.* Biol. Centr.-Amer. Rhop. 1, p. 236.  
 pluto Eu. *Stich.* Berl. Ent. Ztschr. 48, p. 32.  
 pluto Hel. *Stgr.* Iris 9, p. 303. **386**  
 plutonia Ep. *G. & S.* Entom. Month. Mag. 1, p. 113.  
 poasina Eupt. *Schs.* Proc. Zool. Soc. Lond. 1913, p. 343.\*  
 poecile Chlos. *Fldr.* Reise Novara Lep. 3, p. 396.  
 poecilina Phy. *Bat.* Ent. Month. Mag. 3, p. 133.  
 poeyi Meg. *Sagra.* Histor. Cuba 7, p. 562.  
 polaris Arg. *Bsd.* Index Méthod., p. 15.  
 polina Phy. *Hew.* Exot. Butt. 1 (Eresia 1).\*  
 pollina Ad. *Fruhst.* Seitz. Macrolep. V, p. 518.  
 poltis Phy. *G. & S.* Ann. Mag. Nat. Hist. (5) 2, p. 261.  
 polyeheon Hel. *Fldr.* Reise Novara Lep. 2, p. 375. **0.378**  
 polymela Sid. *G. & S.* Biol. Centr.-Amer. Rhop. 1, p. 334.  
 polymnia Phy. *Röb.* Seitz. Macrolep. V, p. 447.  
 polyxo An. *Dre.* Cistul. Entom. 1, p. 288.  
 pomona Eun. *Fldr.* Reise Novara Lep., p. 407.\*  
 pompata Eun. *Fruhst.* Stett. Zg. 1909, p. 211.  
 poppaean Eun. *Fruhst.* Stett. Zg. 1909, p. 209.  
 porphyrio An. *Bat.* Journ. Entom. 2, p. 340.  
 portia An. *F.* Syst. Entom., p. 507.  
 praecaria Ad. *Fruhst.* Seitz. Macrolep. V, p. 515.\*  
 praelantus Hel. *Stich.* Wytsm. Gen. Insect. Nymph. Hel., p. 10. **0.379**  
 praeneste Prep. *Hew.* Exot. Butt. 2.\*  
 praenestina Prep. *Fruhst.* Seitz. Macrolep. V, p. 565.  
 praetura Ad. *Fruhst.* Seitz. Macrolep. V, p. 519.  
 praevallida Ad. *Fruhst.* Seitz. Macrolep. V, p. 514.  
 pratensis Phy. *Behr.* Proc. Calif. Acad. Sci. 3, p. 86.  
 pravitas Ad. *Fruhst.* Seitz. Macrolep. V, p. 522.\*  
 praxias An. *Hpffr.* Stett. Zg. 1874, p. 355.  
 pretiosa Hel. *Weym.* Iris 6, p. 325. **0.382**  
 pretona Chlos. *Bsd.* Lépid. Guatém., p. 37.  
 priene Per. *Hpffr.* Stett. Zg. 1874, p. 351.  
 priene Prep. *Hew.* Exot. Butt. 2 (Prepona 2).\*  
 primularis Hel. *Btlr.* Ann. Mag. Nat. Hist. (4) 3, p. 18.\*  
 prisea Phy. *Hpffr.* Stett. Zg. 1874, p. 349.  
 privata Ad. *Fruhst.* Seitz. Macrolep. V, p. 517.\*  
 privata Prep. *Fruhst.* Seitz. Macrolep. V, p. 565.  
 privigna Ad. *Fruhst.* Seitz. Macrolep. V, p. 515.  
 proeilla Pan. *Hew.* Exot. Butt. 1.\*  
 procula Eu. *Dbl.* Gen. Diurn. Lep. 1, p. 146.\*  
 progne Pol. *Cr.* Pap. Exot. 1, pl. 15.\*  
 prola Pan. *Dbl. & Hew.* Gen. Diurn. Lep., pl. 43.\*  
 promeneae An. *G. & S.* Proc. Zool. Soc. Lond. 1884, p. 316.\*  
 prosehion Prep. *Fruhst.* Insektenbörse 1904, p. 125.  
 proserpina An. *Salv.* Ann. Mag. Nat. Hist. (4) 4, p. 181.  
 proserpina Lim. *Edw.* Proc. Soc. Ent. Phil. 5, p. 148.  
 psaeon Prep. *Fruhst.* Seitz. Macrolep. V, p. 563.  
 psammis An. *Fldr.* Reise Novara Lep. 3, p. 448.  
 pseudagrias Ad. *Fruhst.* Entom. Stuttg. Ztschr. 22, p. 108.  
 pseudarete Ad. *Fruhst.* Seitz. Macrolep. V, p. 529.  
 psendaridae Tem. *Fruhst.* Stett. Zg. 68, p. 230.  
 psendiphis An. *Stgr.* Exot. Tagf. 1, p. 180.  
 psenditys Zar. *Fruhst.* Ent. Ztschr. 1909, p. 165.  
 psendodorippus Lim. *Streck.* Cat. Lepid. 1878, p. 143.  
 pseudolaothoe Tem. *Fruhst.* Stett. Zg. 68, p. 230.  
 psendomeander Prep. *Fruhst.* Seitz. Macrolep. V, p. 557.  
 pseudomeassana Ad. *Fruhst.* Seitz. Macrolep. V, p. 526.\*  
 psendorheia Hel. *Stgr.* Iris 9, p. 291.  
 ptolyea Phy. *Bat.* Ent. Month. Mag. 1, p. 81.  
 pulchra Tem. *Hew.* Exot. Butt. 2 (Epiph. 2).\*  
 pura Hel. *Niep.* Societ. Entom. 22, Nr. 6.  
 purpurascens Arg. *H.* *Edw.* Proc. Cal. Ac. Sci. 7, p. 170.  
 pusilla Eun. *Bat.* Journ. Entom. 2, p. 198.\*  
 pygas Cat. *Godt.* Encycl. Méthod. 9, p. 423.  
 pygmalion Met. *Fruhst.* Entom. Rundsch. 29, p. 14.  
 pylene Prep. *Hew.* Exot. Butt. 1 (Pandora et Prepona).\*  
 pyraemon Cat. *Godt.* Encycl. Méthod. 9, p. 424.  
 pyramus Haem. *F.* Spec. Ins. 2, p. 130.  
 pyrrha Act. *F.* Syst. Entom., p. 464. **0.370**  
 quadra Act. *Schs.* Proc. Un. Stat. Mus. 24, p. 392. **0.370**  
 quadridentatus Prot. *Stgr.* Proc. Zool. Soc. Lond. 1873, p. 773.\*



## Alphabetical List of the American Nymphalidae.

613

- quehuala Chlos. *Reak. Proc. Acad. Phil.* 1, p. 84.  
 quino Mel. *Behr. Proc. Calif. Ac. Sci.* 1863, p. 90.  
 quintilla Phy. *Hew. Exot. Butt.* 5 (Eresia 10).  
 quitaleua Hel. *Hew. Exot. Butt.* 1. \*P.380  
  
 racidula Dyn. *Hew. Exot. Butt.* 2 (Eubagis 2).  
 radiata Act. *Hew. Exot. Butt.* 4 (Aer. 6). \*P.360  
 radiata Ad. *Fruhst. Seitz, Macrolep. V.* p. 531.  
 radiosus Hel. *Bllr. Cistul. Entom.* 1, p. 166. P.352  
 rectifascia Ect. *Bllr. & Drc. Proc. Zool. Soc. Lond.* 1874, p. 345.  
 redneta Act. *Jord. Seitz, Macrolep. V.* p. 362.  
 reducta Chlor. *Röb. Seitz, Macrolep. V.* p. 546.  
 regina Pan. *Bat. Journ. Entom.* 2, p. 213.  
 restricta Ad. *Fruhst. Seitz, Macrolep. V.* p. 514.\*  
 rhea Ad. *Fruhst. Stett. Zg.* 68, p. 15.  
 rhea Hel. *Cr. Pap. Exot.* 1, p. 85.\*  
 rhenea Prep. *Fruhst. Seitz, Macrolep. V.* p. 562.  
 rhodope Arg. *Edw. Trans. Am. Ent. Soc.* 5, p. 13.  
 rhodoptera Per. *Bllr. Cistul. Entom.* 1, p. 162.  
 richardi Hel. *Riff. Berl. Ent. Ztschr.* 45, p. 73. 386  
 ricini Eu. *L. Syst. Nat. (X).* p. 466.  
 riffarthi Eu. *Stich. Berl. Ent. Ztschr.* 48, p. 31. 386  
 riffarthi Hel. *Slich. Wytsm. Gen. Ins. Nymph. Hel.* p. 26.\*  
 robigus Hel. *Weym. Stett. Zg.* 36, p. 382. \*P.379  
 roeselia Anart. *Esch. Kotzeb. Reise* 3, p. 207.\*  
 rogenhoferi Myse. *Fldr. Verh. Zool.-Bot. Ges. Wien* 1869, p. 472.  
 rosacea Hel. *Riff. Deutsche Ent. Ztschr.* 1907, p. 512.\*  
 rosae An. *Fassl. Societ. Entom.* 24, p. 81.  
 rosandra Ag. *Fruhst. Seitz, Macrolépid. du Globe, V.* p. 543.  
 rosina Hel. *Bsd. Lépid. Guatém.* p. 79. 386  
 rosina Phy. *Dogn. Le Naturaliste (2)* 2, p. 67.\*  
 rothschildi Ad. *Fruhst. Seitz, Macrolep. V.* p. 528.\*  
 rubellius Hel. *Sm. & Ky. Rhop. Exot. I.* \*P.384  
 rubescens Hel. *Slich. Wytsm. Gen. Ins. Nymph. Hel.* p. 26.  
 rubia Pyr. *Slgr. Iris* 7, p. 70.  
 rubiunda Hel. *Niep. Societ. Entom.* 22, No 6. 387  
 rubiunda Mel. *H. Edw. Papilio* 1, p. 52.  
 rubra Haem. *Kaye. Trans. Ent. Soc. Lond.* 1904, p. 173.\*  
 rubra Hel. *Slich. Wytsm. Gen. Ins. Nymph. Hel.* p. 26. 386  
 rubrigutta Chlos. *Röb. Seitz, Macrolep. V.* p. 452.  
 rubrobasalis Per. *Rbl. Berl. Ent. Ztschr.* 44, p. 299.  
 rubrosticta Act. *Jord. Seitz, Macrolep. du Globe, V.* p. 365.  
 rufa Act. *Jord. Novit. Zool.* 17, p. 465. P.364  
 rufescens Arg. *Cekll. Entom. Rec.* 1909, p. 186.  
 rufescens Chlos. *Wr. Butt. West-Coast.*  
 rufescens Hypna *Bllr. Proc. Zool. Soc. Lond.* 1866, p. 209.\*  
 rufescens Lin. *Cekll. Entomologist* 1889, p. 4.  
 rufilia Ad. *Fruhst. Seitz, Macrolep. V.* p. 527.  
 rufimbata Hel. *Bllr. Cistul. Entom.* 1, p. 169. 386  
 rupestris Arg. *Behr. Proc. Cal. Ac. Sci.* 2, p. 175.  
 russeus Zar. *Fruhst. Ent. Ztschr.* 1909, p. 167.  
 rusticus Pol. *Edw. Trans. Amer. Ent. Soc.* 5, p. 107.  
 rutilans An. *Bllr. Ann. Mag. Nat. Hist.* (4) 5, p. 223.  
 ryphea An. *Cr. Pap. Exot.* 1, pl. 48.\*  
 rubripicta  
 rufescens  
 sabatia Ag. *Fruhst. Seitz, Macrolep. V.* p. 540.  
 sabrina Caton. *Hew. Exot. Butt.* 1 (Ep. 1).  
 saga Arg. *Slgr. Stett. Zg.* 1861, p. 350.  
 sahlkei Agr. *Honr. Berl. Ent. Ztschr.* 1885, p. 278.\*  
 sakuntala Arg. *Skinn. Entom. News* 22, p. 108.  
 salacia Caton. *Hew. Exot. Butt.* 1 (Ep. 1).  
 saladillensis Phy. *Giacom. An. Soc. Argentina* 72 (1911), p. 22.  
 salambria Caton. *Fldr. Wien. Ent. Mon.* 5, p. 106.  
 salamis Cat. *Fldr. Wien. Ent. Mon.* 6, p. 114.  
 salmonea Act. *Jord. Novit. Zool.* 17, p. 464. P.362  
 salmoneus Ad. *Bllr. Proc. Zool. Soc. Lond.* 1865, p. 667.\*  
 salpensa Dyn. *Fldr. Wien. Ent. Mon.* 6, p. 113.  
 salvini Agr. *Fruhst. Entom. Nachr.* 1895, p. 217.  
 salvini Callith. *Slgr. Exot. Tagf.* 1, p. 124.  
 salvinii Hel. *Dev. Mitt. München. Ent. Ver.* 1, p. 86.  
 sanguinea Hel. *Slgr. Iris* 7, p. 66.  
 santina Prep. *Fruhst. Entom. Nachr.* 1897, p. 220.  
 santina Tem. *Fruhst. Stett. Zg.* 68, p. 231.  
 sapho Hel. *Drury. Ill. Nat. Hist.* 3, p. 54.\*  
 sapphira Callith. *Hbn. Smmlg. Exot. Schmett.*  
 sara Dyn. *Bat. Journ. Entom.* 2, p. 324.  
 sara Hel. *F. Ent. Syst.* 3 (1), p. 167.  
 sarana Ad. *Fruhst. Seitz, Macrolep. V.* p. 520.\*  
 sardanapalus Agr. *Bat. Proc. Ent. Soc. Lond.* (2) 5, p. 111.  
 sarsanda Act. *Drc. Ann. Mag. Nat. Hist.* (7) 12, p. 220. P.361  
 satis Hel. *Weym. Stett. Zg.* 36, p. 380. \*P.378  
 saturata Anart. *Slgr. Exot. Tagf.* 1, p. 104.\*  
 saturata Phy. *Röb. Seitz, Macrolep. V.* p. 446.\*  
 satyrus Pol. *Edw. Trans. Amer. Ent. Soc.* 2, p. 374.  
 saundersi Ad. *Hew. Trans. Ent. Soc. Lond.* (3) 5, p. 564.  
 saundersii Chlos. *Dbl. & Hew. Gen. Diurn. Lep.* p. 185.\*  
 saurites Ag. *Fruhst. Seitz, Macrolep. V.* p. 544.  
 saussurei Per. *Guen. Mém. Phy. Gen.* 22, p. 398.  
 schansi Mel. *G. & S. Biol. Centr.-Amer. Rhop.* 2, p. 676.\*  
 schausiana An. *G. & S. Ann. Mag. Nat. Hist.* (6) 4, p. 98.  
 schulzi Hel. *Riff. Berl. Ent. Ztschr.* 43, p. 405. P.350  
 seiana Act. *Jord. Novit. Zool.* 17, p. 463. P.360  
 seotosis Act. *Jord. Novit. Zool.* 17, p. 468. P.368  
 seyrus Prep. *Fruhst. Seitz, Macrolep. V.* p. 558.  
 segesta Act. *Weym. Stübels Reise* p. 62. \*P.364  
 sejona Phy. *Sehs. Proc. Un. Stat. Mus.* 24, p. 395.  
 seitzii Chlos. *Röb. Seitz, Macrolep. V.* p. 453.\*  
 seitzii Eu. *Stich. Berl. Ent. Ztschr.* 68, p. 6.\*  
 seitzii Hel. *Neust. Seitz, Macrolep. du Globe, V.* p. 594.  
 seitzii Pyr. *Fruhst. Stett. Zg.* 1908, p. 40.  
 selene Phy. *Röb. Seitz, Macrolep. V.* p. 445.\*  
 selima Cat. *Guen. Mém. Phys. Gen.* 22, p. 416.  
 selina Chlor. *Bat. Journ. Entom.* 2, p. 334.  
 sellasia Ag. *Fruhst. Seitz, Macrolep. V.* p. 540.  
 semilavida Hel. *Weym. Iris* 6, p. 302. P.380  
 semifulva Cyst. *Fldr. Reise Novara Lep.* 3, p. 744.  
 semifulvus Prot. *Bllr. Proc. Zool. Soc. Lond.* 1875, p. 36.\*  
 semilutea Act. *Jord. Seitz, Macrolep. V.* p. 370.  
 semiphorus Hel. *Slgr. Iris* 9, p. 284. P.383  
 semiramis Arg. *Edw. Canad. Entom.* 18, p. 61.  
 semirubra Agr. *Niep. Lepidoptera Niepeltiana* p. 29.\*  
 sentia Ad. *G. & S. Biol. Centr.-Amer. Rhop.* 1, p. 309.\*  
 seraphia Chlor. *Hbn. Smmlg. Exot. Schmett.*  
 seraphion Hel. *Weym. Iris* 6, p. 330. P.381  
 serenita Ad. *Fruhst. Seitz, Macrolep. V.* p. 516.\*  
 sergestus Hel. *Weym. Iris* 6, p. 339. \*P.382  
 seriphia Ad. *Fldr. Reise Novara Lep.* p. 423.  
 serita Ad. *Fruhst. Seitz, Macrolep. V.* p. 529.\*  
 serosa Gallic. *Guen. Mém. Phys. Gen.* 22, p. 386.  
 serpa Ad. *Bsd. Spec. Gén.* 1, pl. 8.  
 serpentina Ad. *Fruhst. Seitz, Macrolep. V.* p. 532.  
 sestia Phy. *Hew. Equat. Lepid.* p. 26.  
 setabis Dyn. *Dbl. & Hew. Gen. Diurn. Lep.* 1, pl. 30.\*  
 siehaeus Ad. *Bllr. Proc. Zool. Soc. Lond.* 1865, p. 668.\*  
 sida Lue. *Hbn. Smmlg. Exot. Schmett.* 1.\*  
 sierra Mel. *Wr. Butt. West-Coast.*  
 siga Arg. *Hbn. Zutr. Smmlg. Exot. Schmett.*  
 silenus Pol. *Edw. Trans. Amer. Ent. Soc.* 3, p. 15.  
 silia Ad. *Fruhst. Seitz, Macrolep. V.* p. 522.\*  
 silvana Hel. *Cr. Pap. Exot.* 4, p. 143. \*P.379  
 simois Phy. *Hew. Exot. Butt.* 3 (Eresia 5).  
 simois Prep. *Fldr. Reise Novara Lep.* 3, p. 437.  
 simplex Hel. *Riff. Insektenbörse* 23, p. 56.  
 sineerus Hel. *Riff. Deutsche Ent. Ztschr.* 1907, p. 501.  
 sinefascia Act. *Jord. Seitz, Macrolep. du Globe, V.* p. 365.  
 sinefascia Lin. *Edw. Papilio* 2, p. 22.  
 sirona Ad. *Fruhst. Seitz, Macrolep. V.* p. 521.  
 sisygambis Did. *Fruhst. Entom. Ztschr.* 23, p. 41.  
 sisyphus Hel. *Salv. Ann. Mag. Nat. Hist.* (4) 7, p. 413. P.380  
 sitaleus Phy. *G. & S. Biol. Centr.-Amer. Rhop.* 1, p. 201.\*  
 skinneri Mysc. *Mengel. Entomolog. News* 5, p. 95.  
 snyderi Arg. *Skinn. Canad. Ent.* 29, p. 154.  
 sobrina Act. *Jord. Novit. Zool.* 17, p. 467. P.365  
 socia Phy. *Edw. Verh. Zool.-Bot. Ges. Wien* 1869, p. 470.  
 sodalia Ag. *Fruhst. Seitz, Macrolep. V.* p. 540.  
 sodalis Act. *Bllr. Ann. Mag. Nat. Hist.* (4) 20, p. 119. P.362  
 sodalis Gnath. *Slgr. Exot. Tagf.* 1, p. 95.  
 sophax Ad. *G. & S. Ann. Mag. Nat. Hist.* (5) 2, p. 265.  
 sophene Vict. *Fruhst. Stett. Zg.* 68, p. 13.  
 sophonisba Eun. *Cr. Pap. Exot.* 4, pl. 295.\*  
 sophonisba Myse. *Godl. Eneycl. Méthod.* 9, p. 823.  
 sopolis Phy. *G. & S. Ann. Mag. Nat. Hist.* (5) 2, p. 262.  
 sorana Cat. *Godl. Eneycl. Méthod.* 9, p. 422.  
 soron Prep. *Fruhst. Seitz, Macrolep. V.* p. 556.\*  
 sosippus An. *Ipffr. Stett. Zg.* 1871, p. 352.  
 sosis Phy. *G. & S. Ann. Mag. Nat. Hist.* (5) 2, p. 262.  
 sosthenes Dyn. *Hew. Trans. Ent. Soc. Lond.* 1869, p. 34.  
 soterius Hel. *Salv. Ann. Mag. Nat. Hist.* (4) 7, p. 413.  
 speciosa Cat. *Röb. Seitz, Macrolep. V.* p. 495.  
 sperata Hel. *Riff. Deutsche Ent. Ztschr.* 1907, p. 513.  
 sphaeteria Prep. *Fruhst. Seitz, Macrolep. V.* p. 565.  
 splendida Hel. *Weym. Iris* 6, p. 334. \*P.381  
 splendida Hyp. *Rollsch. Novit. Zool.* 11, p. 309.\*  
 splendida Prep. *Rollsch. Novit. Zool.* 1896, p. 687.\*  
 sploliata Eu. *Slich. Berl. Ent. Ztschr.* 18, p. 9.



- spruceana Ad. *Bal. Ent. Month. Mag.* 1864, p. 129.  
 sprucei Hel. *Bat. Ent. Month. Mag.* 1, p. 57.  
 spurius Hel. *Weym. Iris* 6, p. 309. *P.382*  
 srnkai Callith. *Houar. Berl. Ent. Ztschr.* 28, pl. 7.\*  
 stalactoides Vila *Bal. Trans. Ent. Soc. Lond.* (3) 5, p. 540.  
 standingeri Callith. *Röb. Seitz, Macrolep. V.* p. 491.  
 staudingeri Hel. *Weym. Iris* 6, p. 324. *P.382*  
 steneles Viet. *L. Mus. Ulric.*, p. 218.  
 stenias Act. *Jord. Novit. Zool.* 17, p. 467. *P.365*  
 stenotaenia Phy. *Röb. Seitz, Macrolep. V.* p. 440.\*  
 sterope Mel. *Edw. Trans. Am. Ent. Soc.* 3, p. 190.  
 sterope Ag. *Fruhst. Seitz, Macrolep. V.* p. 544.  
 stesilea Phy. *Bat. Ent. Month. Mag.* 1, p. 82.  
 steno An. *Priltw. Stett. Zg.* 1875, p. 142.  
 sticheli Anat. *Fruhst. Guben. Ent. Ztschr.* 1, p. 101.  
 sticheli Hel. *Riff. Deutsche Ent. Ztschr.* 1907, p. 509.\*  
 straminosa Act. *Jord. Seitz, Macrolep. V.* p. 369.  
 stratiotes Cat. *Fldr. Wien. Ent. Mon.* 5, p. 107.  
 stratonice Act. *Lalr. Humb. et Bonpl. Observ. Zool.* 2, p. 92. *P.36*  
 stratoniceus Pyrr. *Fruhst. Stett. Zg.* 1908, p. 36.  
 streckeri Mysc. *Weeks, Illustrat.* p. 6.\*  
 strigosa Zar. *Gmel. Syst. Nat.* 1 (5), p. 2290. (1770)  
 strymon An. *Weym. Stübels Reise*, pl. 3.\*  
 stuarti Agr. *Godm. Proc. Zool. Soc. Lond.* 1882, p. 19.  
 stübels Hel. *Riff. Berl. Ent. Ztschr.* 45, p. 109. *P.384*  
 stupenda Col. *Stich. Wytsm. Gen. Ins. Fasc.* 63, p. 12.  
 stygiana Viet. *Schs. Proc. Zool. Soc. Lond.* 1913, p. 348.\*  
 styx Phy. *Stgr. Exot. Tagf.* 1, p. 94.  
 suapura Ad. *Fruhst. Seitz, Macrolep. V.* p. 516.\*  
 subbadia Act. *Jord. Seitz, Macrolep. V.* p. 372.  
 subbrunneus An. *Röb. Seitz, Macrolep. V.* p. 585.  
 subconcolor Phy. *Röb. Seitz, Macrolep. V.* p. 441.\*  
 subcydnides Hel. *Stgr. Iris* 9, p. 289. *P.384*  
 subelatus Act. *Jord. Seitz, Macrolep. V.* p. 361.  
 subfasciata Phy. *Röb. Seitz, Macrolep. V.* p. 448.  
 subhyalina Act. *Stgr. Exot. Tagf.* 1, p. 82. *P.384* *P.384*  
 subumbilis Hel. *Stich. Wytsm. Gen. Ins. Nymph. Hel.* p. 14. *P.384*  
 subota Phy. *G. & S. Proc. Zool. Soc. Lond.* 1878, p. 268.  
 subpallida Van. *Cekll. Entomolog.* 1889, p. 185.  
 subuniformis Chlor. *Röb. Seitz, Macrolep. V.* p. 546.  
 sulphureus Hel. *Weym. Iris* 6, p. 311. *P.380*  
 sulpitia Viet. *Cr. Pap. Exot.* 4, p. 328.  
 sulfana Chlor. *Foelt. Rev. Mus. Paulista* 5, p. 627.\*  
 superba Viet. *Bar. Ent. Month. Mag.* 1, p. 161.  
 superioris Hel. *Bllr. Ann. Mag. Nat. Hist.* (4) 15, p. 224. *P.377*  
 surdus Eu. *Stich. Berl. Ent. Ztschr.* 48, p. 27.\*  
 surima Act. *Schs. Proc. Un. Stat. Mus.* 24, p. 392. *P.374*  
 susarion Pyrr. *Fruhst. Entomolog. Rundsch.* 29, p. 15.  
 suspecta Act. *Jord. Seitz, Macrolep. V.* p. 369.  
 sydonia Eun. *Godt. Encycl. Méthod.* 9, p. 416.  
 syeue Zar. *Hew. Exot. Butt.* 1 (Paphia et Siderone).  
 sylphis Bolb. *Bat. Ent. Month. Mag.* 1, p. 113.  
 sylvestris Pseud. *Bat. Journ. Entom.* 2, p. 204.  
 syma Ad. *Godt. Encycl. Méthod.* 9, p. 371.  
 synaithus Prep. *Fruhst. Seitz, Macrolep. V.* p. 557.  
 synchrona Prep. *Stgr. Exot. Tagf.* 1, p. 161.  
 syntyehe Hel. *Hew. Exot. Butt.* 1 (Agr. et Sider).  
 synua Ad. *Fruhst. Seitz, Macrolep. V.* p. 530.  
 sysiphus Prep. *Cr. Papil. Exot.* 2, pl. 158.\*  
 taeniata Phy. *Röb. Seitz, Macrolep. V.* p. 438.\*  
 tales Eu. *Cr. Papil. Exot.* 1, p. 62.\*  
 tarapotensis Hel. *Riff. Berl. Ztschr.* 46, p. 59.  
 tarpeja Ad. *Fruhst. Seitz, Macrolep. V.* p. 532.\*  
 tarquinius Arg. *Cr. Ross. Nat. II, Voy. NW. Pass. App.* p. 68.  
 tarratia Ad. *Fruhst. Seitz, Macrolep. V.* p. 521.\*  
 tatila Eun. *H.-Schäff. Smmlg. Außer-Enr. Schmiett.*, f. 69 à 72.\*  
 tatilina Eun. *Fruhst. Stett. Zg.* 1908, p. 47.  
 taurione Eun. *Hbn. Zutr. Smmlg. Exot. Schmiett.* (4).  
 taylori Mel. *Edw. Canad. Entom.* 20, p. 82.  
 tecta Hel. *Riff. Berl. Ent. Ztschr.* 45, p. 207. *393*  
 tegeata Ad. *Fruhst. Seitz, Macrolep. V.* p. 514.  
 tegyra Ag. *Fruhst. Seitz, Macrolep. V.* p. 541.  
 telehinia Hel. *Dbl., Westw. & Hew. Gen. Diurn. Lep.* 1, p. 104. *P.377*  
 teleboas Cyst. *Mén. Bull. Acad. Moscou* 1832, p. 307.  
 telesiphe Col. *Hew. Trans. Ent. Soc. Lond.* (3) 5, p. 564.  
 telesiphe Hel. *Dbl. Gen. Diurn. Lep.* 1, p. 103.\*  
 teletusa Phy. *Godt. Encycl. Méthod.* 9, Suppl., p. 817.  
 tellias Chlos. *Bat. Entom. Month. Mag.* 1, p. 84.  
 tellus Hel. *Oberth. Etudes d'Entom. Comp.* 21.\*  
 temerinda Hel. *Hew. Exot. Butt.* 5. *P.384*  
 tenebrosa Act. *Hew. Exot. Butt.* 4 (Acr. 6). *P.364*  
 tenebrosa Eun. *Salv. Ann. Mag. Nat. Hist.* (4) 4, p. 173.  
 terpsichore Pyr. *Phil. Linn. Entomol.* 14, p. 266.  
 terpsinoë Act. *Fldr. Wien. Ent. Mon.* 6, p. 78. *P.369*  
 testacea Act. *S. & G. Ann. Mag. Nat. Hist.* (4) 2, p. 144. *P.360*  
 testacea An. *Röb. Seitz, Macrolep. V.* p. 585.\*  
 texa Cat. *Hew. Exot. Butt.* 1 (Catagr. 3).  
 texana Phy. *Edw. Proc. Ent. Soc. Phil.* 2, p. 81.  
 thalassina Dyn. *Bsd. Lépid. Guatém.*, p. 42.  
 thalia Act. *L., Syst. Nat.* (X), p. 467. *P.369*  
 thalpius Prep. *Hbn. Smmlg. Exot. Schmiett.* 1, pl. 71.\*  
 thalysia Chlor. *Fruhst. Stett. Zg.* 1907, p. 242.  
 thamar Hel. *Hbn. Smmlg. Exot. Schmiett.* 1.   
 thauyras Cat. *Mén. Cat. Mus. Petr.* 2, pl. 8.\*  
 tharos Phy. *Drury, Ill. Exot. Entom.* 1, pl. 21.\*  
 thaumas Chlor. *Bal. Ent. Month. Mag.* 1, p. 130.  
 theaena Ad. *Fruhst. Seitz, Macrolep. V.* p. 514.\*  
 thearida Ag. *Fruhst. Seitz, Macrolep. V.* p. 545.\*  
 thebais Prep. *Fruhst. Seitz, Macrolep. V.* p. 555.  
 thebais Phy. *G. & S. Proc. Zool. Soc. Lond.* 1878, p. 267.  
 thebais Sid. *Fldr. Wien. Ent. Mon.* 6, p. 422.  
 thekla Mel. *Edw. Trans. Am. Ent. Soc.* 3, p. 191.  
 thelxiope Hel. *Hbn. Exot. Schmiett.* 1. *385*  
 thelxiopeia Hel. *Stgr. Iris* 9, p. 305. *385*  
 themistocles Meg. *F. Ent. Syst.* 3 (1), p. 66.  
 theona Phy. *Mén. Enum. Corp. An. Petr.*, p. 86.\*  
 theophania Eun. *Fruhst. Stett. Zg.* 1908, p. 46.  
 theophila Act. *Dogn. Le Naturaliste* (2) 1, p. 173. *P.362*  
 therasia Ad. *Fruhst. Seitz, Macrolep. V.* p. 531.  
 thesurs Dyn. *Fldr. Wien. Ent. Mon.* 5, p. 106.  
 thespias Act. *Weym. Stübels Reise*, p. 73. *P.365*  
 thesprotia Ad. *Fldr. Reise Novara Lep.* 3, p. 419.  
 thessalia Ad. *Fldr. Reise Novara Lep.* 3, p. 417.  
 theudela Hel. *Hew. Ent. Month. Mag.* 1, p. 224.  
 thielei Hel. *Riff. Berl. Ztschr.* 45, p. 195. *P.380*  
 thisbe Haem. *Dbl. & Hew. Gen. Diurn. Lep.*, pl. 30.\*  
 thoasa Ad. *Hew. Ann. Mag. Nat. Hist.* (2) 6, p. 436.\*  
 thoë Chlor. *Godt. Encycl. Méthod.* 9, p. 376.  
 thomsoni Van. *Bllr. Ann. Mag. Nat. Hist.* (5) 19, p. 104.  
 thrasylla Cybd. *Fldr. Wien. Ent. Mon.* 3, p. 397.  
 thyamis Anart. *Fruhst. Guben. Ent. Ztschr.* 1, p. 102.  
 thymetus Phy. *F. Mant. Insect.* 2, p. 30.  
 timaeus Hel. *Weym. Iris* 6, p. 331. *P.381*  
 timareta Hel. *Hew. Trans. Ent. Soc. Lond.* (3) 5, p. 563.  
 titan An. *Fldr. Reise Novara Lep.* 3, p. 447.  
 titania Cat. *Salv. Ann. Mag. Nat. Hist.* (4) 4, p. 177.  
 titia Dyn. *Hbn. Zutr. Smmlg. Exot. Schmiett.* (2).  
 tithonia Eun. *Fldr. Reise Novara Lep.* 2, p. 199.\*  
 tithoreides Hel. *Stgr. Iris* 12, p. 404. *P.352*  
 tithoreides Prot. *Bllr. Proc. Zool. Soc. Lond.* 1873, p. 774.  
 titraustes Col. *Salv. Ann. Mag. Nat. Hist.* (4) 7, p. 415.  
 titia Ad. *Fruhst. Seitz, Macrolep. V.* p. 515.  
 titio Col. *Stich. Wytsm. Gen. Ins. Fasc.* 63, p. 12.  
 tizona Ad. *Fldr. Reise Novara Lep.*, p. 424.  
 tizonides Ad. *Fruhst. Ent. Ztschr. Stuttg.* 22, p. 108.  
 tolima Cat. *Hew. Exot. Butt.* (Catagr. 1).  
 torrebria Luc. *Mén. Bull. Acad. Moscou* 1832, p. 310.  
 tracta Ad. *Bllr. Lepid. Exot.*, p. 102.\*  
 trajanus Agr. *Fruhst. Iris* 14, p. 327.  
 transiens Hel. *Stgr. Iris* 9, p. 314. *390*  
 transiens Prep. *Fruhst. Iris* 17, p. 311.  
 trayja Viet. *Hbn. Smmlg. Exot. Schmiett.* 1.\*  
 triclaris Arg. *Hbn. Smmlg. Exot. Schmiett.* 2.\*  
 tricoloratus Hel. *Bllr. Cistul. Entom.* 1, p. 167.  
 trinaeria Act. *Fldr. Wien. Ent. Mon.* 6, p. 417. *P.364*  
 tringa Per. *Guen. Mém. Phys. Gen.* 22, p. 401.  
 tritina Ad. *Kaye. Trans. Ent. Soc. Lond.* 1913.  
 trinitatis Act. *Jord. Seitz, Macrolep. V.* p. 372.  
 trinitatis Prot. *Röb. Seitz, Macrolep. V.* p. 580.\*  
 tristis Hel. *Riff. Berl. Ent. Ztschr.* 45, p. 210.  
 tristrigosa Per. *Bllr. Cistul. Entom.* 1, p. 161.  
 triteia Cat. *Fruhst. Societ. Entomol.* 1916, p. 24.  
 troglodyta An. *F. Syst. Entom.*, p. 502.  
 tryphena Per. *Hew. Exot. Butt.* 2 (Catagr. 6).  
 tryphon Agr. *Fruhst. Seitz, Macrolep. V.* p. 573.  
 tulsis Phy. *Bat. Ent. Month. Mag.* 1, p. 82.  
 tulita Chlos. *Dew. Stett. Zg.* 38, pl. 1.\*  
 tumida Ad. *Bllr. Cistul. Entom.* 1, p. 165.  
 tutelina Meg. *Hew. Exot. Butt.* 1 (Timetes 1).  
 tyche Hel. *Bat. Trans. Linn. Soc. Lond.* 23, p. 559. *385*  
 tydarns Hel. *Weym. Iris* 9, p. 317. *P.380*  
 typhla Cat. *Röb. Seitz, Macrolep. V.* p. 495.\*  
 typhocus Pyrr. *Fldr. Reise Novara Lep.* 3, p. 411.



## Alphabetical List of the American Nymphalidae.

615

tyrianthina An. *G. & S. Ann. Mag. Nat. Hist.* (4) 2, p. 148.  
 tyrias Prep. *Fruhst. Seitz, Macrolep. V*, p. 555.\*

udalrica Hel. *Cr. Pap. Exot.* 4, p. 16.\*  
 umbrosa Pol. *Linn. Trans. Amer. Ent. Soc.* 2, p. 313.  
 unifasciatus Eu. *Bllr. Cistul. Entomol.* 1, p. 169.  
 unimaculata Hel. *Hew. Equat. Lep.*, p. 10. 385  
 urraea Ad. *Fldr. Wien. Ent. Mon.* 6, p. 116.  
 urracina Ad. *Fruhst. Seitz, Macrolep. V*, p. 516.\*  
 ursula Phy. *Stgr. Iris* 7, p. 70.\*  
 uta Ad. *Fruhst. Seitz, Macrolep. V*, p. 519.  
 uzita An. *Drc. Proc. Zool. Soc. Lond.* 1877, p. 443.\*  
 urania — — — — — P. 381  
 vacuna Chlor. *Godt. Encycl. Méthod* 9, p. 377.  
 vala Hel. *Stgr. Exot. Tagf.* 1, p. 78.  
 valdiviana Arg. *Phil. Linn. Entom.* 1860, p. 265.  
 valentina Ad. *Fruhst. Seitz, Macrolep. V*, p. 514.  
 vanessoides Phy. *Röb. Seitz, Macrolep. V*, p. 449.  
 vanillae Dione L. *Syst. Nat.*, p. 482.  
 vaninka Per. *Hew. Exot. Butt.* 1 (Catagr. 4).\*  
 varians Act. *Jord. Novit. Zool.* 17, p. 464. P. 381  
 variegata Phy. *Röb. Seitz, Macrolep. V*, p. 437.\*  
 vegetissima En. *Stich. Berl. Ent. Ztschr.* 48, p. 8.  
 velia Ad. *Fldr. Reise Novara Lep.* 3, p. 423.  
 veliada Ad. *Fruhst. Seitz, Macrolep. V*, p. 526.  
 velica Phy. *Hew. Exot. Butt.* (Eresia V), fig. 25.\*  
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 virgata Hel. *Stich. Insektenböse* 19, p. 255. 386  
 virginensis Pyr. *Drury, Ill. Exot. Entom.* 1, pl. 5.\*  
 viridana Hel. *Stich. Wytsm. Gen. Ins. Nymph. Hel.*, p. 35.  
 viridinota Per. *Bllr. Cistul. Entom.* 1, p. 161.  
 viridis Hel. *Stgr. Exot. Tagf.* 1, p. 77.\* 390  
 virilis Phy. *Röb. Seitz, Macrolep. V*, p. 450.  
 viciina Mén. — — — — — 386

vitringa Per. *Hew. Exot. Butt.* 2 (Catagr. 8).\*  
 vittatus Hel. *Bllr. Cistul. Entom.* 1, p. 166. P. 382  
 vodenai Ad. *Fruhst. Seitz, Macrolep. V*, p. 521.  
 volara Per. *Hew. Exot. Butt.* 4 (Catagr. 12).\*  
 volumina Eun. *Godt. Encycl. Méthod.* 9, p. 416.  
 volupis Ad. *Fruhst. Seitz, Macrolep. V*, p. 512.  
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 vernickei — — — — — P. 384  
 xanthica Hel. *Bat. Ent. Month. Mag.* 1, p. 57. P. 380  
 xanthica Per. *Hew. Exot. Butt.* 3 (Catagr. 11).\*  
 xanthippus Agr. *Stgr. Exot. Tagf.* 1, p. 165.  
 xanthooides Hel. *Bat. Trans. Soc. Linn. Lond.* 23, p. 561. 389  
 xenagoras Prep. *Hew. Ent. Month. Mag.* 12, p. 153.  
 xenarehus Prep. *Fruhst. Seitz, Macrolep. V*, p. 558.  
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 xenocles An. *Ww. Gen. Diurn. Lep.*, p. 319.  
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 ximena Ad. *Fldr. Wien. Ent. Mon.* 6, p. 116.  
 xyliatus Prep. *Fruhst. Seitz, Macrolep. V*, p. 554.  
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 zina Ad. *Hew. Exot. Butt.* 4 (Heterochroa 1).\*  
 ziola Ad. *Fruhst. Seitz, Macrolep. V*, p. 516.\*  
 \*zobeida Hel. *Bllr. Ann. Mag. Nat. Hist.* (4) 3, p. 18.\*  
 zonalis Prec. *Fldr. Reise Novara Lep.* 3, p. 399.  
 zopyra Ad. *Fruhst. Seitz, Macrolep. V*, p. 514.  
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 zynia Ad. *Fruhst. Seitz, Macrolep. V*, p. 525.  
 zabnysa Fruhst. — — — — — P. 380  
 zelinde — — — — — P. 384



























