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THE
butterflies of Switzerland

AND THE
Alps of Central Europe.



BY
GEORGE WHEELER, M.A.

Price 5s. net. Interleaved 6s.

LONDON
ELLIOTT STOCK
62, PATERNOSTER-ROW, E.C.

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INTRODUCTION.

The difficulty I experienced, when beginning to collect butterflies in Switzerland, in finding out what to look for, and when and where to look, and the discovery that many others were in the same situation, first opened my eyes to the necessity for a book with some such scope as the present. No work dealing with the Swiss butterflies as a whole had appeared since Frey's "Lepidopteren der Schweiz" in 1880, though Lang's "Butterflies of Europe" was published in 1884, and 1885 saw the production of the "European Butterflies" of Kane, who has become the "guide, philosopher and friend" of a large and ever-increasing number of British lepidopterists in the Alps and elsewhere. Moreover, not only had new species been discovered since that time, but one of the books was in German, another decidedly expensive and not very portable, and the third, I was informed on trying to obtain a copy, sold out; and in neither of them was the subject of variation, so intensely interesting even to the "mere collector," more than lightly touched on. It was not, however, until much later that I even contemplated the possibility of trying to supply the deficiency, an idea which was first suggested to me after the publication of some of my papers in the *Entomologist's Record*, when I found, to my own great surprise, that my advice was asked, and my opinion consulted, by entire strangers, even including, during the last two years, some of the best known lepidopterists of Switzerland. This circumstance, together with the fact that no one else seemed willing to throw himself into the breach, must be my excuse for undertaking the task; and, if it be a case of "where angels fear to tread," I can only plead that at least I have not "rushed in." Often the inclusion, or even the suppression, of a single line has entailed the close examination of many specimens, and a most unexpected amount of correspondence.

The original idea was to include Swiss butterflies only, but Switzerland is so entirely a political rather than a geographical expression, that it seemed necessary either to enlarge or diminish the scope of the work, and, after much consideration, the whole of the Alps of Central Europe have been included: *i.e.*, the Alpes-Maritimes, the Hautes and Basses Alpes, and Savoie in France: the Alps of N. Italy; the Tyrol; the Styrian, Carinthian and Julian Alps, and such small portions of the S. of Upper and Lower Austria as are alpine. At the same time the original idea has not been lost sight of; the whole of Switzerland is included whether alpine or not (which has involved the inclusion of the French Jura), and those species and varieties which have never been taken in Switzerland are marked with an asterisk (*), for the convenience of those collectors (no insignificant number) who confine their attentions exclusively to the butterflies of that country. It will also, no doubt, be at once perceived that the localities given outside Switzerland are both fewer and often less precise than those within it, especially with regard to the more eastern portion of the region; and I must at once admit that I feel myself far less well equipped for dealing with the latter portion of the subject, both from

being personally unacquainted with the country, and from the fact that it has been very little worked except in the neighbourhood of a few centres.

The whole subject has been as much condensed as possible, and, to save space, abbreviations (lists of which are given) are very freely used. With the same view, descriptions are reduced to a minimum; the prevailing colours of each tribe or genus are given, and often a distinguishing character of the latter; then, under each species, the synonyms, size, foodplant of the larva when known, and the superficial difference between ♂ and ♀ are noted, and one or more characteristics—as few as possible—given, by which each may be distinguished from its neighbours. This has been by far the most exacting portion of the work; in every difficult case many specimens have been examined, and, in no instance, have the distinctions been drawn by reference to books or plates alone, without examination of the actual insects themselves. It must be further understood that the characteristics given are often not those which scientifically differentiate one genus, or even one species, from another (these being often more prominent in some earlier stage), but those which are easiest of recognition, and consequently the most superficial. In the same way, secondary sexual distinctions have always been chosen by preference, and the androconial pockets are generally referred to by their appearance, *e.g.*, “a thickening of the nervures,” “a black line,” &c., rather than by their actual structure or function. The stage at which hibernation takes place is given either under the tribe, genus, or species. Localities are next mentioned, with dates and authorities, and I have by preference given the most modern instances that I can find, and have as far as possible taken, when there was any choice, those which have not been previously published, or which were scattered through the pages of magazines; the year has been added whenever possible, as times of emergence vary greatly with the season; the year 1899, for instance, was abnormally forward; 1898, and in the mountains 1902, unusually late. Lastly, special attention has been paid to variation, and under the head of “Directions of Variation” a good deal of information is often implied concerning the type, which has enabled me to dispense with a considerable amount of direct description; when no localities are added after the various forms mentioned it is to be understood that they occur with the type. Variation in size is only mentioned specially when it is pronounced, as all collectors must be aware that all species differ somewhat in this respect; the size given in millimeters after the name of each species is an average; this small but important item of information has involved a great deal of actual measurement, the sizes given in Favre’s “*Lépidoptères du Valais*,” which I had intended using as a basis, being generally, though by no means always, the largest to which each species attains, unless in abnormal cases.

With regard to Classification and Nomenclature I hold strong views, which would take far too much space to state here, though I fear that certain inklings of them have forced their way out occasionally in notes; but there are two things which to me are anathema, to which I must shortly refer. The first of these is the breaking up of large genera into “genera of convenience.” I feel most strongly that the division into genera ought, strictly speaking, to correspond

with a physiological fact, and always with the *same* physiological fact, *etc.*, the possibility of genuine hybridisation. This is, of course, merely an ideal which can only be reached by an immense amount of actual experiment, and for which negative evidence requires to be cumulative before it can be regarded as having much force: but to search for characters by which a genus can be split up, simply because it is large and "unwieldy" (why unwieldy? who wants to "wield" it?), or to divide genera by characteristics of varying importance, is to cut at the root of all possible development of classification on scientific lines. The second is the doctrine that the first-described form of an insect (or of anything else) must be regarded as the type. It would perhaps be most scientific to regard the most ancestral form as the type if this were possible, but, as in most cases, it would be impracticable to determine which *is* the most ancestral form, the only possible alternative is to regard as typical the most generally distributed form (surely in most cases a matter easy enough to determine), and others as varying from it. I cannot help feeling that classification and nomenclature, even at the loss of some degree of fixity, ought to be made subservient to scientific fact, rather than that such fact should be obscured by a too pedantic adherence to the letter of the law of priority. With regard to the application of these principles to particular cases I am most humbly open to correction, from the principles themselves I see no reason to deviate.

While on the one hand, as Mr. Tutt and others have pointed out, no linear arrangement of classification can be really satisfactory, it is obvious, on the other hand, that both in books and collections no other is possible, and the problem is to choose the least objectionable, *i.e.*, that which least glaringly contradicts scientific facts so far as they are established. It is, of course, highly improbable that any arrangement chosen would quite commend itself to anyone else, unless to someone who had published one of his own which was strictly adhered to: so, as I have not strictly adhered to any, everyone is likely to find something to complain of, and, in fact, I have finally adopted the present one, not because I could not find complaints against it myself, but because "in the present state of our ignorance" I could find more against any other. I consulted Mr. Tutt on this matter, and have in most cases followed his suggestions, but the position which I have assigned to *Nemeobius Lucina*, and *Libythea Celtis* will not, I fear, meet with his approval. The practice of beginning with the more generalised forms, though the more logical, has still probably many enemies.

With regard to the actual nomenclature employed, that of the Hesperiidæ is the most uncertain; I feel convinced that some at least of the generic names will prove to be incorrect, but pending further investigation, I have applied them in accordance with the use of others more competent to judge than myself. If it be necessary to ignore Billberg's generic names in this case, it would appear that *Leptidia* should also give way to *Leptosia*, Hb.: I have, however, retained *Callophrys*, for which there seems to be no alternative. One or two generic divisions, *e.g.*, *Dryas* from *Argynnis*, and *Nomiades* from *Cupido*, I have retained unwillingly, and I hope temporarily, but the genus *Melampias* (as well as some others not generally adopted), I have felt it necessary to suppress. Our knowledge of the earlier stages of the (inclusive) genus *Erbia*, is far too slight and fragmentary to serve as a basis for subdivision, the

imagines resemble one another so closely that no superficial difference will help us. Professor Grote, while accepting the division, does not defend it by difference of neuration, and Dr. Chapman's organic researches would suggest a different subdivision if one were necessary. With regard to specific names there is little to be said. I have, in accordance with my strongly expressed views on "types," restored *Aleris* in place of *Icarus*, regarding the latter as a variety (*r. note in loco*), but have retained the use of *Argus* to replace *Egon*, though I am by no means sure of the necessity, and quite confident of the unwisdom, of so doing. Is it not much more probable that Linnaeus regarded both as one species, than that he was unacquainted with the insect to which we have all, until lately, applied his name *Argus*? and in the former case is there any necessity for a change of name? With regard to varietal names I have only one remark to offer. It would be such a fruitful source of confusion if the same name might be applied to one species, and to a variety of another in the same genus (or even the same tribe), that the practice should never be tolerated, and such names as *Edusa* var. *Chrysothene*, and *Epiphron* var. *Melampus* should be considered inadmissible. Only four changes of any importance from the established order of things, will, I think, be found, *viz.* : the treatment of *M. Berisalensis* as a var. of *Deione* : the merging of *Alegone* in *Herione* : the separation of *S. Cordula* from *Actea*, and of *A. Simplicia* from *Belia* : all, whether generally accepted or not, are the result of careful study and much discussion and correspondence. The last change has already been made by Dr. Spuler, and is, I think, justified *in loco* : and the second, which is a reversion to the arrangement of Esper and Frey, has the support, among many others, of such lepidopterists as Professor Blachier and Chanoine Favre, notwithstanding the opinion held by the latter when he published his "Lépidoptères du Valais." As to *M. Berisalensis*, my reasons for the change are given under *Deione*, and though I find myself in antagonism with so eminent a lepidopterist as Dr. Chapman, I feel compelled to adhere to my view. The separation of *Cordula*, which has long been doubtful, is also treated *in loco*.

On two minor points, literary rather than scientific, I find myself at variance with many writers with whom I should greatly prefer to find myself in accord, but, in neither case, is there any uniformity of practice. In the first place, it seems to me absurd to adhere to the original spelling of a name when it is manifestly and admittedly incorrect, and in such cases I have never hesitated to alter it. Why retain such errors as *Coridon* and *Megera*? Secondly, I have spelt all specific names with capitals; even at the cost of some convenience in reading, the proper names appear to me to cry aloud for them, and naturally I should have employed them for these only, but, as in all other languages than our own, capitals are considered incorrect for *adjectives* of place (*e.g.*, *Simplicia*), a difficulty at once arises which seems most easily solved by capitalising all. I cannot, however, feel that this does away with all (or even with any) objection that might be felt to a disagreement between adjectives and their substantives, and that agreement I have, therefore, maintained; but as both the words "varietas" and "aberratio" are fortunately feminine, I have used the feminine form in all cases for varieties and aberrations. An apparent exception is *Corydon* ab. *Calydonius*, Lowe,

but in this case the reference is to the resemblance of the colour to that of *Meleager*, and I have regarded the name rather as a substantive than an adjective: one or two other similar instances occur.

Although the work makes no pretence at being exhaustive, no one can be more fully aware of its deficiencies than myself, but, whatever measure of success in its limited sphere it may have attained, is primarily due to the great kindness and ungrudging help afforded to me by many lepidopterists, both English and Continental. It would be impossible to thank by name all who have given me assistance, but there are some whom it would be inexcusable to leave unmentioned. First and foremost my thanks are due to Mr. Tutt for help and encouragement of all kinds; himself one of the busiest of men, he seems somehow to be always accessible, and, but for him, it may be safely asserted that this work would never have seen the light: much the same may be said of Mr. Page who has transacted all the business connected with its production. To the Rev. C. J. Buckmaster, who has searched endless back numbers of magazines, which at the time of writing were out of my own reach; to Mr. Fison, who has furnished me with a great amount of hitherto unpublished material, and whose large collection of Swiss butterflies, taken almost to an insect by himself, has been at all times at my disposal; to Professor Blachier and Chanoine Favre, who have helped me with dates, localities, the use of their collections, and much valuable correspondence; to Col. Agassiz and M. Wulschlegel, whose large collections and experience have been placed at my service; to Mr. F. C. Lemann, who nobly entrusted to me his interleaved copy of "Kane," that I might avail myself of his MS. notes; to Mr. G. O. Sloper, who gave me the unrestricted use of his note-books, and helped me in many other ways; to Miss Fountaine, Mr. H. Rowland-Brown, Mr. A. H. Jones, Mr. Powell, and others who have sent me most valuable lists of captures; to the Rev. F. E. Lowe, Mdlle. Marie Rühl, and many more who have helped me in the matter of aberrations, varieties, and a host of details— to each and all of these my most grateful thanks are hereby offered; and I must beg all who may find this little work useful, to remember that it is to them that the credit of such usefulness is mainly due. As a testimony to the great kindness of entomologists in general I should like to add, that *not one single request has been refused, nor one single letter left unanswered*, by any of the large number of correspondents with whom I have had cause to communicate.

ABBREVIATIONS USED.

Ab., aberration; abundant.	gen., general, generally.	N., north, northern.
c., common.	grd., ground.	ov., ovum.
dist. char., distinguishing characteristic.	hyb., hibernates, hibernated.	p., pupa.
E., east, eastern.	im., imago.	S., south, southern.
esp., especially.	l., larva.	sp., species.
exc., except.	loc., locality.	v., very; <i>vide</i> .
Fam., family.	mm., millimetres.	var., variety; variation.
fd. pl., food plant.	mtn., mountain.	W., west, western.
		wh., which.

PARTS OF THE WING, &c.

Ang., angle.	margl., marginal.	w., wing.
cl., central.	out. marg., outer margin.	f.w., fore-wing.
disc., discoidal.	un. s., under-side.	h.w., hind-wing.
inn. marg., inner margin.	up. s., upper-side.	

COLOURS, &c.

Bl., blue.	dk., dark.	or., orange.
blk., black.	gr., grey.	pp., purple.
brn., brown.	grd. col., ground colour.	wh., white.
bri., bright.	grn., green.	yell., yellow.
col., colour; coloured.	lt., light.	

Months in small Roman figures; i., January, &c.; b., beginning, 1st to 10th; m., middle, 11th to 20th; e., end, 21st to end.

NAMES OF AUTHORITIES.

Ag., Agassiz.	H.-S., Herrich-Schäffer.
Bl., Blachier.	Hüb., Hufnagel.
Bkm., Buckmaster.	L., Linnaeus.
Brgstr., Bergsträsser.	Latr., Latreille.
Bkh., Borkhausen.	Led., Lederer.
Bm., Bromilow.	Lam., Lennan.
Bsdv., Boisduval.	M.-D., Meyer-Dür.
Chp., Chapman.	Obth., Oberthür.
Dalm., Dalman.	Ochs., Ochsenheimer.
Dup., Duponchel.	R.-Brn., Rowland-Brown.
Esp., Esper.	Rubr., Rambur.
Fabr., Fabricius.	Rott., Rottenburg.
Fav., Favre.	R.-S., Riggenbach-Stehlin.
Fis., Fison.	Schiff., Schiffermüller.
Fry., Freyer.	Spr., Speyer.
Fssl., Fuessly.	Stgr., Staudinger.
Ftn., Fontaine.	Stph., Stephens.
Hb., Hübner.	Wh., Wheeler.
Hbst., Herbst.	Wschl., Wulschlegel.
Hg., Huguenin.	Zll., Zeller.

Other names, which are shorter, or occur less frequently, are written in full.

The Butterflies of Switzerland and the Alps of Central Europe.

Super-Fam. HESPERIIDES.

Dist. Char. great breadth of head, and of space between bases of antennae.

Fam. HESPERIIDÆ.

Sub-Fam. HESPERIINÆ.

Tribe HESPERIDI.

Genus, Carcharodus, Hb. (*Pilothyrus, Dup.*).

Dist. Char. Series of 3 spots from costa nr. apex, and 3 separate spots on disc f.w., wh. appear translucent when held up to light.

C. Lavateræ, Esp. (*Alcava, Fabr.*); 33mm. Ed. pl.

Stachys recta; (?) hyb. l. full-fed.

♂ with, ♀ without costal fold f.w.

Dist. Char. transparent spots large; grd. col. up.s. lt.; un.s. unicolorous wh.

Loc. In Switz. only in S.W., but there not uncommon. Fusio vii. 99 (*Chp.*); Sépey, vii. 97 (*Wh.*); between Aigle and Sépey, viii. 2 98 (*Jones*); in most places between Martigny and Morel (*Far.*), mounting up to 5000ft. at Zermatt, and Bérisal, where it is v. ab., esp. from 2nd Refuge to Ganter Bridge, vii.-viii. 97, 98 (*Wh.*); Stalden, vii. 9 94; S. Nicholas, vii. 12 99 (*Blm.*); Twannberg; St. Blaise; Neuveville (*Frey*); Veyrier, viii. 10, but v. rare (*Bl.*).

Digne, vi. b. and m. 99, ab. (*B.-Brn.*); vii. 91 (*Linn.*); Basses Alpes and Alpes Maritimes, gen. in dry torrent beds and hot rocky places, not c. (*Powell*); Vallon Obscur (*Brn.*); Bourg d'Oisans, viii. 96; Bourg St. Maurice vii. 98; Chavoire, vii. 29 02 (*Tutt*); Botzen, vi. e. 01 (*Lowe*); St. Martin-Vesubie, vii. 5 02 (*Bentall*); Cogne valley, viii. 94; Aosta to Courmayeur, viii. 6 98, v. fine; Bobbie, viii. 01 (*Tutt*); Orta, vi. b. and m. 1900, v. fine (*Lowe*).

Directions of var. (a.) size. The Alpine specimens are finer and more clearly marked than those from further S.

C. Althææ, Hb. (*Malvarum* var. *Ochs.*; *Gemina, Led.*);

30mm. Ed. pl. various mallows; hyb. l. full-fed,

♂ with, ♀ without costal fold f.w.

Dist. Char. transparent spots larger than *C. Alceæ*, the 2 exterior on disc with straight inn. edge; slight mauve tinge up.s. f.w. and conspicuous wh. longitudinal streaks at marg. un.s. h.w.

Loc. Not uncommon in Rhone Valley in 2 broods v.-vi., and vii.-viii. Veytaux, v. 27 97; Sépey, &c. (*Wh.*); Martigny, v. ab. (*Far.*); nr. Inden, v. ab. (*Knecht*); Pont de Nant, vii. 12; Sonzier, vi. 21; Ormont, viii. 15 (*Bl.*); Sion, viii. 11 76; Zinal, viii. 1 98 (*R.-Bru.*), &c. Between the Schwarz and Weiss Lütschine (*Spr.*); Pilatus (*Knecht*); Lugano, vi. 87 (*Jones*).

Digne, vi. 13 99 (*R.-Bru.*); nr. Cannes, iii. e. iv. b. 98 (*Chp.*); Vallon Obscur, &c. (*Brem.*); Beaulieu, v. 88 (*Jones*); Bourg St. Maurice, vii. e. 98; Le Lautaret, viii. b. 96; Bourg d'Arn, viii. m. 96, the Brévent, viii. 19 02; Abriès, viii. m. 1900, worn; Torre Pellice, viii. b. 01; Bobbie, viii. m. 01; Au Pra, viii. m. 01 (*Tutt*); Certosa di Pesio, damp spots in mtns. (*Norris*); Susa, vi. 18 02 (*Lowc*); Aosta, viii. 98, below Pré St. Didier, viii. b. 98 (*Tutt*); Val Malenco, vii. 7, 1900 (*R.-Bru.*); Lake of Como, viii. 96; Olgiate, viii. 95 (*Miss Ftn.*); Gardone, viii., 1, 1900 (*Jones*); Orta, esp. Strona Valley, vi. b. & m. 1900 (*Lowc*); Botzen (*Kaur*); Mendel Pass, vii. 95 (*Lamm*).

Directions of Var. (a.) size, occasionally as small as 25mm.
(b.) lightening of grd. col.

var. Bætica. *Rubr.* (Marrubii, *Rubr.*; Floccifera, *Zll.*); much lighter, yell.-gr., one or two lt. bands h.w.; smaller than type.

Loc. By the old church at Vex, vii. 82, ab. (*Christ*); nr. Loeche (*Knecht*).

C. Alcææ, *Esp.* (Malvarum, *Hoffmannsegg*; Malva, *Hb.*); 30mm. Fd. plt. various mallows; hyb. l. full-fed.

♂ with, ♀ without costal fold f.w.

Dist Char. transparent spots v. small; 2 exterior on disc gen. crescentic; tinge of red-brn. up.s.

Loc. Less local than the last but gen. singly; 2 broods, iv.-v., and vii.-viii. All along the Rhone Valley (*Far.*), e.g., Branson, v. 15 02; Loeche, vii. e. 99; Brig, ix. b. 97, worn (*Wh.*); Val d'Anniviers, vii. 31 97 (*R.-Bru.*); Mt. Barry, vi. 30 1900 (*Bkm.*); Geneva, Veyrier, viii. 3 (*Bl.*); Weissenburg, nr. the new Baths, searce (*Hg.*); Burgdorf (*M.-D.*); Basle, v.-viii. (*Christ*); Coire, Rheintal, and lower Misoix (*Killias*).

Grésvy-sur-Aix, viii. m. 1900; Abriès, viii. m. 1900, worn; Bourg d'Oisans, viii. m. 96; St. Michel-de-Maurienne, viii. b. 97; Bourg St. Maurice, vii. e. 98 (*Tutt*); Digne, vi. 8 99 (*R.-Bru.*); Alpes Maritimes, iv.-v. and viii.-ix. (*Powell*); Certosa di Pesio, damp spots in mtns., v.c. (*Norris*); Susa, viii. m. 96 (*Tutt*); below Iselle, vii. 7 99 (*Bkm.*); Pré St. Didier, viii. b. 98; Torre Pellice, viii. b.; Bobbie, viii. m. 01 (*Tutt*); Gardone, viii. 1 1900 (*Jones*); Bremmer, vii. e. 1900 (*R.-Bru.*).

Directions of Var. (a.) distinctness of markings, esp. dk. ante-margl. band up.s. f.w.
(b.) more reddish-brn. suffusion.

var. Australis, *Zll.*, wh. is also smaller than type.

Loc. Alpes Maritimes (*Brm.*); Cannes, iv. 98; Susa, viii. 97; Aosta, viii. 98 (*Tutt.*).

Obs.—Mr. Powell took a curious lt. ab. in S.E. France, viii. 11 02.

Genus *Hesperia*, *Fabr.* (*Syrichthus*, *Bsdr.*).

Obs. This is by far the most difficult genus among the butterflies, the same names having been in some cases applied to different forms, and each fresh attempt at elucidation having often made matters more confused than before. This applies specially to the various forms of *Alyeus* and *Serratula*. Moreover, the sp. resemble one another in a gen. way so closely, and yet the individuals vary so greatly in a single sp., that the difficulty is increased tenfold. In addition to all this, no two collections seem to agree in their separation of the sp. and vars., and I am, as yet, far from feeling the comparative certainty in this genus that I feel, rightly or wrongly, in *Erebia* and *Militia*. Under these circumstances experience will no doubt discover errors in the following treatment of this genus, and, in particular, it may be said that the localities for the more obscure and uncertain forms are by no means implicitly to be relied on, as it is sometimes far from certain to what exact forms they refer.

Prevailing col. Blk. or blackish, with wh. spots, gen. more or less Q-shaped up.s. f.w.

Dist. Char. a brush of hair on hind tibia of ♂.

♂ with, ♀ without a costal fold f.w.; also the ♂ has and the ♀ has not a tuft of hair at the extremity of the body, and the ♀ has gen. a tendency to be less spotted than the ♂, esp. h.w. It will not be necessary to give these details with the sp.

***H. Sidæ**, *Esp.*, 30mm. Fd. plt. (and l.) unknown.

Dist. Char. un.s. h.w. basal and cl. bands of brt. or.

Loc. Perhaps hardly within the region in S.E. France, but not uncommon nr. Hyères, *egl.*, v. 6. 12, &c., 02, in Val Gapéan (*Sloper*); Botzen (*Kaue*).

Directions of Var. (a.) tendency to become lighter un. s. culminating in:

ab. **Onopordi**, *H.-S.*

H. Carthami, *Hb.* (Malvæ, *Esp.*; Tessellum, *Ochs.*); 30mm. Fd. plt. *Centaurea*, *Althaa officinalis*, *Malva sylvestris*.

Dist. Char. un.s. lt., with inm. marg. h.w. broadly lighter, gen. whitish.

Loc. Ab. in places in the Rhone Valley in 2 broods iv.-v. and vii.-viii. (*Fac.*); but at Follaterre v. fine and fresh vi. 12, &c. 02 (*Wh.*); Sembrancher, Martigny, Saillon, Sion, Sierre, Brig, &c. (*Fac.*); mounts to 5000ft., *egl.*, Montana, vii. 11 99, ab.; Bérisal, vii. 98; v.c. and fine nr. 2nd Refuge on Simplon Pass, vii. 8 01 (*Wh.*); Riffel Alp, vii. 01 (*Linn.*); Gadmen (*Rätzer*); Olten, on the Schafmatt (*Kuecht*); Biemme, St. Blaise (*Couleru*), Tarasp (*Christ*), is the only loc. I can find in the Grisons, but I think it must be found elsewhere.

Digne, vi. b. 99 (*R.-Bru.*); vii. 91 (*Linn.*); Beauv  zer, vi.-vii. (*Powell*); c. in the mtns. of the Alpes Maritimes (*Bru.*); Certosa di Pesio, vii. 92, ab. in damp spots (*Norris*); Sasa, v. ab., vi. 26 99 (*B.-Bru.*), one, between Aosta and Pr   St. Didier, viii. m. 98 (*Tutt*); Ch  tillon, vi. 95 (*Miss Ftn.*); Orta, v. e., vi. b. 1900 (*Loew*); New baths of Bormio, vii. m. 1900, v. ab. (*R.-Bru.*); Botzen, vi. e. 01 (*Loew*); Mendel, vii. 95 (*Linn.*).

Directions of Var. (a.) Size: [my smallest ♂ is 26mm., my largest ♀ 34mm.]
(b.) Size of wh. spots up. s.

var. Valesiaca, *Strecker*; with smaller spots f.w. and none, or scarcely any, h.w.; less dusted with gr.

Loc. The Valais and S. Tyrol (*Styr.*); Martigny, Fully, Sion, Sierre, &c., with type (*Far.*).

[Obs.—According to Frey this would appear to be the form of the 1st brood in Valais, but I have not met with it. The usual form there from vi. onwards is v. large, the ♂ v. grey, and with large spots in both sexes, the ♂ having more, and the ♀ not less than usual on h.w. This is certainly the case everywhere that I have taken it; e.g., Follaterre, Montana, 2nd Refuge on the Simplon, &c.]

H. Alveus, *Hb.*; 28mm. Fd. pl. *Aira caespitosa*, *Potentilla frigida*, &c.; hyb. ov.

Dist. Char. un.s. h.w. lt. cl. band, not projecting inwards, basal spot not isolated. inn. marg. broadly darkish.

Loc. The alpine form according to Frey, but not exclusively so. Basle, Liestal (*Christ*); Engelberg (*Frey*); Engstlen Alp (*Baker*); neighbourhood of Geneva, e.g., the Sal  ve, v.e.; Versoix, viii. 16; Meyrin, vii. 18, &c. (*Bl.*); c. in the Valais and the Grisons, e.g., Montana, vii. 11 99 (*Wh.*); Arpilles, Bovine, Lo  ches-bains, Stalden, &c. (*Far.*); Riffel Alp, vii. 01 (*Linn.*); Campfer, on dry slopes, c. (*Jones*); Dischmathal, vi. 27 01; Brusio, vii. 13 01 (*Fis.*), &c.

Gen. distributed over the rest of the region; 2 broods at lower, 1 at higher elevations.

Directions of Var. (a.) number and size of wh. spots up. s.

var. Onopordi, *Rubr.*; with numerous large spots, a large form; un. s. pale.

Loc. Bortel Alp; Mattmark, Saas, vii. 15-28 (*de Jenner*); Evolena, Davos (*R.-S.*); the Jura (*M.-D.*).

Digne, Beauv  zer, vii.-viii. (*Powell*); Thorenc, ab. (*Milli  re*).

var. Cirsii, *Rubr.*; with large spots; of small size; grd. col. un. s. red, or brownish-gr.

Loc. Basle (*Christ*); the Bechburg and Saut du Doubs (*R.-S.*); Burgdorf, Resi nr. Soleure, vii. and viii.-ix. (*M.-D.*); Varen (*Christ*); B  renfallen Alp, vii.-viii.; Salquenen (*Far.*); Martigny (*Wschl.*).

Digne, viii.; Alpes Maritimes (*Powell*); above St. Martin V  subie, vii. b. (*Hentall*).

var Conyzæ, *Guénée*: spots v. wh.; un. s. pale.

Loc. Digne vii.-viii. (*Powell*).

var. Fritillum, *Trübshcke*: with larger spots up. s. than type, and much larger spots un.s. h.w.

Loc. According to Frey the usual form of the plains but not exclusively so. Zürich (*Frey*); Trift Alp (*R.-S.*); Gadmen (*Christ*); on the slopes at Weissenburg, not scarce (*Hg.*); Morteratsch Glacier, viii. 1 01 (*Fis.*); e. in the Rhone Valley: Fully, Branson, Martigny, Brig, &c. (*Far.*); Sierre (*Wh.*). 2 broods in the plain vi. and viii.; 1 in the mtns. (*Frey*).

var. Carlinæ, *Rubr.*: with v. small spots up. s.

Loc. The Gemmi, (*Far.*); Locche-les-Bains, vii. 99 (*Rosa*); Le Lautaret, vii. 30, viii. 5 (*Tutt*).

Obs.—*Cirsii*, *M.-D.* is v. differently described. It is said to be as large as the type, and to be conspicuously dusted with yell.; spots on up.s. h.w. almost wanting; un. s. so lt. that it might be taken for *Carthami*. It is a S. form. (*Frey*, *Lepidopteren der Schweiz*, p. 51, note.) The name has no business to be applied to this form if it be a var. of *Alveus*. I am inclined to think it a form of *Carthami*.

H. Serratulæ, *Rubr.*: 25mm. Fd. pl. *Aira montana*
and *Potentilla frigida*.

Dist. Char. un.s. h.w. roundish basal wh. spot nr. costa isolated; cl. lt. band not projecting towards base; inn. marg. un.s. h.w. darkish.

Loc. Surenen (*Christ*); Engstlen Alp (*Baker*); Monnetier, vi. 2; Pont de Nant, vii. (*Bl.*); the Jura, e.g., St. Georges, vi. e. 02, e. (*Wh.*); Branson, Jeur-brûlée, from Sierre to Zinal, from Visp to Zermatt, vii.-viii. (*Far.*); Val d'Hérens, Bérisal, Saasthal (*R.-Brn.*); Täsch, vii. 99 (*Rosa*); Andermatt, vii. 86, v.c. (*Jones*); Rosegg Glacier, viii. 3 01 (*Fis.*); nr. lake at St. Moritz, vii. e. (*Nicholson*).

Directions of Var. (a.) Size of spots up. s., gen. small, sometimes obsolescent, culminating in:

ab. Cæca, *Ferr.* (with basal spot less isolated), in wh. there are none, or v. few and small.

Loc. Pontresina, vii. 85 (*Linn.*); Bérisal (*Wh.*); Engstlen Alp (*Baker*); Bortel Alp, Zermatt, Trift Alp (*Far.*).

ab. Tarasoides, *Höfner*, with spots up. s. confluent.

H. Cacaliæ, *Rubr.*: 28mm. Fd. pl. (and l.) unknown.

Dist. Char. un.s. h.w. cl. lt. band projecting inwards in middle; basal spot isolated; un.s. f.w. v. washed out and indistinct.

Loc. Gen. ab. in the high alps from Martigny to the far side of the Tyrol, vi.-viii., e.g., Drause Valley below Orsières (*Baker*); Arpilles; Bovine; Bortel Alp, v. ab.; by Riffel Alp Hotel, vii. 26 02, v. ab.; the Grimsel, &c. (*Far.*); ab. in Upper Engadine, vi.-vii. (*Miss Ftn.*); often at great elevations (*Nicholson*); e.g., Rosegg Glacier, viii. 9 01 (*Fis.*); Pontresina, vii. 85 (*Linn.*);

Campher. e. (*Jones*): gen. from 5500ft. to 7500ft., Weissenburg, about 3000ft., scarce. vii. (*Hg.*); Engstlen Alp (*Baker*).

Chamonix, viii. 93 (*Miss Fu.*); scarce in Basses Alps (*Kaar*); ab. at Pic de l'Aigle, Alpes Maritimes (*Bru.*).

Directions of Var. (a.) amount of wh. spots up. s. f.w., gen. v. slight; h.w. almost without marks.
(b.) depth of grd. col. up. s.

H. Andromedæ, *Wallengren*: 28mm. Fd. plt. (and l.) unknown.

Dist. Char. un. s. h.w. lt. cl. band projecting inwards as in *Caecalia*, but on up. s. f.w. 3 short wh. lines under basal part of Q-mark; fringe sharply defined.

Loc. Not on the Jura or the W. Alps. Dranse Valley, below Orsières (*Baker*); Pont de Nant, vii. 12, scarce (*Bl.*); Gemmi, nr. the Schwarzbach, vii. 99 (*Rosa*); Mattmark (*Rät:cr*); below Zermatt, vi. (*Püngeler*); Bovine (*Far.*); Andermatt, vi. 6-86, e. and fine (*Jones*); Maloja, vi. e., one only (*Miss Fu.*); mtns. round Bergün; Albulapass, vi. b.-viii. b. (*Frey*).

Stelvio; Franzenhöhe and 1000ft. above (*Frey*); Certosa di Pesio, not rare in Val Maguareis, vi. e. 92 (*Norris*); Allos, vii. 15-18 99 (*Powell*).

H. Centaureæ, *Rubr.*: 30mm. Fd. plt. (and l.) unknown.

Dist. Char. un. s. h.w. zigzag markings nr. fringe: grd. col. up. s. browner than last sp.

Loc. Steimenthal, nr. Bérisal, vi.-vii. (*Rät:cr*).

H. Malvæ, *L.* (*Alveolus*, *Hb.*): 23mm. Fd. plt. *Fragaria*, *Rubus*, *Potentilla*, &c.: *hyb. l.*

Dist. Char. up. s. wh. spots larger and more conspicuous than in any other sp. in proportion to size.

Loc. Gen. distributed over the region, and gen. e., iv.-vi., and at higher elevations to vii. m., e.g., Stelvio, nr. Trafoi (*R.-Bru.*); found up to 6500ft.

Directions of Var. (a.) confluence of spots up. s.

ab. Fasciata, *Tutt*: in which wh. spots h.w. unite into a cl. band.

ab. Intermedia, *Schilde*: in which wh. spots f.w. are confluent and banded, but not forming a large blotch.

ab. Taras, *Brust*: in which wh. spots f.w., and sometimes h.w. also, join into a large wh. patch.

Loc. Anywhere with type; e.g., Veytaux (*Hb.*); Berne, v. 7/93 (*Fleming*); Weissenburg (*Hg.*); Martigny; Sion; Sépey; Gryon (*Far.*); Aigle, iv. 28-33 (*Hb.*); not uncommon at Monnetier, v. 25, 28; vi. 10 (*Bl.*).

(b.) diminution of wh. un. s. h. w.

ab. Malvoides, *Flies*: with un. s. h. w. brownish.

Loc. Alpes Maritimes, vii.-viii. (*Powell*). (This would seem to imply a regular 2nd brood.)

Genus, *Pyrgus*, *Hb.*

Prevailing col. Blk. or blackish with wh. or whitish spots.

Dist. Char. absence of brush of hairs on hind tibia in ♂.

♂ and ♀ differ otherwise as in *Hesperia*.

P. Tessellum, *Hb.*: 34mm. Fd. plt. (and l.) unknown.

Dist. Char. up. s. f. w. 2 oblong wh. spots under the distorted Q-mark, one below the other, forming a square: 2 distinct rows of wh. spots h. w.

Loc. Alpes Maritimes, rare (*Brm.*): Botzen (*Kaue*), v. and vii.

Directions of Var. (a.) grd. col. up. s. in ♂ sometimes approaching lighter grd. col. of ♀.
(b.) depth of grd. col. un. s. h. w.

P. Proto, *Esp.*: 28mm. Fd. plt. *Phlomis fruticosa*.

♂ with, ♀ without gr. dusting.

Dist. Char. un. s. h. w. 3 rather indistinct narrow lt. bands, the cl. the most distinct: spots up. s. and fringe dirty yellowish.

Loc. Digne, not above 2000ft. vi.-vii. (*Powell*).

Directions of Var. (a.) grd. col. un. s. h. w. varying between yell.-gr. and red-brn.

P. Orbifer, *Hb.* (Eucrate, *Frr.*): 27mm. Fd. plt. (and l.) unknown.

Dist. Char. un. s. h. w. basal wh. spot and cl. band of wh. spots round.

Loc. S. Tyrol, v. and vii. (*Kaue*).

Directions of Var. (a.) grd. col. un. s. h. w. varying from yell.-brn. to olive-grn.

P. Sao, *Hb.* (Sertorius, *Hoffmannsegg*): 24mm. Fd. plt. *Rubus idaeus* and *Poterium sanguisorba*.

Dist. Char. 3rd wh. space from apex in fringe f. w. much wider than the others: lt. cl. band un. s. h. w. projects towards base at costa.

Loc. Widely spread but by no means found everywhere (*Fry*): in 2 broods, iv.-vi. and vii.-viii. Nr. Basle, Liestal, the Schafmatt, &c. (*Christ*); Schaffhausen (*Frapp*); St. Gall, scarce (*Luscher*); Zürich, not c. (*Fry*); the Jura, e.g., St. Georges, vi. c. 02, c. (*Wh.*); St. Cergues, vi. 26 (*Bl.*); in the Mittelland of Canton Berne:

Oberhaslithal; hills nr. Burgdorf (*Frey*); Weissenburg, v. variable (*Hg.*); Justisthal (*Fis.*); Weggis, viii. 96 (*Tutt*); Mt. Barry, vi. e. 1900; Rossinières, vii. 2, 1900; Comballaz, vi. 15 99 (*Bkm.*); gen. distributed from Lausanne up the Rhone Valley; Veytaux (*Wh.*); Martigny; vineyards of Mt. Ravoire; Fully; Sion; Sierre; Nionc, &c. (*Far.*); Brig, viii. 3 74 (*R.-Brn.*); rising to over 5000ft. at Zermatt, vii. 01 (*Lmn.*); and Bérisal, viii. 1 97 (*R.-Brn.*); Loèche-les-bains; St. Nicholas (*Far.*); Stalden, vii. 9 94 (*Bkm.*); nr. Bergün (*Zll.*); Lower Engadine (*Killias*); Piz Okel nr. Coire (*Caplisch*); c. S. of the Alps, *e.g.*, San Stefano, v. 22 (*Mayer*); Gandra, viii. 14; Mendrisio, viii. 15 02 (*Fis.*); Simplon, vii. 99; Locarno, vi. 99; iv. 00 (*Tutt*), &c.

Savoie, *e.g.*, le Coin, v. 11; viii. 16; Monnetier, vi. 2; viii. 10 (*Bl.*); Grésy-sur-Aix, v. 97; viii. m. 1900; the Brévent, viii. 18 02; Bourg St. Maurice, vii. 98; St. Michel de Maurienne, viii. 97; Larche, vii. e. 1900; Abriès, viii. m. 1900 (*Tutt*); c. at Digne, vi. b. 99; and on the Dourbes, iv. 8 02 (*R.-Brn.*); Nice, Cannes, and mtns. of Alpes Maritimes (*Brm.*); Cogne, viii. 94; Courmayeur, e.vii. 94; Au Pra, m. viii. 01; Cortina, viii. 95 (*Tutt*); Mendel, vii. 95 (*Lmn.*).

- Directions of Var.** (a.) grd. col. up.s. (always a redder or purpler blk. than other sp.).
 (b.) grd. col. un. s. h.w. v. variable, rich red-brn., prp.-brn., yell.-brn., or brownish-grn.
 (c.) smaller, with lt. un. s.

ab. Eucrate, *Ochs.*

Loc. Alpes Maritimes (*Brm.*).

Genus, Nisoniades, *Hb.*

Prevailing col. darkish brn.

♂ with, ♀ without a costal fold, f.w. containing lighter scales.

N. Tages, *L.*: 28mm. Fd. plt. *Lotus corniculatus*, *Coronilla varia*, *Iberis*, &c.; *hyb.* l. full-fed.

Dist. Char. a row of v. small wh. spots close to fringe up. and un. s. f.w. and h.w.

Loc. Gen. distributed and c. iv.-v., and vii.-viii. (My earliest date is Veytaux iii. 29 99): mounts up to about 5500ft.; not v.c. in the S.E. alps of France (*Powell*).

Directions of Var. (a.) distinctness of markings; sometimes almost obsolete.

ab. Approximata, *Loew.* (So called because approaching the Greek var. *Unicolor*.)

Loc. Aigle, iv. 03 (*Sloper*); Susa, vi. e. 02 (*Loew*).

- (d.) col. of lighter el. band up.s. f.w., brn., gr., or slightly reddish.
 (e.) extent of inner line of wh. dots up.s. f.w., varying from a single spot on costa to a complete series.

Sub-Fam. PAMPHILINÆ.**Tribe PAMPHILIDÆ.****Genus, Pamphila, Fabr.**

Prevailing col. or.-brn.

Dist. Char. un. s. h.w. spots lighter than grd. col.

P. Sylvanus, Esp. : 32mm. F'd. plt. *Luzula pilosa*,
Festuca, Poa, &c. ; hyb. l.

♂ with, ♀ without blk. transverse streak up.s. f.w.

Dist. Char. un. s. h.w. spots yell. and inconspicuous.

Loc. Gen. distributed and c. up to 6500ft. vi.-viii.

Directions of Var. (a.) size : from 25-35mm.

(b.) depth of grd. col. ; specimens from the mtns. gen. darker.

P. Comma, L. : ♂ 28, ♀ 33mm. F'd. plt. *Coronilla varia*, and various grasses : hyb. l.

♂ with, ♀ without blk. transverse streak up.s. f.w.

Dist. Char. un.s. h.w. spots conspicuous and silvery wh.

Loc. Gen. distributed and c. in the mtns. up to 7500ft. and by no means uncommon at lower elevations. vii.-viii.

Directions of Var. (a.) brighter col. un.s. h.w. culminating in :

ab. **Catena, Styr. :** in wh. they are vivid grn. as also apex f.w. un.s. ; up.s. darker than type.

Loc. High mtns., e.g., the Simplon, magnificent examples ♂ and ♀ (*Fis.*) ; Saas Fée (*K.-Bru.*)

(b.) darkening of up.s. grd. col. and markings.

var. (?) **Alpina, Bath** (Entomologist).

Loc. Urnerboden, ix. 1 02 (*Fis.*) ; Pont de Nant, vii. (*Bl.*) &c. The darker forms, however, are not confined to the mtns. ; I have seen v. dk. specimens from Mendrisio, vii. 2 01 (*Fis.*).

(c.) spots un.s. h.w. yell. instead of wh.

ab. **Flava, Tutt.** (Still quite distinguishable from a grd. col.).

Genus, Thymelicus, Hb.

Prevailing col. or.-brn.

Dist. Char. absence of spots un.s. h.w.

T. Actæon, Esp. : 23mm. F'd. plt. *Brachypodium sylvaticum*, *Triticum repens*, *T. pungens* ; hyb. l.

♂ with, ♀ without longish blk. streak up.s. f.w.

Dist. Char. up.s. greenish tinge.

Loc. V. local, often confined to v. small areas. vii.-viii. ; Veyrier, vii. 1. (*Bl.*) ; Sierrre, and several places in the Pfynwald, one or two

being by the main road, vii. m. 99; Brig, right bank of Rhone, below the bridge, ix. b. 98, worn (*Wh.*); Martigny, above Plan Cérésier: between Aigle and Sépey: Arpilles; Zermatt (*Far.*). (This last is considerably above the usual limit.) Basle (*Knecht*); St. Blaise and neighbourhood (*Coulera*): neighbourhood of St. Gall, but scarce (*Täschler*): wide spread around Tarasp (*Killias*); Weissenburg, up to 3300ft. (*Hg.*).

Between Annecy and Chavoire, v. ab., vii. e. 02; Grésy-sur-Aix, vii. e. 98 (*Tutt*); Digne, vi. b. 99 (*R.-Bru.*); Alpes Maritimes, gen. distributed (*Powell*); Aosta, viii. m. 98 (*Tutt*).

Directions of Var. (a.) Amount of marking in ♂ up.s. f.w.; sometimes unicolorous, sometimes with the or. costal streak and fan-shaped row of spots as well marked as in the ♀.

(b.) grd. col. un.s. h.w.; gen. unicolorous, but greener gr. specimens have an or. anal patch.

T. Lineola, *Ochs.* (*Virgula*, *Hb.*); 26mm. Fd. plt. *Triticum*, &c.: *hyb. ov.*

♂ with, ♀ without short blk. streak up.s. f.w.

Dist. Char. suffused blk. border up.s., the outer end of the nervures being gen. conspicuous; further distinguished from *Actæon* by absence of greenish tinge up.s., and from *Flavus* (*Thaumas*) by absence of grn. from apex f.w. un.s., and of brt. or. patch at anal ang. h.w. un.s.

Loc. V. ab. in the meadows and roads in Valais up to more than 5000ft. (*Far.*). In my experience ab. where it occurs, but local. Sépey, vii. 97 (*Wh.*); the Jura (*Frey*); scarce in the lowlands, e.g. Basle: Berne: Liestal; St. Gall (*Frey*); Weissenburg (*Hg.*); Gondo, vii. 17 02 (*Fis.*); e. in the Grisons (*Frey*); e.g., Pontresina; Bad Alveneu; Disentis (*Linn.*); Thusis, viii. 95 (*Miss Ftn.*); Brusio, vii. 13 01 (*Fis.*); Fusio, vii. 99; Guarda, vii. 1900 (*Chp.*).

Grésy-sur-Aix, vii. e. 98; viii. m. 1900, worn; Abriès, viii., m. 1900; Larche, vii. 1900; Megève, viii. 02, v. ab. (*Tutt*); Macugnaga, vii. 96 (*Miss Ftn.*); Digne, vi. 90, vii. 91 (*Linn.*); Alpes Maritimes, St. Martin Vésubic, and many other places, but rather local, and not v.c., vi.-vii. (*Powell*); Courmayeur, vii. 94; viii. 98 (*Tutt*).

Directions of Var. (a.) lighter grd. col. up.s.

ab. Pallida, *Tutt*; a pale straw-col. ab. found occasionally in both sexes.

ab. ♂ Semicolon, *Stgr.*: wh. has a short blk. streak below the usual (androconial) one, standing out distinctly on the paler grd. col. All my ♂ specimens show some slight traces of this streak.

(b.) increase in breadth of border, culminating in:

ab. Ludovicicæ, *Mabille*: wh. has also blk. apex, and inn. marg. un.s. f.w.

Loc. Haut Valais (*Ig.*); Simplon (*Tutt*).

T. Flavus, *Brünn.* (*Thaumas. Hufn.*; *Linea, Fabr.*):
28mm. Fd. plt. grasses; hyb. l. (? sometimes ov.)

♂ with, ♀ without longish blk. streak up.s. f.w.

Dist. Char. un.s. f.w. greenish tinge at apex, also on un.s. h.w. exs. anal ang.

Loc. gen. distributed and c. up to 4000ft. : in some places, *e.g.*, Zermatt, higher, vi.-viii.

Very constant; a large form at Villach (*Linn.*).

Tribe CYCLOPIDI.

Genus, Carterocephalus, *Lcd.*

Prevailing col. brn. and yell.

Dist. Char. up.s. h.w. yell. spots on brn.

C. Palæmon, *Pallas* (*Paniscus, Fabr.*; *Brontes, Hb.*);
27mm.; Fd. plt. Plantain and grasses; hyb. l.

Body of ♀ more pointed than that of ♂.

Dist. Char. Dk. grd. col. f.w. : with yell.-brn. spots.

Loc. Gen. distributed in grassy woods, but v. seldom c.; v. m. vi.-vii. b.; in the lowlands and hills, and in some places reaching to the mtns., *e.g.*, Forelaz; Glacier de Trient, c. (*Far.*); Veytaux, v. and vi. 98 and iv. 28 99; Sépey, vi. e. 97. Mt. Barry, vi. 98 (*Wh.*); Weissenburg, c. up to 3300ft. (*Hg.*); Les Plans, vi. 16 90 (*Fis.*); Turtmannthal, vi. 20 99 (*Blm.*); Orsières (*Baker*); Collobière de Fully; Sierre, &c. (*Far.*); Brunnen; Andermatt, scarce (*Jones*); Axenstrasse, v. 17/88 (*Hutchinson*); nr. Lake of Lucerne; Fluelathal, vi. 27; Dischmuthal, vi. 28; Flims, vi. 30 01 (*Fis.*); Davos (*Killias*); Maloja, vi. e. 95 (*Miss Ftu.*).

Val de Lantosque (*Millière*); Val Anzasea; Susa, vi. e. 902 (*Lowe*); Pejo, vii. 95 (*Linn.*).

Directions of Var. (a.) size of spots up.s. esp. h.w., sometimes almost obsolete.

[Obs.—The 2 specimens mentioned by Frey from the Maloja, vii. e. 965 are of this form, but by no means an extreme case.

***C. Sylvius**, *Knoch*: 30mm. Fd. plt. grasses; hyb. l.
♀ with much more brn. f. and h.w. than ♂.

Dist. Char. yell. grd. col. with dk. markings f.w.; h.w. dk. with large yell. spots.

Loc. Mtns. of Fenestrella, rare (*Knoch*).

Genus, Heteropterus, *Duméril*.

H. Morpheus, *Pallas* (*Steropes, Schjff.*; *Aracanthus, Fabr.*; *Speculum, Schrank*): 36mm. Fd. plt. grasses; hyb. l.

♀ with much larger streaks apex of f.w. up.s. than ♂.

Dist. Char. un.s. h.w. 12 large yellowish spots; (up.s. dk. brn).

Loc. Below Giornico, and S. side of Mte. Cenere, 1804 (*Meissner*); Giubiasco, nr. Magadino, vii. /57, not scarce (*Trapp*). I can find no later dates.

[Obs.— Kane gives vi. e. vii., and observes that it “must be beaten out of foliage in damp glades of woods.” Millière gives “heights of Berthémont,” on wh. Powell remarks (*in litt.*) that he has never taken it there himself, nor has any collector of his acquaintance. It seems a most unlikely loc.]

Directions of Var. (a.) decrease in size of spots in ♂ up.s. f.w.; sometimes quite disappearing.

Super-Fam. PAPILIONIDES.

Division LYCÆNIDA.

Fam. Lycænidae.

Tribe THESTORIDI.

Genus, *Thestor*, *Hb.*

***T. Ballus**, *Fabr.*: 28mm. Fd. plt. *Lotus hispidus*,
hyb. p.

♂ without. ♀ with large or. blotch up.s. f.w.

Dist. Char. un.s. f.w. copper, h.w. grn. grd. col.

Loc. Perhaps hardly comes into the region, but Millière gives waste land of Vallauris: ab. nr. Hyères: *e.g.*, Col de Serre, iii. 18; Costebelle, iii. 24; Carqueiranne, iii. 29-02 (*Sloper*).

Tribe CHRYSOPHANIDI.

Genus, *Chrysophanus*, *Hb.*

Prevailing col. copper (or brn.), often with more or less prp. reflections; un.s. with eye-spots; hyb. l. (ex. *Alciphron*).

C. Virgaureæ, *L.*: 30mm. Fd. plt. *Rumex acetosa*, *R. acuta*, *Solidago virgaurea*.

Br. or. copper, ♂ without, ♀ with numerous blk. spots on disc f. and h.w.

Dist. Char. interrupted line of wh. dots or dashes un.s. h.w.

Loc. V. occasionally in the lower valleys, *e.g.*, Aigle, I ♂, worn, vii. e. 97; Martigny (*Wh.*); but gen. ab. in Switz. at the pine forest zone, esp. nr. streams and in moist places, vii. e. and viii.; Jura.

Savoie, *e.g.*, the Brévent, viii. 18-02; Bourg St. Maurice, vii. e. 98 (*Tutt*); Dauphiny Alps—St. Michel-de-Maurienne, vii. e., viii. b. 97; Bourg d'Oisans, viii. m. 96; Hautes Alpes, *e.g.*, Abriès, viii. m. 1900 (*Tutt*); Basses Alpes, *e.g.*, Barcelonnette, viii. 1900 (*Tutt*); Digne, vii. 91 (*Linn.*); Alpes Maritimes, up to 5000ft. (*Brm.*); Piedmont—Pré St. Didier, viii. b. 98; Bobbie, viii. m. 01. c.; Au Pra, viii. m. 01; Campiglio, vii. 95 (*Tutt*); Wolfsberg, vii. 18-97 (*Linn.*).

Directions of Var. (a.) size: from 24-33mm.

(b.) un.s. f.w., distinctness and continuity of wh. line.

- (c.) ♀, wh. line appearing on up.s.
 (d.) ♂, breadth of blk. border. v. rarely with
 three blk. spots nr. apex, up.s. f.w.
 (e.) ♀, loss of brilliance of grd. col., culminat-
 ing in:

var. Zermattensis, *Fallon*, with grd. col. yell.-brn.

Loc. Zermatt valley, vii. 01 (*Linn.*); Bérival, viii. 98, ab. (*Wh.*); Zinal, vii. 31 and viii. 98 (*R.-Brn.*); Sedrün, viii. 27, 02 (*Fis.*); Campfer, v. ab. (*Jones*); Saasthal, and Maderanerthal (*Kane*). Hitherto considered a ♀ var. but a corresponding ♂ with metallic buff grd.-col. was taken at the Riffel Alp, vi. 28, 02, by Chne. Favre.

[Obs.—On the S. side of the Simplon Pass, e.g., Simplon Village, all the ♀s are of the type, on the N. side, and gen. in the other valleys mentioned, all are of the var. A transitional form occurs with the var. at Sedrün (*Fis.*).]

Dauphiny Alps—St. Michel-de-Maurienne, vii. e. 97; La Grave, viii. 5-13, 96; Bourg d'Aru, viii. m. 96; Hautes Alpes—Larche, vii. e. 1900; Abriès, viii. b. 1900; Piedmont—Courmayeur, viii. e. 94; Cogne, viii. 7-12, 94; Pré St. Didier, viii. b. 98 (*Tutt.*). [The Cogne specimens are the nearest to the small and pale specimens from Zermatt; those from the other localities are rather transitional (*Tutt.*).

Directions of Var. (b.) and (c.) as above.

(f.) up.s. f.w. development of blk. spots into streaks.

[Obs.—This development is occasionally seen, un.s., in many of the *Lycenidi*: cf. also *C. Hippothoë*.]

C. (Dispar. Haworth) var. Rutilus, *Wernburg* (*Hippothoë*, *Illb.*); 38mm. Ft. plt. *sorrel* and *bistort*.

Br. copper red, ♂ without, ♀ with row of blk. spots up.s. f.w.

Dist. Char. un.s. h.w. clear gr. with bluish base.

Loc. Certosa di Pesio, round the great springs at Beinette, vii. 29, 92 (*Norris*); *Kane* also gives Savoie, and Val Tellina. In these locs., presumably both broods, v.e.-vi. e. and vii. e.-ix. would occur; further N., in Germany, there is but one, vii.

Directions of Var. (a.) ♂, more or less blk. spots out. marg. up.s. h.w.

(b.) ♀, up.s. h.w. more or less covered with brn.

C. Thersamon, *Esp.* (*Nanthe. Illb.*); 23mm. Ft. plt. *Spartium scoparium*.

Br. or., ♂ without, ♀ with spots on disc of f.w. up.s. *c. infra* (a.)].

Dist. Char. ♂, brn. shading on up.s. h.w.; ♀ brt. grd. col., extending to out. marg. up.s. f.w.

Loc. Piedmont in open woodlands on S. side of Alps; also Gumpoldskirchen (*Kane*); iv. e.-vi. b., and vii.-ix. b. (*Spuler*).

Directions of Var. (a.) extent to wh. spots of un.s. are visible above, esp. in ♂.

(b.) prp. reflection nr. out. marg. up.s.
h.w. in ♂.

(c.) a slender "tail" h.w. constituting:

var. Omphale, *Klug.*

Loc. Val de Lantosque, from 3280-4920ft., replacing type (*Millière*).

[Obs.—There seems no reason why this sp. should not occur in Tessin and the S. of the Grisons.]

C. Hippothoë, *L.* (*Eurydice*, *Rott.*; *Chryseis*, *Brlch.*):

32mm. Fd. pl. *Rumex acetosa*.

♂ ruddy copper, ♀ ditto with dark spots f.w.; h.w. brn. with copper ante-margl. band.

Dist. Char. un.s. f.w. with dull red.-or. cl. area, with small eye-spots.

Loc. Widely spread, but local; gen. in marshy spots, esp. damp meadows. Veytaux, vi. b. 97; Caux, vi. 97 (*Wh.*); Villars-sur-Bex, vii. 02 (*Moss*); Loèche-les-bains, Naters, Mayenwand (*Far.*); between Visp and Zermatt (*Tasker*); nr. Simplon Village, vi. 26, 97 (*Postans*); behind the Hotel Mt. Barry, vi. e. 98, c. (*Wh.*); same place, vi. 28-30, 1900, worn (*Blm.*); Mürren, vii. e. 1900, c. (*Wh.*); Ober-Weissenburg (*Hg.*); on the lower slopes of the Jura (*Frey*); e.g., St. Georges, vi. e. 02 (*Wh.*); St. Cergues, vi. 25 (*Bl.*); rare in N. Switz. (*Kane*); apt to disappear when its haunts are drained.

S. Tyrol, vii. 95 (*Linn.*); Savoie, Grand Salève, vi. 24; vii. 1; le Reculet, vi. 26 and Monnetier, v. 30 (*Bl.*).

Directions of Var. (a.) ♂, extent of deep prp. suffusion up.s. h.w.
(b.) more or less conspicuous copper band in this suffusion, like ♀.
(c.) ♀, copper of f.w. up.s. more or less invaded by brn., culminating in:

var. Eurybia, *Ochs.* (*Eurydice*, *Hb.*); ♂ has far less prp.; the blk. disc. spot up.s. f.w. almost always absent; ♀ only v. slight tinge of copper; dull or. cl. area un.s. f.w. v. indistinct both in ♂ and ♀.

Loc. The usual mtn. form (but at Mürren, even in the Blumenthal, only the type is found). In some places both forms fly, e.g., Engelberg, ab. (*Baker*); above Nax (*Christ*); so also in the Arve Valley nr. Chamonix (*Baker*); above Abriès, viii. m. 1900, v. worn (*Tutt*). Much less local than the type and by no means confined to damp or marshy places: from the Valais to the Stelvio, vii.-viii., e.g., Simplon road, v. ab. from Ganter Bridge to 5th Refuge (*Wh.*); Oberalp, viii. 95, Andermatt, viii. 95 (*Chp.*); Mattmark and Saasthal, viii. b., a small form; Arolla up to 7000ft. viii. 25, 96, &c. (*R.-Bm.*); and gen. in the high Valaisian valleys; also in those of the Grisons: e.g., Pontresina, vii. 85 (*Linn.*); Davos, viii. 2, 1900; Funsio, vii. b. 1900; Guarda, vii. e. 1900 (*Chp.*). Splügen, W. side, vii. 5, 1900 (*R.-Bm.*), &c., &c. Susten, Handeck,

Urserenthal, &c. (*Kane*); Grimsel, Aletsch Glacier (*Far.*); Binn (*Bkm.*), &c.

The Brévent, viii. m. 18 02; Le Lautaret, vii. e. 96; La Grave, viii. b. 96; Larche, vii. e. 1900; Abriès, viii. b. 1900 (*Tutt*); St. Martin Vésubie (*Brm.*); Cogne, viii. m. 94; Bobbie, viii. m. 901, worn (*Tutt*); Maenguaga, vii. 16-20, 1900; Campiglio, vii. 95 (*Chp.*); Salzburg and Berchtesgaden, vi. e. 1900 (*Lang*).

The extreme form of this var. is named:

ab. ♀ Nigra, *Far.*: v. dk. brn. without a touch of or.; blk. disc. spots up.s. f.w. v. distinct.

Loc. Mt. Chemin, Martigny (*Far.*); Bérisal (*Wh.*).

(d.) tendency of blk. spots un.s. to coalesce, forming:

ab. Confluens, *Gerhard*: sometimes on one side only.

(e.) diminution in size; ♀ fulvous.

ab. Stieberi, *Gerhard*: a N. form, but reported from Engelberg (*Baker*).

Obs. In Mr. Fison's collection are 3 specimens without markings on the left f.w. un.s.; a ♂ of type, and ♀ and ♂ var. *Eurybia*. Mr. Lowe describes a ♀ var. *Eurybia* from Engelberg, vii. 6 01, as being of uniform dk. brn. with a slight prp. glaze, exc. a bit. or. spot in centre of f.w., throwing into strong relief the 2 large blk. disc. spots; faint traces of ante-margl. row of spots f. and h.w.; no or. margl. band h.w., making the wh. fringe v. conspicuous.

C. *Alciphron*, *Rott.* (*Hipponoë*, *Esp.*; *Lampetii*, *Wh.*);

33mm. Ed. pl. *Rumex acetosa*: hyb. ov.

♂, copper suffused with prp., often giving a brownish appearance, ♀ brn.

Obs.—The ♀ of several sp. of this genus, notably of *Alciphron* and *Doritis*, differs extremely from the ♂ in *shape*, as well as col. and markings, the ♀ having an angular outline, esp. h.w.

Dist. Char. un.s. grd. col. f.w. brt. copper, h.w. pale fawn-col., darker in ♀.

Loc. V. rarely met with in Switz.: Engelberg, vii. (*Frey*); Fiesch (not Viège), vi. e. (*Trapp*); e. at the upper end of the Val Bregaglia, vi. e. (*Bazzigher*).

Certosa di Pesio, v. e. (*Norris*).

Directions of Var. (a.) ♂, diminution in extent of suffusion.

Obs.—In Geneva University Museum is a ♂ specimen from Hyères with only a row of prp. spots h.w.

(b.) greatly increased brilliancy of col. up.s.,

esp. in ♀, leading through the Grecian var. *Melibous*, *Styr.* to:

var. Gordius, *Salzer*: brilliant copper with numerous blk. spots, ♂ with, ♀ without metallic prp. suffusion; 33-37mm.

Loc. Immensely more e. in this region than the type. Under the cliffs between Vernayaz and Martigny, v. ab., vi. 13-15 02 (*Bkm.*); vi. 19 01, 02, &c., till vii. m.; also on the other side of the Rhone Valley, and on the path up to and beyond la Bâtiâz (*Wh.*); Fully, Granges, Sierre (*Far.*); Pfynwald, vi. 24 99 (*Bkm.*);

in many of the lateral valleys between Martigny and Brig, *e.g.*, Evolena, nr. Ferpècle Glacier; Nionc and Susillon, in the Val d'Anniviers; Baltschieler (*Far.*); St. Nicholas, vii. 17 97; vi. 30 98; Saas, vii. 15 98 (*Bkm.*); v. ab. on the Simplon Pass, esp. from 2nd to 4th Refuge, vii. 98 (*Wh.*); Simplon Village, vii. e. 99 (*Tutt*); e. in the S. valleys of Tessin, the Valais, and the Grisons.

Grand Salève (*Far.*); not mentioned, however, by *Bl.* in his list of captures nr. Geneva); the Brévent, viii. 18 02; Abriès, viii. m., worn out; Crête de Reychasse up to 7000ft., viii. m. 1900, worn; Larche, up to 6500ft., vii. e. 1900; Barcelonette, viii. m. 1900 (*Tutt*); Digne, vi. 4 99 (*R.-Bm.*); vi. 90, vii. 91 (*Lmn.*); St. Martin Vésubie, Val de Madone, 7000-7500ft., &c. (*Bm.*); Certosa di Pesio, much scarcer than the type (*Norris*); Courmayeur, vii. b. 02 (*Lowe*); Pré St. Didier, viii. b. 98 (*Tutt*); Varzo (*Lowe*); Stresa, vi. 10 87 (*Jones*); below Iselle, vii. 7 99 (*Bkm.*); Campiglio, vii. 95 (*Lmn.*); Trafoi, Meran, &c. (*Tutt*); and gen. in S. and S.E. valleys of the Alps.

Directions of Var. (a.) ♂, fullness and brilliancy of prp, suffusion. Gen. not v. brt. in the Rhone Valley, tho' often brilliant on the Simplon, nr. 2nd Refuge (*Wh.*); more so on S. slope, and also larger (*Far.*); v. brt. prp. at Stresa (*Jones*); also at Digne (*R.-Bm.*); almost confined to costa and thorax at Courmayeur (*Lowe*); poor in col. at Crête de Reychasse (*Tutt*).

(b.) size of spots: varies greatly, esp. in ♀. Mr. Lowe remarks that at Varzo the markings are all much darker and thicker than in Martigny specimens (this corresponds with Mr. Tutt's experience at Bobbie); in one of Mr. Lowe's specimens, a ♀, the whole h.w. is suffused with brn., leaving only an or. border with conspicuous blk. spots; this closely resembles a ♀ in the Geneva Museum, from Hyères, marked Alciphron; "a fine blk. ♀, Val Malenco, vii. 7, 1900" (*R.-Bm.*).

ab. ♀ **Midas**, *Lowe*: has the row of spots outside the centre up.s. f.w. reduced to dots, the border broad, but opening into a large spot (or spots) at anal ang.; the h.w. having an ante-margl. band of blk., more or less wedge-shaped dashes, leaving the whole disc brilliant copper exc. a blk. disc. spot.

Loc. Martigny, vi. 1900 (*Lowe*); nr. Vernayaz, vi. 29, 1900 (*Wh.*). Other specimens exist, but so far as I know them, all are from the foot of the cliffs between Vernayaz and Martigny.

C. Dorilis, *Hufn.* (*Circe*, *Schiff*; *Xanthe*, *Fabr.*; *Phocas*, *Rott.*); 29mm. Ed. pl. *Gemista*, *Romer*, &c.

♂ brn., ♀ with copper on disc f.w. and out. marg. h.w.; (for shape *v. Alciphron*).

Dist. Char. m.s. h.w. more or less strongly tinted with yell. (*v. Virgaurea*).

Loc. In dry sunny spots throughout Switz. and elsewhere, but by no means gen. e., iv. vi., and viii. ix. (My earliest date is Veytaux, iii. 17 99). In v. early seasons, such as 1899, there seem to be 3 broods, iii.-v., vi.-vii., and viii.-ix., Lausanne, 94 (*Tutt*); Veytaux, not uncommon, e.g., v. 18 01, &c. (*Wh.*); Veyrier, v. 10; vii. 13; viii. 4 (*Bl.*); the Jura (*Frey*); between Bex and Chiètre, iv. e. and v. b. 97, c. (*Wh.*); Follaterres, v. 26 02, worn; Forelaz, v. 28 02, good (*Blm.*); les Ormonts, rather e., viii. b. 85 (*Jones*); Fully, Saillon, Sion, Siere, between Visp and Stalden, Gondo, &c. (*Far.*); Vacallo, v. 19; Sagno, vi. 3 (*Mayer*); Lugano, vi. 96; Locarno, vi. 6 99 (*Chp.*); Lucerne, viii. 85 (*Lann.*); Weggis, vi. 96 (*Tutt*); "in the plains from Basle to the Grisons and Lugano" (*Frey*).

Digne, vi. 12 99 (*R.-Bren.*); vii. 91 (*Lann.*); St. Martin Vésubie, v. e. (*Bren.*); le Coin, v. 23; Divonne, viii. 10 (*Bl.*); Grésy-sur-Aix, vii. 25 96, just emerging; Bourg S. Maurice, vii. e. 94; Bourg d'Oisans, viii. m. 96 (*Tutt*); Lago Maggiore, ix. 93; Esino, viii. 02 (*Miss Ftn.*); Certosa di Pesio, vi. and viii. 92 (*Norris*); Bobbie, viii. m. 01, fresh; Val d'Aosta, viii. m. 98, v. ab.; Pré St. Didier, viii. b. 98; Torre Pellice, vii. e. 04 (*Tutt*); Stresa, vi. b. 87 (*Jones*); Pejo, vii. 95; Wolfsberg, vii. 18 97 (*Lann.*).

Directions of Var. (a.) size: greatly diminishing, culminating in: **ab. Nana**, *Wh.*; a v. small form, 23mm. and less.

Loc. Aigle, Roche, viii.-ix. (*Wh.*); Caux, viii. e. (*Fis.*); and doubtless elsewhere in the late brood.

(b.) increase of size, number, and brightness of or. spots in ♂, up.s. sometimes extending to f.w.

(c.) appearance of a row of small pp. spots within the or. spots up.s. h.w.

ab. Purpureopunctata. *Wh.* (cf. *Phleus* ab. *Uroleopunctata* and *Amphidamas* ♀).

Loc. Veytaux, v. 01. ♂ (*Wh.*); Les Avants, v. 01. ♂ (*Sloper*), ♀ (*Fis.*); St. Triphon, v. 9-10 03 (*Sloper*); les Grangettes, v. 20 03 (*Wh.*).

Digne, iv. e. 97 (*Tutt*).

(d.) loss of copper col. in ♀ and of or. spots in ♂, accompanied by increase of size up to 33mm.

var. Subalpina, *Spr.* (Montana, *M.-D.*); wh. is deep. rich brn. v. dk. up.s.; ♂ and ♀ with slight pp. reflections, and without or. spots up. or un.s.

Loc. The usual mtn. form, but sometimes as low as 2000ft., e.g., Glion (*Sloper*), vii.-viii.; Pont de Nam, vii. (*Bl.*); Mt. Chemin; above Follaterre: Grand St. Bernard; Loèche-les-bains; Gemmi; Zermatt; Mayenwand (*Far.*); above Simplon village, worn ♂s and fine ♀s, viii. b. 99, c. (*Tutt*); Arolla, 7000ft., viii. 25 96; Bérisal, viii. 5 97; Saas Fée, viii. b. 97 (*R.-Bren.*); Andermatt, viii. 95; Oberalp, viii. 95; Goschenen, vii. 96 (*Tutt*); Engelberg (*Baker*);

Davos, vii. 2, 1900 (*Tutt*); Fusio, vii. 1-12, 1900 (*Chp.*); Upper Engadine, not v. c.: in wood at foot of Schafberg, vii. (*Nicholson*); wide spread, but gen. scarce on S. alps (*Frey*).

Larche, vii. c. 1900 (*Tutt*); Madone des Fenêtres; Mt. Balme de la Fréma, 6300ft. (*Brn.*); above Certosa di Pesio, vii. m. 92. ♀ s v. scarce (*Norris*); Val Ferret, above Courmayeur, vii. c. 94; viii. b. 98 (*Tutt*); above Susa; Val Malenco, vii. 7, 1900 (*R.-Brn.*); Macugnaga (*Miss Ftn.*); Trafoi, vii. m. 1900 (*R.-Brn.*); Heiligenblut, vii. 97 (*Chp.*).

(c.) a modification of the last.

var. (? & ab.) Brunnea, *Wh.*: large, no prp. reflections; ♂ with or. spots at anal ang. un.s. h.w., and sometimes all along out. marg. h.w., ♀ varying on up.s. from unicolorous rich dk. brn. of ♂ to dull copper (rarely) on disc f.w.; h.w. brn. with or. spots of un.s. h.w. (and occasionally of f.w.) reproduced on up.s.: closely resembles dk. form of *Hippothoë* ♀ and var. *Eurghia* ♀ on up.s.

Loc. Mürren, vii. c. and viii. b. 1900, c. (*Wh.*).

C. Phlæas, *L.*: 28mm. Fd. pl. *Rumex acetosa*.

♂ with dk. costa up.s. f.w. and narrower copper band h.w.

Dist. Char. un.s. h.w. darkish brn., v. slightly spotted, with faint ante-margl. reddish band.

Loc. Widely distributed, but not gen. c. in Switz. exc. S. of the Alps: I have only met with it in any numbers in 2 places, *viz.*, Brig, viii. 31 98, on right bank of Rhone about 500 yds. below the bridge, and nr. Bérisal, vii. m. and viii. 98, on right bank of Gantier, above the stone bridge. One may meet with it singly anywhere up to 4000ft. or more, iv.-vii. and viii.-ix. (*Frey*). My earliest date is Veytaux, 1st week in May 99. Much commoner on S. side of Alps, *e.g.*, ab. at Chiasso (*Mayer*). Amongst other places mentioned are Arzier, vii. 18; Veyrier, vii. 16; Onex, viii. (*Bl.*); Saas Fée, viii. 1. &c. 94 (*R.-Brn.*); Disentis, vii. 85 (*Linn.*); Davos, vii. 2, 1900 (*Sloper*); Fusio, vii. 12 98 (*Chp.*).

Bourg St. Maurice, vii. 98; Digne, iv. 97 (*Tutt*); vi. 90; vii. 91 (*Linn.*); x. 16 02 (*R.-Brn.*); Alpes Maritimes, c. everywhere (*Brn.*); Susa, vi. c. 02, fairly c. (*Lowe*); viii. m. 97, v. varied (*Tutt*); Torre Pellice valley, viii. 01; Aosta, viii. m. 98 (*Tutt*); Tyrol, *e.g.*, Mendel, vii. 95; Carinthia, *e.g.*, Wolfsberg, vii. 18 97 (*Linn.*).

Directions of Var. (a.) depth of col. on disc of f.w., and band of h.w. up.s. leading to:

ab. Intermedia, *Tutt*: grd. col. brassy.

ab. Schmidtii, *Gerhard*: grd. col. whitish.

Loc. 1 specimen at Martigny, viii. 13 01 (*Sloper*).

(b.) copper col. suffused with dk.

ab. Suffusa, *Tutt*: culminating in:

ab. Eleus. *Fabr.*: in wh. the copper is entirely suffused and h.w. distinctly "tailed."

Loc. A v. frequent form of 2nd brood in S., occasionally also N. of the S. Alps; e.g., Bérisal, viii. e. 98; Brig, ix. b. 98 (*Wh.*); Sion, Sierre, Nioue, Visp, Stalden (*Far.*).

St. Michel-de-Maurienne, vii. e. 97; Susa, viii. m. 97; Torre Pellice, vii. e. 01 (*Tutt.*).

(c.) size and number of spots up.s. f.w.

(d.) a series of prp.-bl. spots inside copper band up.s. h.w., forming:

ab. Cæruleopunctata. *Stgr.* (cf. *Amphidamas* and *Dorilis* ab. *Purpurcopunctata*).

Loc. Esp. in S.; e.g., at Chiasso half the specimens are of this form (*Mayer*); Brig, viii. 98 (*Wh.*).

(e.) absence of band up.s. h.w., called:

ab. Obsoleta. *Tutt.*

(f.) band replaced by long radiating wedge-shaped lines, forming:

ab. Radiata. *Tutt.*

C. Amphidamas. *Espr.* (Helle. *Ill.*): 26mm. Fd. plt. *Rumex acetosa*, *Polygonum bistorta*.

♂ with brilliant prp. reflections, ♀ with large prp. spots up.s.

Dist. Char. Brilliancy of the metallic prp., in connection with small size.

Loc. In Switz. a mtu. sp.: W. slope of the Moléson in marshy meadows, vi. 25 01 (*Bl.*) (too early for this loc. in 02); 1 at Villard-sur-Clarens, vi. 12 01 (*Fis.*); 1 on slope of Rochers de Naye, nr. Caux, vii. m. 01, worn (*Linn.*); 1 in Tinière Valley, vi. 25 02 (*Chabrich*); 1, worn, at Villars-sur-Gryon, vii. 02 (*Moss*).

Obs. All these locs. are on one chain, and it is therefore probable that *Amphidamas* may be found in suitable, and perhaps less accessible, marshy spots between these points.

Stockhornthal (*Hg.*); Pas de Cheville (*Meissner*); Tramelan (*Hg.*); Hasliberg (*Suell*); Justisthal (*Jenner*); Pilatus (*Wschl.*); esp. on the Emsigen Alp (*Christ*); Ober-Gurnigel (*M.-D.*).

Obs. The specimens from the last loc., according to Frey, are remarkable for the extreme brilliancy of the metallic prp. in the ♂, and for the ante-margl. row of brt. prp. spots on all 4 ws. ♀ and ♂; these observations are certainly true of the Gurnigel specimens I have seen at Geneva; those from Tramelan are, however, equally magnificent.

Directions of Var. (a.) Brilliancy and extent of prp. suffusion (c. *suprà*).

Obs. The suffusion of the Tramelan ♂ is of the col. of A. Iris, that of the Gurnigel ♂ of the col. of A. Ha.

Tribe LYCENID.

Prevailing col. bl. in ♂, brn. in ♀; some ♂s, however, being always brn., and many ♀s sometimes bl.; un.s. with ringed eye-spots.

Genus, *Lycæna*, Fabr.

L. Arcas, Rott. (Ereb. *Knock*); 32mm. Fd. plt. clover,
Sanguisorba officinalis: *hyb. l.*

V. dk. sooty brn. ♂ suffused with dk. bl., ♀ unicolorous.

Dist. Char. un.s. with grd. col. dk. umber brn.

Loc. Exceedingly local, and confined to marshy spots: not hitherto found in the Valais. Hermance, vi. 14, 26; Versoix, vii. (Bl.); a field behind the Hotel at Mt. Barry, vii. b. 98, ab. (Wh.); vi. c. 1900, nearly over (Blm.); Weesen Marsh, vii. 8 01, ab.: a mile W. of Attalens, vi. 11 01; En Saumont, above Clarens, vii. 1 90, and vi. 12 01 (Fis.); marshes nr. Bünschen, at about 3000ft. scarce (Hy.); Berne: Leuk (Jüggli); moors above Einsiedeln (Paul); between Schüpfen and Aarberg (Rothenbach); Aarau (Snell); W. of Pontresina; E. of St. Moritz (Fis.).

Wolfsberg, vii. 16 97, ab. (Lmn.); Grand Salève, vii.; Divonne, vii. and viii. (!) (Bl.).

Directions of Var. (a.) diminution of size, culminating in:

ab. Minor, Rötzer.

Loc. Siselen, nr. lake of Bieme (Rötzer).

(b.) distinctness of spots f.w. up.s. ♂.

L. Euphemus, Hb. (Diomedes, Rott.); 32mm. Fd.
plt. *Sanguisorba*, *Lotus corniculatus*, clover; *hyb. l.*

Lightish bl., ♂ spotted, veined, and bordered, ♀ spotted and almost entirely suffused with blk.

Dist. Char. grd. col. un.s. yellowish brn.; ♂ further distinguished from *Arion* ♂ by size, ♀ from *Alcon* ♀, and *Arion* var. *Obscura* ♀ by the absence of all spots un.s. f.w. (and gen. h.w.), outside the el. row.

Loc. Marshes and damp meadows; much the same range in Switz., and often the same locs. as *Arcas*: not in the Valais. Versoix, vii. (Bl.); Mt. Barry, vi. c. 98, ab. (Wh.); same place and date 1900, worn out (Blm.); Weesen marsh, vii. 8 01, v. large, 36mm. (Fis.); Liestal (Christ); Oftringen (Wschl.); Ins: and in the water meadows nr. Aarau (Snell); Berne (Jüggli); Schüpfen, Aarberg (Rothenbach); Neucheville (Coulern); Tour de Gourze; Jorat (Laharpe); Münstertal (Zll-Dalder).

Susa, vii. 24 99 (R.-Bru.); Divonne, viii. 10 (!) (Bl.); Marcoux, nr. Digne, vii. (Doutzel); marshy meadows in Alpes Maritimes (Bru.); Certosa di Pesio, ab. in all the wet meadows by the Beinette springs, vii. 13, &c., 92 (Norris); Wolfsberg, vii. 18 97, ab. (Lmn.).

Directions of Var. (a.) brightness of ♂, depending on extent of dusting with blk. scales.

(b.) extent of blk. suffusion in ♀.

L. Alcon, Fabr. (*Arcas*, Esp.: *Euphemus*, Godart). 36mm.
Fd. plt. *Cytisus sagittalis* and *Gentianum pucnonanthe*; *hyb. l.*

Darkish lilac-bl. ♂ without, ♀ with blk. spots and suffusion up.s.

Dist. Char. un.s. grd. col. darkish gr., *scarcely bl. at base.* ♀ somewhat closely resembles *Arion* var. *Obscura* ♀ and yet more closely the ♂, but the grd. col. un.s. has a browner tint, and the disc. spots un.s. are smaller and more linear; also *Obscura* ♀ is larger.

Loc. Local and seldom c., "in openings of woods in the lowlands, and up to nearly 7000ft. in the mtns." (*Far.*): vi. e.-viii. b. Rossinières, vii. 2 and 6, 1900 (*Bkm.*); Villars-sur-Bex, vii. 02, worn (*Moss*); Frenières, vii. 13-91 (*Fis.*); Bex, Champéry, Visperterminen, Triftalp, Stalden (*Far.*); Zermatt, N.W. of Boden Glacier; W. of Evolena, beyond the stream, vi. 26-97 (*Fis.*); Riffelalp, vii. 01 (*Lamm.*); Bérisal, vii. m. 98; in the gorge leading to the Steinenthal and on the Steinentalp, vii. 11-01, c.; above 5th Refuge, vii. 13-01 (*Wh.*); Simplon Hospice, vii. 25-02; Laquinthal (*Far.*); Bois de Bay, vi. 26; Versoix, vi. (*Bl.*); Basle (*Christ*); Zürich (*Frey*); Schaffhausen (*Trapp*); St. Gall (*Täschler*); E. of Wengen (*Fis.*); "dry stony places at foot of Jura," e.g., nr. Olten (*Wschl.*); St. Blaise (*Coulern*); St. Cergues, vi. 25 (*Bl.*); Biemme and Soleure (*Hätzer*); marshes nr. Bünschen, 3000ft. (*Hg.*); Gadmen (*Hätzer*); Bergün, Stulser-weg, c. (*Zll.*); Fusio, vii. b. 99; Guarda, vii. e. 1900, with broad border (*Chp.*); Morteratsch Glacier, viii. 1-01 (*Fis.*); Pontresina, vii. 95 (*Miss Ftn.*).

The Dôle (*Baker*); le Reulet, vi. 26 (*Bl.*); Beauvêzer; Allos, vi.-vii. (*Powell*); Digne, vi. 99 (*Miss Ftn.*); Torre Pellice, viii. b. 01 (*Tutt*); Macugnaga, vii. 99 (*Chp.*); Campiglio, vii. 95; Wolfsberg, vii. m. 97, scarce (*Lamm.*)

Directions of Var. (a.) diminution in size:

var. Monticola, *Stgr.*

(Obs. -*Stgr.*, Cat. 1901, p. 90, does not give Switz. as a loc. for the type, but for this var., which he describes as being rather smaller, lighter gr. un.s., with more bl. at base of h.w.; the difference is not very intelligible, as it is a physical impossibility for any specimens to have less bl. at base of h.w. than the Swiss mtn. ones, unless they are without a vestige of it. Mr. Rowland-Brown mentions a specimen taken by him at Mattmark, 7,000ft., corresponding with *Stgr.*'s description.)

(b.) diminution of bl. in ♀ culminating in:

ab. ♀ Nigra, *Wh.*: in wh. it disappears under the blk. suffusion.

Loc. Steinenthal, &c.

L. Arion, *L.*: 40mm. Fd. pl. *Thymus serpyllum* (in early stages seems to require some animal food, *Frohawk*); hyb. l.

Br. bl. with slight lilac tinge: ♀ gen. larger, and with larger blk. spots up.s. f.w. than ♂.

Dist. Char. spots on up.s. f.w. in connection with lightish grd. col. un.s.

Loc. Wide spread throughout the region, but somewhat local. vi.-viii. b. [It would require a monograph to give all the locs. with their varying forms; the following are only examples, and in most cases neither books nor correspondents give much detail as to size and markings.] Veytaux, v. 27-97; Caux, vi. 97; Sépey, in many places, large and lt., vii. b. 97 (*Wh.*); on most of the slopes bordering on the Rhone Valley, *e.g.*, all round Martigny, Mayens de Sion, Evolena, Val d'Anniviers, Forest of Aletsch, &c. (*Far.*); St. Nicholas, vi. 30-vii. 20/98; Binn (*Bkm.*), &c. Meyrin, vii. 26; Versoix, viii. 18 (*Bl.*); Mürren, vii. e. 1900, a lt. form (*Wh.*); marshes nr. Bünschen, 3000ft. (*Hg.*); Liestal (*Kaw.*); Jura, *e.g.*, St. Cergues, viii. 29 (*Bl.*); San Stefano, vi. 29, v. dk. (*Mayer*); Pontresina, vii. 84, &c. (*Lmm.*); Val Leventina, v. large and brt. (*Trapp*); Splugen, vii. 5. 1900, ab. (*R.-Brn.*).

Savoie, *e.g.*, Chavoire, vii. e. 02, worn; Megève, viii. b. 02; The Brévent, viii. m. 02; Grésy-sur-Aix, vii. e. 97 (*Tutt*); Digne, Eaux Chaudes, vii. m., ab., v. variable, from brt. lt. bl. to var. *Obscura* (*R.-Brn.*); Vallon Obscur, St. Martin Vesubie, Madone des Fenêtres (*Brn.*); Baveno, v. large, vii. 88 (*Lmm.*); Brenner, vii. 27, 1900, v. dk., approaching *Obscura* (*R.-Brn.*); high up the Eggenthal, not v. dk., vi. e. 01 (*Lowc.*); S. Tyrol, vii. 95 and 97 (*Lmm.*).

Directions of Var. (a.) size: exceptionally only 32mm., sometimes up to 44mm.

(b.) extent of blk. shading over disc, culminating in:

var. Obscura, *Christ*, in wh. the blk. almost reaches to the base, esp. in ♂.

Obs.—This var., according to the original description (Frey, Lepidopteren der Schweiz, p. 32, 1880—not 1890, as in Stgr's Cat.) is not *e.* small; tho' the ♀ esp. is gen. smaller than the type.

Loc. Gen. in the mtns. Bérisal vii. viii. 98 (*Wh.*); Zermatt, la Forclaz, Trient, Thyon, Turtmannthal, Laquinthal, &c. (*Far.*); Hospenthal, vii. 96 (*Tutt*); Silser See, vii. 1-95 (*Miss Ftn.*); Fusio, vii. 1-12, 1900, Guarda, vii. e. 1900 (*Chp.*); Via Mala, vii. 5, 1900 (*R.-Brn.*); occasionally in the plain, *e.g.*, the usual form at Sierre, vii. 99 (*Wh.*); Martigny (*Far.*).

Digne (*R.-Brn.*); Alpes Maritimes above 3000ft. (*Brn.*); Courmayeur, viii. b. 95 (*Tutt*); Val Ferrex, a poor form, vii. b. 01 (*Lowc.*); Pejo, vii. 95; Campiglio, vii. 95 (*Chp.*); Villach; Sau Alp, Kor Alp, vii. 97 (*Lmm.*).

(c.) size and number of spots up.s.

L. Iolas, *Ochs.* (*Iolaus*, *Hb.*): 42mm. Fd. pl. *Colutea arborescens*: hyb. p.

♂ lilac-bl., ♀ blackish-brn. with bl. suffusion at base.

Dist. Char. large size: up.s. lw. unspotted in both sexes.

Loc. In Switz. confined to the Rhone Valley between Martigny and Salquenen; v. local, and confined to spots where the fd. pl. grows; gen. one brood, vi., but in 1901 there were two, as in S. locs., at its headquarters at Follaterre: v. e. (*Wschl.*) and vii. 26, several, quite fresh (*Wh.*); same loc, vi. 23, 1900, ab.: vi. 22-01,

1 ♀ only: vi. 21 02, 1 ♂, quite fresh (*Wh.*): vi. 3 02, worn (*Blen.*): vi. 29 02, v. worn (*Sheldon*): Sierre, vi. 13 99 (*Mrs. Lowe*): vi. 15, 21, &c. (*Wh.*): Sion; Corin; Salquenen (*Far.*).

Digne, v. (*Powell*): vi. b. 99, 1 ♂ (*Miss Ftu.*): vi. 90 (and larva, vii. 91) (*Linn.*): Botzen (*Kane*).

Directions of Var. (a.) size: 32mm. (rarely), to 4mm.

(b.) size of spots un.s.

L. Amanda, *Schneider* (*Icarinus*, *Esp.*): 34mm. Fd. pl.
Vicia cracca.

♂ lavender-tinted bl., ♀ brn.

Dist. Char. ♂, col.: ♀ brn. fringe, lighter at out. edge. The un.s., gr. in ♂, brn. in ♀, may best be distinguished by the absence of the dist. chars. of other sp. There is no wh. streak as in *P. Damon* var. *Ferretii* (the only "blue" wh. resembles the ♂ in col.), *P. Admetus* var. *Rippertii*, and *P. Eumedon*: a strongly marked ♀ might be confused with a slightly marked *P. Alaris* ab. *Icarinus*, but *Amanda* has not the straight row of 4 basal spots un.s. h.w. wh. is found in *Alaris*. nor has it the slightest wh. suffusion inside the peacock eyes.

Loc. V. local: under the cliffs between Vernayaz and Martigny, but only in, and close to, the marshes, v. ab. vi. 24, 1900 (*Lowe*): vi. 19, &c. 01, 02 (*Wh.*): ft. of Mt. Ravoire, Martigny: fields between Martigny and Fully: Vex in the Val d'Hérens (*Far.*): Tarasp, ab. (*Killias*): Guarda, vii. 1900 (*Chp.*).

Annot, vii. 17 99, a few: St. Martin Vésubie, vi. 28 to vii. 7 99 (*Lang*): Certosa di Pesio in Val Cravina, vi. b. 92, scarce (*Norris*): Monte Viso, Mt. Cenis (*Kane*): Cortina, vii. 17, 1900 (*R. Brn.*): Sarnthal and Eggenthal, vi. e. 01 (*Lowe*), (*v. infra*).

Directions of Var. (a.) size: from 26-36mm.

(b.) distinctness of peacock eyes un.s., never v. strong, and often absent on f.w. in ♂.

(c.) amount of or. up.s. ♀.

(d.) exact tint of grd. col. ♂.

(e.) extent of dk. suffused border up.s. ♂: much richer and darker at Botzen than in the Rhone Valley (*Lowe*).³

(f.) distinctness of blk. veining up.s. ♂: always v. distinct on h.w.).

(g.) occasional margl. row of blk. spots up.s. h.w. ♂.

(h.) tendency to obsolescence of el. row of eye-spots, un.s. f.w. ♂.

[Obs. Spuler mentions 3 ♂s from Mödling, in wh. the 2 rows of blk. spots above the or. un.s. h.w. are coalescent, forming large spots.]

Genus, Cupido, Schrank.

C. Minima, Fssl. (Alsus, *Fabr.*); 20mm. Fd. plt.
Astragalus glycyphyllos, *A. cicer*, *Anthyllis vulneraria*, *Coronilla*
varia, *Melilotus*, &c.: *hyb. l.*

V. dk. brn., ♂ with, ♀ without, greenish-bl. scales at base.

Dist. Char. un.s. brownish-gr., with eye-spots f.w. in a nearly straight line, and with the double eye-spot next but one to inn. marg. h.w. coming outwards towards out. marg.

Loc. Gen. one of the commonest Lycaenids; mounts up to about 8000ft.: from iv. e. to viii. at lower elevations, vii.-viii. at higher: in the former case probably 2 broods (*Far.*, *Tutt*), rather than a prolonged succession of emergences (*Frey*), as the l. feeds up v. rapidly. My earliest date is Veytaux, iv. 3.99: extraordinarily ab. in Jura, *c.g.*, St. Georges, vi. e. /02.

Directions of Var. (a.) Increase of size (with increase of greenish bl. up.s. ♂).

var. Montana, Frey: 24-26mm.; eye-spots un.s. often larger.

Loc. Gen. in moderately high locs., *c.g.*, Simplon (*Far.*); but a v. usual form on the slopes above Lavey, *c.g.*, v.-vi. /02 (*Wh.*).

Le Lantaret, vii. e. 96 (*Tutt*).

(b.) further increase of size (without more bl. in ♂).

var. Alsoïdes, Gerhard: 26mm. and above.

Loc. In the high mtns., *c.g.*, Simplon Pass: Pierre-à-voir sur Saxon; Glacier de Trient (*Far.*): Laquinthal (*Lüttw.*): Murren, viii. 2. &c. (*Wh.*).

(c.) loss of col. in ♂.

ab. Pallida, Tutt: up.s. pale gr. (v. rare).

(d.) tendency to obsolescence of eye-spots un.s., culminating in:

ab. Obsoleta, Tutt: in wh. they have nearly, or quite, disappeared.

C. Lorquinii, H.-S. (Buddhista, *Alphérakj*); 20mm.
Fd. plt. (and l.) unknown.

♂ deep prp.-bl. (like *Sebrus*), ♀ brn.

Dist. Char. un.s. h.w. row of eye-spots in an almost unbroken line, as the last does not conspicuously approach the border. ♂ differs also from *Sebrus* in size, and broader border, and from *Minima* in col.

Loc. Alpes Maritimes (*Bru.*).

C. Sebrus, Bsd.: 25mm. Fd. plt. *Onobrychis montana*,
Orobus, and *Colutea arborescens*.

♂ deep brt. prp.-bl., ♀ brn.

Dist. Char. un.s. pale bluish-gr. with spots on f.w. in nearly straight line (*v. N. Semiargus*).

Loc. Gen. a scarce sp., but ab. in many places in Rhone Valley, and found up to 6000ft., iv. e., v., and vii.-viii. b. (1st brood far the more ab.): v. ab. on road nr. St. Triphon station, v. 15 01, and Martigny, on road to Branson, v. 20 01; Lavey, v. 10. &c. 02, c.: Veytaux, iv. 99, and v. 01; Vernavaz, iv. 30 02; Sierre, vii. m. 99; Martigny, vii. 22 99, a few (*Wh.*): viii. 8 01 (*Sloper*); Saillon v. ab.; Sion; Sierre to Brig; Bérisal; Simplon; Laquinthal; Zermatt, &c. (*Far.*); Schaffhausen (*Trapp*); in many places round Geneva, both in Switz. and Savoie: *e.g.*, Geneva, iv. 22; Veyrier, v. 13, 22; Hermance, v. 29; le Coin, v. 23; vi. 14; Mommetier, v. 25, 29; vi. 2, 5; Bossey, vii. 25 (*Bl.*); (the last 3 in Savoie).

Chavoire, vii. e. 02 (*Tutt*), not uncommon in the Basses Alpes; Grenoble, v. b. 97; Digne, iv. 97 (*Tutt*); vi. b. 99 (*R.-Brn.*); esp. le Bois du Rocher Coupé, ab. (*Joues*); Col de Rouaine, about 3800ft., vii. 9, scarce and rather worn (*Parcell*); Ozglosse, Pain de Sucre, &c. (*Kane*); above Barcelonette, vii. 3, 92 (*Norris*); Piedmont (*Kane*).

Directions of Var. (a.) occasional bl. suffusion at base of ws. up.s. ♀.

Loc. *e.g.*, St. Triphon (*Fis.*); Lavey, v. slight (*Wh.*); v. strongly marked specimens from the Jura (*Ag.*).

[Obs.—The Jura “blues” have a marked tendency towards bl. in the ♀s.]

(b.) occasional lt. col. up.s. ♂. [A v. pale one in Col. Agassiz’s collection.]

Genus, *Nomiades*, *Illb.*

N. Semiargus, *Rott.* (*Acis*, *Schiff.*; *Argiolus*, *Esp.*); 30mm. Fd. pl. *Melilotus officinalis*, *Anthyllis vulneraria*, *Armeria vulgaris*, &c.: *hyb. p.*

♂ dk. prp., ♀ brn.

Dist. Char. un.s. brownish gr., with eye-spots of f.w. in a *wavy* line.

Loc. Distributed over the whole region; gen. but not always, *e.*, sometimes the most ab. of all the Lyeonids; v. vi. vii. in the lowlands and lower slopes; vii.-viii. in mtns.; found up to 7500ft.

Directions of Var. (a.) decrease in size, gen. in proportion to altitude, culminating in:

var. Montana, *Frey*: 25-27mm.; with darker grd. col.

Loc. The highest limits of the sp., *e.g.*, Blumenthal, above Mürren, vii. e. and viii. b. 1900; top of Simplon Pass, viii. m. 97 (*Wh.*); Gornergrat, Grand St. Bernard (*Far.*); Dischmuthal, vi. 27 01; Rosegg Glacier, viii. 23 01 (*Fis.*), &c., &c.

Le Lantaret, vii. e. 96; Val Vèni, viii. 98 (*Tutt*); Kor Alp, vii. 17 97; Sau Alp, vii. 14 97; Lölling, vii. 9 97 (*Chp.*).

(b.) size of spots un.s.

ab. Ætnæa, *Zll.*: in wh. they are large and surrounded with wh.

ab. Cæca, *Fuchs*: in wh. they are obsolete.

ab. Striata, *Wh.*: in wh. some are extended into streaks.

[Obs.—I have seen no ♂ of this ab.]

(c.) occasional slight bl. suffusion at base of ws. ♀.

(d.) deepening of grd. col. in ♂.

Loc. *e.g.*, above les Avants, viii. 2 96 (*R.-Bru.*); Bisbinno, vi. 12 (*Mayer*).

N. Cyllarus, *Rott.* (*Damætas. Hb.*); 30mm. F'd. plt.

Astragalus, Trifolium, Melilotus, Onobrychis, Genista: *hyb. l.*

♂ brilliant bl., ♀ brn. with brt. bl. bases.

Dist. Char. un.s. f.w. eye-spots increasing greatly in size from costa to below the middle, in connection with bl. or grn. suffusion over greater part of h.w. (*c. Melanops*).

Loc. C. in most years from Montreux to Mörel, esp. at Lavey (*Wh.*); Sion and Brig (*Far.*); iv. e. v.-vi. (My earliest date is Veytaux, iv. 5 99.) Not gen. found above 3000ft., but mounting exceptionally considerably higher, when it may be found later; *e.g.*, Splügen, 4700ft., vii. 5, 1900 (*R.-Bru.*). In many places round Geneva; Veyrier, Chêne, Bois de la Batie, Bois de Bay, &c., v. 6-27 (*Bl.*). Not v. e. elsewhere in Switz.; Locarno, vi. b. 02 (*Chp.*); San Stefano, v. 22 (*Mayer*); Weissenburg, vi. b., not c. (*Hg.*); Jura (*Christ*); Bergell (*Frey*); Tarasp (*Christ*).

Grenoble, v. 97, v. large; Digne, iv. e. 97 (*Tutt*); vi. 90 (*Lmn.*); vi. b. 99 (*R.-Bru.*); Auribeau, iv. 6 03 (*Tutt*); Vallon Obscur, St. Martin Vésubie (*Bru.*); Alassio, iv. m. 03 (*Tutt*); Certosa di Pesio, vi. b. 92, c. (*Norris*); Aosta, v. 95, e. fine (*Miss F'n.*); Orta, v. m.-vi. m. 1900, scarce (*Lowe*); Trafoi (*Frey*).

Directions of Var. (a.) Size: reaching to 33mm. or 34mm., but sometimes v. small, culminating in:

ab. Blachieri, *Millière*: sometimes as small as 22mm.: un.s. eye-spots gen. large (but *c. infra*).

Loc. Rhone Valley, &c., *e.g.*, Lavey, v. 28, 1900; v. 10 02; Veytaux, v. 01; Aigle, v. 01 (*Wh.*); c. above Saillon (*Far.*); Troinex, iv. 29 (*Bl.*).

Monnetier, vi. 3, 4 (*Bl.*); St. Martin Vésubie, vi. 6 92 (*Bru.*); Susa, vi. 18 02 (*Lowe*).

(b.) number and size of spots un.s.

ab. Tristis, *Gerhard*: with eye-spots f.w. v. large.

ab. Lugens, *Caralja*: almost (sometimes quite) without eye-spots h.w.: up.s. ♂ darker in tint, ♀ v. dk. (*cf.* *ab. Andereggii, infra*).

ab. Dymus, *Berkh.*: without spots un.s. f.w.

ab. Subtus-radiata, *Obth.*: spots of un.s. f.w. and sometimes of h.w. prolonged into streaks.

Loc. Charpigny, v. 9, 13 01 (*Fis.*); a magnificent ♂ with streaks on all 4 ws. Branson, v. 15 02 (*Wh.*).

Obs.—With regard to the var. in number of spots in the band of f.w. un.s., I cannot do better than refer to Mr. Lowe's captures at Susa and Certosa di Pesio, 6 spots being the normal number; 1 ♂, an *ab. Blachieri*, with 2, and these reduced to dots; 5 ♂ s, 1 ♀ with 4; 5 ♂ s, 1 ♀ with 5; 3 ♂ s with 6 on right

and 5 on left w. : 4 ♂s, 2 ♀s with 7; one of the ♂s with 7 spots has also a small but distinct basal spot on each f.w." (Ent. Rec., xiv., 333). I have also a ♂ with these basal spots, which has 6 spots on the right wing and 7 on the left—the reverse of Mr. Lowe's.

(c.) diminution of bl. in ♀ up.s., culminating in :

ab. ♀ **Andereggii**, *Rühl* : almost, often quite, without bl. : large spots un.s., esp. on h.w.

Loc. So far only in the Valais and the neighbouring parts of Vaud. Veytaux, iv. e. 97; Lavey, v. 24 01; v. 10 02; Sierre, v. 7 02; Sion, v. 22 02 (*Wh.*); Martigny, Branson, Saillon (*Far.*)

(d) col. of un.s. h.w., varying from deep sky-bl. to lt. emerald grn.

N. Melanops, *Bdsr.* : 25mm. Fd. pl. *Dorycnium decumbens*.

♂ brt. bl., ♀ blackish-brn. with bl. suffusion.

Dist. Char. row of spots un.s. f.w. greatly increasing in size from costa to below the middle, h.w. scarcely sprinkled with bl. at base; further distinguished from *Cyllarus* ab. *Blachieri* by a faint margl. row of lunules un.s. h.w.

Loc. A correspondence with Mr. Elwes has elicited the fact that it was undoubtedly this sp. and not *Cyllarus* ab. *Blachieri* that he took nr. Sion in the 2nd week in May, 87. These are the only Swiss specimens known, though the sp. has frequently been looked for since in the same loc. : being small and v. local, the exact spot may have escaped detection, or the insects may have been passed over as small *Cyllarus*, wh. is ab. nr. Sion.

Digne, iv. 5 02, e. (*It.-Bru.*) : ab., esp. in the Bois du Rocher Coupé, v. b. 94 (*Jones*); iv. e. 97, perhaps the most ab. "blue" (*Tutt*). Vallon Obscur, &c. (*Bru.*); Cannes, iv. 98 (*Tutt*); on thyme, up to about 2500ft. (*Powell*).

Directions of Var. (a.) extent of bl. up.s. ♀.

(b.) diminution of spots un.s., those on h.w. being sometimes not ocellated.

Obs.—This is not ab. *Marchandii*, *Bdsr.*, as apparently supposed by *Bem.*, this ab. being without spots un.s. f.w., and being so far confined to Catalonia.

Genus, Polyommatus, *Latr.*

P. Eumedon, *Esq.* (*Chiron*, *Rott*; *Antiqua*, *Rühl*) : 31mm.

Fd. pl. seeds of *Geranium sanguineum* and *G. pratense*.

Brt. dk. brn. ♂ without, ♀ gen. with or. spots at anal ang. up.s. h.w.

Dist. Char. un.s. h.w. a wh. streak extending from disc. spot almost to out. margl., more or less wedge-shaped, the point of the wedge being towards the margl.

Loc. Not gen. c., but mounting up to 6000ft. or more, vi.-vii.:

Veytaux, vi., Sépey, vii. /97 (*Wh.*); Val d'Anniviers, vii. b. /97; Sierre, vi. 17-24 /93 (*R.-Bru.*); Arolla, c. vii. 12, 1900; St. Nicholas, vi. 30/96; vii. 11/98, &c. (*Bkm.*); Saas, vi. m., Mattmark See, vii. e. (*Jones*); Bérisal, vii. /98, v. ab. (*Wh.*); and gen. in the valleys of S. Valais. The Engadine. *e.g.*, Pontresina, vii. /95 (*Miss Ftn.*); ft. of the Schafberg, vii. c. (*Jones*), &c. Dischmathal, vi. 27.01 (*Fis.*); Fusio, vii. /99; Guarda, vii. 29-31, 1900 (*Chp.*); Bremgartner woods, nr. Berne (*Frey*); Weissenburg, scarce (*Hg.*); Jura, *e.g.*, Chasseral (*Couderc*); Neuveville (*Rothembach*); Breitbodenalp, nr. Meiringen; Kandersteg (*M.-D.*); La Vare, above Pont de Nant, vii. (*Bl.*).

Pontarlier (*Kanc*): Le Lautaret, vii. c. 96; Abriès, viii. m. 1900 (*Tutt*); Basses Alpes (*Kanc*); Alpes Maritimes on all mtns. (*Millière*); Cogne, viii. 7-12 /94; Courmayeur, vii. e. 94 (*Tutt*); Macugnaga, vii. 99 (*Chp.*); Susa, vi. 27 99, v. c.; Cortina, vii. 27, worn (*R.-Bru.*); Campiglio, vii. /95 (*Lom.*); Stelvio, vii. 12. 1900 (*R.-Bru.*); Val Bigontina, viii. 95 (*Tutt*).

Directions of Var. (a.) diminution in size of eye-spots un.s., culminating in :

ab. Subtus-impunctata, *Far.*: in which they are absent from f.w.

ab. Speyeri, *Ilus.*: in which they are altogether absent.

(b.) absence of or. up.s. h.w. ♀.

(c.) tendency to obsolescence of wh. streak.

un.s. h.w., culminating in :

ab. Fylgia, *Spångberg*: in which it is obsolete.

[Obs.—This is a var. of the extreme N., but *Stgr.* says also “ab. ubique”; it can only be expected in the highest altitudes reached by the sp. Mr. Buckmaster, however, notes a ♂ from Sierre—another instance of the curious tendency of that locality to produce mtm. forms. Cf. *Arion* var. *Obscura*.]

P. Donzelii, *Bsd.*; 26mm. F.d. pl. (and l.) unknown.

♂ lt. steely bl. broadly dk. bordered, ♀ brn.

Dist. Char. un.s. h.w. a wh. streak from the indistinct peacock eyes to the disc. spot, more or less wedge-shaped, *the point of the wedge being towards the base.*

Loc. In Switz. only in the Valais and the Engadine, between 4000ft. and 6500ft. (exc. Martigny-Combe, *de Rougemont*), vii.-viii. Ponchette, in Val d'Anniviers: damp places by the Viège below the Riffel (*Far.*); by chapel of St. Laurent between Vissoye and Zinal, viii. 1/97, c. (*R.-Bru.*); Turtmanthal, viii. 18.91; Lötschenthal, viii. 9/90 (*Fis.*); Saas Fce, vii. e. /85 (*Jones*); a pine forest in the Saas Valley, ab. (*Far.*); Bérisal, viii. /97, /98, scarce; Simplon Village, viii. b. /99, c., vii. 10.01, ab. (*Wh.*); Pontresina, vii. /95 (*Miss Ftn.*); at ft. of Schafberg; Rosegg Valley, vii. (*Nicholson*); Sils Maria; St. Moritz; Celerina; Samaden (*Frey*); Campfer, scarce (*Jones*).

Allos; Barcelonette, vii. (*Powell*); Glaisolas; Godessart; Digne; Mt. Cenis (*Kanc*); Valley of the Boréon (*Brm.*); Courmayeur, moraine of Glacier de Miage, viii. b. /98 (*Tutt*); Cortina, vii. 21, 1900; Trafoi, vii. 12, 1900 (*R.-Bru.*).

Directions of Var. (a.) amount and distinctness of or. spots un.s.
(b.) ♀, amount of bl. at base of h.w. up.s.
(always slight).

P. Damon, *Schiff.* (Biton, *Sulzer*): 35mm. Fd. plt.
Onobrychis satira: hyb. l.

♂ brt. slightly greenish-bl., with broad dk. suffused border,
♀ smaller, brn.

Dist. Char. un.s. h.w. a long whitish streak, not wedge-shaped,
reaching *almost from base* to nr. out. marg.

Loc. Not c. in N. Switz. Schaffhausen (*Trapp*); St. Gall (*Täschler*); Zürich (*Frey*); Liestal (*Christ*); Arlesheim (*Kuecht*); nr. Lucerne, viii. e. /99 (*Sandford*); Weggis, vii. 96; Rigi, vii. /96 (*Tutt*); gen. distributed, often c., and sometimes ab. in E. Vaud, the Valais, the Bernese Oberland and the Grisons; e.g., les Avants, vii. 30 01 (*Stoper*); Aigle to Sépey, vii. 97, and other years, v. ab. (*Wh.*); viii. 2 98 (*Joues*); throughout the Rhone Valley, e. (*Wh.*); Evolena, Inden, Loèche-les-bains, Visp valley up to St. Nicholas, &c. (*Fav.*); below Bérisal, v. e., viii. 20 97, and earlier other years (*Wh.*); Weissenburg, e. (*Hg.*); Grindelwald and Mürren, vii. /89 (*Lmn.*); e. nr. St. Moritz, vii. (*Nicholson*); Guarda, vii. 1900; Pontresina, vii. 1900 (*Chp.*); Bad Alveneu, vii. /88 (*Lmn.*), &c.; nr. Geneva, Veyrier, vii. 13; Sierne, vii., Monnetier (Savoie), vii. (*Bl.*); not uncommon on the Jura Vaudois (*Wh.*).

Gen. c. in Savoie, Hautes Alpes, and Basses Alpes, e.g., la Clusaz, viii. 4/02, v. ab.; Abriès, viii. m. 1900, v. ab. (*Tutt*); Digne, vii. /91 (*Lmn.*); Bourg d'Oisans, vii. m. /96; Bourg d'Aru, viii. m. /96; Bourg S. Maurice, vii. e. /98; Petit St. Bernard, viii. b. 98; Barcelonnette, viii. m. 1900 (*Tutt*); Barcelonette and Allos, vi. e. /92, ab. (*Norris*); local in Alpes Maritimes, top of Balme de la Fréma, 7300ft. (*Brm.*); Cannes (*Lmn.*); Certosa di Pesio, ab. on damp spots under Cima Car, and in Val Sestrerà, vii. viii. /92; Courmayeur, viii. m. /98; Pré St. Didier, viii. m. /98; above Bobbie, viii. m. /01 (*Tutt*).

Directions of Var. (a.) diminution of size, culminating in:

var. Ferreti, *Fav.*: 25mm.-29mm.; grd. col. of ♂ a much more lavender tint, with dk. suffusion sometimes greatly enlarged, esp. in Val Ferret; un.s. ♂ and ♀ rather less dk., wh. streak often more sharply defined.

Loc. Ab. in the Val Ferret (or Ferrex), esp. at the Grand Ferret (*Fav.*); upper end of Lauterbrunnen valley, viii. 1. 1900; Vallorbe, viii. b. /02 (*Wh.*); Campfer (*Joues*); Sierre, vii. 6 86, aberration. (*Bl.*).

Le Lautaret, vii. e. /96; Larche, vii. e. 1900; Cogne, viii. 7-12, /94; Au Pra, viii. m. /01 (*Tutt*).

[Obs.—This var. was wrongly described in Favre's "Lépidoptères du Valais" as var. *Actis*, H.-S., an error which is corrected in the "Supplément" of 1903.]

(b.) tendency to obsolescence of spots, always small, un.s. h.w.

* **P.** (*Admetus*, *Esp.*) **var. Rippertii**, *Bsd.*: 36mm. Fd. plt. (and l.) unknown.

Dk. brn., ♂ with, ♀ without nervures of basal half and disc. cell up.s. thickly furred.

Dist. Char. un.s. clear yell.-brn., with wh. streak on h.w.; further distinguished from *Fumelon*, and *Dolus* var. *Vittata* ♀ by *bru. fringe*.

Loc. V. e. on lavender blossom in some localities round Digne, vii. 99 (*Miss Ftu.*), e.g., half-way up the Coussons, 3500ft., vii. 5 and 6 (*L.-Bru.*); La Bollène, vi. 24 92, on lavender, worn (*Bru.*); S. Tyrol (*Kane*).

Directions of Var. (a.) sometimes trace of wh. streak un.s. f.w.

* **P. Dolus**, *Hb.*: 35mm. Fd. plt. sanfoin.

♂ v. pale bl. (paler than *Corydon*), ♀ brn.

Dist. Char. ♂, grd. col., and brn. furring on basal half up.s. f.w.; ♀, concave outline of h.w. just before anal ang., distinguished from *Admetus*, wh. is the same shape, by smaller size and lt. fringe.

Loc. The Basses Alpes, not occurring higher than about 1600ft. (*Powell*).

Directions of Var. (a.) occasional presence of an ill-defined wh. streak, un.s. h.w.

* **ab. Vittata**, *Obth.*: (doubtful whether it occurs outside the Department of Lozère, wh. is not in the region.)

P. Meleager, *Esp.* (*Daphnis*, *Brystr.*): 35mm. Fd. plt. *Thymus*, *Origanum*, *Orobus niger*, *Onobrychis*.

V. brt. lt. sky-bl., ♂ with narrow, ♀ with broad blk. border; ♀ has also the nervures broadly suffused with blk.

Dist. Char. h.w. a notch nr. anal ang. forming 2 rudimentary "tails," more marked in ♀.

Loc. Extremely local in Switz.; only in the Valais between Martigny and Visp, and at Tarasp, vi. e-viii. m.; Pfywald, principally nr. Pfy. vii. 11 and 19 99, good; viii. 14 99, ♂ s v. worn, ♀ s good; vii. 13 01 rather worn (*Wh.*); vii. 19-20, 1900, fresh (*Bkm.*); Sierre, vi. e. (*Jaggi*); viii. 16 99, 1 ♂ slightly worn (*Wh.*); Martigny at the Tour de la Bâtiaz and the surrounding vineyards, vi. 28 92, and above Plan Cérasier, vii. 5 02; Val d'Anniviers: from Sierre to Loèche by Salquenen and Varen; Visp, Stalden, and Huteggen (*Far.*); Tarasp, nr. the Kurhaus (*Killias*). Its best loc. in the Valais is undoubtedly the Pfywald, and in most years the likeliest time the 2nd and 3rd weeks in July.

St. Michel-de-Maurienne, vii. e. 97 (*Tutt*); Beauvèzer, vii. (*Powell*); Digne, vi. 13 99, just emerging (*L.-Bru.*); vii. 11-16 89, v. e. (*Mrs. Nicholl*); St. Martin Vésubie; Vallon Obscur, &c. (*Bru.*); Castellane (*Powell*); Certosa di Pesio, vii.-viii. /92, not. c. (*Norris*);

above Bobbie, viii. m. 101, worn (*Tutt*); Susa, vi. 27, 99 (*U.-Bren.*); viii. m. 96, worn (*Tutt*); Pré St. Didier to Aosta, viii. b. 98, worn (*Tutt*); Botzen, vii. 14 02, not fresh (*Lowr*); various places round Vienna, vii.-viii. (*Miss Fln.*).

Directions of Var. (a.) ♀, almost complete loss of bl., forming:

ab. ♀ Steeveni, *Treitschke*:

Loc. The usual form in the Valais: (2 type ♀s at Martigny, *Wschl.*).

Alpes Maritimes, commoner than type (*Bren.*); Digne, vii. 2 90, and 91 (*Linn.*); St. Michel-de-Maurienne, vii. e. 96 (*Tutt*).

P. Corydon, *Podu* (*Tiphys*, *Esp.*); 34mm. Fd. pl.

Coronilla, *Vicia*, *Astragalus*, &c.: hyb. l.

♂ pale silvery bl. with greenish tinge, ♀ dk. fawn-brn.

Dist. Char. Col. (un.s. f.w. gen. has principal line of eye-spots so bent inwards below the middle as to form a line with disc. spot.)

Loc. V. gen. and widely distributed, sometimes in amazing abundance (*e.g.*, between Mürren and Gimelwald, viii. i. 1900); mounts up to 7500ft. or more; one brood only vi. (in S.), vii., viii., and often ix.

Directions of Var. (a.) size: from 26mm. to 38mm.

(b.) tint of grd. col.

ab. Calydonius, *Lowr*: almost the bl. of *Melayer*: up.s. f.w. with narrow, v. blk. and v. clearly defined border: h.w. margl. row of strongly marked and isolated blk. spots: un.s. f.w. blk. spots v. large, on much darker gr. grd. col. than type: h.w. with much bl. at base, or. eye-spots rather small and pale, grd. col. rather dingy, without a trace of fawn-col.

Loc. Montana, vi. m. 99 (*Lowr*); Follaterre, vii. 22 99 (*Wschl.*).

(?) **ab. Hispana**, *H.-S.*: lighter, pale spotted margl.: a transitional form is not uncommon in Switz.

ab. ♀ Semibrunnea, *Millère* (*Semi-syngrapha*, *Tutt*): base bl. to disc. spot f.w. and beyond in h.w.

Loc. Not c., Bérisal, viii. 97 (*Wh.*).

Alpes Maritimes (*Bren.*); Lago di Loppio and Riva (*Jones*).

ab. ♀ Syngrapha, *Keterstein* (*Mariscolore*, *Gerhard*); bl. to the or. border.

Loc. The hottest parts of the region: v. scarce in Switz.: 1 at Branson (*Far.*); Tramelan, 2 superb examples (*Igg.*).

(c.) extent and distinctness of or. spots up.s.

ab. Aurantia, *Tutt*: ♀ with distinct margl. or. spots edged internally with paler.

Obs.— One cannot, I think, be wrong in including here the ♂ form in which the spots up.s. h.w. are edged interiorly with or.; this occurs not

infrequently in Switz. At Esino above Varenna about 20 per cent. are of this form (*Miss Fin.*.)

(d.) size of spots and breadth of border up.s.

[Obs.—The forms named in Tutt's "British Butterflies," pp. 166, 167, only partially apply here. So far as my experience goes, the broad marg. f.w. and v. distinct and rather large spots h.w. always occur together; and, similarly, the narrow border f.w. gen. goes with smaller spots h.w.]

"In the Basses Alpes the blk. of the border has practically disappeared, leaving in some specimens only faint gr. ocellations, e.g., Digne, vi. 199." (*R.-Brn., in litt.*). This form I take to be :

ab. Punctata, *Tutt.*

(e.) tendency to lighter grd. col. un.s.,
culminating in :

ab. Pallida, *Tutt* : ♂ wh., ♀ pale ochreous."

(f.) tendency to obsolescence of spots un.s.

ab. Obsoleta, *Tutt* : in wh. the tendency is marked. [I took a ♂ at Vallorbe, viii. 10.02, with right h.w. only of this form :— both f.w.s. are ab. *Striata*.]

ab. Cinnus, *Hb.* : spots on h.w. not ocellated.

(g.) tendency of spots un.s. to coalesce.

ab. Striata, *Tutt* : in wh. they are more or less joined into streaks.

ab. Arcuata, *Weymer* : in wh. the lowest basal spot f.w. is joined to the lowest of the cl. row by an arched streak.

P. Bellargus, *Rott.* (*Adonis, Hb.*) : 32mm. Fd. plt.

Genista, Coronilla, Trifolium, Hippocrepis comosa : *hyb. l.*

♂ brilliant sky-bl., ♀ brn.

Dist. Char. col. in connection with distinctly chequered fringe. ♀ distinguished from *Corydon* ♀ by its much darker gr. col. and fringe-markings. In Switz., at any rate, it is really inexcusable to confuse them. *Hylas* has wh. fringes.

Loc. Gen. distributed and often c., esp. in the lowlands and lower slopes, clearings of woods, &c., v.-vii. and viii.-ix., but mounting as high as 5000ft. or even 6000ft., e.g., ab. at Bérisal, viii. 97 (*Wh.*); Zermatt (*For.*). Finest in S. locs.

Directions of Var. (a.) tint of grd. col. in ♂. Of the two usual shades it is suggested (*Tutt, British Butterflies*, p. 170) that the type name should be reserved for the more lilac, and the name

var. Adonis, *Hb.*, be applied to the more brilliant and greener form : 2 other shades are occasionally found :

ab. Pallida, *Tutt* : paler, nearer in col. to *Aleris*, and

ab. Suffusa, *Tutt* : of a darker, more leaden bl.

(b.) amount of bl. up.s. ♀, culminating in :

ab. ? Ceronus, *Esp.*, wh. has bl. like the ♂ extending to the or. border.

Loc. The intermediate forms are often c., the extreme form is

scarce in Switz. Montana, vi. 98 (*Lowr*); Sierre, viii. e. 99 (*Wh.*); Jura, superb specimens (*A.g.*); Basle (*Knecht*); Liestal (*Christ*); banks of the Sarine nr. Gruyère, viii. 29/97, the predominant form (*R.-Brn.*), &c.

Savoie, *e.g.*, Monnetier, vi. 5 (*Bl.*); Basses Alpes, Digne, c. (*Jones*); vi. 90 (*Linn.*); Alpes Maritimes (*Brm.*); St. Martin Vésubie, vii. 4/02 (*Bentall*); Orta, v.-vi. 1900 (*Lowr*). Gen. commoner on S. than N. Alps.

[Obs.—There is no ground for applying this name to ab. ♂ *Puncta*, the 2 forms often occur in different locs., the other sex being typical.]

(c.) tendency to obsolescence of spots un.s.

[Forms exist with one or both basal spots f.w. missing, parallel to

Aleris abs. *Iphis* and *Icarinus*.]

ab. Cinnides, *Stgr.*: spots on un.s. h.w. without ocellation.

Loc. V. scarce: Martigny, Sierre, Zermatt (*Far.*)
Alpes Maritimes (*Brm.*); Yvoire, vi. 3 (*Bl.*).

ab. Obsoleta, *Tutt*: in wh. many of the spots are obsolete.

[* (?) **ab. Krodeli**, *Gillmer*: in wh. all but the discoidals are absent.]

(d.) ♂ with row of margl. blk. spots up.s. f.w.

ab. Puncta, *Tutt*: in wh. they are small, but conspicuous.

Loc. Warm places; *e.g.*, Follatere (*Wh.*); Orta (*Lowr*), &c.

***ab. Punctifera**, *Obth.*: with large spots, broader blk. marg., grn. tint in bl. up.s., brighter un.s.

[Obs.—This form, if it occurs at all in the region, can only be looked for on the hottest S. slopes.]

(e.) tendency of spots un.s. to coalesce.

ab. Striata, *Tutt*.

P. Hylas, *Esp.* (*Dorylas*, *Hb.*: *Argester*, *Brgstr.*): 32mm.

Fd. pl. *Trifolium*, *Melilotus*, *Thymus vulgaris*, &c.: hyb. l.

♂ brilliant sky-bl., ♀ brn.

Dist. Char. un.s. broadly suffused wh. border, esp. f.w.; fringe wh.

Loc. Gen. distributed on limestone, and often locally ab., v.-vi. and vii.-viii. at lower elevations, vii.-viii. at higher. Basle, scarce (*Christ*); Zürich (*Frey*); St. Gall (*Täschler*); gen. distributed on the Jura (*r. infra*); Mt. Barry, vi. 29; Rossinières, vii. 2, 1900 (*Bkm.*); Weissenburg, not uncommon, 2 broods (*Hg.*); Hermance, vi. 14; Veyrier, vi. 17, and vii. 30; and other places round Geneva (*Bl.*); gen. distributed in and round the Rhone valley: Veytaux; Sépey; under the cliffs between Vernayaz and Martigny, *e.g.*, vi. 19/02; below Bérisal, esp. at the Ganter bridge, viii. (*Wh.*); Simplon, vii. e. 99; Guarda, vii. 1900; Fusio, vii. 1900 (*Chp.*); Haudères. Evolena, Arolla, viii. m. 99 (*Tutt*); vii. 15, 1900 (*Bkm.*); Zinal, vii. 31 78, v. ab. (*R.-Brn.*); Zermatt, small specimens (*Frey*); &c., Engelberg (*Baker*); Neuhansen, Interlaken (*Linn.*); nr. Thusis, vii. 5, 1900 (*R.-Brn.*); gen. in S. valleys.

Grésy-sur-Aix, viii. m. 1900 (*Tutt*); Chamonix, viii. 93 (*Miss Ftn.*); Digne, iv. e. 97 (*Tutt*); vi. 90, vii. 91 (*Linn.*); Vallon

Obscur: St. Martin Vésubie, not v. e. (*Bru.*): Abriès, viii. m. 1900; Courmayeur, vii. e. 94; viii. 17 98; Pré St. Didier, viii. b. 98; Susa, viii. m. 97; An Pira, viii. m. 01; Torre Pellice, viii. b.; Bobbie, viii. m. 01 (*Tutt*): Susa, vi. 25 99, ♀s v. fine and brilliantly marked (*R.-Bru.*); Lake Como, vii. 95; Olgiate, ix. 93 (*Miss Ftu.*); Stelvio (*R.-Bru.*); S. Tyrol, vii. 95; Heiligenblut, vii. 24 97 (*Linn.*); Mödling, viii. 97 (*Miss Ftu.*): &c., &c.

Directions of Var. (a.) ♂, border of blk. spots up.s. h.w.

ab. Nigropunctata, *Wh.*: blk. spots more or less conspicuous, blk. marg. sometimes broader.

Loc. Occasionally with type. The only form at St. Georges, Jura, vi. e. 02 (*Wh.*).

(b.) tendency to obsolescence of spots un.s., esp. h.w.

(c.) tendency to increase in number of spots un.s.

(?) **ab. Addenda**. *Tutt*: a name given to certain specimens taken at Susa, viii. m. 96. At the same time and place were taken some v. small specimens, wh. were named:

ab. Minor. *Tutt*: a Swiss specimen taken by Mr. Fison measures only 28mm.

(d.) number and size of red spots up.s. ♀.

(e.) occasional coalescence of spots un.s. f.w.

(f.) occasional bl. on ♀ up.s., gen. only a slight powdering at base, but Frey mentions "a magnificent bl. ♀ at Bergün, viii. 76."

ab. ♀ Metallica. *Far.*: v. dk. up.s. with a conspicuous powdering of metallic bl.-grn., sometimes on f.w. only, sometimes also on h.w. extending from the base more or less along the nervures.

Loc. Mt. Chemin (*Wschl.*); Salquenen (*de Rougemont*); the Jura (*Lf.*); Chiasso, vi. 24 94 (*Mayer*).

P. Escheri, *Hb.* (Agestor, *Godart*): 38mm. F.d. plit. *Astragalus incanus*, *A. monspessulanus* and *Plantago*; hyb? ov. or l.

♂ brt. bl. (between *Aberis* and *Bellaragus*), ♀ brn.

Dist. Char. narrow blk. out-margl. line continued round apex, un.s. f.w.: ♂ further distinguished by col.: only *Pheretes* and *N. cyllarus* resemble it in this respect: also from *Aberis ab. leucurus* by larger size, and ♀ by or. spots up.s. f.w. being rectangular rather than wedge-shaped: no basal spot un.s. f.w.

Loc. V. scarce N. of the S. Alps except in Lower Valais: one pair close to Ollon (*Laud*), vi. 20 01 (*Wh.*); locally ab. in Lower Valais, vi.-vii., Martigny, Arbaz sur Sion, Sierre, Pfynwald, &c., to Brig; Visp to Zermatt and even higher (*Far.*); Evolena, viii. 12 96

(*It.-Brn.*): from 2nd Refuge to Bérisal, vii. 7-01, &c., v. ab. (*Wh.*); also on S. side of the Pass (*Far.*); the Grisons, *e.g.*, Campfer, vii., small (*Jones*), Pontresina, vii. m. 1900, and Tessin (*Chp.*).

V. c. in the Hautes Alpes, *e.g.*, Abriès, viii. m. 1900 (*Tutt*); the Basses Alpes, *e.g.*, Digne, vi. 90, vii. 91 (*Lann.*); Dauphiny Alps, *e.g.*, La Grave, viii. b. 96; Bourg d'Ara, viii. m. 96; Bourg d'Oisans, viii. m. 96; Bourg St. Maurice, vii. e. 91 (*Tutt*); St. Martin Vesubie, Vallon Obscur, &c. (*Brn.*); v. c. in the Italian Alps, *e.g.*, Certosa di Pesio (*Norris*); Torre Pellice Valley up to 7000ft., viii. 01 (*Tutt*); Susa (*R.-Brn.*); Pré St. Didier, viii. b. 98 (*Tutt*); Courmayeur, vii. b. 02 (*Lowc.*); Tyrol, *e.g.*, Botzen (*Kanc.*).

Directions of Var. (a.) border of small blk. spots up.s. h.w. ♂.

ab. Punctulata, *Wh.*

(b.) size and conspicuousness of or. spots up.s. in ♀, esp. at apex f.w.

(c.) tint of grd. col. un.s.

(d.) occasionally spots un.s. prolonged into dashes (*Pis.*).

P. Alexis,† *Hb.*: 30mm. Fd. pl. *Lotus corniculatus*, *Fragaria*, *Genista*, *Medicago*, *Melilotus*, *Astragalus*, &c.: *hyb. l.*

♂ brt. lilac-bl., ♀ brn. with or. margl. spots.

Dist. Char. extremely narrow blk. out-margl. line not continued round apex f.w. un.s.

Loc. Gen. distributed, often c., and sometimes ab., though by no means the commonest "blue" as in England. Found up to 7000ft. or even more, iv.-x., in 2 and often 3 broods. My earliest date is Veytaux, iv. 3 99.

Directions of Var. (a.) tint of grd. col. in ♂ and amount of bl. in ♀.

ab. Pallida, *Tutt*: ♂ pale lilac-bl., ♀ brn., shaded all over, exc. costa, with pale lilac-bl., pale wedge-shaped mark h.w., and often pale bl. margl. bordering the or. spots.

ab. Clara, *Tutt*: ♂ brt. bl. approaching Bellargus, ♀ same col., with or. spots esp. f.w. almost obsolete.

Obs.—This appears to be an ab. of the 1st brood.

ab. ♀ Cærulescens, *Wh.*: ♀ with col. of typical ♂ only on basal part of ws.

ab. ♀ Cærulea, *Fuchs*: ♀ with col. of typical ♂ as far as the or. spots; margl. brn.

† Note.—The utterly unscientific position that the first described form must be regarded as the type, can hardly have a better illustration than is afforded by this sp. The ♀ *Icarus*, *Rott.*, only differs from the ♂ by its border of or. spots up.s. If it be held, as it certainly should be, that the name *Icarus* must be applied to this unusual form, then Hübner's name, *Alexis*, must be restored for the true type, a course wh. would have the further advantage of getting rid of ab. *Iphis*, *Bamh.*, and the consequent confusion with ab. *Iphis*, *Melig.* "Literary" types, as opposed to natural ones, are an unnecessary, if "convenient," means of putting literature into opposition with science.

ab. ♀ Icarus, Rott.: ♀ col. of typical ♂, but with ante-margl. row of or. spots.

ab. ♀ Semiclara, Tutt: ♀ with col. of ab. *Clara* at bases only.

ab. ♀ Angulata, Tutt: ♀ like ab. *Pallida*, but with angulated row of pale bl. spots just inside or. spots f.w. ups.

(b.) presence in type ♀, and ab. *Carulea* ♀ of wedge-shaped mark and cl. spot up.s. h.w.

(c.) tendency to loss of spots un.s.

ab. Iphis, Meigen: with one basal spot only un.s. f.w.

ab. Icarinus, Scriba: without any basal spot un.s. f.w.

ab. Semi-persica, Tutt: spots on h.w. more or less obsolete.

ab. Persica, Bionert: with all exc. the disc. spots obsolete, f. and h.w.

(d.) tendency of spots un.s. to unite or lengthen into streaks.

ab. Arcua, Fav.: in wh. the lowest basal spot, f.w., is united with the lowest of the cl. row into a long bow-shaped streak.

ab. Striata, Tutt: in wh. the spots are more or less united (or prolonged) into streaks.

[Obs.—These various abs. not having been sufficiently noticed, it is impossible to say whether all of them occur in Switz. or the central Alpine region. The ab. *Carulea*, *Fachs*, magnificent examples of wh. are in the collection of Col. Agassiz at Lausanne, is so strikingly different from the c. form of the ♀ with bl. at the base and slightly shaded over the centre of the ws., that I have ventured to name the latter ab. *Carulescens*; this form may be found wherever the brn. type ♀ appears. Ab. *Arcua* is to be found in the Rhone Valley, and is c. in the neighbourhood of Aigle and St. Triphon. Ab. *Icarinus* may be taken in the same loes. amongst others, and in vi. /98 was by far the commonest form at Veytaux; I have also a splendid ab. *Striata* from the same place. Judging from the analogy of other "blues," it would seem probable that in the S. of the region should also occur:

ab. Celina, Obth.: ♂ with margl. row of blk. spots up.s. h.w.]

P. Eros, Ochsh. (Fithonus, Hb.): 29mm. Fd. plt. (and l.) unknown.

♂ lt. greenish-bl., ♀ blackish brn. with pale bl. at base.

Dist. Char. col. (between *Corydon* and *Damon*) in connection with size; (un.s. v. like *Alexis*).

Loc. Principally in the Bernese, Valaisian, and Grisons Alps from about 3000ft. to 7000ft., vii.-viii. Pont de Nant (*Faud*), vii. 18, 27 (*Bl.*); Glacier de Trient; Pierre-à-voir; Diablerets; Crêtes de Thyon; Evolena; Inden; Loèche-les-bains; Daubensee; Gorner Glacier, &c. (*Fav.*); Simplon Village, vii. e. /99 (*Tutt*); Simplon Pass, nr. 1st gallery, viii. 6/98; nr. 5th Refuge, viii. 12/98, ab., ♀ rather later; vii. 12/01, ♂ and ♀; Steinenthal, vii. e. 99, v. ab. (*Wh.*); Saas, vii. 7-16 /98; Zermatt, vi. 28/99 (*Bkm.*); viii. 9/01 (*Stoper*); Riffelalp, vii. /01 (*Lmn.*); upper end of Lauterbrunnen valley, viii. 1, 1900 (*Wh.*); Little Scheideck (*Fis.*);

Meiringen (*M.-D.*); rather c. in Upper Engadine, Val Fex, &c. (*Nicholson*); Pontresina, vii. 195, v. ab. (*Miss F'n.*); Guarda, vii. 1900 (*Chp.*); Campfer, fairly c. (*Jones*).

Abriès, viii. m. 1900; Larche, vii. c. 1900; Le Lautaret, vii. c. 196 (*Tutt*); Gap (*Kane*); Allos, viii. 292 (*Norris*); Beauvèzer; Colmars (*Powell*); Malmorte, v. ab.; Digne; Faillefeu; Barcelonette (*Kane*); Alpes Maritimes, not c. (*Brm.*); Cogné, viii. 8-12 91; Bobbie and Au Pra, viii. m. 101, ab. (*Tutt*); Certosa di Pesio, from 6000ft., not c. (*Norris*); Kor Alp (*Linn.*).

Directions of Var. (a.) depth of grd. col. ♂, caused by more or less grn. in the bl.

[Obs. - Specimens from the Lauterbrunnen Valley are smaller and bluer than from the Valais. *Cf. Damon.*]

(b.) amount of bl. on up.s. ♀ [tending towards ab. *Cerulescens*, *Obth.*].

(c.) tendency to disappearance of blk. spots of border un.s., culminating in:

ab. Petrividenda, *Var.*: in wh. they are replaced by a wh. band.

Loc. Pierre-à-voir sur Saxon (*Var.*); v. close to this form, Anzeindaz (*Fis.*).

(d.) spots un.s. occasionally lengthened into streaks.

ab. Subtus-radiata, *Obth.*

Loc. Riffel Alp (*Var.*).

P. Orbitulus, *Pruner*: 26mm. F'd. pl't. unknown, the

l. having only been discovered just before pupation; *hyb.* (? ov.) or l.

♂ slate-col., ♀ slaty-brn.

Dist. Char. col. (*cf. Donzlii*), in connection with great breadth of wh. round blk. spots un.s.

Loc. On all the high Alps from 5500ft. to 8000ft., vii.-viii., in more or less numbers; sometimes on moist spots many hundreds may be seen at a time, *e.g.*, Steimental, vii. 11 01 (*H'h.*).

Directions of Var. (a.) size of blk. spots un.s.

ab. Subtus-punctis-fortissimis, *Var.*: in wh. they are v. large.

(b.) tendency to lose blk. centres of eye-spots un.s. h.w.

(c.) tendency to develop conspicuously wh. nervures un.s. f.w.

(d.) tendency to exhibit wh. spots up.s.

ab. Aquilonia, *Lowe*: disc. spot up.s. t.w. deep blk., triangular, on h.w. smaller, rounder and lighter, both surrounded with wh.; ante-margl. row of wh. spots f.w. up.s., marg. brighter than grd. col.; v. faint eyes out. marg. h.w.; un.s. h.w. clear fawn-

col.; the smoky markings at marg. obsolete f. and h.w., only one blk. spot nr. costa f.w.

Loc. Pilatus, vi. 6 01 (*Lowe*); apparently also the same form described by Frey ("Lepidopteren der Schweiz," p. 17), as being found occasionally in the Engadine.

Obs.—Mr. Lowe has another specimen from Pilatus, typical on up.s., but like the above un.s. (*c. (b.) supra.*)

(e.) breadth of dk. border up.s. in ♂.

(f.) spots un.s. occasionally elongated into dashes (*Frey*).

P. Astrarche, *Brystr.* (Medon, *Esp.*; Agestis, *Hb.*); 26mm. F'd. plt. *Helianthemum vulgare*, *Trifolium*, &c.; *hyb. l.*

Brn., ♂ greyer than ♀ u.s.

Dist. Char. col. in connection with size: no basal spot un.s. f.w.; distinguished further from *Alexis* ab. *tearinus* ♀ by entire absence of bl. from base of ws., and from others, *e.g.*, *Eumedon*, *Hygas* ♀, *Escheri* ♀, by the absence of their dist. chars.

Loc. Gen. considered an ab. as well as a widely distributed sp., and found up to an elevation of 7000ft. or more; v.-vi. and viii.-ix. It appears not to be absent from any district, on rough, flowery pastures, wastes, and slopes.

Directions of Var. (a.) tendency of red spots up.s. to disappear, culminating in:

ab. Allous, *Hb.*: in wh. they are absent.

Loc. Principally in the warmer locs. in Switz. in 2nd brood. Also in the Basses Alpes (*Far.*), and the Alpes Maritimes (*Brm.*).

ab. Alpina, *Styr.*: also without red spots up.s., but is smaller and of darker appearance.

(b.) Tint of grd. col. un.s. which in 2nd brood is often brn., esp. in ♀.

var. Calida, *Bellier* (*Estiva*, *Styr.*): in wh. the red spots are also large.

Loc. Chiefly in hot valleys, *e.g.*, Rhone Valley from Martigny to Brig (*Far.*).

P. Pheretes, *Hb.*: 28mm. F'd. plt. (and l.) unknown.

♂ brilliant bl., ♀ brn.

Dist. Char. un.s. h.w. wh. patches in place of all eye-spots.

Loc. Confined to the high Alps, from about 5500ft. to 8000ft.; not on the Jura, but v. widely distributed over the mtns. of Berne, Uri, Unterwalden, Lucerne, Glarus, St. Gall, Appenzell, Vaud, the Valais, and the Grisons, vi. e. vii.-viii. (*Far.*, "Lépidoptères du Valais," speaks of it as somewhat scarce and local); *e.g.*, Pont de Nant, vii. 12 (*Bl.*); Arolla, vii. 11, 12, 1900, not c.; Saas, vi. e. 94;

vii. 5-15 98 (*Blm.*); viii. 9 97 (*R.-Brn.*); Zermatt, vii. 10 99 (*Blm.*); Zinal, viii. 1 98, e. on the Arpitetta path (*R.-Brn.*); on the Simplon Pass, not lower than the 5th Refuge, and not e. vii. e. 98, 99 (*Wh.*); nr. Languard Falls, vi. e., e. (*Nicholson*); Pontresina, Silser See, vii. 95 (*Miss Fru.*); Schafberg, vii. 24 01 (*Fis.*); Fusio, vii. 1900; Guarda, vii. 1900; Bernina Valley, Heuthal, Val Tuoi, all v. ab., vii. 1900; Oberalp, viii. e. 95 (*Chp.*); Mürren, vii. e. 1900, e. (*Wh.*), &c.

Chamonix (*Far.*); Faillefeu, Larche, vii. 1 (*Powell*); Val Bigonima, viii. 11 95 (*Tutt*); Cortina, vii. 20-25, 1900, v. ab.; Brenner, on the Postalp, ♀ s preponderating, vii. 29, 1900; Stelvio, vii. 16, 1900 (*R.-Brn.*); Heiligenblut, vii. 24 97 (*Lamm.*).

Directions of Var. (a.) Brilliancy of col. ♂, depending on presence of lilac tint.

(b.) ♀ bl. disc. spot up.s. f.w.

ab. ♀ Cæruleopunctata, Wh.

Loc. Pierre-à-voir, 1 specimen (*Far.*); Mürren, vii. e., viii. b. 1900, about half (*Wh.*).

(c.) tendency to loss of eye-spots f.w. un.s., culminating in:

ab. Maloyensis, Rühl: in wh. they are absent.

Loc. By no means confined to the Maloja Pass, e.g., Mürren, vii. e. 1900; Simplon Pass, vii. 12 01 (*Wh.*).

P. Baton, Brystr. (Amphion, *Esp.*; Hylas, *Hb.*): 22mm. Fd. plt. *Thymus serpyllum*, *T. vulgaris*, *Coronilla varia*: hyb. p. (? sometimes as l. full-fed).

♂ dull lightish mauve-bl., ♀ dull dk. brn. with bl. of ♂ at bases.

Dist. Char. Col. and size, in connection with sharply-defined chequered fringe (v. *Orion* and *Bellarqus*).

Loc. Widely distributed, but in Switz. gen. isolated, or only a few together; so much is this the case that locs. are not likely to be v. reliable. 2 broods, iv. e. to vi. b., and vii.-viii., rising in the mts., later brood only, to more than 7000ft., e.g., Albula Pass (*Frey*); Riffelalp, vii. 01 (*Lamm.*); Basle (*Knecht*); Lostorf; Soleure; the Bechburg; Aarberg, &c. (*Frey*); Gadmen (*Rätzer*); Vernayaz, iv. 30, v. 26 02; Sierre, vii. m.; Brig, vii. 24 99, e.; Bérisal, viii. 97 (*Wh.*); Simplon, vii. e. 99 (*Tutt*); Arolla, vii. 11, 1900; Saas, vii. 5-16 98; St. Nicholas, vii. 1 99, &c. (*Blm.*); Veyrier, v. 26; Meyrin, vii. 26, &c. (*Bl.*); Pontresina, vii. 1900 (*Chp.*); Locarno (*Fis.*), &c.

Digne, iv. 5 02 (*R.-Brn.*); vii. 91 (*Lamm.*); Castellane, &c., iii., iv. and vii. (*Powell*); Croda da Lago, viii. m. 95; Torre Pellice, viii. b. 01 (*Tutt*); Brenner, vii. 1900, a large form (*R.-Brn.*).

Directions of Var. (a.) size; specimens from Alpes Maritimes, v. much smaller than Swiss.

(b.) un.s. size of blk. spots, esp. f.w.; gen. large.

(c.) considerable darkening of grd. col. ♂, culminating in :

***var. Panoptes**, *Hb.* : in wh. the or. spots un.s. are also obsolete : v. small.

Loc. Cannes ; (Hyères).

[Obs.—Some collectors well acquainted with these parts assure me that genuine *Panoptes* is not found there (unless as an occasional ab.) ; v. small and dk. forms are e., but not without or. un.s. h.w.]

P. Orion, *Pullas* (*Telephii*, *Esp.* ; *Battus*, *Hb.*) : 27mm.

Fd. pl. *Sedum telephium* and *S. album* : *hyb. p.*

♀ with broader border than ♂ up.s. ; *blk.* with bl. on bases : broadly chequered fringe.

Dist. Char. un.s. h.w. continuous or. band.

Loc. N. of the S. Alps only in a v. restricted part of the Rhone Valley (*v. infra*) ; e. S. of the Alps in 2 broods, iv. v. and vi. m. vii. *e.g.*, Locarno, iv. b. /99, v. ab., and vii. (*Chp.*) ; v. : Lugano, iv. 16 /02 ; Val Anzascia, vi., Brusio, vii. e. (*Fis.*), &c.

St. Michel-de-Maurienne, vii. e., just out (*Tutt*) ; Chiavenna, vii. b. 1900 (*R.-Bru.*) ; just above Crevola, vi. 26/96 (*Postans*) ; Orta, v. m. 1900 (*Lowe*) ; Lake Como, viii. /96 (*Miss Ftn.*) Pré St. Didier, viii. b. /98 (*Tutt*) ; Gorge de St. André, Nice, vi. 9/91 (*Brm.*) ; Certosa di Pesio, vii.-viii. /92, e. (*Norris*) ; Botzen, vi. e., worn ; vii. 14/02, presumably 1st and 2nd broods (*Lowe*) ; Mödling, vii. b. 1900 (*Laug*) ; Isonzothal, vi. m. /92, e. on Monte Matajur (*Norris*).

Directions of Var. (a.) size : from 24mm.-34mm. [Specimens of 1st brood from S. side of Alps much the smallest.]

(b.) increase of bl. up.s., culminating in :

var. Ornata, *Stgr.* : wh. has a good deal of bl. on disc. f.w., and a border of bl.-ringed eye-spots, up.s., most conspicuous on h.w.

Loc. S. Alpine Valleys, in 1st brood.

(c.) diminution of bl. on w. bases, culminating in :

var. (and ab.) Nigra, *Gerhard* : in wh. the bl. has almost, often quite, disappeared.

♀ much larger and rather browner than ♂.

Loc. The usual Valaisian form, though the type is occasionally found. Only between Vernayaz and the Ganter, and mostly confined to the neighbourhood of Martigny : Branson, at ft. of vineyards, v. 14, 1900, fresh ; v. 15.02, rather worn (*Wu.*) ; Fully, v. 22 /01, between 8.30 a.m. and 9.30 a.m., v. ab. ; S. of Plan Cérasier, vi. b. /02, 1st brood (*Fis.*) ; Vernayaz, vi. 26/01, 1 only, worn (*Bkm.*) ; Bovernier, Sion, Granges, Sierre, entrance to Visp valley, and between the 2nd Refuge and Ganter Bridge on the Simplon (*Far.*) ; Fusio, vii., 12, 1900 (*Chp.*) ; as ab. San Stefano (*Mayer*) : S. side of the Simplon (*Rüttser*).

Torre Pellice, viii. b. /01 ; Bobbie, viii., m. /01 (*Tutt*).

P. Optilete, *Knoch*; 27mm. Fd. pl. *Vaccinium uliginosum*,
V. myrtillus, *V. oxycoccus*.
 ♂ dk. prp.-bl., ♀ brn.

Dist. Char. un.s. h.w. a conspicuous metallic bl. spot at anal ang., bordered on inn. side by brt. or. crescent.

Loc. Gen. distributed on the higher Alps of Unterwalden, Berne, the Valais, and the Grisons, but seldom c. Moors nr. Einsiedeln, vii.-viii. (*Paul*); the high alps round Martigny, Bovine, vii. 25, Grand St. Bernard, &c.; above the Mayens de Sion; the Gemmi; the Grimsel; the Furka, &c. (*Far.*); Belalp, vii. 11 91. one; between Zermatt and Riffelalp, vii. 10 99 (*Bkm.*); above Zinal, at ft. of Durand Glacier, viii. b. 97 (*R.-Bru.*); Simplon road, above 4th Refuge, vii. e.; above 5th Refuge, viii. b. 98 (*Wh.*); Saas Valley, vii. 85, a few, worn (*Jones*); Mürren, vii. 21, 1900, 1 ♂ (*Wh.*); Göschenen, vii. 96 (*Tutt*); Engelberg (*Kane*); Guarda, vii. 1900 (*Chp.*); wood opposite Pontresina, rather c.; Rosegg and Morteratsch valleys, usually in peaty places (*Nicholson*); Morteratsch glacier, viii. 1 01 (*Fis.*); Campfer, on banks of Inn, a few; more c. 1000ft. higher (*Jones*).

Le Lautaret, vii. 30, viii. 5 96; Pré St. Didier, viii. b. 98; Courmayeur, vii. e. 94 (*Tutt*); S. Tyrol, vii. 95; Wolfsberg, vii. 14 97 (*Lmu.*); Kor Alp, vii. 17 97 (*Chp.*).

[Obs.—The usual Swiss form is smaller than type and larger than *Cyparissus* (? var. *Sibirica*, *Stp.*).]

Directions of Var. (a.) diminution of size, culminating in :

ab. (var.) Cyparissus, *Hb.* about 22mm.

Loc. Occasionally with type, *v.g.*, top of Simplon Pass, viii. b. 98; Mürren, viii. 11, 1900 (*Wh.*).

Chamonix; Larche, Lac de la Madeleine (*Kane*); as var. only in N. latitudes.

(b.) blk. spots un.s. occasionally replaced by long dashes.

ab. Subtus-radiata, *Fac.*

(c.) occasional traces of additional metallic spots un.s. h.w.

Genus, Rusticus, *Hb.* (*Plebeius*, *Kirby*, &c.).

[On the authority of Scudder and Grote, I have suppressed *Plebeius* as a generic name, as not having been so used by *L.*]

Dist. Char. A more or less conspicuous wh. band un.s. h.w. just within the peacock eyes.

R. (Zephyrus, Fricaldski) var. Lycidas, *Trapp*. 33mm.
 Fd. pl. *Astragalus cocarpus*.

♂ lilac-bl., ♀ brn.

Dist. Char. un.s. h.w. straight row of 4 nrly. equal-sized blk. spots across base.

Loc. Extremely local: Simplon Pass, just above 2nd Refuge,

ab., and thence to Ganter Bridge, vi. 25 01 (*Sloper*), vii. m. 98; vii. 8 01 (*Wh.*); same date 02 (*Sheldon*), &c., &c.; from Visp to Stalden, Huteggen, Baltschieder, and Val d'Anniviers, vi.-vii. (*Far.*); St. Nicholas, vii. 18 98 (*Lowr*); vii. 19 98 (*Bkm.*); Follattere, vii. 22 99 (*Wschl.*); Gemmi, 2 ♀ s (*Stauden*).

Stresa, meadows nr. lake, vi. b. 87, a few; x. 99, a ♂ and ♀ smaller, presumably a 2nd brood (*Jones*).

- Directions of Var.** (a.) up.s. h.w. ♂, eye-spots showing or. edges.
 (b.) up.s. h.w. ♀, absence of eye-spots.
 (c.) un.s. h.w. tendency of wh. band to become less distinct.
 (d.) shade of grd. col. un.s.

R. Argus, L. (*Ægon*, *Schiff.*: *Argyrotoxus*, *Brgstr.*); 27mm. Fd. pl. *Trifolium*, *Gnista scoparia*, *Ononis spinosa*, *Colutea arborescens*, &c.: hyb. ov.

[Obs.—The confusion wh. always seems to exist between this and the following sp. has been materially increased by the discovery that the name *Argus, L.*, by which the latter has been universally known, ought to be applied to the sp. generally called *Ægon*. It is greatly to be regretted that the discovery, wh. serves no scientific end, was ever made, or that having been made, the discoverer did not suppress the useless fact. Unfortunately it is but too little realized that nomenclature is only a means to an end, and that that end is the illustration, and, so to speak, the condensation of scientific facts, rather than a reproduction of the confusion of Babel.]

♂ lilac-bl., ♀ brn.

Dist. Char. ♂ rather broad suffused blk. border up.s., ♀ proportionately large eye-spots un.s., esp. f.w., and grd. col. gen. darker than *Argyrognomon* ♀, making the wh. band more conspicuous: some ♀ s are, however, difficult to distinguish.

Obs.—The claw on the front tibia of this sp. requires a fairly strong lens to distinguish it, so does not afford a ready means of identification, though useful as a final resort. It is, however, a mere prolongation of the upper portion of the joint, and absurdly inadequate as a generic distinction.

Loc. V. gen. distributed over the whole region in woods and clearings, on roadsides and riverbanks, alpine slopes and pastures up to the tree-limit: sometimes in endless profusion; v.-vi. and vii.-viii.; in the mtns. vii.-viii. only.

Directions of Var. (a.) increase of size up to 32mm. (in the hotter locs.; the largest I have ever seen come from Sierre, and from the Rhone banks at Bouveret).

(b.) diminution of size, culminating in:

var. Alpina, Berce: not exceeding 23mm., sometimes less; ♂ with rather darker grd. col.

Loc. The usual form in the higher mtns., *etq.*, Bérisal, vii.-viii. 98, and vii. b. 02, extremely ab. (*Wh.*)

(c.) tendency to obsolescence of metallic spots un.s. h.w.

(d.) tendency towards disappearance of wh. band un.s. h.w. in ♂.

(e.) un.s. shade of grd. col.

(f.) ♀, amount of or. up.s.

(g.) tendency to develop margl. row of blk. spots up.s. h.w. ♂.

(var.) **ab. Bella**, *H.-S.*: with lighter un.s. (a transitional form is ab. in the Rhone Valley).

R. Argyrognomon,† *Bergstr.* (*Argus, auctorum*); 27mm. to 35mm. Ed. pl. *Cicuta, Melilotus, Lotus, Trifolium, Colutea*, &c.: *hyb. p.*

♂ lilac-bl., ♀ brn. with bl. suffusion over a large portion of ws.

Dist. Char. ♂ narrow well-defined blk. border up.s., ♀ proportionately small eye-spots un.s.

Loc. More local than the preceding, but still widely distributed, often c., sometimes ab., v.-vi. and vii.-viii.; in mtns., only vii.-viii. Basle: Liestal (*Christ*); the Jura: St. Gall (*Tüscher*); Gadenenthal (*Rützer*); Engelberg (*Baker*); Coire, scarce (*Aplisch*); Pontresina, vii., 84 (*Linn.*); c. throughout the Valais, esp. on the banks of the Rhone; and in the high valleys, *e.g.*, in immense numbers at the Ganter bridge, vii., 98, &c. (*Wh.*).

Gen. distributed through the rest of the region.

Directions of Var. (a.) size: largest gen. in hotter locs., Sierre, Branson, and larger still from Mendrisio, viii., 1502 (*Fis.*). ♂s of 27mm.-28mm. are usual where ♀ *Brunnea* is found. The smallest constitute:

var. Ægidion, *Meissner*: 22mm.-25mm. ♂ with rather darker grd. col. up. and un.s., ♀ gen. with some bl. up.s.

Loc. Gen. the mtn. form, but not to the exclusion of others, exc. the large ♂ and type ♀, nor is *Ægidion* confined (exc. as var.) to the mtns.; *e.g.*, Branson, with type not uncommonly. At Bérisal, vii.-viii., it occurs in immense profusion, in about equal numbers with ♀ *Brunnea* and the ♂ of 27mm. (*Wh.*); so also on the Weissenstein (*Frey*). In the upper Engadine it replaces the type (*Frey*), so also at Thusis, viii., 95 (*Miss Ftu.*).

(b.) ♀, bl. extending over whole ws. exc. border.

ab. ♀ Argulus, *Frey*: of small size, av. 27mm.

† Note.—*Staudinger's* use of this name (Cat., 1901, p. 78), with the brn. ♀ as the type, is indefensible. As Dr. Spuler (*Die Schmetterlinge Europas*, 1902, p. 61) has pointed out, *Bergsträsser's* sp. is figured with the bl. ♀, and as this is quite a c. form (I should say the commonest), it is perfectly permissible to regard it as the type. (The case of *Alcis* is quite different.) Dr. Spuler suggests the name ab. ♀ *Brunnea* for the brn. ♀. The only objection is that the brn. ♀ is gen. associated with a smaller and slightly darker ♂, but as this is not invariably the case, I have, after much consideration, decided to adopt the suggestion, rather than the only alternative of adding to the already existing confusion by re-naming this sp. In my own judgment it would be immeasurably better to retain the traditional use of the names *Argus* and *Egon*; it is probable that Linnæus regarded both as one sp.

Loc. Scarce: Branson; Sierre; Pfyn, vii. 15 01 (*Wh.*); on the road to Alpien above the Simplon Pass, S. side (*Rötzer*).

ab. ♀ Unicolor, Fav. A form of *Argulus* without ante-margl. blk. spots or or. edging up.s.

Loc. Gamsen; Martigny; Fully (*Wschl.*).

(c.) absence of bl. in ♀.

ab. (& var.) Brunnea, Spuler. This having been hitherto regarded as the type, there is some confusion as to locs. It is, however, the usual form on the Rhone banks between Bouveret and Martigny where it is replaced by the bl. form, and also in the mtns., though not exclusively, until replaced by *Egilion*.

(d.) un.s. h.w. tendency of wh. band to become less conspicuous.

(e.) depth of grd. col. un.s.

(f.) extent of or. up.s. ♀, varying from a little on h.w. to border f. and h.w.

Genus, *Everes*, *Hb.*

E. Argiades, Pallas (*Tiresias, Rott.*; *Amyntas, Hb.*): 29mm. Fd. pl. *Trifolium, Medicago, Lotus corniculatus*, &c.: *hyb. l.*

♂ lilac-bl., ♀ brn. tinged with bl.

Dist. Char. h.w. a tiny projection or "tail" nr. anal ang. (much shorter than in *Lampides*).

Loc. V. local in Switz.: Liestal; Zürich (*Kaw.*); locally through the lowlands (*Frey*); Lucerne, viii. ab., Cassarate, viii. 14 02, ab. (*Fis.*); Pinchat, viii.; Veyrier, vii. 13, viii. 1; Versoix, viii. 29; Onex, ix. 2 (*Bl.*).

Much commoner in the S., e.g., Grécy-sur-Aix, vii. 25 96; viii. m. 1900, ab.: Chavoire, vii. c. 02 (*Tutt*); Digne, Eaux Thermales valley, vi. 7 99 (*H.-Brn.*); Alpes Maritimes, c. in meadows (*Brn.*); Certosa di Pesio, a few ♀s below Chiusa, ♂s in a large clover field about a mile away, viii. 18 92 (*Norris*); Susa, viii. m. 97; Courmayeur, viii. b. 94 (*Tutt*); Olgiate, viii. 95; Sondrio, viii. 96 (*Miss Ftu.*); Lago di Loppio, vii. 31, 1900 (*Jones*); Wolfsberg, vii. 17 97 (*Lamm.*).

Directions of Var. (a.) diminution of size, culminating in:

ab. Polysperchon, Brugstr.: not more than 20mm.

Loc. With type or with var. *Coretas*; usually considered an ab. of 1st brood, but I have taken it in the Pfynwald, vii. 21 99, and at Branson, vii. 19, 1900, as well as vi. 1 02 in the latter loc.

(b.) loss of or. spots un.s. h.w. constituting:

var. Coretas, Obs. ♀ entirely brn. up.s.

Loc. The only form (exc. ab. *Polysperchon*) that I have ever found in the Rhone Valley: the ♀ seems v. scarce. Pfynwald vii. 21 99; Martigny, vii. 22 99; both sides of Rhone bridge at Branson, on right bank of Rhone, v. 20 01, and vii. 19, 1900 (*Wh.*).

As ab., Digne, vi. 7 99 (*B.-Bru.*); vi. b. 90, c. but worn, *all* of this form (*Jones*); Alpes Maritimes, c. in meadows (*Bru.*); Mendel, vii. 95 (*Linn.*).

Obs. -This sp. requires even more than ordinary care, being v. fragile.]

Genus, *Cyaniris*, *Dalm.*

C. *Argiulus*, *L.* (*Acis*, *Fabr.*; *Cleobis*, *Sulzer*): 32mm.

Fd. pl. *Rhamnus frangula* (*Frey*), ivy and holly; *hyb. p.*

Bl. with slight lilac tinge, ♂ with v. narrow, ♀ with v. broad blk. marg. up.s.; broadest in both sexes at apex f.w.

Dist. Char. Pale milky-bl. grd. col. un.s., with small blk. dashes.

Loc. Widely spread, but in Switz. local and seldom c., often with v. restricted flight. I have only seen it in any numbers at Veytaux, in the vineyards, v. and ix. 97; between Bouveret station and the Rhone, same dates, and under the cliffs opposite Vernayaz, v. 26 02. Weissenburg, v.e., v. c. (*Hg.*); nr. Sion, v.e., v.c. (*Trapp, Fav.*); Lugano, c. (*Jones*). Other places and dates are: Göschenen (*R.-S.*); Weissenstein, nr. Solcure (*Jaggi*); Veyrier, iv. 29; Sierne, v. 12; Arzier, vii. 18 (*Bl.*); Veytaux, iv. 5 99; Vernayaz, iv. 22 02; ix. 8 02; Lavey, v. 29 02 (*Wh.*); Sépey, vii. 01 (*Linn.*); Chiasso (*Mayer*); Faido, vi. 6 02 (*Chp.*); Sertigthal, and Val Bregaglia (*Killias*).

Digne, iv. e. 97 (*Tutt*); vi. 90, vii. 91 (*Linn.*); Alpes Maritimes, e.g., Vallon Obscur, c.; St. Martin Vésubie, scarce (*Bru.*); the Esterel, iv. b. 03, c.; Auribeau, iv. b. 03 (*Tutt*); Monnetier, vi. 4; le Coin, iv. 23, v. 11; Mt. de Sion, vii. 29; Bossey, v. 28 (*Bl.*); Wolfsberg, vii. 19 97 (*Linn.*).

Directions of Var. (a.) size: 25mm. to 35mm.

(b.) decrease in size of spots un.s., culminating in:

ab. **Parvipuncta**, *Fuchs*: a form of the summer brood with few and small spots.

Genus, *Lampides*, *Illb.*

Dist. Char. un.s. streaked with brn. and wh.; h.w. with slender "tail."

L. *Bœticus*, *L.*: 33mm. Fd. pl. pods of *Colutea* and other *Leguminosae*; *hyb. ov.*

♂ prp.-bl., ♀ dk. brn. with brt. bl. on disc.

Dist. Char. un.s. fawn-col. and wh.

Loc. In Switz. only isolated specimens exc. in the Rhone valley, e.g., Basle (*Dickmann*); Hottingen, viii. 13 and x. 6 79 (*Sahl*); Lausanne (*Labarpe*). Not v. uncommon below Follatterre (on *Colutea*), viii. 18-21 93 (*Fav.*); viii. 21 99, ab., but mostly rather worn; viii. 27 01, 1 ♀, worn (*Wh.*); also St. Triphon, x. 3 98

(*Fis.*); Sierre, viii. 19, 99, worn, and viii. 31, 99, in good condition (*Wh.*); Aigle (*Tasker*); Geneva, vii. (*Bl.*).

Grésey-sur-Aix, viii. 22, 1900 (*Tutt*); Stresa, x. 13/99, c. (*Jones*); above Beaulieu, v. worn, x. 9/02 (*L.-Brn.*); St. Maurice, Cannes, scarce (*Brn.*); San Dalmazzo di Tenda, ix. 92; Bordighera, v. 92, fairly c. (*Norris*); Susa, viii. m. 97 (*Tuti*).

[Obs.—*Staudinger* is mistaken in speaking of *Boticus* in the Valais as "advena": it is to be found in the same spots every year, and in all stages. I have taken both l. and p.]

L. Telicanus, *Lang*: 26mm. Fd. pl. *Lythrum salicaria*, heather, &c.: hyb. ov.

Brn: ♂ glazed with lilac. ♀ brt. lilac at base (spots of un.s. show through).

Dist. Char. un.s. mouse-brn. and whitish.

Loc. V. scarce in Switz.: opposite la Croix, Martigny, nr. the Dranse, x. (*Wschl.*); also larvæ; Trois Torrents, vii. 94; also Cassarate, viii. 14, 02 (*Fis.*); every year in gardens in and round Geneva, e.g., Geneva, viii. 30; Hermance, vii., Pinchat, vii. (*Bl.*).

Digne, vii. 91 (*Linn.*); Nice; Vallon Obscur; Val des Fleurs; Valley of Mantegna; St. Martin Vésubie, a few, ii. to x. (*Brn.*); Castellane, vii. 17, 91 (*Nicholson*); Certosa di Pesio, vii. 18, 92; c. later round the Beinette springs; San Dalmazzo di Tenda, ix. 92, v.c. on flowers of *Aster amellus*; Bordighera, c. throughout x. (*Norris*).

Tribe THECLIDÆ.

Genus, Callophrys, *Billberg*.

C. Rubi, *L.*: 28mm. Fd. pl. Sp. of *Rubus*, *Genista*, *Vaccinium*, &c.; hyb. p.

♂ with, ♀ without a scaleless-looking oval patch nr. costa, up.s. f.w.

Dist. Char. Grn. un.s.

Loc. V. gen. distributed and mostly ab., even at 7000ft., e.g., c. at top of Rochers de Naye: iii.-v., in the lowlands, vi.-vii. in the mtns. My earliest date is Veytaux, iii. 17, 99. In Switz. it appears not to be double-brooded.

Directions of Var. (a.) tendency to disappearance of wh. line un.s., culminating in:

ab. Immaculata, *Fuchs*: wh. is entirely without it.

Loc. Occurs occasionally with type, e.g., Vacallo (*Mayer*); Rochers de Naye, vi. 4, 01 (*Wh.*).

[Obs.—An ab. with the bare patches up.s. f.w. ochreous was taken at Veyrier by Prof. Blachier, who has another (from Morocco), in which they are dk. brn.]

Genus, Læosotis, *Rimbr.* (*Aurotis*, *Dalm.*).

L. Roboris, *Esq.* (*Evippus*, *Hb.*) : 36mm. Fd. plt. oak.

♂ with prp. reflections over greater part of f.w. and half h.w.,
♀ only along inn. marg. f.w.

Dist. Char. Border of metallic-lilac-edged peacock eyes on brn.-gr. un.s.

Loc. Digne, vi. e. and vii. b. 99, v. local and not c. (*Miss Ftu.*); at Villard it reaches more than 3000ft.; Annot; Entrevaux, vi. 30 01 (*Powell*); St. Martin Vésubie on high road to Nice, 2 miles from village in oak copse off road (*Brm.*); vii. 701, v. ab.. ♂ s until vii. m., after which ♀ s became more ab. (*Lang*).

Directions of Var. (a.) number of prp. spots up.s. h.w. (♂ 2 or 3, ♀ up to 6).

Genus, *Zephyrus*, *Dalm.*

Z. Quercus, *L.* : 34mm. Fd. plt. oak (and ash);
hyb. ov.

♂ with prp. reflections over all ws., ♀ with deep metallic bl. on base and inn. marg. f.w.

Dist. Char. Pale gr. un.s. with whitish line and 1 or. eye-spot h.w.

Loc. Distributed over the region wherever the oak is found, and not rising higher than its fd. plt. grows; vii. to viii. m.

Directions of Var. (a.) size : occasionally as small as 29mm.
(b.) a yell. spot at end of disc. cell up.s. f.w.,
constituting :

ab. Bella, *Gerhard* : a v. rare ab.

(c.) depth of markings un.s.

Z. Betulæ, *L.* : 36mm. Fd. plt. sloe and plum; hyb. ov.
♂ without, ♀ with brt. or. band up.s. f.w.

Dist. Char. un.s. h.w. two wh. lines, the inn. extending only half across the w.

Loc. Spread over the whole region in the lowlands, rarely mounting to any considerable height, but c. at Tarasp, 1000ft. (*Killias*), and on Monte Generoso, 5000ft. (*Jenner*), viii.-ix.

Directions of Var. (a.) ♂ occasionally with 1 large and 2 small yell. patches up.s. f.w., known as :

ab. Spinosæ, *Gerhard*.

Obs.—A v. rare form in which the patches are wh. is named :

ab. Pallida, *Tutt*.

(b.) ♀ with yell. band, &c., instead of or.

ab. ♀ Fisonii, *Wh.* : specimens of wh. have been taken at Charpigny (*Fis.*).

Genus, *Thecla*, *Fabr.*

Prevailing col. dk. brn.; hyb. ov.

Dist. Char. un.s. wh. line on dk. (in *Acacia* darkish) brn. grd. col.

[Obs.—This genus, even more than the other *Theclidi*, is v. difficult to take in good condition and is v. easily spoilt in setting.]

T. *W-album*, *Knoch* : 30mm. Fd. plt. elm (and lime).

♂ with, ♀ without small oval smooth patch nr. centre of costa up.s. f.w.

Dist. Char. un.s. h.w., wh. line makes a clearly defined W nr. anal ang.

Loc. Local, and only at low elevations, but not rare where elms are found; vii.-viii. b.; e. at Berne, in the lime avenues; Burgdorf (*M.-D.*); Basle (*R.-S.*); Liestal (*Christ*); Marly, nr. Fribourg; Neuveville (*Coulera*); Uetliberg (*Hg.*); Zürich (*Zll.-Dolder*); at Weissenburg the commonest *Thecla* (*Hg.*); on the E. slope of Pilatus, viii. b. 01 (*Keynes*); on both roads from Aigle to Sépey, settling with other *Theclas* on *Sambucus ebulus*, vii. 22, fresh, 29, worn, 97; vii. 18, 1900, and viii. b. 01 (*Wh.*); beyond Sépey, vii. 30 01 (*Linn.*); Leysin (unusually high), vii. 24 (*Bl.*); Sion (*Far.*); Sierre, vii. b. 97 (*Postans*); Geneva, vii., Bois de Veyrier, vii.; also on the Jura at St. Cergues (*Bl.*).

Cannes, Nice, not c. (*Brm.*); Certosa di Pesio, not uncommon in Val Pari, Val Sestrera, and Val Cavallo, vii. 24, viii. 6 92 (*Norris*).

Directions of Var. (a.) size, esp. in ♀.

(b.) depth of grd. col. (often, however, depending on freshness).

(c.) tendency to narrowing of wh. line, culminating in :

ab. Butlerowi, *Kroulikofski* : in wh. it is so interrupted as not to form a W.

Loc. With type, e.g., Sépey road, vii. 22 01 (*Wh.*).

(d.) with broad wh. line un.s. (at Nice, Cannes, &c., *Brm.*).

T. *Ilicis*, *Esop.* (*Linceus*, *Fabr.*); 33mm. Fd. plt. oak, elm, &c.

♂ (type) without, ♀ with or.-brn. patch on out. half f.w.

Dist. Char. un.s. h.w. thin broken wh. line, and entire absence of bl.

Loc. 2 broods, at any rate in some years. Onex, vi. 21; Veyrier, vi. 24; Bois de Bay, vi. 24; Meyrin, vii. 26 (*Bl.*); e. in Vaud (*M.-D.*); e.g. Glion, vii. 01 (*Linn.*); Sépey road, vi. e. vii., ab. (*Wh.*); all round Martigny, Saillon, Sion, Sierre, and mounting over 4000ft at Evolena (*Far.*); Brig, ix. b. 98 (*Wh.*); Basle (*Knecht*); Liestal (*Christ*); on the Jura; scarce at St. Gall and Zürich (*Täschler*); Coltura (*Baczigher*).

Grésy-sur-Aix, vii. e. 98; nr. Chavoire, vii. e. 02 (*Tutt*); Digne, vi. 4, &c., 99 (*R.-Brn.*); Certosa di Pesio, vi.-vii. 92, on flowers of wh. *Sedum* (*Norris*); Botzen, vi. e. 01 (*Lowc*); Mendel Pass, viii. b. 95 (*Tutt*).

Directions of Var. (a.) size: from 31mm. to 35mm.

(b.) enlargement of or. patch, culminating in:

ab. (& var.) Cerri, *Hb.*: gen. larger, ♂ with small, ♀ with v. large or.-brn. patch.

Loc. Aigle, vii. 97, and 101; Sierre, vi. m. and e. 99 (*Wh.*); Utznach, vii. 5 01 (*Fis.*).

Digne, vi. 4, &c., 99 (*R.-Brn.*); Alpes Maritimes, to the exclusion of type (*Brn.*); Botzen, vi. e. 01 (*Lowc.*).

(c.) tendency to lose the wh. line un.s., culminating in:

ab. Æsculi, *Hb.*: in wh. it is wholly wanting on f.w. and occasionally on h.w. also.

Loc. Aigle (*Wh.*); Pfywald, vii. 9 98 (*Blm.*).

Digne (*R.-Brn.*); Nice, &c. (*Brn.*); Certosa di Pesio, vi.-vii. 92 (*Norris*); Susa, vi. 18 02 (*Lowc*); Botzen (*Kanc*).

T. Spini, *Schiff.* (*Lynceus*, *Esp.*); ♂ 30mm., ♀ 32mm.

Fd. pl. *Prunus spinosa*, hawthorn, buckthorn.

♂ with, ♀ without small, oval, bare-looking spot nr. costa, up.s. f.w.

Dist. Char. large bl. spot anal ang. un.s. h.w.

Loc. Widely spread throughout the region, chiefly at lower elevations, but mounting up to 1000ft. or more: (vi.) vii. to viii. m. Basle, Liestal (*Christ*); Zürich; Weissenburg, not c. (*Hgt.*); Schaffhausen (*Trapp*); c. on the Jura, e.g., Vallorbe, viii. 10, &c., 02 (*Wh.*); c. in Vaud and Valais, e.g., Sépey road, vii. 97, and 01; ab. (*Wh.*); Martigny, Sierre, Varen, Brig, &c. (*Far.*); Leuk, vii. 23 99 (*Wh.*); Stalden, vii. 5 94 (*Blm.*); Zermatt (*Püngeler*); the Grisons, e.g., Alvenen, vii. 85 (*Lmn.*); Tarasp (*Kanc*); also nr. Geneva, Veyrier, vii. 13 (*Bl.*); Brünnen, viii. 96; Monte Salvatore, vii. 96 (*Tutt*).

Grésy-sur-Aix, vii. e. 98 (*Tutt*); Monnetier, vii. 27, &c. (*Bl.*); Chavoire, vii. e. 02, worn; Bourg St. Maurice, vii. e. 98; Abriès, viii. m. 1900; Larche to Barcelonette, viii. b. 1900 (*Tutt*); Digne, vi. 4 99, v. c. (*R.-Brn.*); vii. 91 (*Lmn.*); St. Martin Vesubie; Valley of the Madone; Bahne de la Fréma, 7500ft. (!) (*Brm.*); Conrmayeur, viii. m. 98; Pré St. Didier, viii. m. 98; Cogne, viii. 7-12 94 (*Tutt*); Certosa di Pesio (*Norris*); Lake Como, vi. 95 (*Miss Ftn.*); Bormio, the New Baths, vii. 11, 1900 (*R.-Brn.*); Cortina, fairly c. and fine, vii. m. 1900 (*Jones*); Falzarego Pass, viii. 6 95 (*Tutt*); Mendel, vii. 95; St. Paul, Carinthia, vii. 17 97; Wolfsberg, vii. 97 (*Lmn.*); Mödling, vii. 97 (*Miss Ftn.*).

Directions of Var. (a.) number of or. spots anal ang. up.s. h.w.

(b.) ♀, large or. spots up.s. f.w., constituting:

ab. ♀ Lynceus, Hb. : which on un.s. has the or. diminished, and the bl. spot v. large.

Loc. Digne, vi. 4/99, &c. (*H.-Brn.*); St. Martin Vésubie, rare (*Brn.*); Certosa di Pesio, c. in 2nd brood, vii. e. 92 (*Norris*); Botzen, vi. e. 01 (*Low*).

(c.) broader wh. line un.s.

Loc. S. of Alpes Maritimes (*Brn.*).

T. Pruni, L. : 32mm. Fd. plt. blackthorn, oak, &c.

♂ with, ♀ without indistinct oval patch nr. costa, up.s. f.w.

Dist. Char. un.s. streak silvery-bl. instead of wh.

Loc. Scarce and local; vi. m. to viii. b.: Basle; Liestal (*Christ*); on the Aargau Jura (*Wschl.*); St. Blaise; Neuveville (*Conlern*); Aarberg; Schüpfen (*Rothw. bach*); Lausanne; Orbe (*Laharpe*); not rare at Schaffhausen (*Trapp*); Zürich, vii. /95 (*Lmn.*); Weissenburg, New Baths, scarce (*Hg.*); Coire (*Killias*); Chouilly, vii.; Meyrin, vii. (*Bl.*); Aigle, vii. b. /97 (*Wh.*); St. Triphon (*Fis.*); Martigny; Sierre; Noës; Corin (*Far.*).

Mendel, vii. /95 (*Lmn.*).

Directions of Var. (a.) number of or. spots up.s. [♂ has gen. 2 or 3 on h.w., none on f.w.; ♀ 3 to 5 on h.w., 2 or 3 on f.w.]

T. Acaciæ, Fabr. : 28mm. Fd. plt. *Prunus spinosa* (gen. the smallest and worst bushes).

♂ without, ♀ with small or.-brn. patch up.s. f.w.

Dist. Char. un.s. lighter grd. col. than other sp.; wh. line in ♂ gen. forming no ang. at anal ang. of wing. (The bare patch in ♂ is also nearer to base; ♀ distinguished from *Hicis* ♀ by much lighter grd. col. up.s. as well as un.)

Loc. Local, and scarce even where it occurs; vii. Lake of Biemme, Macolin, and Twannberg, in the vineyards (*Rothw. bach*); nr. Oftringen and Aarberg (*Wschl.*); Basle (*Kuecht*); Liestal (*Christ*); Tramelan (*Cinédât*); Charpigny (*Fis.*); nr. Sierre, *c.g.*, Corin, Noës, Niouc (*Far.*); Veyrier, vi.-vii. 5 (*Bl.*).

Digne, vi. e. 99 (*Miss Ftu.*); nr. Condamine, vi. 24; Barcelonette, vii. 1/92 (*Norris*); Alpes Maritimes, scarce (*Brn.*); St. Martin Vésubie, vii. 17/02 (*Powell*); Susa, vi. 27, 1900 (*H.-Brn.*).

Directions of Var. (a.) number of or. spots up.s. h.w.

Fam. LEMONIIDÆ.

Sub.-Fam. NEMEOBIINÆ.

Genus, *Nemeobius*, *Stph.*

N. Lucina, L. : 28mm. Fd. plt. primrose, also various sp. of *Rumex*.

♂ with 6, ♀ with 4 walking legs. [The lt. markings in the

♀ are gen. so much more conspicuous than those of the ♂, that the latter gen. appears to be dk. brn. with or.-brn. macular bands, the former or.-brn. with v. dk. brn. markings.

Dist. Char. un.s. h.w. 2 bands of wh. spots, the basal one broken below the centre.

Loc. Throughout the whole district from Digne to Wolfsberg, and from Basle to the Alpes Maritimes, but becoming scarce in the latter loc., and not rising much above 3000ft., iv.-vi.

[Obs. It must occasionally be partially double-brooded, as Dr. Christ took it at Lecco, viii. /79; Mr. Tutt at Grésy-sur-Aix, vii. e. /97; and Miss Fountaine at Olgiate, ix. /93.]

Directions of Var. (a.) extent of dk. col., esp. h.w., in ♂, in which it sometimes almost obliterates the tawny markings; the blk. dots nr. out. marg. sometimes unite into a band.

(b.) suppression of margl. row of blk. dots in ♀, culminating in:

ab. Obsoleta, *Tutt*: in which they are all absent f. and h.w.

Division. PAPILIONIDA.

Fam. PAPILIONIDÆ.

Tribe PAPILIONIDI.

Genus, Papilio, *L.*: *hyb. p.*

Prevailing col. yell. and blk.

Dist. Char. a long "tail" nr. anal. ang. h.w.

P. Podalirius, *L.* (*Sinon. Podu*): 75mm. Fd. pl. sloe, plum, and other fruit trees.

♀ gen. larger than ♂.

Dist. Char. up.s. f.w. 2 black transverse streaks entirely crossing cl. portion.

Loc. Gen. distributed over the whole region in 2 broods, v.-vi. and vii.-viii.; exceptionally both earlier and later, found up to about 4000ft. At Digne, 1st brood, iv. 6/02; 2nd brood, vi. 4/99; one at Col di Tenda, x. 7/02, v. worn (*R.-Bru.*).

Directions of Var. (a.) size: exceptionally from 56mm. to 78mm.

(b.) tendency to whitening of grd. col., culminating in:

ab. Feisthamelii, *Dup.*, with ante-margl. band f.w. and margl. lunules h.w. or. (but much less so in Swiss than in Spanish specimens).

Loc. Martigny, Fully, both broods (*Far.*); Sierre, viii. e. 99 (*Wh.*); between Inden and Raron (*M.-D.*).

ab. Zanclæus, *Zll.*, pale like last, but with abdomen wh. on up.s. instead of blk.

Loc. Martigny to Raron (*Far.*), 2nd brood only. A transitional form with body not quite wh. is not uncommon in the same district, e.g., Pfyn, vii. 21 99 (*Wh.*). Gen. ♀.

Crevola (*Far.*); and doubtless other S. valleys of W. Alps; Alpes Maritimes (*Brm.*).

(c.) up.s. h.w. the long blk. streak divided by brt. or. line, constituting:

ab. Ornata, *Wh.*; wh. is v. e. in Rhone Valley.

(d.) an extra blk. streak up.s. f.w. on basal side of longest streak.

ab. Undecimlineata, *Eimer.*

***P. Alexanor**, *Esp.*: 64mm. to 76mm. Fd., plt. *Sesile montanum*, and other *Umbellifera*.

♀ gen. larger than ♂.

Dist. Char. up.s. f.w. *one* blk. streak entirely crossing cl. portion.

Loc. [*Lang* (Butterflies of Europe) gives Switz., but I can find no locality, nor hear of any capture.]

Digne, vi. 13, and e. vi. e. and vii., fond of settling on thistles (*Jones*); above Eaux Thermales (Digne), vi. 18, &c. 99 (*R.-Brm.*); St. Martin Vésubie, on the road to Venanson; Valley of Madone; and less e. to La Bollène (*Brm.*); Castellane, vii. 17 91 (*Nicholson*); Beauvèzer, Annot, vii. 1-13 (*Powell*); between Allos and St. André, vi. e. 92 (*Norris*).

V. constant exc. in size (*v. suprà*).

P. Machaon, *L.*: 75mm. Fd. plt. wild carrot and other *Umbellifera*.

♀ gen. larger than ♂.

Dist. Char. up.s. f.w. broad blk. base, thickly sprinkled with yell.

Loc. Gen distributed and often ab. up to 5000ft., less ab. above, but found occasionally much higher: iv.-vi., and vii.-viii., e.g., Lugano, iv. 12 96 (*R.-Brm.*); Bex, iv. e. 97 (*Wh.*); summit of la Palette, 7130ft., viii. 98 (*Jones*); Stelvio, 7680ft., vii. m. 1900 (*R.-Brm.*); top of Chamossaire, 6940ft., vii. 02 (*Moss*).

Directions of Var. (a.) size: 58mm. to 88mm.; spring brood gen. much the smaller.

(b.) increase in depth of colouring, culminating in:

ab. Burdigalensis, *Trimoulet* (*Aurantiaea*, *Spr.*); in wh. grd. col. approaches or., and anal spot is much less red.

Loc. Valaisian Alps (*Far.*); nr. Gimelwald, viii. 1, 1900; Aigle, viii. 21 1900 (*Wh.*); Charpigny; the Jura (*Fis.*); Botzen (*Kane*). &c.

(c.) diminution of colouring:

ab. Flava, *Tutt*: grd. col. pale primrose.

ab. Pallida, *Tutt*: grd. col. almost wh.

Obs. Both these abs. are conspicuously wanting in dk. markings un.s.

(d.) increased heaviness of blk. markings.

ab. Sphyrus, *Hb.* (Saharae, *Obth.*: *Estiva*, *Eimer*); up.s. blk. markings broader, un.s. more rust-col. spots, and larger bl. ones; "tails" shorter, size small.

Loc. Arpilles, Jeur-Brûlée, vii. (*Wschl.*); &c.

ab. Nigrofasciata, *Rothke*; with broad blk. border almost covering the bl.

Loc. With type, but v. rare; and as it has been obtained by freezing pupa, only to be expected in the highest haunts of the sp.: Zermatt (*Aq.*).

(e.) or.-red spots in yell. lunules of border
up.s. h.w., esp. nr. costa, constituting:

ab. Rufopunctata, *Wh.*

Tribe THAÏDI.

Genus, Thaïs, *Fabr.*: Fd. pl. *Aristolochia*: *hyb. p.*

Prevailing col. yell. and blk. with red spots.

Dist. Char. conspicuous dog-toothing, out. marg. up.s. esp. h.w.

T. Polyxena, *Schiff.* (*Hypermnestra*, *Scopoli*: *Hypsipele*, *Fabr.*: *Rumina*, *Esp.*); 60mm.

♀ larger than ♂.

Dist. Char. not more than 1 red spot up.s. f.w.

Loc. Formerly in Tessin (*F'ssl.*). It may be found again, just as *L. Boeticus* was; esp. as it was taken in some numbers by *Trapp*, in the vineyards at Orta, vi. 19-57. Like all the genus it flies v. early in the day, and is seldom seen after 2 p.m.

Directions of Var. (a.) darker colouring.

var. Cassandra, *Hb.* (*Demmosia*, *Ferr.*: *Crensa*, *Meigen*); also smaller, 50mm.

Loc. Digne and Châteaufort; Savoie (*Kane*); Vence; Cagnes; nr. mouth of Loup; Cannes; on marshy grd., and flies only a short time (*Brm.*); Mouth of the Roja, iv. 92 (*Norris*).

Obs.—Mr. A. H. Jones remarks that the emergence of this sp. depends greatly on the season: it was fairly c. at Hyères, v. b. 88, but entirely over and the larvae full fed by v. 6-94.

(b.) red spots replaced by yell. lighter than
grd. col.

ab. Meta, *Meigen* (*Rumina alba*, *Esp.*: *Rufescens*, *Obth.*: *Flavomaculata*, *Schilbe*).

(c.) absence of red spot imm. marg. up.s. f.w.

* **T. (Rumina. L.) var. Medesicaste**, *Hilger* (*Rumina. Hb.*: *Rumina australis*, *Esp.*); 48mm.

♀ larger than ♂.

Dist. Char. 3 red spots nr. costa up.s. f.w.

Loc. L'Estérel, iv.-v. (*Powell*); Grasse (*Kane*); [at Hyères as early as iii. 18.02 (*Sloper*), as late as v. b. 90 (*Jones*).]

Digne, iv. 7.02 (*R.-Bru.*); v. (*Sloper*); vi. 7.99 (*R.-Bru.*); esp. dry hill-side behind cemetery. [Mr. A. H. Jones found both the butterfly and the larva in all stages, vi. b. 90, the young l. on the un.s. of the leaves and in the tubes of the flowers of *Aristolochia pistolochia*, the full-fed l. concealed at the roots.]

Directions of Var. (a.) presence or absence of red spot nr. inn. marg. up.s. f.w.

(b.) increase of red on h.w.

***ab. Honoratii**, *Bsdr.*: in wh. the disc of h.w. up.s. is more or less covered with red.

Loc. So far, from Digne only, in varying numbers, e.g., 16 taken in '95, only 1 in '96 (*Tutt*).

Tribe PARNASSIDI.

Genus, *Parnassius*, *Latr.*

Prevailing col. wh. with blk. (and gen. red) spots.

Dist. Char. f.w. with transparent out. marg.

[Obs.—The ♀, after pairing, possesses a remarkable abdominal sac, the use of wh. is as yet unknown.]

P. Apollo, *L.*: 75mm. **Ed. pl.** *Sedum telephium* and *S. album*, rarely *Saxifraga aizoides*.

♂ with v. hairy. ♀ with nearly smooth abdomen (sac dk. brn. small and horny).

Dist. Char. grd. col. *milky* wh.; antennæ not annulated; gen. red spots h.w. only.

Loc. Scarce in the N. plains of Switz., but ab. in the Rhone Valley, and gen. on the lower slopes and in sunny gullies throughout the region; gen. less c. above 5000ft., but rises to 8500ft. at the Schwarzsee above Zermatt, and is c. at 7000ft. on the Simplon, and still higher on the Albula. It sometimes emerges as early as iv. c. (*Far.*), and lasts till ix. m. (*Hg.*), often in good condition, though there is only one brood. Its most usual time for emergence is vi. and vii.

Directions of Var. (a.) size: average specimens from the Jura are said by *Far.* and *M.-D.* to be larger than those from the Alps, but are certainly not larger than those from the neighbourhood of the Rhone Valley. Specially fine above Susa, vi. 24.99 (*R.-Bru.*); large at Abriès, vii. m. 1900 (*Tutt*); v. small and approaching *Delius* in the Torre Pellice valley, viii. .01 (*Tutt*). The largest alpine specimens look small compared with some of the Spanish examples from the Albarracin district (*Chp.*).

(b.) size of spots, culminating on the one hand in:

ab. (& var.) Carpathica, *Rebel*: with v. large costal spots up.s. f.w.; and

ab. Wiscotti, *Obth.*: with v. large spots up.s. h.w.; and on the other hand in:

ab. Novaræ, *Obth.*: without spots up.s. h.w.

(c.) blk. spots up.s. f.w. joined into a band.

(d.) absence of wh. centres to red spots.

[Obs.—*Kane* (European Butterflies, p. 5) would seem to imply that the wh. pupils are peculiar to the Pyrenees, but it is certainly the usual form; the other is scarce. There is a magnificent example with v. large red spots in Mr. Fison's collection.]

(e.) col. of red spots, varying from brt. crimson through lt. rd. and or. to:

ab. Nevadensis, *Obth.*: in wh. they are yell.

Loc. (Occurs as var. in S. Spain); as ab. in the Alps, *e.g.*, Weissenburg (*Hg.*): nr. Basle (*Burchhardt*); &c.

(f.) presence of a red spot or spots, f.w. constituting:

var. Pseudonomion, *Christ*: wh. has always a red spot, gen. double, on inn. marg. un.s. f.w. and usually one outside the disc. cell; the latter of wh. is gen., the former sometimes reproduced up.s. The long spot nr. anal ang. up.s. h.w. is also gen. red; this sometimes occurs in other forms.

Loc. The usual form on the Jura where it is v. ab.: not yet out. vi. e. 02; but rather worn, though ab., viii. b. 02 (*Wh.*); found as an ab. elsewhere; *e.g.*, Brusio, vii. 17 01 (*Fis.*).

(g.) occasionally 2 wh. pupils in cl. spot up.s. h.w.

(h.) ♀, tendency to darken greatly up.s., usually dk. in the Valais, culminating in:

ab. ♀ Brittingeri, *Rebel*.

Loc. Principally in the E. Alps, but also in the Engadine, the Valais, &c.

[Obs.—A specimen from the Albula Pass has the 2 red spots h.w. united by a blk. bar. (*R.-Brn.*).]

[Obs.—A question has been raised as to the specific difference between *P. Apollo* and *P. Delius*, and the observations of Dr. Chapman on the larvæ hardly seem to have been conclusive. There are not very many places where the 2 forms overlap in any numbers, and when this is the case hybrids are occasionally, though v. rarely, found, *e.g.*, between Simplon Village and the Hospice (*Christ*); Allula Hospice, a ♀, viii. 81 (*Frey*); others are also mentioned by *Frey* in the "Bulletin de la Société Entomologique Suisse," vol. vii., p. 256. Naturally these are in the highest haunts of *P. Apollo*. The probability would seem to be that we have here a sp. almost, but not quite fully evolved; or rather, separated in most locs. but not entirely so in those places wh. are suitable to both forms. It would seem from the rarity of these hybrids, that even where they occur they are less successful in passing through the earlier stages than the progeny of either form alone. That they are true hybrids and not merely intermediate forms is to be inferred from the fact that they occur only when the two forms overlap.

P. Delius, *Esp.* (Phæbus, *Prunner*) : 62mm. Fd. plt.*Saxifraga aizoides* and *Sempervivum montanum*.

♀ with fewer and shorter hairs on body than ♂ ; abdominal sac brn. and horny.

Dist. Char. grd. col. up.s. *creamy* wh. : antennæ annulated : gen. at least one red costal spot up.s. f.w.

Loc. Not rare, but local ; found esp. by the side of Alpine streams. Not in the plains nor on the Jura, also wanting in the highests Alpine locs. : gen. from 4500ft. to 8000ft. : vii.-viii. On the heights of Glarus and St. Gall (*Frey*) : Parpan, vii. 80 ; Prätigau, vii. 81 (*Tutt*) ; Pont de Nant, vii. 13, 22 (*Bl.*) ; between the Diablerets and the Argentine, vii. 02 (*Moss*) ; all the lateral valleys to the left of the Rhone between Brig and Martigny ; e.g., Evolena, vii. 11, 98 (*Fleming*) ; Col Torrent, viii. b. 99 (*Tutt*) ; Col des Vaches, Zinal, viii. 1, 98, ab. on marshy grd. (*H.-Bru.*) ; above 5th Refuge on Simplon Road, vii. 9 and 12, 01, ab. (*Wh.*) ; also the Gemmi (*Far.*) ; Oberalp See viii. e. 95 (*Thp.*) ; Andermatt, vii. m. 86 (*Jones*) ; gen. in the valleys of the Engadine ; e.g., Pontresina, vii. 88, &c. (*Lmu.*) ; Guarda, vii. 22-31, 1900 ; upper marshy pastures of Val Tuoi, vii. 1900 (*Thp.*) ; &c. (*v. infra*).

Chamonix ; Mt. Cenis (*Kane*) ; slopes of Mer de Glace, Lavancher, viii. m. 02 ; Le Lautaret, viii. 5, 96 ; Larche, viii. b. 1900 ; Abriès, viii. m. 1900 (*Tutt*) ; above Vinadio, vi. e. 92 (*Norris*) ; Petit St. Bernard—La Thuile, viii. b. 98 ; Cogne, viii. m. 94 (*Tutt*) ; Madone des Fenêtres, vi. 28-vii. 7, 99 (*Lang*) ; Campiglio, vii. 95 (*Lmu.*) ; Stelvio (*Frey*).

Directions of Var. (a.) size of blk. and red spots.
(b.) spots f.w. joined together, constituting :

ab. ♀ Herrichii, *Obth.*

(c.) eye-spots h.w. joined by blk. streak constituting ;

ab. ♀ Cardinal, *Obth.* : in wh. the eye-spots are also v. large.

(d.) absence of wh. pupils to red spots.

(e.) occasional entire absence of red from f.w.

ab. Inornata, *Wh.*

Loc. C. in the Engadine, e.g., Sertigthal (*Sloper*) ; also Simplon occasionally, e.g., vii. 9, 01 (*Wh.*) ; &c.

(f.) occasional absence of red from one or both spots h.w.

ab. Leonhardi, *Rühl* : wh. has h.w. only slightly marked.

Loc. Upper Engadine (*Rühl*) ; not rare in Gadmenthal (*Christ*) ; Simplon (*Rätzer*).

(g.) increase in number of red spots culminating in :

ab. ♀ Hardwickii, *Kane* (*Rubra*, *Christ*) ; wh. has three on outer costal blotch up.s. f.w. and distinct wh. ante-marg. band, h.w.

Loc. Esp. Simplon and the Gemmi (*Far.*): Pont de Nant, vii. 13 (*Bl.*).

(h.) decrease of col. in red spots, culminating in:

ab. Aurantiaca, *Spuler*: in wh. they are replaced by yell.

Loc. Simplon and Gadmenthal (*Christ*).

(i.) darkening of up.s. in ♀, culminating in:

ab. ♀ Nigrescens, *Wh.*: wh. is greatly darker than type.

Loc. Esp. Engadine, e.g., Languard Alp, nr. Glacier; nr. last trees E. of ft. of Rosegg Glacier, vii. 10 01; Henthal, viii., 14 01 (*Fis.*): Sertigthal, vii., 22 and 25, 1900 (*Sloper*); nr. top of Furka, vii. 1 94 (*R.-Bru.*).

P. Mnemosyne, *L.*: 60mm. F'd. plt. *Corydalis cara* and *C. halleri*.

♀ with smooth shiny body; abdominal sac wh., large, and irregular in shape.

Dist. Char. absence of red spots.

Loc. Moist grassy places at moderate heights throughout the region, exc. the Jura; rarely much under 3000ft. or above 5500ft.; vi.-vii. b.; its lowest loc. appears to be on the mtns. round Wallenstadt, at about 1500ft.; occasionally at ft. of cliffs at Martigny (*Far.*, *Sloper*, *Wh.*). In nearly all the side valleys from Vernayaz to Brig: Salvan; Forclaz; Trient; entrance to the Val d' Hérens; Mayens de Sion; Arolla; Nivone; Plaine de la Madeleine; Chandolin; Saasthal; Alpe Foliette nr. Loèche-les-bains; Balt-schieder Valley (*Far.*); Bérisal, v. ab., vii. b. 98; over before vi. e. 99; and worn, vii. b. 01, but v. fine on the Steinalp, vii. 11 01 (*Wh.*); Montana, vi. e. 98, v. c. (*Fleming*); Urbachthal (*M.-D.*); Gadmenthal, at about 5000ft. (*Ratzer*); Weissenburg, behind the ruins (*Hg.*); Engelberg, on Engstlen Alp and in Surenenthal (*Meissner*); Wasen below Göschenen (*Wschl.*); Weggithal (*Frey*); above Einsiedeln, at ft. of Mythen (*Paul*); Wiesen (*Eisenring*); Val Tellina (*M.-D.*).

Digne, vi. 90 (*Linn.*); Certosa di Pesio, v. ab. up to 7000ft., vi.-vii. 92 (*Norris*); Susa, vi. 23 97 (*R.-Bru.*); Lölling, vii. 97 (*Linn.*).

Directions of Var. (a.) size: specimens from Switzerland and the Basses Alpes are gen. smaller than those from further E., but those from the Steinalp are v. fine.

(b.) size of blk. spots.

(c.) darkening of grd. col. esp. in ♀, culminating in:

ab. ♀ Melaina, *Hornath* (*Hartmanni*, *Standfuss*).

(d.) broadening of semi-transparent marg., culminating in:

ab. Nubilosa, *Christoph*: in wh. the v. broad marg. contains wh. spots.

(e.) absence of blk. spot outside disc. cell, h.w.

Fam. PIERIDÆ.

Tribe APORIDI.

Genus, *Aporia*, *Ill.*

Prevailing col. wh.

A. Cratægi, *L.*: 65mm. Fd. plt. hawthorn, fruit trees, and at higher altitudes *Prunus padus* and *Cotoneaster* (*Far.*):
hyb. l.

♀ with cl. area f.w. almost transparent.

Dist. Char. Nervures of all ws. strongly marked in blk., browner in ♀.

Loc. Widely distributed and gen. ab. over the whole district; in the Alps up to 6000ft. or more: v., vi., vii., viii. according to altitude, *e.g.*, Bex, v. b. 97; Martigny, vi. 102; Bérésal, vii. b. 01 (*Wh.*); Zinal, vii. 31.98; Rochers de Naye, viii. 4.96, v. fine and fresh; Ferpècle, viii. 14.96 (*R.-Bru.*).

Directions of Var. (a.) increase of blk. markings.

ab. Suffusa, *Tutt*: with blk. suffusion on out. marg. forming triangular patches.

ab. Marginata, *Tutt*: further increased to form broad dk. border (v. rare).

ab. Lunulata, *Tutt*: with a marked thickening of disc. lunule h.w.
(b.) col. un.s.

ab. Melaina, *Tutt*: un.s. h.w. with a thick dusting of blk. scales between the nervures.

ab. ♀ Flava, *Tutt*: un.s. h.w. yell.: not uncommon in fresh (esp. bred) specimens.

[Obs. The ab. *Alepica*, *Cosmorici*, is grey, transparent, completely without scales. I think we can all make with judiciously rough handling: it is doubtless not uncommon in nature towards the end of the season.]

Tribe PIERIDI, hyb. l.

Genus, *Pieris*, *Schrank*.

Prevailing col. wh., apex f.w. more or less blk.

Dist. Char. un.s. h.w. without markings, or only along the nervures.

P. Brassicæ, *L.*: 65mm. Fd. plt. various *Crucifera*.

♂ without, ♀ with, blk. spots, un.s. f.w.

Dist. Char. large size, without markings un.s. h.w.

Loc. Everywhere in the plains and up to 4000ft., in 2 broods, iv.-vi., and vii.-viii.; above that height one brood only, vii.-viii. My earliest date is Veytaux, iv. 5.99. The greatest heights I find recorded are Riffelberg, 8480ft. and Fuorcla di Surlej, 9055ft.

Directions of Var. (a.) size: 50-70mm.

(b.) v. light apex up.s. f.w. in 1st brood,
known as:

var. Chariclea, *Stph.*: which has also un.s. h.w. deeper in grd. col., and powdered, often thickly, with dk. scales; my most marked examples are from Martigny.

(c.) a spot on f.w. up.s. in ♂.

ab. Nigronotata, *Jachoutoff*.

P. Rapæ, *L.*: 45mm. Fd. plt. *Crucifera*, also mignonette and other low plants.

♀ with blk. dash (in addition to the spots), inn. marg. up.s. f.w.

Dist. Char. small size, without markings un.s. h.w.

Loc. C. everywhere, from iii. e. to ix. e. in the plains, emergence taking place later as altitude increases, and only one brood being found in the mtns. Occasionally met with even up to the snow-line (*Frey*); my earliest date is Veytaux, iii. 15 99.

Directions of Var. (a.) size: 37mm.-58mm.; the smallest are known as:

ab. Minor, *Costa*: 37mm.-39mm.

(b.) lt. apex up.s. f.w. in spring brood:

var. Metra, *Stph.* (Similis, *Kroulikoffski*: *Debilis*, *Alphérakij*): with spots also lt.

ab. Leucotera, *Stefanelli*: apex without blk., the spots small and gr.

ab. (var.) Immaculata, *Cockrell* (*Alba*, *Sébold*): quite without markings.

(c.) increase of size of blk. spots, culminating in:

var. Messanensis, *Zll.*: a summer form. (The summer brood at Martigny is v. close to this.)

(d.) un.s. h.w. dull yell. with blk. powdering.

ab. (var.) Mannii, *Mayer*: un.s. with blk. spots showing through, apex lighter yell.

Obs. - This is described as a summer form, vi.-vii., but I have taken it at Vernayaz, iv. 30 02. ♂; and Sierre, v. 7 02. ♀.

(e.) deeper shade of yell. in ♀, culminating in:

ab. ♀ Novangliæ, *Scudder*: a closely approximating form occurs in Switz., *et al.*, *Sépey*, v. 26 02: Martigny, vi. 3 02 (*Fis.*).

P. Napi, *L.*: 45mm. Fd. plt. *Cardamine pratensis* and other low plants, esp. *Crucifera*.

♂ with not more than 1, ♀ with 2 or 3 dk. spots up.s. f.w.

Dist. Char. un.s. h.w. nervures broadly suffused with greyish-grn.

Loc. C. everywhere in the plains and alps, and in var. *Bryoniæ* up to the snow-line, iii. e.-ix. e.

Directions of Var. (a.) darkening of the gr. tips and spots up.s. in 2nd brood, known as :

var. Sabellicæ. *Stph.* : ♂ has a spot up.s. f.w. ; nervures un.s. much less strongly marked.

(b.) tendency in 2nd brood to obsolescence of markings un.s. h.w., culminating in :

ab. Napææ. *Esp.* : in wh. they do not extend beyond centre of wing, and in extreme cases are represented only by dots at end of rays on out. marg. : gen. larger than type.

Loc. Occasionally in many places viii.-ix., e.g., Veytaux, ix., e. 98 (*Wh.*) ; Martigny ; Sion ; Sierre ; &c. (*Far.*).

Abriès, ab., viii. m. 1900 (*Tutt*) ; St. Martin Vésubie ; Cascade de Boréon (*Brm.*).

(c.) tendency in ♀ to darken up.s. at high elevations, culminating in :

var. ♀ Bryoniæ. *Ochs.* : in wh. all the nervures are broadly suffused with dk. scales, wh. sometimes extend over the whole wing, grd. col. varies from lt. gr. to yell.

Loc. Gen. replaces type above 5000ft., vi.-vii., 1 brood only, but also found considerably lower. E. Vaudois Alps, e.g., Rochers de Naye, vi. b. 01, ab., yell. grd. (*Wh.*) ; all the alps on S. side of Rhone Valley from Martigny to Simplon (*Far.*) ; e.g., Bérisal, vii. m. 98, gr. grd. (*Wh.*) ; Riffelalp, vii. 01 (*Linn.*) ; not c. in Bernese Oberland (*Kauc.*) ; Gemmi, rare ; but Loèche-les-bains, e. (*Far.*) ; Mürren, viii. b. 1900 (*Wh.*) ; Weissenburg (*Hg.*) ; Trübsee Alp (*Kauc.*) : c. on the Jura, descending as low as Tramelan, about 3000ft. ; Glarus, e.g., Pantenbrücke, vi. 26 02 (*Fis.*) ; Maloja, vi. e. 95, v. fresh (*Miss Ftn.*), &c., &c.

Piedmont : Savoie : Basses Alps ; e.g., Faillefeu, Larche, Godessart, &c. (*Kauc.*) ; St. Martin Vésubie ; Cascade de Boréon (*Brm.*) ; Trafoi, vii. 15, 1900, nearly over (*H.-Brm.*) ; Mendelpass, vii. e. 95 (*Tutt*) ; Heiligenblut, vii. e. 97 (*Linn.*).

(d.) un.s. h.w. grd. col. and markings vary extremely ; with us the spring brood is far brighter and more distinctly marked un.s.

(e.) tendency of grd. col. to become yell., culminating in :

ab. Sulphurea. *Schögen* : wh. has all ws. of a clear sulphur col.

Loc. The Jura (*Ag.*).

Genus, *Pontia*, *Fabr.*

Prevailing col. wh. with blk. at apex.

Dist. Char. grn. or greenish on un.s. h.w., *not only along the nervures.*

P. Callidice, *l'sp.*: 43mm. F'd. pl't. alpine *Crucifera*.

♂ with v. little blk. at apex f.w., ♀ with wh.-spotted blk. border f. and h.w. n.p.s.

Dist. Char. un.s. h.w. cl. row of arrow-headed primrose spots.

Loc. V. widely distributed above 6000ft., and occasionally lower, *e.g.*, Eggen, on the Simplon, 5250ft., and, most curiously, for several consecutive years on the dyke bordering the Rhone nr. Branson bridge (*Far.*). 6500ft.-8000ft. is the range of its greatest abundance. It flies strongly and rapidly, often over dangerous ground. All the heights between Martigny and the Simplon (*Far.*); *e.g.*, Arolla, up to viii. 28/96 (*R.-Bru.*); Steinenalp above Bérisal, viii. m. 98, nearly over; vii. e. 99, and vii. 11 01; also above the 5th Refuge, vii. 9 01, v. fresh (*H'h.*); Riffel alp, vii. 01 (*Lamm.*); Gornergrat, viii. b. 01 (*Sloper*), &c. Pilatus (*Knecht*); ab. on the heights of Glarus; the Bernese Oberland; from the Gemmi to the Rhone Glacier (*Kane*); Oberalp, viii. e. 95 (*Chp.*); c. in the Engadine, *e.g.*, Pontresina, vii. 95 (*Miss Ftu.*); Schafberg, vii. 24 01, &c. (*Fis.*); Fusio, vii. 1-12 99; ab. on the Albula Pass, and at the Bernina Hospice, vii. 1900 (*Chp.*); Bad Alvenen, vii.-viii. 85 (*Lamm.*); Jura, Mt. Suchet, 5235ft. (*Kane*).

Chamonix (*Kane*); The Brévent, viii. m. 02; Le Lautaret, viii. b. 96; above Abrics, viii. m. 1900 (*Tutt*); Allos, Larche, vii.-viii. (*Powell*); Mt. Balme de la Fréma, St. Martin Vésubie, Madone des Fenêtres, &c. (*Brm.*); Certosa di Pesio, c. on Monte Faschia and the highest green alps, vii. 92 (*Norris*); Brenner Pass, summit of Postalp, c. (*Jones*); Stelvio, from Franzenhöhe to summit, vii. 12 01, ab. (*R.-Bru.*); Falzarego Pass, viii. m. 95 (*Tutt*); Mendel, Caupiglio, vii. 95; Heiligenblut, vii. 25/97 (*Lamm.*).

Directions of Var. (a.) size, esp. in ♀. [My largest specimen, from the Schafberg, is 48mm., my smallest, from the Steinenalp, 37mm.]

(b.) darkness of markings up. and. un.s. in ♀.

[Obs.—Specimens from E. Switz. are gen. finer and better marked than those from the Valais.]

P. Daplidice, *l.*: 43mm. F'd. pl't. *Crucifera*, *Roseduven*, &c.

♂ with slight, ♀ with broad wh.-spotted blk. border up.s. f.w.

Dist. Char. un.s. h.w. with much grn.; a more or less circular wh. spot in middle of basal grn. patch.

Loc. Not gen. distributed in Switz. and rarely ab. From the lake of Geneva to Martigny, but never in any numbers (*Jones*); on the railway banks at Sierre, vii.-viii. 97, e.; a few nr. Bérisal, viii. 97; Follaterre, ix. 8/02; ab. nr. Stalden, vi. m. 92 (*H'h.*); Simplon, vii. e. 99 (*Tutt*); rather ab. on Chippis road nr. Sierre, vii. 29/98; Loèche-les-bains, viii. 27/94; Lugano, iv. 2 96, fine (*R.-Bru.*); in sandy and uncultivated places, meadows, vineyards,

and lucerne-fields, from Martigny to Brig, not rare, iv.-v. and vii.-viii. (*Far.*); Lake of Neuchâtel (*Snell*); St. Gall (*Täschler*); Schaffhausen (*Trapp*); Basle, Liestal (*Christ*); Zofingen; Aargau (*H'schl.*); according to *Frey* not found in the Grisons.

Grésey-sur-Aix, vii. e. 97; viii. m. 1900; Bourg S. Maurice, viii. b. 98; Abriès, viii. m. 1900 (*Tutt*); Digne, iv. 6.02; vi. 5.99 (*H.-Bru.*); vii. 91 (*Linn.*); Vallon Obscur; St. Martin Vésubie; zigzags ascending Mt. Balme de la Fréma (*Bru.*); Pré St. Didier, viii. m. 98; Aosta, viii. m. 94; Susa, viii. m. 97; Torre Pellice, vii. e. 01 (*Tutt*); Certosa di Pesio, in lower valley, vi. 92 (*Norris*).

Directions of Var. (a.) size: a small form about 33mm., gen., but not exclusively, in the spring brood, constitutes:

var. and ab. Bellidice, *Ochs.* (Belemida, *Hb.*); having un.s. much darker and duller grn., and disc. spot un.s. f.w. sometimes gr. instead of grn.

Loc. Occasionally with type, e.g., Sion, iv. 7 (*Bl.*); Lavey, v. 16.02; La Bâtiâz, viii. e. 1900 (*H'b.*); from Martigny to Loèche (*Far.*). Alpes Maritimes (as above) (*Bru.*). Cannes, iii. e. 97; iv. b. 03; Alassio, iv. b. 03 (*Tutt*).

Tribe ANTHOCHARIDI, *hyb. p.*

Genus, Anthocharis, *Bsdv.*

Prevailing col. wh. with blk. on f.w. only; grn. on un.s. h.w.

A. Simplonia, *Frr.* (Marchandæ, *Hb.-Geyer*); 42mm.
Fd. pl. *Crucifera*.

♀ larger and more strongly marked with blk. than ♂.

Dist. Char. disc. spot f.w. up. and un.s. crescentic or angulated with the hollow towards apex (the edge turned towards base, gen. nearly straight in ♀). Differs from *Belia* by its greater size and absence of silver un.s. h.w. and from var. *Ausonia* by being more heavily shaded with blk., esp. at w.-bases up.s., and by having the much more regular wh. spots at edge of h.w. un.s. elongated.

Loc. Nr. Trient Glacier; Allée Blanche in Val Ferret; Grand St. Bernard; Niouc; Vissoie; Chandolin; Loèche-les-bains; Vispertenbinen; Simplon Hospice; Laquinthal, &c., vi. e., vii. (*Far.*); head of Val d' Anniviers, viii. 1, &c., 97 (*H.-Bru.*); Arolla, path to Pas des Chêvres, vii. 14/1900, e. but worn; Saas, vi. 21.94; vii. 2 and 14.98, e. but worn (*Bkm.*); Nicholaithal, vi. m., e. but worn; Zmutthal, vii. m. v. fine (*Jones*); Täsch; Stalden, vii. 99 (*Josa*); Riffelalp, vii. 7/01 (*Linn.*); Bérissal, vii. e. 98 (*H'b.*); Pont de Nant, vii. 10 (*Bl.*); nr. Gryon, vii. 02 (*Moss*); Sefinenthal, viii. 1, 1900 (*Fis.*); 1, v. worn, reported from Campfer, ix. 26 (*Jones*).

Chamonix; Iarche (*Far.*); St. Martin Vésubie, &c. (*Bru.*); Courmayeur, vii. e. 94 (*Tutt*); Mt. Chétif, vii. 3.02 (*Lowr*); Certosa di Pesio, vi. 15, &c. (*Norris*).

Directions of Var. (a.) marking of un.s. less heavy and of yellower-grn.

† **var. Flavidiator.** *Wb.* (*Ausonia*, *Far.*): the form of the plain, gen. with brt. yell. nervures (hitherto confused with *Ausonia*); gen. also slightly larger, reaching 46mm.; ♀ with more or less of dull yell. suffusion up.s. h.w.

Loc. The Rhone Valley, *et.*. Lavey, v. c. 97; v. 27 02; Sierre, v. 7 02 (*Wb.*); c. some years between Charpigny and Bex, iv. c.; v.: Ilgraben, v. (*Fis.*); Martigny; Saillon; Sion; Visp (*Far.*).

A. Belia, *Cramer* (*Cramerii*, *Butler*); 38mm. Fd. pl. *Erucastrum* and other *Crucifera*.

♀ un.s. h.w. yellower grn. than ♂ (*Kaue*).

Dist. Char. (type) un.s. h.w. mottled grn. and silver (*c. Tagis* var. *Bellezina*).

Loc. Monte Bré, iii.-iv. (*Kaue*).

Digne, iv. 6 02 (*R.-Bru.*); Susa, vi. 18 02 (*Lour.*); Mt. Vinaigrier; Vallon Obscur; St. Martin Vésubic (*Bru.*); La Bocca, Cannes, vii. m. 91 (*Nicholson*); Certosa di Pesio, vi. m. 92 (*Norris*).

Directions of Var. (a.) absence of silver in 2nd brood.

var. Ausonia, *Hb.*; rather larger than type; differs from *Simplonia* (q. v.) by having straight or nearly straight outer edge to disc. spot, up.s. f.w., and much less blk. marking esp. at w.-bases and on costa; un.s. h.w. wh. spots at border rounded and much more irregular.

Obs. The absence of blk. from the costa f.w., up.s., is not a trustworthy char.; most of the Spanish specimens I have seen have a good deal; Spuler figures *Ausonia* with blk. on costa.

vi.-vii. The 2 broods sometimes overlap.

† **A. (Tagis, Hb.) var. Bellezina**, *Bsdv.* (*Bellidice*, *H.-S.*); 28mm. Fd. pl. *Iberis pinnata*.

♀ un.s. h.w. lightly washed with yell. (*Kaue*).

Dist. Char. un.s. h.w. a v. small round blk. disc. spot; and wh. spots edged with yell.

† **Note.** The examination of a large number of specimens from the Valais, and a comparison of them with specimens of *Ausonia* from S. France, Spain, Piedmont and the Caucasus, has convinced me of what I have long suspected, *viz.*, that *Ausonia* is not found in the Valais. It is also *prima facie* improbable that if we have one brood of *Belia*, it should take the form of the 2nd, as the same influences are brought to bear on the larvæ and pupæ of our insect as on the 1st, but not on the 2nd, brood of *Belia* in the S. Further, it appears from a note communicated by M. de Rougemont to Chne. Favre (*Lépidoptères du Valais*, Supplement, 1903, p. 2), that the ♀ of *Simplonia*, of wh. he has bred many, differs greatly from that of *Belia*, and closely resembles that of *P. Duplidiæ*: he describes the p., wh. has no movable segments, as being also less slender than that of *Belia*, and having a shorter and stouter nose-horn. I have, therefore, followed Dr. Spuler in treating *Simplonia* as a separate sp. Mr. Sloper (no doubt amongst many others) has bred both *Belia* from eggs laid by *Ausonia*, and vice versa, in the regular cycle.

Loc. Digne, on the Dourbes, vi. /89, nearly over (*Mrs. Nicholl*); sparingly at about 3000ft. iv. e. /97 (*Tutt*).

Genus, *Euchloë*, *Hb.*

Prevailing col. wh. or pale yell.; un.s. h.w. with greenish marbling.

Dist. Char. ♂ with apex f.w. or.

E. *Cardamines*, *L.*: 42mm. Fd. plt. *Cardamine pratensis* and other *Crucifera*.

Wh.: ♂ with, ♀ without broad or. apical blotch f.w.

Dist. Char. un.s. h.w. marbling of small irregular dashes extending over whole w.

Loc. Gen. c. in lowlands and subalpine region, iii. e.-vi. b., and mounting up well above 5000ft., emerging later as altitude increases, being found as late as viii. b. in the highest locs. My earliest date is Vextaux, iii. 17 99, the latest I have found recorded is Zinal, viii. 2 98 (*H. Urn.*).

Directions of Var. (a.) size: varies greatly, commonly 37mm.-45mm., exceptionally, 31mm.-49mm.

(b.) size of disc. spot f.w.: its variation culminates in:

ab. *Lasthenia*, *Millière*: in wh. all blk. is absent: un.s. h.w. with v. pale greenish-yell. markings.

(c.) diminution of or. tip, culminating in:

ab. *Turritis*, *Ochs*: in wh. it only just reaches disc. spot.

Obs. The v. small specimens of this ab. are called ab. Minor, *Cockerell*, and ab. *Hesperidis*, *Newham*, and are considered by the latter to be a separate sp.

(d.) ♂, un.s. f.w. sometimes with yell. grd. col. exc. inb. marg.

ab. *Citronea*, *Wh.*

Loc. Rhone Valley, xc.: e.g., Aigle, v. b. 03 (*Sloper*); above Stalden, v. 16/03 (*Wh.*).

(e.) ♀, sometimes a dull buff suffusion up.s. h.w., esp. nr. costa.

[Obs.—In the Geneva Museum is a hermaphrodite, the body apparently ♂, the ws. more like the ♀, but with the lower half of tip of left w. or., and an or. streak on tip of right w.; the rest of the tips show or. through the wh.]

E. *Euphenoides*, *Stgr.* (*Eupheno*, *Esp.*: *Callenphenia*, *Butler*); 36mm. Fd. plt. *Biscutella didyma*.

♂ with primrose-yell., ♀ with wh. grd. col. (and a little or. nr. apex).

Dist. Char. Slight extent of marbling un.s. h.w.

Loc. Monte Bré (*Muc. Suferet-Mieg*); Locarno (*Spuler*); below Gondo (*Christ*); iv.-v. (*Kane*).

Digne, v. 23, 01 (*Sloper*); vi. 90 (*Lann.*); vii. 7 99, nearly over (*R.-Bru.*); Barcelonette, vii. 2 92 (*Norris*); Vallon Obscur, Mt. Vinaigrier, Gorge de St. André, Cannes (*Bru.*); Nice; St. Martin Vésubie, v. 98 (*Lang*); above Villafranca, v. c. 92 (*Norris*); Susa, vi. 23 99, still quite fresh (*R.-Bru.*). At Hyères as early as iii. 27 02 (*Sloper*).]

Directions of Var. (a.) size (Alpine specimens larger than nr. coast, *Bru.*).

Tribe LEPTOSIDI.

Genus, Leptosia, Hb. (Leucophasia, *Stph.*; Leptidia, *Billberg*); *hyb. p.*

Prevailing col. wh.

Dist. Char. Extreme tenuity of abdomen.

L. Sinapis, L.: 38mm. *Fd. pl.* *Lotus corniculatus*, *Lathyrus pratensis*, *Orobus*, *Vicia*, &c.

♀ with rounder ws. and less blk. at apex than ♂.

Dist. Char. absence of grn. tint up.s. h.w. (*v. Duponcheli*).

Loc. Gen. distributed throughout the region, in the lowlands, iii. e.-vi., and vii. m.-ix., and up to 5000ft. or more in one brood, resembling the spring brood of lower levels, v. e.-vii. m.

Directions of Var. (a.) loss of markings.

var. Diniensis, Bsdv.: v. dk. blotch on apex f.w. up.s. but no markings un.s., exc. that the apical blotch shows through, and there is often a *v.* slight cl. gr. band on h.w.

ab. ♀ Erysimi, Brlb.: quite wh. up. and un.s.

[Obs.—There are both gen. lowland forms of the summer brood, but *Erysimi*, at any rate, sometimes occurs in the spring. *Diniensis* is the usual form of the summer brood: *Erysimi* is by no means uncommon, *e.g.*, Aigle, viii.-ix.]

(b.) col. of un.s. h.w. (the type has gr. markings on yellowish-wh. grd. col.).

ab. Lathyri, Hb.: gr. markings on dull greenish grd., only a long basal streak, and sometimes another beyond it to out. marg. remaining wh.; rather small.

Loc. A spring form, *e.* in some years in Vaud, the Valais, and elsewhere (*e.g.*, Veytaux, v. 99, where in other years not one is to be found). *Ab.* iv. 03, Aigle (*Sloper*); Charpigny (*Fis.*).

ab. Sartha, Rühl: with brt. yell. grd. col. h.w. and apex f.w. un.s. (a large form).

ab. Subgrisea, Stgr.: no yell. or grn. in grd. col. wh. is almost covered by the gr. markings.

[Obs.—In the Geneva Museum is a curious specimen deeply smoked in an angular shape at base, with a whitish line of the same shape nr. marg. of the dk. suffusion.]

L. Duponcheli, *Stgr.* (Lathyri, *Dup.*); 38mm. F'd. pl. (and l.) unknown.

♀ somewhat larger than ♂.

Dist. Char. up.s. h.w. with greenish tinge, f.w. with deeper blk. apex than *Sinapis*; large wh. patch un.s. h.w.

Loc. V. local. Digne, v. 20 02, going over; vi. b. 99 (*R.-Brn.*); vii. 91 (presumably 2nd brood) (*Lmn.*); behind Beaulieu up to about 1500ft., v. 10 (*Jones*); Draguignan, ab. (*Raine*).

Directions of Var. (a.) loss of markings.

var. Æstiva, *Stgr.*: with yellowish un.s.; the summer brood.

Loc. *e.g.*, St. Martin Vésubie; c. all round Digne, vii. 19-29 91 (*Nicholson*).

Tribe RUODOCEIID.

Dist. Char. Short red antennae.

Genus, Colias, *Leach*: *hyb. l.*

Prevailing col. yell. or or. with blk. border.

C. Phicomone, *Esp.*: 42mm. F'd. pl. sp. of *Vicia*.

♂ rather lt. yell., ♀ whitish with yell. tint.

Dist. Char. gr. suffusion on f. and h.w.

Loc. V. gen. distributed and often ab. on the Bernese, Vaudois, and Valaisian Alps, from 4000ft. to 8000ft., and found both higher and lower. Its lowest loc. appears to be Oberstalden, 2240ft. (*Frey*). So far as my experience goes, it ascends higher than *Palano*, though it also descends much lower. Above Sôpey, about 1000ft., vii. 19 97 (*H.b.*); ft. of Argentine, vii. 02 (*Moss*); Ferpêcle, viii. 14 96; Arolla, viii. 21 96; but totally absent from Zinal, viii. 98 (*R.-Brn.*); Simplon Pass, 5th Refuge, v. ab. vii. m.-viii. m. 98; Steinalp, vii. e. 99; Mürren, viii. b. 1900 (*H.b.*); Weissenburg, ab. at about 2650ft. (*Hg.*); Oberalp, viii. e. 95; Guarda, vii. 22-31, 1900; Fusio, vii. 1-12 99 (*Chp.*); ab. in the Engadine, *e.g.*, Campfer, viii. 92 (*Jones*); Pontresina, vii. 95 (*Miss Ft.*); Urserenthal; the Albula; the Furka (*Kane*), &c.

In the Jura, Mt. d'Or, and Mt. Suchet; Le Lautaret, vii. e. 96; Larche, vii. e. 1900; just above Abriès and higher, viii. m. 1900 (*Tutt*); c. throughout the Basses Alps, Savoie, and Piedmont (*Kane*); Alpes Maritimes (*Bern.*); Mont de la Saxe, viii. b. 91; Cogne, viii. m. 94; Au Pra, viii. m. 01 (*Tutt*); gen. distributed in the Tyrol, *e.g.*, Brenner, v. large, vii. 27 1900 (*R.-Brn.*); Val Bigonina, viii. m. 95; Falzarego Pass, viii. m. 95 (*Tutt*); Campiglio, vii. 95; Innsbruck, viii. 1 97; also Heiligenblut, vii. e. 97 (*Lmn.*).

Directions of Var. (a.) extent of gr. suffusion.

(b.) depth of grd. col. ♂ and ♀.

Obs.—Mr. Fisen has taken a beautiful and interesting hybrid *Palano* × *Phicomone*, a ♂. It has the gr. suffusion of *Phicomone* extending over all 4

ws., exc. the el. half of inn. marg. f.w., on the grd. col. of *Palæno*. It has also the border of the latter, but the fringe of *Phicomone*, and the disc. spot f.w., though larger than in *Palæno*, is only outlined somewhat thickly in blk.; that of the h.w. is between the 2 sp. in col. and size. The un.s. has more the col. of *Phicomone* and the markings of *Palæno*, but with border f.w. nearly invisible.]

C. Palæno, *L.* (*Philomene*, *Hb.*; *Lapponica*, *Stgr.*; *Werdandi H.-S.*); 37mm. Ed. pl. *Vaccinium uliginosum*.

♂ brt. daffodil yell., ♀ nearly wh.

Dist. Char. Extreme smallness of disc. spot, outlined in blk. f.w., pale yell. h.w.

Obs. Great confusion exists in the nomenclature and the descriptions of the vars. of this sp., and though I have endeavoured to clear it up, I am by no means certain of the justice of my conclusions. First then, in some authors *Europomene*, *Ochs.*, is treated as being the same name (though applied to an opposite form of var.), as *Europome*, *Esp.*; then the smaller form of the Swiss Alps gen. has a narrower, not a broader, border than the type, and gen. resembles the description of *Capfisch*, *Caradja*, exc. in what I take to be the special distinction of the latter, *viz.*, the absence of the discoidal spot up.s. f.w.; then again, the majority of the Swiss specimens appear to be identical with those of N. Europe, as stated by *Frey* and *Farre*, though contradicted by *Staudinger*, whilst the large N. German form, *Europome*, *Esp.*, is not found with us. I am inclined to suppose that we must disregard the narrower border (so far as named forms are concerned) and include these specimens for the present in the type, as they are not at all yellower than others, and so can hardly come under the form *Schildei*, *Stgr.*]

Loc. Confined to high elevations, from 3000ft. to nearly 8000ft., but more usually from 5000ft. to 7000ft. *Frey*, however, remarks that single specimens are occasionally taken in the lowlands; (possibly these may be bred): vii.-viii. On most of the heights from Martigny and the Gemmi to the Stelvio, and on through the Tyrol, &c.: *e.g.*, Arpilles, Bovine, Catogne, and Grand St. Bernard, nr. Martigny; at the top of the Val d'Anniviers; Zermatt; the Gornergrat; Saas; Fiesch; Mörel; Aletsch Glacier, &c. (*Far.*); Arolla, vii. 11, 1900, worn; towards Evolena, vii. 17, 1900; Eggishorn, vii. 16-93; Belalp, vii., 4. 99 (*Bkm.*); Steimenthal; W. end of Steinenalp, vii. 11-01, fresh; vii. e. 99, worn; top of Simplon Pass, beyond the Hospice, viii. m. 98, worn; vii. m. 99, fresh (*Wh.*); Furka, Andermatt side, viii. 1-94 (*R.-Brn.*); Engelberg (*Christ*); Oberalp, viii. e. 95; Davos Platz, viii. 2, 1900; Guarda, vii. 22-31, 1900; Pontresina, vii. 1-21, 1900 (*Chp.*); Upper Engadine (*Miss Ftn.*), *e.g.*, Morteratsch Glacier, e. vii. (*Nicholson*); St. Moritz and Weissenstein (*Frey*); Dischmatal, vii. 12, 1900 (*Sloper*); Campfer, ab. (*Jones*); above Coire (*Frey*); Hasli-Scheideck (*Kanr*); moors above Einsiedeln (*Paul*); Bünschen at about 3000ft. (*Hg.*); on the Jura at Tramelan (*Guédat*).

Chamonix (*Far.*); the Montanvers, viii. m. 02 (*Tutt*); nr. Pontarlier (*Kanr*); Le Lautaret, vii. 30-viii. 5-96, fine but scarce (*Tutt*); Abriès viii. m. 1900; Larche, vii., scarce (*Powell*); Lac de la Madeleine (*Kanr*); Alpes Maritimes (*Brn.*); *e.g.*, St. Martin Vésubie, vii. (*Powell*); Mont de la Saxe, vii. e. 91; above Pré St. Didier, viii. m. 98 (*Tutt*); Brenner, vii. e. 1900, fresh (*R.-Brn.*); Sulden, vii. 1900 (*Lunn.*).

Directions of Var. (a.) breadth of border in ♂.

var. (& ab.) ♂ Europomene, *Ochs.*; with broader border, of smaller size, un.s. darker.

Loc. Grimsel; Mayenwand (*M.-D.*); Gros Glockner.

ab. Flavoradiata, *Wh.*: with narrower border crossed by yell. nervures.

Loc. *e.g.*, Steinalp, vii. 29 99 (*Wh.*); &c.

(b.) col. in ♀.

ab. (& var.) ♀ Herrichi, *Stgr.* (Werlandi, *H.-S.*; Philomene, *Dup.*); yell. grd. col. varying from pale lemon to the deepest yell. of ♂. [In Mr. Pison's collection are 2 ♀s of a beautiful cream col., quite different in tint from the usual yell. ♀.]

Loc. By far the commonest form on the Steinalp, and the only one I have seen on the Simplon; Campfer, *ab.* (*Jones*); Morteratsch Glacier, rather *c.* (*Nicholson*): as an *ab. gen.* where type is found.

(c.) presence or absence of spots in blk. border of ♀, up.s. f.w.

(d.) grd. col. un.s. h.w.

(e.) absence of disc. spot up.s. f.w.

ab. Cafilischi, *Caradja*: described as also having narrower border up.s. and greener h.w. un.s.

(f.) disc. spot f.w. occasionally filled in with blk., up. and un.s.

(g.) disc. spot f.w. un.s. occasionally filled in with or.

C. Hyale, *L.* (*Paleno*, *Esp.*); 48mm. F'd. pl't. *Coronilla varia*, *Vicia*, and other *Leguminosae*.

♂ brt. primrose yell., ♀ clear yellowish wh.

Dist. Char. Blk. spotted border, narrowing almost to a point at anal ang. f.w., and v. slight on h.w.; distinguished from *Paleno* var. *Herrichi* by large blk. disc. spot f.w.

Loc. Gen. distributed and *c.*, usually *ab.*, v.-vii. and viii.-xi. m., occasionally up to 8000ft. My earliest date is iv. 24 99. The highest loc. in wh. I have seen it in any numbers is above the 5th Refuge on the Simplon Pass, at nearly 7000ft.

Directions of Var. (a.) size: exceptionally from 35mm. to 52mm.

(b.) depth of grd. col., the brighter and deeper form of ♀ culminating in:

ab. ♀ Inversa, *Alphéraky*: in wh. it is of the col. of the ♂.

Obs.—The *ab. Flava*, *Husz.* seems to be synonymous with this (as given in *Stgrs' Catalogue*, 1901), as it is only *sometimes* that the yell. spots in border of f.w. are developed into a band.]

(c.) tendency to disappearance of parts of the blk. border.

ab. Apicata, *Tutt*: in wh. band f.w. is reduced to an apical tip.

ab. Obsoleta, *Tutt*: in wh. band of h.w. is almost lost.

(d.) tendency to exaggeration of blk. on h.w. amounting occasionally to a double row of blk. spots.

(e.) diminution of double disc. spot h.w.

[**ab. Unimaculata**, *Tutt* : in wh. one is obsolete.

ab. Pallida, *Tutt* : in wh. it is barely visible.

Obs.—In Col. Agassiz' collection are 2 ♀s, one with the un.s. h.w. entirely, and the other partly lt. bluish-grn., the latter irregularly streaked with or. ; for this ab., which may recur, is proposed the name :

ab. Viridescens, *Sloper* :

C. Chrysothème, *Esp.* : 33mm.-42mm. Fd. plt. *Vicia hirsuta*.

♂ without, ♀ with yell. spots in dk. border.

Dist. Char. f.w. up.s. yell. costa, in connection with lt. dull or. grd. col.

Loc. Styria and Carinthia : Salzburg, vii.-viii. (*Konc*) ; above Mödling, viii. c. 97. c. (*Miss Fm.*).

Directions of Var. (a.) size : (*v. supra*).

(b.) up.s. f.w. disc. spot often reddish at outline, sometimes outlined only in blk. and filled in with reddish.

C. Myrmidone, *Esp.* : 32mm.-45mm. Fd. plt. *Cytisus biflorus* : *Cistus*.

♂ without, ♀ with yell. spots in blk. border.

Dist. Char. f.w. up.s. costa yell. (in ♂), in connection with red. or. grd. col. : distinguished also from *Edusa* by narrower blk. border and in ♀ by squarer yell. spots.

Loc. St. Paul, Lavantthal, vii. m. 97 (*Linn.*) ; Styria (and N. Italy), iv.-v. and vii.-viii. (*Sloper*).

Directions of Var. (a.) size : (*v. supra*).

(b.) grd. col. of ♀.

ab. ♀ Alba, *Stgr.* : almost wh. ; distinguished from ab. *Helice*, as type from *Edusa*.

Obs. — It is not unlikely that both the above sp. may have been overlooked in various locs. as *Edusa*, e.g., *Chrysothème* in N.E. and *Myrmidone* in S.E. Switz.

C. Edusa, *Fabr.* (*Hyale*, *Esp.* : *Crocens*, *Fourcroy* ; *Electra*, *Levin* : *Helena*, *H.-S.*) : 48mm. Fd. plt. clover, trefoil, &c.

♂ without. ♀ with brt. yell. spots in broad blk. border.

Dist. Char. brt. or. grd. col., deeper than *Chrysothème*, not so red as *Myrmidone*.

Loc. V. gen. distributed in the lowlands and often ab. up to 1000ft., much less ab. than *Hyale* between 1000ft. and 6000ft., but

mounting occasionally even above 8000ft., *e.g.*, on the Riffelberg. v.-x.

Directions of Var. (a.) size: exceptionally from 32mm. to 52mm. (*Aq.*).

(b.) diminution of spots in ♀ culminating in:

ab. Obsoleta, *Tutt*: in which they are absent.

[Obs.—Surely one would be justified in including under this ab. those ♂s wh. are quite without yell. rays in the border.]

(c.) depth of col. of border.

ab. Brunnea, *Tutt*: in wh. the blk. is replaced by brn.

(d.) less depth of grd. col., esp. in ♀.

ab. Helicina, *Obth.* (*Chrysothème*, *Stph.*: *Aubuissoni*, *Caradja*): wh. has grd. col. of a paler or.

Obs. The name *Chrysothème*, *Stph.*, must be regarded as a *nomen pre-occupatum* (*v. suprâ*), and *Aubuissoni*, *Caradja* (*Iris*, vi., 1893), must fall before *Helicina*, *Obth.* (*Bulletin de la Société Française*, 1880), unless the latter is held to represent a further shade between this ab. and ab. *Helice*, in wh. case *Caradja's* name must hold good.]

This form occurs in both ♂ and ♀.

ab. ♀ Helice, *Hb.* (*Europome*, *Stph.*): "pale lemon or creamy-yell." (*Tutt*).

Loc. Like other abs. with the type: *e.g.*, *Sierre*, viii. 18 99; *Branson*, vii. 19, 1900; vii. 8 02; *Follaterre*, vi. 4 02; *Aigle*, viii. 23, 1900 (*Wh.*); *Steinalp*, vii. 9 02 (*Sheldon*); *Weissenburg* (*Hg.*).

Grétsy-sur-Aix, vii. m. 1900 (*Tutt*), &c.

ab. ♀ Pallida, *Tutt*: "wh. or creamy-wh." (*Tutt*).

(e.) size and shape of disc. spots f. and h.w.

Genus, *Gonopteryx*, *Leach* (*Rhodocera*, *Bsdr.*).

Prevailing col. yell.

Dist. Char. a small, sharply angled projection in outline of each w.

G. Rhamni, *L.*: 58mm. Fd. plt. *Rhamnus catharticus*,
R. Frangula: in mtns. *R. Punila*: hyb. in.

♂ brt. canary yell., ♀ greenish wh.

Dist. Char. small or. disc. spot on each w.

Loc C. through the whole region exc. the coast of the *Alpes Maritimes*, extending in isolated cases to an altitude of 7500ft. (over 8000ft. on the *Stelvio*, *R.-Bru.*); according to *Frey*, in 2 broods, vi. and viii.-ix: other authorities give only the latter. It is of course c. in the spring, even at ii. e., and in such excellent condition that it is difficult (to me almost impossible) to believe that it never hibernates as a pupa: that there is a fresh brood earlier than viii., admits, in many places, of no doubt, witness the following dates: *Zurich*, *Lucerne*, vii. 85; *Neuhausen*, vii. 89; *Zermatt*, vii. 01; *Mendel Pass*, vii. 95; *Baveno*, vii. 88; *Digne*, vi. 90, vii. 91 (*Linn.*).

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- Directions of Var.** (a) tint of un.s. h.w. both in ♂ and ♀.
 (b.) "mealiness" of texture up.s. f.w. constituting:

var. Farinosa, Stgr.

Loc. Lac de Madone (*Brm.*).

G. Cleopatra, L.: 64mm. Fd. plt. *Rhamnus alpina*; *hyb. im.*.

♂ grd. col. brt. yell., ♀ greenish wh.

Dist. Char. ♂ brt. or. suffusion extending over greater part of f.w. up.s.; ♀ Distinguished from *Rhamni* ♀ by greater size, and slight or. blotch at root of w. (? var. of *Rhamni*.)

Loc. Monte Bré (*Mme. Süffert-Mieg*); below Iselle, and has been found at Axenstein (*Kane*). ii.-iv. and vi.-viii.

Digne, vi. 90; vii. 91 (*Lann.*); iv. 5 02; vi. 9 99, 1st and 2nd broods respectively; St. André, x. 16 02 (*R.-Brm.*); Alpes Maritimes, e., occurs even above Venanson (*Brm.*); Certosa di Pesio, vii. 92 (*Norris*).

Fam. NYMPHALIDÆ.

Sub.-Fam. NYMPHALINÆ.

Tribe ARGYNNIDÆ: *hyb. f.*

Prevailing col. Tawny or. with blk. spots.

Genus, Dryas, Ill.

Dist. Char. un.s. h.w. silvery bars.

D. Paphia, L.: 65mm. Fd. plt. *Viola canina*, *Rubus Idæus*, &c.

♀ darker than ♂; ♂ shows a conspicuous thickening of 4 lowest nervures f.w.

Dist. Char. un.s. f.w. grd. col. or. (*v. Pandora*).

Loc. Everywhere in lower valleys, gen. e., often ab., but seldom reaching much above 3500ft.; vii.-ix. b. (Wears well. I took an excellent ♂ above Montreux, ix. 1 02).

Directions of Var. (a.) col. of metallic glow un.s. h.w., ranging from pink to prp.

(b.) depth of gm. grd. col. un.s. h.w.

(c.) depth of grd. col. up.s. ♀, culminating in:

ab. ♀ Valesina, Esp.: wh. has grd. col. yellowish brn. much suffused with blk., giving dk. appearance.

Loc. Sporadic; v. uncommon in N. of region, less scarce in S., esp. S. valleys of Grisons (*Frey*); Tessin (*Ag.*); not v. scarce some years in the Rhone Valley; e.g., Aigle in 97 (*Wh.*); Salvan (*Fis.*);

Visp, viii. b. /98; Pfyn, vii. e. /99 (*Wh.*); e. one year at Stalden (*Frey*); Thusis, vii. 95 (*Miss Ftn.*), &c.

Lower slopes of the Brévent, viii. 18/02 (*Tutt*); Chamonix, viii. /93; above Varenna (*Miss Ftn.*); Baveno, vii. /88 (*Lmn.*); Alpes Maritimes (*Brm.*); Pré St. Didier, viii. m. /98; Torre Pellice and Bobbie, c., vii. m. /01 (*Tutt*).

(d.) absence of silver un.s., constituting:

***ab. Immaculata**, *Bellier* (*Anargyra*, *Stgr.*); wh. occurs rarely in the Alpes Maritimes (*Brm.*).

D. Pandora, *Schiff.* (*Cynara*, *Fabr.*; *Maia*, *Cramer*); 75mm. Fd. plt. *Viola tricolor*.

♂ has nervures iv. 1 and 2 up.s. f.w. widened.

Dist. Char. un.s. f.w. large cherry-col. patch.

Loc. V. scarce (and accidental) in Switz. Aigle, vii. 6/97 (*Lowc*); Lausanne, viii. 18/99 (*Tutt*); Fully (*Meissner*); Loèche (*Kuecht*); Fische (*Trapp*); Pfynwald (*Paul*); Niouc (*Tasker*); said to be not uncommon at the entrance of the Val Fex, nr. Sils.

Much less scarce S. of the Alps. vi.-ix. b. (*Spuler*); Val d'Aosta, above St. Rémy, on the St. Bernard route at about 5500ft. (!), vi. 25 (*Far.*); Courmayeur, vii. 15/03 (*Lowc*); Pré St. Didier, viii. b. 94, c.; /98, scarce; Cogne Valley, viii. m. /94; Aosta, viii. m. /94 (*Tutt*); Roquebilière, St. Martin Vésubie, La Bollène, St. Sauveur, &c., vi. vii. (*Brm.*).

Directions of Var. (a.) grd. col. up.s.: ranging from dk. ochreous to greenish ochreous.

(b.) diminution of silver un.s., esp. in ♂, culminating in:

ab. Paupercula, *Ragusa*; in wh. there is none.

Genus. Argynnis, *Fabr.*

Dist. Char. un.s. h.w. large silvery spots.

A. Aglaia, *L.*: 58mm. Fd. plt. various *Violacea*.

♂ has a slight thickening of the two lowest nervures up.s. h.w.,

♀ larger and gen. darker.

Dist. Char. un.s. h.w. brt. yell. ante-margl. band without spots.

Loc. V. widely distributed and c., esp. on hill-sides, vii.-viii.; most ab. from 2000ft. to 4000ft., ascending in some cases, e.g., on the Simplon Pass, even above 6000ft.

Directions of Var. (a.) reduction in size, culminating in:

ab. Nana, *Wh.*: not more than 48mm.; not bleached like var.

Vithata, *Moore*, but brt.: ♀ scarcely darker than ♂.

Loc. Nr. top of Simplon Pass, viii. m. 97, several (*Wh.*)

(b.) shade of grd. col. up.s. [This gives rise to many abs., viz.:

ab. ♂ **Flavescens**, *Tutt* : lighter and brighter or.

ab. ♀ **Aurea**, *Tutt* : pale or.-brn.

ab. ♀ **Pallida**, *Tutt* : lighter still, costa and out. marg. pale straw-col.

ab. ♀ **Suffusa**, *Tutt* : base, spots and nervures shaded with fuscous ; grd. col. at costa and a row of spots at out. marg. whitish ochreous.

(c.) extent of grn. suffusion un.s. h.w., sometimes nearly covering yell. band.

(d.) basal area of un.s. h.w. fuscous instead of grn.

ab. **Fusca**, *Tutt*.

[Obs.—A v. remarkable ab. was taken by Rev. A. M. Moss at Villars-sur-Bex, vii. 26,02, and described and figured in the *Ent. Rec.*, vol. xiv., No. 12, p. 311 ; up.s. almost entirely blk., also un.s. f.w., the silver mostly replaced by bronze placed in dk. grn. An ab. in Mr. Fison's collection has a band of large blk. blotches, just contained by the branches of the nervures.

A. Adippe, *L.* : 58mm. f'd. pl. various violets : *hyb.*
(at any rate, sometimes) *ov.*

♂ with nervures iv. 1 and 2, v. much thickened up.s. f.w.

Dist. Char. un.s. h.w. deep golden-yell. ante-margl. band containing reddish-brn., silver-centred spots.

Loc. Everywhere up to about 4000ft. in and about woods, and often also on slopes and at way-sides, vii.-viii.

Directions of Var. (a.) size : commonly 52mm.-65mm.

(b.) tone of grd. col. up.s. ♀.

(c.) dk. band next to margl. silver spots un.s. h.w.

ab. **Virgata**, *Tutt* : the shade of brn. varies ; one in my collection is deep chocolate ; 1 at Gryon, vii. 702 (*Moss*).

(d.) diminution of silver un.s.

ab. **Intermedia**, *Tutt* : without silver at apex f.w. or border h.w.

var. **Cleodoxa**, *Ochs* : without silver at all, exc. tiny centres of spots in ante-margl. band.

Loc. The usual form S. of the Alps, *e.g.*, Brusio, vii. 13 01 (*Fis.*) ; Chiasso, vi. 24, San Stefano, vii. 7 (*Mayer*).

St. Martin Vésubie, but not e. (*Brm.*) ; Pré St. Didier, viii. m. 98 ; Torre Pellice Valley, viii. 01, ab. (*Tutt*).

A. Niobe, *L.* : 49mm. f'd. pl. various sp. of violet.

♀ grd. col. darker than ♂, wh. has also the 3 nervures above the lowest up.s. f.w. v. slightly thickened.

Dist. Char. un.s. h.w. buff ante-margl. band with v. small red-brn. silver-centred spots ; has a rather *washy* appearance ; is gen. noticeably smaller than *Adippe*.

Loc. In the forest zone and above the tree limit up to about 7500ft., vii.-viii., but the type form is not v. c. in Switz. I have only found it in any numbers at one point on the Simplon, *et.*, in the first open field on the path leading from the 4th Refuge to Wasen, viii. b. 98, &c. The type form is specially mentioned for the following locs., but is to be found amongst var. *Eris* in many others. Niouc, Susillon, Ponchette, Chandolin and Zinal in the Val d'Anniviers; Sierre; Loèche-les-bains; Stalden; Laquinthal (*Far.*); Arolla, viii. m. 99 (*Tutt*); St. Nicholas, vii. 13 98; Zermatt, vii. 10 99 (*Bkm.*); Saas Fée, ab. (*Jones*); Weissenburg (*Hg.*); Basle (*Christ*); in the Aargau Jura (*Wschl.*); Engelberg (*Baker*); Pontresina, vii. (*Miss Ftn.*); Churwalden (*Hg.*).

La Faucille on the Jura, viii. 10 (*Bl.*); above Lac Bourget, vii. e. 98; Megève, viii. b. 02; Larche, viii. b. 1900; Abriès, viii. m. 1900, v. ab. and brt.; Cogne Valley, viii. m. 94; Courmayeur, viii. b. 94, ab.; above Bobbie, viii. m. 01 (*Tutt*); Mendel Pass, vii. 95 (*Linn.*).

Directions of Var. (a.) tone of grd. col. up.s. ♀; varies greatly, from yell.-brn. to warm or.-brn. (same range in var. *Eris*).

(b.) diminution of silver un.s. culminating in :

var. Eris, *Meigen* (*Cleodoxa*, *Esp.*); 52mm. in wh. it is replaced by yell.

Loc. Far more c. than type; gen. ab. on the mtns. of the whole region up to 7500ft., vii.-viii.

(c.) increase of dk. suffusion, c. to some extent in ♀. culminating in :

ab. Pelopia, *Berkh.* (*Niobe*, *Hb.*); up.s. almost wholly suffused with blk., markings of un.s. sharply drawn in blk.; no silver.

Loc. 1 ♂ in Steimenthal, nr. Bérisal, vii. 25/99 (*Wh.*); 1 nr. St. Moritz, vii. 784 (*Nicholson*).

Genus, *Issoria*, *Hb.*

I. Lathonia, *L.*: 42mm. Fd. plt. violets. *Orobrychis*,
Achusa officinalis.

♀ larger than ♂ and with rather darker and more extended basal suffusion.

Dist. Char. great size of silver spots un.s. h.w. and concave out. marg. f.w.

Loc. One of the most widely distributed butterflies of the region; gen. ab. in the plains and lower elevations, and mounting as high as 8500ft. and more; *e.g.*, on the St Bernard Pass, the Pierre-à-Voir, and even the Gornergrat, nearly 10000ft. (*Far.*); gen. iv.-vi. and viii.-ix. My earliest date in Switz. is iii. 15/99, but further S. it appears much earlier, *e.g.*, at Cannes, often i. e. (*Chp.*). Often settles on the bare ground.

Directions of Var. (a.) size: the spring brood is small, the later

incomparably larger and finer: ♂ of the former often not more than 38mm., ♀s of the latter sometimes as much as 50mm.

(b.) confluence of silver spots un.s. h.w.

ab. Valdensis, *Esp.*: in wh. the blk. spots un.s. f.w. are also confluent.

[Obs.—I have never seen this ab. nor met with anyone who has, it must, I think, be *v.* scarce.]

Genus, *Brenthis*, *Hb.*

Dist. Char. un.s. h.w. either prp. or silvery patches or both. [In the case of *Hecate*, wh. has neither, the gen. arrangement of un.s. h.w. is such as to connect it unmistakably with others of the genus, such as *Selene* and *Ino*.]

B. Euphrosyne, *L.*: 42mm. Fd. pl. *Viola canina*, *V. sylvatica*, *Fragaria*, &c.

♀ gen. rather larger, and deeper or. than ♂.

Dist. Char. Brick-red spots and suffusion un.s. h.w.

Loc. Gen. distributed and often c. in the lower valleys and slopes, and by no means rare at 5000ft., *e.g.*, Bérisal, and mounting occasionally up to 7000ft.; gen. larger and brighter at lower elevations (*e.g.*, *v.* fine at Lucens, *v.* 21, 1900, *Fis.*), and smaller and darker at greater altitudes; *v.*-vi., and viii. at lower, vii.-viii. at higher elevations; fairly large and well-coloured at Ferpècle, viii. m. 99 (*Tutt*). My earliest date is Veytaux, iv. 5/99.

Directions of Var. (a.) exaggeration of blk. spots and suffusion at base of ws.

(b.) tendency to diminution of margl. row of silver spots un.s. h.w., culminating in:

ab. Obsoleta, *Tutt*: in wh. there are none.

B. Selene, *Schiff.* (*Euphrosyne*, *Bryst.*: *Euphrasia*, *Levin*): 37mm. Fd. pl. *Viola canina*.

♀ gen. rather larger and slightly more or. than ♂.

Dist. Char. un.s. h.w. chestnut-brn. spots and suffusion.

Loc. *V.* local and gen. scarce in Switz., *v.*-vi. and viii. Where it occurs in the mtns., up to nearly 6000ft., I feel no doubt there is only one brood, vii.-viii. Basle (*Knecht*); the Bechburg (*R.-S.*); Büren and Soleure (*Meissner*); Berne: Burgdorf; Lattrigen, Meiringen, and the Oberhaslithal as far as Guttannen, and above, c. in the last two locs. (*M.-D.*); Gadmenthal, nr. the Steine Glacier (*Frey*); Rosenlani, rather worn, vii. 15 90 (*Prideaux*); nr. Lansanne (*Laharpe*); on the Curfirsten, and above Amden (*Tuschler*); Weesen Marsh, vii. 5 01 (*Fis.*); Zürich, nr. the Trichterhaus Mill, *v.* scarce (*Snell*); Weissenburg, c. (*Hg.*); at the Grangettes, between Villeneuve and Bouveret, *v.* 19, fairly c. ♂s only; vi. 7 99, *v.* ab., ♀s also; banks of the Rhone at Bouveret, vi. 1900 and 01; Reverendaz.

v. 30 03 (*W.h.*); Vouvry, Locche-les-bains, Zermatt and Bérisal (*Far.*); less scarce in the Grisons, e.g., Dischmathal, vi. 27; vii. 2 01; S. side of Bernina Pass, vii. 9 01 (*Fis.*); nr. St. Moritz, but not c. (*Nicholson*); Sagno, v. 27; San Stephano, vi. 10 (*Mayer*); Locarno, iv. m. 03, c. (*Tutt*); Monte Salvatore, vi. b. (*Jones*).

Digne, vi. 90; vii. 91 (*Linn.*); Torre Pellice, viii. b. 01 (*Tutt*); woods nr. Trafoi, vii. m. 1900 (*R.-Bru.*); Sondrio, viii. 96 (*Miss Ftu.*); Campiglio, vii. m. 95 (*Chp.*).

Directions of Var. (a.) size: sometimes 2nd brood is v. small, constituting:

ab. Selenia, *Frr.*

(b.) depth of grd. col. un.s. h.w. "Alpine examples are lighter, but with darker red" (*Frey*).

(c.) silvery spots un.s. h.w. lengthened into streaks.

ab. Rinaldus, *Hbst.*: reported from Bouveret (*Far.*).

(d.) darkening of grd. col. up.s.

ab. Thalia, *Hb.*: darker than type, but without cl. blk. spots; also reported from Bouveret (*Far.*).

[(?*) **ab. Intermedia**, *Spångberg*: blackish brn., with margl. row of fulvous spots.

(?*) **ab. Marphisa**, *Spångberg*: almost unicolorous blackish.

These being N. abs. can only be expected in the highest altitudes reached by the sp.]

***B. Apherape**, *Hb.*: 37mm. Fd. plt. bistort and marsh violet.

♀ with dull suffusion extending over half w., but not obliterating the markings.

Dist. Char. un.s. h.w. broad margl. row of lt. yell. angulated spots, followed by a row of small spots as in *Ino*, *Daphne*, &c., gen. silver-centred, but without prp.

Loc. V. local; in marshy places; mtns. of Carinthia; marshy mtn. meadows of S. France (*Kane*).

Directions of Var. (a.) amount of silver on un.s.; sometimes none at all, the maximum being silver in cl. and margl. bands, as well as the row of small eye-spots h.w., and in the centres of the small spots nr. apex f.w.

***B. Hecate**, *Esp.*: 29mm. Fd. plt. (and l.) unknown.

♀ larger than ♂ and with greenish-blk. wing-bases.

Dist. Char. un.s. h.w. 2 v. conspicuous long, lt., somewhat wedge-shaped spots nr. centre of out. marg., the points being towards the base. [On up.s. a broad dk. marg. followed by 2 nearly

parallel rows of dk. spots, f. and h.w. : col. of un.s. h.w. rusty brn. and faded buff.

Loc. Mtns. of Alpes Maritimes, rare (*Millière*); e.g., Thorene, at about 4000ft., vii. (*Powell*); Piedmont (*Kane*); mtns. of S. Tyrol (*Spuler*); Isonzthal, a little way up the valley, vi. b. and m. 92 (*Norris*).

B. Thore, *Hb.* : 43mm. Fd. plt. (and l.) unknown.

♀ gen. lighter than ♂ up.s.

Dist. Char. conspicuous dk. suffusion up.s. ; differs from *Ino* var. *Zinalensis* by the double band of prp. un.s. h.w., one margl., one (incomplete) more cl.

Loc. Local and gen. scarce in Switz., though c. in a few places ; not reaching far W. or S., found up to about 6000ft., vi.-vii. according to altitude. Sureenthal; Gadmenthal (*Rützer*); Rosenlani, the Oberhaslithal, and the Reichenbach, e. (*M.-D.*); Handeck Fall (*Suell*); Reussthal, ab. (*Kane*); Seealpthal, scarce (*Peyer-Ishoff*); in the Pays d'Enhaut, above Château d'Oex, between Rossinière and Rougemont, and on towards Saanen (*M.-D.*); in the Grisons, above Flins (*Christ*); above Pontresina and Muottas, vii. m. 1900 (*Chp.*); Roseggthal, 2 only, vii. 95 (*Miss Ftu.*); in a wood nr. the gorge, vii. (*Nicholson*); nr. Bergün, scarce (*Zll.*); Tarasp (*Killias*); opposite Guarda, 1 only, vii. e. 1900 (*Chp.*).

Trafoi, vii. 15 1900, fine but scarce (*R.-Bru.*); the wood sloping down to the Brenner See, vii. 27, 1900. worn (*Jones*); Pejo, vii. 95; Lölling, vii. 8 97 (*Linn.*).

Directions of Var. (a.) amount of dk. suffusion up.s.

B. Daphne, *Schiff.* (*Chloris. Esp.*) : 47mm. Fd. plt.

Rubus idaeus, R. fruticosus, &c.

♀ slightly larger and more strongly marked than ♂.

Dist. Char. un.s. h.w. prp. suffusion extends to out. marg. on lower half of w.

Loc. In Switz. gen. found only between Lavey and Inden, e.g., Lavey, vii. (*Bl.*); between Vernayaz and Martigny under the cliffs, vi. 27, 1900; vi. 19 01 and 02; also under cliffs on opposite side of valley, vii. 9, 1900; vi. 29 02 (*Hb.*); between Sierre and Lœche, vi. 22 97 (*Postans*); Sion, Nioue, Saillon (*Far.*); also reported, doubtfully according to *Frey*, from Oftringen, Engelberg (?), Pfäfers and Ragatz.

Digne, vi. 14 99 (*R.-Bru.*); vii. 91 (*Linn.*); Entrevaux, vi.-vii. (*Powell*); Bourg d'Oisans, viii. 96; Bourg d'Arv, viii. m. 96; Pré St. Didier, viii. b. 98, ab. but worn (*Tutt*); about a mile below St. Martin Vésubie, between that place and Venanson; St. Sauveur (*Bru.*); Certosa di Pesio, v. e., in upper valleys (*Norris*); Botzen, vi. 20 01; Sarntal, vi. 28 01, ab. (*Lower*); Mendel, vii. 95 (*Linn.*).

Directions of Var. (a.) size of blk. spots; occasionally much diminished (*Fis.*).

(b.) coalescence of blk. markings, culminating in :

- ab. Conjuncta**, *Tutt.*: with large blk. costal blotch, el. blk. line united with next row of spots, and margl. united with ante-margl. row up.s. f.w.; el. blk. cloud, and margl. series of wedge-shaped streaks up.s. h.w.; un.s. f.w. with wide el. blk. transverse band: h.w. with inn. half yell. and outer half reddish-prp. without darker markings.

Loc. Pré St. Didier, viii. m. 98 (*Tutt.*).

[Obs.—In Col. Agassiz's collection is a specimen from the Tyrol, with the blk. spots up.s. h.w. prolonged into dashes.]

- B. Ino**, *Rott.* (*Dictynna*, *Hb.*): 40mm. Fd. pl. *Spiraea arvensis*, *S. ulmaria*, *Sanguisorba officinalis*, *Rubus*, *Urtica*, &c.
♀ darker than ♂, and dk. border line un.s. more distinct.

Dist. Char. prp. suffusion un.s. h.w. v. slight, and confined to outer el. band, also distinguished from *Daphne* by its much smaller size.

Loc. Wanting in the Basle district, and gen. scarce in the N. lowlands of Switz., but otherwise gen. distributed throughout the region, though sometimes rather local, reaching above 5000ft., vi. vii. The whole length of the Jura, e.g., Tramelan (*Güdat*); St. Georges, vi. 30 02 (*Hb.*); St. Cergues, vi. 26; vii. 20 (*Bl.*); Rhone Valley, e.g., between Villeneuve and Bouveret (*Fis.*); Lavey, vi. b. 97 (*Hb.*); and up most of the lateral valleys, e.g., Pont de Nant, vii. 24 (*Bl.*); Villars-sur-Bex, vii. 02 (*Moss*); Zinal, viii. 5 02, c. (*R.-Bru.*); Turtanenthal, ab. (*Far.*); &c. Mt. Barry, vi. 29, 1900, fresh (*Bkm.*); gen. distributed in the Grisons, e.g., Pontresina, vii. 95 (*Miss Ftn.*); Davos, viii. 2, 1900; woods opposite Guarda, vii. e. 1900, c. (*Chp.*); Campfer (*Jones*); Val Bevers, vii., rather c. (*Nicholson*); Bergün and Posehivao (*Frey*).

St. Michel-de-Maurienne, vii. e., worn (*Tutt*); Godessart, vii. 3 92 c. (*Norris*); gen. a poor form in the Basses Alpes (*Kane*); Alpes Maritimes (*Bru.*); Pré St. Didier, viii. b. 98; Courmayeur, viii. b. 98; Val Ferrex, viii. b. 98 (*Tutt*); Tyrol, e.g., Campiglio, vii. 95 (*Lamm.*); Salzburg, vi. e. 1900 (*Lamy*); Carinthia, e.g., Lölling, vii. 8 97 (*Lamm.*).

Directions of Var. (a.) tendency to darker up.s., culminating in :

- var. Zinalensis**, *Far.*: with v. dk. appearance f. and h.w., the basal half of h.w. entirely blackish.

Loc. On the left bank of the Naviganza, nearly opposite Zinal, viii. 18 02, still fresh (*Far.*); considered rather a local race than an ab.

- B. Amathusia**, *Esp.* (*Titania*, *Hb.*): 45mm. Fd. pl. *Viola mirabilis*, *Polygonum bistorta*, &c.

♀ rather larger than ♂, and with rather more pronounced markings un.s.

Dist. Char. reddish-prp. of h.w. with conspicuous dog-toothing at out. marg.

Loc. A mtn. species, but to be found almost everywhere within its range, wh. is practically the fir region, through the whole alpine area: also in some locs. at lower elevations, *e.g.*, Lauterbrunnen, about 2600ft. In many places it is ab., esp. in meadows: vii.-viii. At Susa, vi. 26 99, the ♀s were lighter, and both sexes larger than in Switz. (*It.-Bun.*).

Directions of Var. (a) un.s. h.w., prp. sometimes replaced by brick-red, almost the col. of *Euprosyne* un.s.

(b) tendency to increase of blk. up.s., culminating in:

ab. Nigrofasciata, *Var.*: with broad cl. blk. band f.w.

Loc. Hitherto only reported from Mt. Chemin, nr. Martigny, vii. (*Var.*).

B. Dia, *L.*: 33mm. Fd. plt. violets.

♀ gen. slightly larger and slightly lighter than ♂.

Dist. Char. sharpness of apical ang. h.w. in connection with *large* blk. spots up.s.

Loc. One of the most widely distributed and often one of the commonest of the tribe, in the lowlands, and up to about 3000ft., gen. in 2 broods, iv.-v. and vii.-ix., but in forward seasons in 3 broods: *e.g.*, I took freshly emerged specimens in the same field at Veytaux, iii., vi., and ix. 99. Mr. Rowland-Brown took it at Digne, iv. 6, fresh, and x. 16, nearly over. 02; Mr. Lemann having taken it there, vi. 90, and vii. 91, wh. seems to point to 3 broods in that loc.

Directions of Var. (a) occasional tendency to blk. suffusion up.s.

(b) occasionally v. large spots up.s. (*Fis.*).

(c) depth of prp. colouring un.s. h.w. v. variable.

B. Pales, *Schiff.*: 35mm. Fd. plt. violet by preference, but will eat almost anything.

♀ with larger and deeper blk. markings than ♂: un.s. gen. paler.

Dist. Char. sharpness of apical ang. h.w., in connection with *small* blk. markings, up.s.

Loc. Type not on the Jura, but otherwise gen. distributed over the heights of the region, often c. and not infrequently ab. from 5500ft. to about 10000ft. The type, however, seldom occurs below 7000ft., but is to be found on almost all the heights from the Bernese Oberland to Styria, on the E., and the Alpes Maritimes on the S., vii.-viii.

Directions of Var. [By far the most variable of the tribe; all the vars. are larger than the type.]

(a.) gradual predominance of yell. over red-
pp. un.s., culminating in:

var. Isis, *Hb.* (Altaica, *Gronow*): wh. has also up.s. dusted with blackish.

Loc. Not scarce on the bushy slopes of the higher Valaisian Alps, e.g., the Forchaz, Val Ferret, Val d'Anniviers, Riffel, Schwarzsee, Simplon, &c. (*Far.*); Campfer (*Jones*), &c.

Le Lautaret (*Tutt*); Alpes Maritimes (*Brm.*), &c.

ab. ♀ Napæa, *Hb.*: an ab. of *Isis* ♀, having up.s. shot with a dull purplish tint.

Loc. With *Isis*, e.g., at head of Val d'Anniviers, viii. 1 97 (*R.-Brm.*); Simplon, 6th Refuge; Val de Bagnes (*Pis.*); Davos, viii. 1, 1900 (*Sloper*); Pontresina, vii. 84 (*Linn.*), &c.

Mont de la Saxe, viii. b. 94; Lauzon Valley, viii. m. 94; Cogne, viii. m. 94; Falzarego Pass, viii. b. 95 (*Tutt*); Mendel, vii. 95 (*Linn.*), &c.

[Obs.—A v. fine almost blk. ♀, vii. 28, 1900, Brenner" (*R.-Brm.*), is probably to be referred to this ab., or the next.]

ab. ♀ Cinctata, *Far.*: a further ab. of *Isis*, less shot with pp. but with a broad band of united blk. spots across f. and h.w. up.s., narrowed nr. centre f.w. by an or. streak wh. runs into it; outside wh. is a row of large blk. spots, failing only at costa of each w.

Loc. This magnificent form is so far only known from Barmaz, Dent du Midi, vii. 31 '02 (*Pis.*)

(b.) un.s. f.w. with conspicuous blk. spots
(wanting in type).

var. Ārsilache, *Esp.* (*Inducta*, *Spångberg*): wh. has also rounder ws. than type.

Loc. At lower elevations than type, e.g., Tramelan, on the Jura (*Ginédat*); the Vaudois Alps (*Labarpe*); Bünschen, ab. (*Hg.*) moors at Einsiedeln, c. (*Paul*); between Eggiswyl and Rothenbach, at about 2200ft. (*M.-D.*); round little lakes below Campfer and St. Moritz (*Jones*), &c.

Tribe MELITÆIDI: hyb. I.

Genus, Melitæa, *Fabr.*

This genus, some of the sp. of wh. are not easy to distinguish, divides itself naturally into 3 groups. In the 1st the colouring and markings of up.s., exc. suffusion at base, are reproduced in a more or less washed-out form on un.s. The nervures and transverse lines are blk., the interstices being filled, in the form of bands, with or.-red and yell.

M. Cynthia, *Hb.* (*Trivina*, *Esp.*): ♂ 38mm., ♀ 42mm.

Fd. pl. *Plantago*, *Viola*, &c.; l. sometimes *hyb.* twice.

♂ with yell. replaced by wh. up.s., ♀ with yell. and red closely approximating, up.s.

Dist. Char. up.s. h.w. ante-margl. red band spotted blk., having its inn. edge, as well as the nervures, much suffused with blk.

Loc. Not on the Jura, but otherwise gen. distributed, often c., and sometimes extremely ab. at v. high elevations throughout the region, esp. on rocky slopes; rarely, if ever, below 5500ft., and gen. between the tree-limit and the snow-line: vii.-viii.

Directions of Var. (a.) lightening of the yell. up.s. in ♀ (above the Simplon sometimes tending towards the wh. of the ♂, as in *Iduna*; at other places, *e.g.*, Saas-im-Grund (*Fis.*), tending towards *Aurinia*).

(b.) clearness and whiteness of margl. row of spots in ♂, sometimes reddish, and sometimes obsolescent on f. or h.w., or both.

(c.) un.s. h.w. absence of the row of blk. dots in ante-margl. band.

M. Maturna, *L.* (*Cynthia*, *Esp.*; *Mysia*, *Hb.*); 40mm.

Fd. pl. *Scabiosa lucida*, *Plantago*, &c.

♀ considerably larger and somewhat more brightly marked than ♂.

Dist. Char. up.s. h.w. red ante-marg. band unspotted (un.s. more distinctly marked than *Cynthia* and *Aurinia*.)

Loc. V. local, but not scarce in its few haunts in this region. The type is not found in Switz. or the S.W. of the region, and perhaps even those of the Tyrol are hardly typical. Pejo, vii. 95 (*Linn.*); Aunezzo (*Far.*); Salzburg, vi. c. (*Lamy*).

Directions of Var. (a.) loss of brilliancy of red and yell., leading to:

var. Wolfensbergeri, *Frey*: the form found in Switz. and the S.W.

Loc. Vald'Anniviers from Niouc to Vissoye, vi.-vii. (*Mennet*, *Far.*, &c.); Zinal (*de Rougemont*); Saus, vii. m. 85 (*Stamlen*); Dischmatal, vi. 27, and vii. 201, ab.; S. side of Bernina Pass, vii. 901 (*Fis.*); Val Rosegg, at about 6600ft. (*M.-D.*); Maloja, vii. 85 (*Linn.*); Sils Maria (*Frey*); Lagalp, below Languard (*Sara*); Lower Misox (*Killias*).

Fenestrella (*Kane*); St. Martin Vesubie (*Far.*); Mts. of Modane, Savoie (*Kane*).

Obs.—Among the specimens taken by Mr. Fison in the Engadine in 1901, is a most remarkable ♂, in wh. the middle left leg is replaced by a tiny wing, having the appearance of the inn. marg. of a h.w. with the fringe, about 8mm. in length and 2mm. in breadth. It is quite detached from the normal wing,

wh. is perfect without it. It is the more curious, as the leg is a true limb, wh. the wing-structures, correctly speaking, are not.]

M. Aurinia, *Hott.* (*Artemis*, *Hb.* : *Maturna*, *Esp.*) ; 40mm.

Fd. pl. scabious, plantain, &c.

♀ larger, and with broader and lighter markings than ♂.

Dist. Char. up.s. h.w. red ante-margl. band distinctly spotted with blk., the blk. nervures being v. clear and well defined.

Loc. Gen. in marshy spots, but sometimes in v. dry places, v. m. and vi. : distributed over the whole region in the lowlands and often up to 4000ft., above wh. a break occurs, var. *Merope* not appearing below 5500ft., or thereabouts. As *Frey*, who speaks of it as being found all over Switz., adds that he has never taken it, I give a few locs : Vevrier, v. 17.-22 : Hermance, vi. 14 (*Bl.*) ; Caux, vi. 97 ; Lavey, v. 27, &c. 02 ; Brig, v. 16 03, v. brt. (*Wh.*) ; Jeur-Brûlée, above Fully, v. ab. (*Far.*) ; Bisbinno, vi. 3 (*Mayer*) ; Weissenburg, v. c. (*Hg.*) ; the Jura (*Frey*) ; Mt. Barry, vi. 28, 1900, nearly over (*Blm.*) ; Brunnen, swampy grd. by lake, v. 18 88, v. ab. (*Hutchinson*) ; and, as a contrast, v. ab. on the dry N. side of Charpigny (*Fis.*).

At Digne, iv. e. 97, v. ab., mostly var. *Artemis*, but some var. *Provincialis* (*Tutt*).

Directions of Var.

[Obs.—This is a most variable sp., being rarely *exactly* similar in any 2 districts ; and although certain forms are v. distinct, yet intermediate forms exist between the type and vars., and between the vars. themselves, exc. in the case of *Merope*, wh. is so isolated that it is doubtful whether it has not obtained specific rank : (even the specimens bred by the Rev. J. S. St. John do not necessarily tell against this view, though they go far towards establishing the phylogeny of *Merope*). The different forms are rather vars. than abs., as they are mostly local races, found, however, as abs. in locs. in wh. other forms predominate.]

(a.) size : esp. a great diminution at high altitudes, forming :

var. Merope, *Frauner* : 32-36mm., col. much washed out, and blk. nervures much suffused.

[Obs.—*Merope* varies greatly in amount of suffusion, and the depth of colouring up.s.]

Loc. In more or less numbers in marshy places on nearly all the high Alps from 5500ft. almost to the snowline, vii.-viii., e.g., Pont de Nant, vii. 18 (*Bl.*) ; Arolla, Pas de Chèvres path, vii. 13, &c., 1900, rather worn (*Blm.*) ; Riffelalp, ab. (*Postans*) ; Simplon Pass, vii. 10 01 ; vii. 28 99, not c., v. dk. with yellowish wash (*Wh.*) ; Upper Engadine, v. ab., esp. Alp Laret, nr. St. Moritz, vii. (*Nicholson*) ; Guarda, vii. 22-31, 1900 ; Fusio, vii. 1-12 99 ; Pontresina, vii. 1-21, 1900 ; Heuthal and Val Tuoi, vii. m. 1900, v. ab. (*Chp.*) ; &c.

Le Lantaret, viii. b. 96 (*Tutt*) ; Larche (*Powell*) ; Alpes Maritimes (*Brm.*) ; Pejo, vii. 95 ; Campiglio, vii. 95 ; Heiligenblut, vii. 25, 97 (*Lmm.*).

(b.) closer approximation of tint in the red and yell., leading to :

var. Artemis, *Fabr.*: with almost uniform fulvous grd. col. and well-developed blk. markings.

var. Signifera, *Kan.*: with reddish fulvous grd. col., but slight straw-col. in out. band f.w.

var. Ochrea, *Tutt.*: with grd. col. uniform ochreous: no red.

var. Brunnea, *Tutt.*: with uniform brn. grd. col. resembling that of *Cinria*.

(c.) a gen. paling of both tints, the red becoming yellower, the yell. more ochreous.

var. Provincialis, *Bsd.*: in wh. the dk. markings are also lighter and less conspicuous.

Loc. In Switz. only as ab.; Glion, 1 ♀ (*Sloper*); 1 ♀ (*Fis.*).

The usual form at low elevations in the Alpes Maritimes; Basses Alpes (*Powell*): e.g., Hospitalet (*Kan.*); Digne, vi. 90 (*Linn.*).

var. Iberica, *Obth.* (*Desfontainii*, *Imbr.*: *Desfontainesi*, *H.-S.*: *Beckeri*, *Led.*); in wh. the fulvous tint yet further predominates.

Loc. Mt. Vinaigrier: Nice; St. Martin Vésubie (*Brm.*, identified by *Stgr.*).

(d.) conspicuous brightening of red and yell., approaching towards *Maturua*.

var. Orientalis, *H.-S.* (*Praeclara*, *Kan.*).

Loc. By no means uncommon in Switz. esp. round the head of the Lake of Geneva: Glion; Caux; banks of the Rhone at Bouveret (*Wh.*); ab. at Jeur-Brûlée (*Par.*); Champéry, vi. 2 02; Le Prese, vii. 12 01 (*Fis.*).

(e.) el. pale band undivided at costa:

ab. Virgata, *Tutt.*

In the 2nd group the un.s. h.w. is divided into 5 fairly regular bands of alternate yell. and or.-brn., more or less outlined in blk., the inner deep-coloured band enclosing, or nearly enclosing, a yell. spot, grd. col. of up.s. gen. nearly unicolorous, though in *Phæbe* showing, in some forms v. clearly, the bands of the 1st group.

M. Phæbe, *Knoch* (*Corythallia*, *F.sp.*); 4mm. F'd. pl't.
Centaurea scabiosa, *C. jacea*, *Plantago lanceolata*, &c.

♀ gen. larger than ♂.

Dist. Char. up.s. grd. col. reddish or., a el. band on each w. and inn. band f.w. and a spot nr. base of h.w. being somewhat lighter.

Loc. Widely distributed, but not found everywhere, e.g., wanting in the Berne, Zürich and St. Gall districts (*Frey*); but found in the N. at Schaffhausen (*Trapp*); and Basle (*Kan.*); gen. e. in the S. Cantons, both in the lowlands and alps up to 5000ft., and in the Engadin as high as 6500ft.: e.g., Jura (*Frey*); Versoix, viii. 16, and other places nr. Geneva (*Bl.*); Les Avants, viii. 2, 26 (*R.-Brm.*);

Rhone Valley and lateral valleys, *e.g.*, Sierre, vi. 24 (*Blm.*), &c.: Visp, vi. 30 02 (*Sheldon*); Bérisal, v. c., esp. from 2nd Refuge to Ganter Bridge, vii. 98, &c. (*Wh.*); c. in the Grisons, *e.g.*, Silser See, vii. 1 95 (*Miss Ftn.*); Pontresina, vii. m. 1900; nr. Guarda, vii. e. 01 (*Chp.*), &c.; Locarno, iv. m. 03 (*Tutt*); Lugano (*Hg.*).

Grésey-sur-Aix, vii. e. 97; Bourg St. Maurice, vii. e. 91; Petit St. Bernard, vii. e. 94; La Grave, viii. m. 96; Larche, vii. e. 1900; Abriès, viii. m. 1900, ab. (*Tutt*); Digne, vi. 90, vii. 91 (*Lmn.*); St. Martin Vésubie, &c. (*Brm.*); Pré St. Didier, viii. b. 98; Courmayeur, viii. m. 98; Torre Pellice, viii. 2 01, v. ab.: Susa, just appearing, viii. 19 97 (*Tutt*); Olgiate, v. 93, and viii. 95, here apparently double-brooded (*Miss Ftn.*); Val Malenco, vii. 7, 1900; Campiglio, vii. 95 (*Lmn.*); Mendel Pass, vii. e. 95 (*Tutt*); &c.

Directions of Var. (a.) size, tendency to become noticeably smaller, culminating in:

ab. Minor, *Frey*: 38mm. and less.

(b.) a v. marked lightening of the pale bands giving a much more variegated appearance, known as:

var. Occitanica, *Styr.*

Loc. The warmer parts, esp. Varen, and the S. side of the Simplon, where specimens are much finer than those of Granada: also nr. the Ganter Bridge (*Far.*); Pfywald, vi. 24; St. Nicholas, vii. 20 98 (*Blm.*).

(c.) a marked lightening of the darker portions, and obsolescence of blk. up.s., esp. at bases f. and h.w. and centre of f.w., some of the blk. being replaced by brownish.

ab. (in S.E. Europe **var.**) **Ætheria**, *Eversmann*.

Loc. Martigny, vi. 19 02 (*Wh.*); Bad Alveneu, vii. 84 (*Lmn.*).

(d.) number and size of blk. spots un.s. f.w., esp. the last, wh. is sometimes a thick sq., sometimes consists of 2 curved lines placed horizontally back to back.

M. Cinxia, *L.* (*Delia*, *Brkh.*: *Pilosella*, *Esp.*); ♂ 36mm.

♀ 40mm. Fd. pl. *Plantago lanceolata*, &c.

♀ decidedly larger than ♂.

Dist. Char. up.s. grd. col. unicolorous or.-brn.; h.w. up. and un.s. with ante-margl. row of small blk. spots.

Loc. V. gen. distributed and often c. in the lowlands and lower mtn. slopes, up to about 3500ft., occasionally much higher, v.-vii.

Directions of Var. (a.) size: gen. becoming smaller at higher elevations.

Obs.—Mr. Lowe mentions one on Mt. Crammont nr. the snow, vii. 7/02, so small that it was taken, before capture, for *Parthenic* var. *Varia*.]

(b.) increase or decrease of blk. markings.

- ab. Suffusa**, *Tutt*: in wh. the blk. encroaches on the grd. col.
- ab. Obsoleta**, *Tutt*: in wh. the blk. is partially obsolete, and more of the grd. col. appears.
- ab. ? Pallida**, *Tutt*: in wh. the blk. also encroaches, and the grd. col. is much paler.
- var. Diniensis**, *Wh.*: in wh. the ante-margl. row of blk. spots up s. h.w. is absent.
- Loc.** Digne, *cgt.*, v. 20 02 (*Sloper*).

M. Trivia, *Schiff.* (*Iphigenia*, *Esp.*): 36mm. Fd. plt. mullein.

♀ without yell. spots on abdomen.

Dist. Char. broad blk. marg. enclosing or.-brn. lunules; further distinguished from *Didyma*, wh. it otherwise resembles, by its duller col. and *blk. nervures*.

Loc. Botzen, iv.-v. and vi.-vii. (*Spuler*); mtns. of Piedmont (*Kanc*).

Directions of Var. (a.) increase in size.

(?) **var. Fascelis**, *Esp.*: wh. is also a brighter chestnut-brn.

Loc. (?) Pas de Suze (*Kanc*).

M. Didyma, *Ochs.* (*Cinxia*, *Esp.*): 42mm. Fd. plt. *Plantago*, *Centaurea*, *Linaria vulgaris*, &c.

♂ grd. col. of all ws. alike, ♀ with grd. col. f.w. lighter than h.w. (in type a lighter shade of same col.).

Dist. Char. up.s. h.w. grd. col. brt. or.-red (♂ looks almost scarlet on the wing), *nervures not blk.* (though dk. in some forms of ♀).

Loc. Gen. distributed and often ab., but wanting in some few districts, *c.g.*, the Emmenthal and Burgdorf (*M.-D.*): in 2 broods (*Frey*) at lower elevations, vi. and viii., certainly only one at higher altitudes. vii.-xiii., gen. up to 6500ft.: a v. small ♂ not far from the snow on Mt. Crammont. vii. 7 02 (*Lowr*).

Directions of Var. (a.) size: considerable (my smallest ♂ is 32mm., my largest ♀ 48mm.)

(b.) grd. col. esp. in ♀, forming several vars. (in Switz., exc. *Alpina*, abs.).

var. Alpina, *Stgr.*: up.s. f.w. with greenish tinge, h.w. deep red-brn.: ♂ v. slightly spotted.

Loc. By no means confined to the mtns. notwithstanding the name, though found there commonly, *c.g.*, Bérisal, vii.-viii., ab.; but also between Aigle and Sépey (*Wh.*); between Sierre and Vissoye (*Far.*); at Sierre itself and in the Pfywald the type is more usual; Martigny; Naters; the Jura nr. Basle, &c. (*Far.*); Pontresina, vii. 95 (*Miss Ftn.*), &c.

Larche, vii. e. 1900; Abriès, viii. b. 1900 (*Tutt*).

var. Meridionalis, *Stgr.*: ♂ grd. col. v. brt. red, ♀ f.w. greyish and h.w., exc. for dk. suffusion, tinted greenish.

Loc. In hot places with type: *e.g.*, *e.* some years in the vineyards beyond la Bâtiatz: Sion: Sierre: &c. (*Far.*).

var. Græca, *Stgr.*: ♂ with broad blk border, ♀ of greenish-gr. tint; *un.s. h.w. in 2 r. rich shades.*

Loc. Scarce: gen. in hot places only: Vineyards of Martigny (*Far.*): Vevey, viii. 30 01 (*Kegues*).

var. Occidentalis, *Stgr.*: ♂ and ♀ much paler.

Loc. Scarce: La Bâtiatz (*Far.*): Pfynwald, 1 ♀, vii. 99 (*Wh.*). Olgiate, viii. 98, with whole up.s. rich cream-col. (*Miss Ftn.*): Alpes Maritimes (*Bru.*). [The small local race on the Dolomites, vii. m., with lighter, yellower, f.w. (*R.-Bru.*), should probably be referred to this var.]

[Obs.—A v. curious and beautiful ab. was taken close to the Hotel at St. Nicholas, vii. 23, 1900, by Mr. Buckmaster: up.s. f.w. grd. col. yell. brn., with border of blk. wedges, and ante-margl. line of blk. dots, much blk. at base, extending along two-fifths of costa, and one-third of inn. marg., containing 2 yell. spots in the upper and 2 in the lower part: h.w. deeper in col. with border of blk. wedges, cl. line of blk. dashes, and large blk. blotch from nr. base, following but not touching inn. marg.; un.s. f.w. few and small blk. spots: h.w. pale yell. with ante-margl. line of short blk. dashes, base or. edged with blk., rather broadly internally, narrowly externally; out. marg. f. and h.w. un.s. dashed with blk.]

The 3rd group consists of those sp. in wh. the lt. cl. band un.s. h.w. is preged exteriorly by a band usually containing at its out. edge a row, or part of a row of or.-brn. or yell.-brn. crescentic spots, and at its inn. edge a succession of narrow mottled spots, wh. are often more or less repeated at the basal edge of cl. lt. band: grd. col. up.s. nearly unicolorous, though the lighter bands are sometimes clearly indicated, esp. in *Parthenic* ♀. The sp. of this group are by far the most difficult to determine, though by no means so difficult as is usually supposed, if a number of specimens can be compared, exc. in the case of certain extreme abs.

Intermediate between the 2nd and 3rd groups is:

M. Deione, *Hb.*: 40mm. Fd. plt. *Linaria mouspetiensis* and *L. vulgaris*.

♀ less unicolorous up.s. and lighter un.s. than ♂.

Dist. Char. un.s. h.w. almost like group 2, but with some traces of the band characteristic of group 3: spot enclosed in inn. or. band more or less triangular, with apex resting on lowest of lt. basal spots: un.s., and often up.s., f.w. with a >-shaped blk. mark nr. inn. marg.

Loc. Digne, vi. 10 99, *e.* at privet by the side of rivulets (*R.-Bru.*): v., vi. and viii. (*Powell*): Certosa di Pesio, nr. Beinette, vii. 18, 92 (*Norris*); St. Martin Vésubie, a few, vii. b. 99 (*Lang*).

Directions of Var. (a.) grd. col. darker and duller.

var. Berisalensis. *Fav.* (false Berisali, *Hohl*). The Swiss form.

Obs.—After much correspondence, and the examination of many specimens, I am fully assured that this is the Swiss form of *M. Deione*, as M. Püngeler supposes; the un.s. is identical, the up.s. differs from that of *Deione* (from la Valette) only in being darker in grd. col. and having the blk. markings more pronounced. It is beyond my comprehension how anyone can regard either *Deione* or *Berisalensis* as a form of *Athalia*, the un.s. alone would preclude such a designation. I fail to see even a superficial resemblance, and the life-histories have nothing in common beyond what is common to the whole genus. Further, the 2 broods of *Berisalensis* come out, one before, and the other after, the one brood of *Athalia* in the Rhone Valley. On the other hand, besides the close similarity of markings, the broods of *Deione* and *Berisalensis* both feed on *Linaria*, both are regularly double-brooded, appear at approximately the same time, and in both the earlier brood is noticeably the larger; both, again, are singularly constant in their special characteristics. The difference between the Spanish and S. French specimens of *Deione* seems to point in the same direction, the Spanish form being as much lighter as the Swiss is darker than the French.]

Loc. Hitherto only from Martigny (Tour de la Bâtiaz through the vineyards to Plan Cérisier), and Saillon; v. e. to vi. e., and viii. m. to ix. m.; *v.g.*, Martigny, v. 28 01, ab. (*Fis.*); vi. 14 02; vi. 25 01, rather worn; viii. 27, 1900; ix. 1 99 (*Wh.*), &c. &c.; reported also from the vineyards at Varen, vii. 3 02 (*Sheldon*, identified by *Chp.*).

Obs.—This loc. is a v. likely one, the date, though rather late, by no means impossible, *but* specimens intermediate between this and *Athalia* are mentioned, which makes one pause before fully endorsing this loc. My correspondence on the subject, and the arrangement of various collections, have made me v. doubtful whether half a dozen collectors exist, outside the *habités* of the Rhone Valley, who really know *Berisalensis* when they see it, still less when they do not.]

Directions of Var. (a.) 2 v. suffused specimens, becoming almost blk. (*Wschl.*).

(b.) 2 specimens with the > mark divided thus: > (*Fis.*).

Obs.—The name *Berisalensis* is a complete misnomer, it being an open secret that the original type specimens came from Martigny, whence the captor went direct to Bérisal, his captures from the 2 places becoming mixed. It has never been taken at Bérisal, and it may be safely predicted that it never will be. It is v. likely that specimens from the Simplon Pass purporting to be *Berisalensis* are responsible for much of the confusion through which it has been supposed to be a var. of *Athalia*.

M. Asteria, *Frr.* (*Asterie*, *H.-S.*); 30mm. Fd. plit. unknown.

♀ lighter than ♂.

Dist. Char. un.s. h.w. a single dk. margl. line (the other sp. have a double one).

Loc. Only at high elevations in the E. Swiss and Tyrolean Alps and Piedmont, vii.-viii. On the Calanda (*Wredow*); above Coire (*Kriechhammer*); above Churwalden (*Hg.*); on the Gurgaletsch above Parpan (*Caflich*); Davos, viii. 2, 1900; Pontresina, vii. 1-21, 1900; Guarda, vii. 22-31, 1900; Henthal, vii. m. and Val Tuoi, vii. e. 1900 (*Chp.*); at the top of the Albula Pass (*Frey*); reported also

from between Zermatt and the Gornergrat (*Guénée*): considering its Piedmont haunts this is quite a likely loc., and I have myself taken 3 specimens on the Simplon, vii. m. 01.

Larche, vii. e. 1900; Abriès, viii. m. 1900; Pré St. Didier, summits of the Crammont and Mt. de la Saxe, vii. b. 98 (*Tutt*); Brenner on the Postalp, vii. 28, 1900, ♂ s worn, ♀ s fine (*R.-Bru.*).

[Obs.—“An insect v. inconspicuous on the wing, and with a ‘bee-like’ flight” (*R.-Bru.*).]

Directions of Var. (a.) some specimens slightly more transparent-looking.

[Obs.—*Frey* observes that this sp. is rich in vars.: I have only once taken it, but all that I have seen in collections are singularly constant, and all those of my correspondents to whom I have addressed special enquiries on the subject bear this out from their own experience.]

M. Aurelia, *Nickerl* (Parthenie, *Illust.*: *Athalia minor*, *Esp.*: *Athalia*, *Ill.*); 32mm. Fd. pl. *Melampyrum* and plantain.

♀ lighter in markings than ♂.

Dist. Char. small size, together with breadth of blk. markings giving a chequered appearance.

Loc. Apparently confined in Switz. to the Valais, the Grisons and Tessin, mostly at low elevations, but rising in places to nearly 6000ft.; local in Valais, but found in many places: Visp, on an open bank about a mile along the Brig road, vi. 16 99. c.; Rhone meadows at Sion, v. 20, 1900 (*Wh.*); Bérisal, viii. 2 97 (*R.-Bru.*); vineyards at Martigny; Mt. Chemin; Fully; Sierre; Cran; Turtmann; Vispertenbinen; Stalden; Forest of Fiesch; Belalp; Bortelalp; Bärenfallenalp: vi.-vii. (*Fav.*); Bergün in a few meadows only, vii. 11, &c., 89 (*Rühl*); Maloja, vii. 88 (*Linn.*); Monte Bré, viii. 18 02, dk. specimens (*Fis.*).

Susa, vi. 21 99 (*R.-Bru.*); Val Solda, viii. 20 02 (*Fis.*).

Directions of Var. (a.) lighter grd. col. and narrower blk. markings.

var. Rhætica, *Frey*.

[Obs.—As *Rhætica* is sometimes spoken of as a darker form, I give the original description translated from *Frey's* “Lepidopteren der Schweiz,” p. 30: “smaller, lighter red-brn., less dull, with narrower blk. markings, the ? not rarely with v. lt. brn. rows of spots.”]

Loc. Coire, v. c. (*Cajlich*): vii. 3 01 (*Fis.*); occasionally among the Visp specimens (*Wh.*).

(b.) general darkening of appearance un.s.

var. Britomartis, *Assmann* (? *Veronica*, *Dorfmeister*: ? *Aphaea*, *Frr.*).

[*Assmann's* original description is as follows: “*Melitaea alis integris, ferrugineis, nigro-reticulatis, posticis subtus flavidis, fasciis tribus cinnamoneis, maculisque duabus sub-albicantibus, linea nigra ante marginem exteriorem flavum vel cinnamoneum.*” This is not a v. enlightening description, but *Rühl*, who had the opportunity of

examining a specimen identified by *Assmann* himself, remarks that he should have taken it for *Parthenie* by its up.s., but that on the un.s. it showed in the out. dk. band of the h.w. the blk. spots peculiar to *Dietygna*. This at once puts out of the question *Spuler's* description in the *Schmetterlinge Europas*, 1903, "border, bases, and cross-lines broader and blacker, the palpi darker, and the 3 red-brn. bands un.s. h.w. standing out more strongly." *Assmann* considered *Britomartis* to be a distinct species.; *Bühl* considers that if it is not, it is probably a hybrid between *Parthenie* and *Dietygna*, and not in any case a var. of *Aurelia*: the hybrid theory was a favourite one with *Bühl*, and in this group is possibly far more often correct than one is apt to imagine. The following locs. refer to the var. as described by *Assmann*; Mr. Fison's specimens from Monte Bré and Val Solda would come under this head according to *Spuler* and others.]

Loc. In the Valais as an ab. only: Sion; Sierre; Naters; Laquinthal (*Far.*).

M. Parthenie, *Brkh.* (Parthenoïdes, *Kefferstein*); 36mm.

Fd. pl. plantain, scabious, &c.

♀ lighter and less unicolorous than ♂, with whitish bands un.s. h.w.

Dist. Char. up.s. f.w. cl. and ante-margl. bands v. slightly divided by narrow blk. line often broken in middle; cl. band of h.w. in ♂ conspicuously broad, and scarcely, if at all, interrupted in the centre with blk. (This *sometimes* occurs in *Athalia*.) Un.s. h.w. with dk. band nr. base gen. lighter and narrower than in *Athalia*: further distinguished from the latter by the palpi, wh. are golden-brn. above, with a dark line below; ♀ grd. col. much less unicolorous than *Athalia* ♀, and distinguished from *Deione* var. *Berisalensis* ♀, which it closely resembles above, by un.s.

Loc. Swarms in many parts of the Rhone Valley, esp. in 1st brood, vi.-vii. m.; less ab. in the 2nd, viii.-ix; Veytaux, Aigle, Charpigny, Bex, &c. (*Wh.*); La Bâtiâz, Charrat, Fully, Mt. Chemin, Sierre, Salquenen, the Pfynwald, Locche-les-Bains, Visp, Stalden, &c. (*Far.*); also Veyrier, vi. 17; viii. 26; Versoix, viii. 18, &c. (*Bl.*); Liestal, Engelberg, Meiringen, Interlaken, Brienz, &c. (*Frey*); Oberhasli (*M.-D.*); Gadmen, v. c. (*Hützer*); Weissenburg, v. c. in both broods (*Hg.*); the Jura, *v.g.*, St. Georges, v. brt. (*Wh.*); large at Basle, Zurich, and in the Grisons, and v. brt; small and v. bright in Tessin (*Frey*); San Martino (*Mayer*), &c.

St. Martin Vésubie, Thorenc, Berthémont, &c. (*Brm.*).

Directions of Var. (a.) diminution of size at greater altitudes, culminating in:

var. Varia, *M.-D.*: down to 28mm. or even less; ♂ v. brt., ♀ often with slight greenish tinge.

Loc. Gen. at high elevations: Evolena, Val d'Anniviers, Kaltberg, the Riffel, Belalp, Rossbodenthal, &c. (*Far.*); Bérisal, viii. 1 97 (*It.-Brn.*); c. in the Engadine, up to 7500ft. or more (*Frey*); Bernina Haus, vii. 18 01, c. (*Fis*); Heuthal, vii. 1900 (*Chp.*), &c.

Trafoi, scarce (*Frey*); Mt. Crammont, vii. 7 02 (*Lowc*); Crête de Rey-chasse (*Tutt*): at high elevations in the Alpes Maritimes (*Brn.*).

(b.) amount of blk. up.s.

[Obs.—Mr. Fison has one entirely suffused with blk. exc. border.]

(c.) amount of variegation up.s. in ♀.

(d.) depth of colouring un.s.

M. Athalia, Rott. (Maturna, *Illb.*): 36mm. Fd. plt.

Melampyrum pratense, *M. sylvaticum*, *Centaurea*, *Plantago*, &c.

♀ gen. larger, and with lighter un.s. than ♂.

Dist. Char. cl. and ante-margl. band up.s. f.w. more or less heavily divided by blk.; up.s. h.w. with cl. band often suffused, almost always interrupted in centre with blk. (*v. Parthenic*) and with or.-brn. spot nr. base; un.s. h.w. inn. dk. band gen. broader at costa than in *Parthenic*, *Aurelia*, or *Dictynna*: further distinguished from *Parthenic* and *Aurelia* by the palpi wh. are dk. brn. above.

Loc. Throughout the whole region, vi.-vii.-viii., rising as high as 6500 metres or more; not, in my experience, so c. in the Rhone Valley as *Parthenic*. *Rühl* observes that the specimens emerging vi. are smaller, and those emerging viii. larger, than the average. He also remarks that the brighter the colouring the rounder the outline of the w.; that the specimens from the mtus. of Lower Austria have v. small blk. spots un.s. h.w.; and that those from moorlands are gen. darker than the average. Occasionally, in very hot years, a few small specimens, a partial 2nd brood, appear ix.

Directions of Var. (a.) size: the mtn. specimens are gen. small but brt. (*Rühl*).

(b.) increase of blk.

ab. Navarina, Silys-Longchamps: with blk. suffusion over all ws., leaving ante-margl. row of or.-brn. spots.

ab. Aphæa, Illb.: with 2 bands of or. spots up.s., the margl. lunules and cl. spot un.s. h.w. filled with blk. and a row of large blk. spots un.s. f.w.

[Obs.—In Mr. Fison's collection is a specimen approaching this ab. with inn. edge of ante-margl. band suffused with blk., whole centre of w. lt. yell. with band of large suffused blk. spots.]

ab. Caucasica, Stgr.: f.w. normal, h.w. much suffused with blk.

(c.) decrease of blk.

ab. Corythalia, Illb. (Samonica, *Rieser*); all blk. markings absent from centre of f.w. up.s.; h.w. much suffused with blk., leaving a single row of or. spots.

- ab. Obsoleta.** *Futt.*: with conspicuously decreased blk. markings f. and h.w.
ab. Hertha. *Quensel.*: with long blk. streaks m.s. f.w. but less blk. up.s. f.w.
ab. Virgata. *Futt.*: with cl. or. band f. and h.w. lengthened into streaks.
var. Helvetica. *Rühl.*: with cl. or. band lengthened out on h.w. only (as in *Parthenie*): m.s. h.w. with oblong, blk.-bordered yell. spot nr. root, and cl. band silvery-wh. in ♂ as well as ♀.
Loc. Bergün and Stalla (*Rühl.*).

(d.) greater variegation of ♀ up.s.

- ab. Leucippe.** *Schneider.*: in wh. the out. and 3rd row of spots are much lighter.

Obs.—Specimens from Coire are dk., some from Le Prese darker still, approaching *Dictynna* in col. (*Fis.*).

M. Dictynna, Esp. (*Corythalia, Hb.*): 37mm. Fd. pl. *Veronica, Melampyrum, Spiraea, Valeriana, Plantago lanceolata,* &c.

♀ with more and lighter markings than ♂.

- Dist. Char.** v. large proportion of blk. on up.s. esp. h.w., looking as if it were the grd. col., also dk. ante-margl. band m.s. h.w., interrupted nr. costa on out. side, and containing v. dk. spots on the uninterrupted portion.

Loc. Gen. distributed in Switz. in the plains and at lower elevations, and mounting to 6000ft. or more, v. e. and vi. Remarkably fine specimens on the left bank of the Rhone at Bouveret. Gen. distributed, also, in the rest of the region, but apparently not extending to the Basses Alpes or Alpes Maritimes.

Directions of Var. (a.) size: my smallest ♂, from Vald'Anniviers, is 32mm.; my largest ♀, from Bouveret, 40mm.

(b.) amount and depth of or.-brn. up.s., esp. in ♀.

(c.) depth of colouring m.s., esp. h.w.

Tribe VANESSINI: hyb. im. (exc. *Levana*).

Genus, Arachnia (false Araschnia), *Hb.*

A. Levana, L.: 30mm. Fd. pl. nettle: hyb. p.

♀ larger than ♂, with rather lighter grd. col.

Dist. Char. Conspicuous lt. veining m.s. with transverse lines on basal half, giving a cobweb appearance (hence the name).

(Obs. The seasonal dimorphism in this sp. is so marked and extraordinary that nothing is left in common but the character above mentioned and the slightly angled shape of the w. In the 1st brood, iv. v₂, the grd. col. up.s. is or.

as in *P. C-album*, with dk. brn. markings; in the 2nd (and later) broods, vii.-viii. (and ix.), known as

var. Prorsa, *L.*: the grd. col. is blk., with wh. broken bands and or. ante-margl. lines. An intermediate form, v. scarce in nature, but readily obtained by keeping September chrysalids at an artificial heat during the winter (*Far.*), is called:

ab. Porima, *Ochs.*: more nearly resembling *Prorsa*, but with wh. replaced by tawny, and the band on h.w. almost always divided.

Loc. V. local; c. round Basle, *e.g.*, Liestal (*Christ*); the Bechburg (*R.-S.*); c. in the Bernese Mittelland: Schüpfen; Burgdorf; Berne (*Jüggli*); throughout Oberaargau; Lenzburg (*Wschl.*); Glaruss (*Heer*); Kupfernaseruns above Filzbach, vi. 19/02; Thalalp, vi. 20, &c. 102; *Lerana* (*Fis.*); v. scarce in the Grisons; Tavanasa (*Brügger*); Ragatz (*Eisnering*); also in the Valais, at the ft. of Mt. Chemin; nr. Sierre, esp. in the Pfywald (*Far.*); in W. Switz. at Lucens, v. 7/88 (*Hutchinson*); also Moudon and Payerne (*Frej*); (entirely absent from the Cantons of Schaffhausen, Thurgau, St. Gall, and Zürich; also from the Rhone Valley up to Martigny, and from the district bordering on the Lake of Geneva).

The Tyrol; also Wolfsberg, vii. 15/97; *Prorsa* (*Linn.*); Berchtesgaden, vi. e. 1900 (*Lang*).

Directions of Var. (a.) size of the dk. brn. markings in *Lerana*.
(b.) size and continuity of the wh. band in *Prorsa*.
(c.) number and extent of thin or. ante-margl. lines in *Prorsa*.

Genus, *Pyrameis*, *Illb.*

Dist. Char. a triple wh. spot from centre of costa, and ante-margl. wh. spots from nr. apex half down f.w.

P. Cardui, *L.*: 35mm. F'd. pl. thistles.

Dist. Char. grd. col. un.s. f.w. cherry col.

Loc. To be found everywhere, in many years ab., up to 8000ft.; the principal brood emerges in late summer, but the insect is to be seen on brt. days during most of the year.

Directions of Var. (a.) blk. markings confluent up.s.

ab. Elymi, *Rubr.*: in which the wh. spots are reduced to small streaks.

(b.) absence of blk. spots up.s. f.w. except apical half.

ab. Inornata, *Bramson*: in which the wh. spots are also larger (both abs. scarce).

P. Atalanta, *L.*: 55mm. F'd. pl. nettle.

Dist. Char. Scarlet band across f.w. and border h.w. up.s.

Loc. V. gen. distributed, but not often mounting v. high, though occasionally to the tree limit: vii. till hybernation, and in spring, but not gen. re-appearing till v.m.

Directions of Var. (a.) division of red. band up.s. f.w.

ab. **Fracta**, *Tutt*: the dk. grd. col. being developed along el. nervure.

(b.) a gen. diminution of markings.

ab. **Klemensiewiczzi**, *Schille*: red band f.w. shortened at both ends, large costal spot reduced to small wh. dot. red band h.w. shorter, narrower, and without blk. spots.

Genus, *Euvanessa*, *Scudder*.

E. Antiopa, *L.*: 70mm. Fd. plt. willows, poplars. &c.

♀ larger than ♂.

Dist. Char. Deep chocolate grd. col. with lt. border.

Loc. Throughout the region, though seldom v. ab.; flying up to 6000ft. or more; viii.-ix., and after hybernation, iv.-vi., often in excellent condition.

Directions of Var. (a.) yell. border after hyb. becomes lighter, gen. almost wh., and the bl. spots become more prp.

(b.) enlargement of yell. border.

ab. **Lintneri**, *Fitch*: in wh. the bl. spots are consequently reduced.

ab. **Hygiæa**, *Heydenreich*: in wh. they are entirely lost.

Genus, *Vanessa*, *Fabr.*

V. Io, *L.*: 55mm. Fd. plt. nettle.

Dist. Char. a large eye-spot on each w. up.s. those on f.w. gorgeously coloured.

Loc. Gen. c. throughout the region, mounting occasionally up to some 8000ft. (*e.g.*, the heights above the Blumenthal, Müren, viii. 3, 1900, v. fresh); vii.-ix., and, after hibernating, all spring.

Directions of Var. (a.) size: the so called ab. *Ioïdes*, *Ocks.*, is merely the result of half-starved larvæ].

(b.) loss of eye-spots.

ab. **Exoculata**, *Wegner*: with eye-spots h.w. obsolete.

ab. **Belisarius**, *Obth.*: with all eye-spots obsolete, and blk. spots f.w. confluent.

ab. **Fischeri**, *Standfuss*: in which eye-spots f.w. are disintegrated, showing a resemblance to the wh. spots of *Pyrameis*.

[Obs.—The last always, the 2 former usually, are obtained by refrigerating pupæ, but *Fav.* (Supplement to the "Lépidoptères du Valais," 1903, p. 5) says that these 2 occur here and there with the type.]

(c.) col. of the prp. in eye-spots esp. h.w.,
varying from heliotrope to bl.

(d.) occasional appearance of a bl. spot below
eye-spot, h.w. up.s.

ab. **Cyanosticta**, *Raynor*: spot varies greatly in size.

Genus, *Aglais*, *Hb.*

A. *Urticæ*, *L.*: 48mm. Fd. plt. nettle.

Dist. Char. un.s. f.w. grd. col. of large portion, starting from
ext. half of inn. marg., of a buff tone, only slightly marked
with brn.

Loc. One of the commonest as well as most widely distributed
of butterflies throughout the region: found in numbers up to 7500ft.
and occasionally much higher: 2 or 3 broods, vi., viii., and some-
times x.; but the insect may be seen on warm days throughout the
year.

Directions of Var. (a.) tint of grd. col. up.s.: more or less or,
in the red.

(b.) distinctness of cl. band un.s. h.w.

(c.) traces of blk. cl. band up.s. f.w., culmi-
nating in:

var. (& ab.) **Polaris**, *Stgr.*: in wh. blk. spot of inn. marg. is
joined to middle costal spot.

(d.) obsolescence of the 2 cl. blk. spots
up.s. f.w.

var. (& ab.) **Turcica**, *Stgr.*: in which they are absent, as is
also the inn. margl. spot: grd. col. deeper.

var. (& ab.) **Ichnusa**, *Bonelli*: grd. col. still deeper, cl. spots
absent, inn. margl. spot *sometimes* absent also.

ab. **Ichnusoïdes**, *Selys Longchamps*: cl. spots absent, costal blk.
spots confluent: un.s. darker.

ab. **Atrebatensis**, *Bsd.*: like the last, but with h.w. up.s. entirely
suffused with blk.

Genus, *Eugonia*, *Hb.*

Prevailing col. or.-brn. with blk. spots, and bl. spots in border.

E. *Polychloros*, *L.*: 60mm. Fd. plt. elm and willow.

♀ larger than ♂.

Dist. Char. absence of *wh.* spot nr. apex on costa f.w. up.s.; *legs*
dk. brn.

Loc. V. widely distributed, but seldom ab., and somewhat
uncertain in appearing: vii.-viii., and, after hibernation, all through
the spring: in plains and lower valleys.

Directions of Var. (a.) size: 50mm.-65mm.
(b.) coalescence of blk. spots up.s. f.w.

ab. Testudo, Esp. (*Pyrrhoclaina, Hb.*): which has also grl. col. f.w. much lighter, and h.w. darker than type: a magnificent, but scarce form.

E. Xanthomelas, Esp.: 60mm. Fd. plt. willow.

Dist. Char. V. like *Polychloros*, but with whitish spot on costa nr. apex up.s. f.w.: *legs yell.*

Loc. V. scarce. Formerly taken at Winterthur (*Rordorf*): valleys of the E. Alps (*Spuler*): vii. to ix., and, after hibernation, in the spring.

Genus, Polygonia, Hb.

Prevailing col. brownish-or. with v. dk. brn. (or blk.) markings.

Dist. Char. v. jagged out. marg. f. and h.w.

P. L-album, Esp. (V-album. *Fabr.*: Vau-album. *Nier-ville*): 60mm. Fd. plt. aspen, willow, &c.

Dist. Char. wh. spot on costa nr. apex both f. and h.w. (up.s. closely approaches *Eugonia*, and the outline of the ws. is not so jagged as in other sp., but un.s. is that of *Polygonia*).

Loc. Doubtful whether found in region. Switz. is given in some authors, but I can find no more exact loc. and no evidence. Possibly in the valleys of the E. Alps, vi.-viii. (*Spuler*).

***P. Egea, Cramer** (Triangulum. *Fabr.*: Vau-album. *Esp.*: V-album. *Bekh.*): 45mm. Fd. plt. elm, nettle, *Ribes*, *Lonicera*, *Corylus*.

? gen. larger than ♂.

Dist. Char. un.s. h.w. conspicuous wh. mark *angled*: further distinguished from *C-album* by smaller spots up.s., and less jagged outline.

Loc. v.-vi. and viii.-ix., also early spring after hibernation: only in S. of the region. Digne, iv. m. 97 (*Tutt*): vi. 16 99, v. fine (*R.-Bru.*): vii. 91 (*Linn.*): Cannes, ii. 27, *hyb.* (*Chp.*): well distributed over Basses Alpes and Alpes Maritimes, but not v. c. (*Powell*): Vallon Obscur, St. Martin-Vesubie, &c. (*Bru.*): Finalmarina, v. 92, c. (*Norris*): Susa, viii. m. 97 (*Tutt*): vi. 21 99, c. m vineyards: Cortina, vii. 30, 1900 (*R.-Bru.*).

Directions of Var. (a.) darkening of coloration:

var. J-album, Esp. (L-album. *Hb.*: *Autumnalis, Staudelli*): wh. is also smaller and with more angulated outline.

Loc. The ordinary form of the later brood, *eg.*, Alpes Maritimes, Beaulieu, &c. (*Bru.*): between Puget-Theniers and St. André, x. 9 and 16, quite fresh (*R.-Bru.*).

(b.) shade of grd. col. and conspicuousness of markings un.s.

[These vary in a way exactly parallel with *C-album*, *q. v.*]

P. C-album, *L.*: 44mm. Fd. plt. currant, nettle, elm, poplar, &c.

♀ gen. larger than ♂.

Dist. Char. un.s. h.w. conspicuous wh. mark, *rounded*; gen. like a C.

Loc. Everywhere in the region in woods, gardens and roadsides, often ab.; v. e., vi.; and vii., viii.-x., also in early spring after hybernation; not gen. above 4000ft., but in Val Pellice at 8000ft. (*Tutt*).

Directions of Var. (a.) lighter grd. col. up.s.

var. (& ab.) Hutchinsonii, *Robson* (*Pallida*, *Tutt*); gen. in summer brood.

(b.) tendency of dk. markings up.s. to form a cl. band culminating in:

ab. F-album, *Esp.*: wh. has also the C-mark converted more or less into an F.

(c.) darkening of border up.s., culminating in:

ab. Reichenstettensis, *Bühl*: with pale grd. col.; 2 basal spots up.s. f.w. in place of blk. blotch; v. broad border, esp. on inn. marg.; and h.w. all dk. exc. base and nr. fringe.

(d.) shape of wh. mark un.s.; sometimes resembles a G, sometimes an O, sometimes a small r inverted, occasionally, in ♂, reduced to a mere line, forming:

ab. Iota-album, *Newham*.

(e.) grd. col. and markings un.s.; the more or less uniform dk. un.s. is regarded as the type, the shade of which varies considerably; there are also 2 main divisions of the variegated form:

ab. Pallidior, *Petaqua*: with lt. grd. col.

ab. Variegata, *Tutt*: with dk. grd. col., the grn. being often prominent.

Obs. The above give only the main forms of the un.s., wh. varies almost endlessly; such variation being independent of sex, and to a great extent also of time of emergence; it has, however, been observed that the hibernating specimens are gen. more uniform in colour, this probably being useful for concealment in the winter.

Tribe NYMPHALIDÆ.

Genus, *Limenitis*, *Fabr.*: *hyb. l.*

Prevailing col. blk. (or v. dk. brn.) with wh. spots and bands.

L. Populi, *L.*; 68mm. F'd. plt. poplars.

Almost blk., ♂ with narrow, ♀ with broad wh. band up s. h.w.

Dist. Char. un.s. h.w. out. marg. lt. greenish-bl. band divided by blk. lines.

Loc. Basle and Liestal, scarce (*Frey*); Canton Aargau, e.g., Bremgarten, Lenzburg, Gysulafuh, &c. (*Wschl.*); commoner in the "Mittelland" of Canton Berne, e.g., Burgdorf, Schüpfen, Berne, Aarberg (*M.-D.*); widely distributed, but v. scarce in E. Vaud (*r. infra*); Gryon, vii. /02, much worn (*Moss*); not quite so scarce in the forests of the Valais; e.g., Forclaz, vii. 18/01 (*Sloper*); St. Léonard, Granges, Sierre, &c. (*Far.*); not rare at Rossinières (*Tasker*); in the cantons of Schaffhausen, St. Gall (*Täschler*); Thurgau (*Engster*), and Glarus, e.g., Mollis (*Heer*); in the Grisons, Coire, Trins, Tiefenkasten (*Killias*); Le Prese, at side of lake, vii. 12-15.01, mostly worn (*Fis.*); in the Jura at St. Cergues, vi. 26, and vii. (*Bl.*); Versoix (*Jullien*).

N. Savoie, e.g., Sauverny, nr. Divonne (*Hervardin*); les Voirons (*Fogt*); the Tyrol, e.g., Sarnthal, vi. 21/01, strongly tinged with bl. approaching col. of *Camilla* (*Lowr.*).

[Obs.—The ♂ gen. rests on the grd. up to 10 a.m., the ♀ rarely descends before 4 p.m.]

Directions of Var. (a.) tendency towards loss of wh., culminating in:

ab. Tremulæ, *Esp.*: in wh. little is left but the apical spots; grd. col. deep snuff-brn.

[Obs.—A transitional form with the wh. v. narrow and much suffused with brn., and the grd. col. brn. without a trace of bl.-blk., is the ordinary one in E. Vaud, at any rate at the lower elevations: Veytaux, vi. 13-07 (*Wh.*); Aigle, vi. 24/98, and vi. 25, 1900 (*Lowr.*); Timière Valley, vi. 21/02 (*Chadwick*); a mile beyond Sépey, vii. 26 01 (*Lann.*); etc.]

L. Camilla, *Schiff.* (*Lucilla*, *Esp.*); ♂ 50mm., ♀ 54mm.

F'd. plt. honeysuckle.

Dist. Char. un.s. h.w. out. marg. 1 row of blk. spots between 2 rows of Indian red, on dk. leaden grd. col.

Loc. Throughout the whole region, but not found everywhere, occasionally plentiful, but often in small numbers only; in and on the outskirts of woods. Basle, scarce, 1 sp. x. m.† (*Christ*); Oensingen, on the Beechburg (*R.-S.*); in the cantons of Schaffhausen (*Trapp*); Aargau (*Wschl.*); Thurgau (*Sulzberger*); and St. Gall (*Täschler*); Berne: Schüpfen; Burgdorf (*M.-D.*); Gadmen

† Note. The fact, wh. has always seemed probable, that *Camilla* is at least partially double-brooded, is now placed beyond doubt. Mr. Sloper reared a number of larvæ from the 1st brood at Glion in 1901, some in captivity, some placed out of doors on the f'd. plt. Although those in captivity were removed to Zermatt, they emerged in August, and, on returning to Glion in September, at least one empty pupa-case was found on the plant on which he had placed the other larvæ on leaving for Zermatt.

(*Littor*); entrance to the Klönthal (*Frey*); Weissenburg, up to ix. (*Hg.*); the Jura, *e.g.*, Sorvillier (*Hg.*); St. Blaise (*Conderu*); St. Cergues, vi. 26 (*Bl.*); nr. Geneva, Veyrier, viii., Onex, viii. 18 (*Bl.*); gen. distributed in Vaud and the Valais, *e.g.*, Lausanne, vii. 85, not uncommon in gardens (*Jones*); les Avants, viii. 5, 96 (*R.-Bru.*); Veytaux, vi. 8, 99; Aigle and Sépey, ab., vi. e., and vii., 1900, &c., Sierre, vii. and ix. 6, 99 (*Hb.*); Pfyn, vi. 29, 97 (*Postans*); Martigny; Fully; Sion; Varen; above Grengiols, ab., &c. (*Far.*); the Grisons (*Killias*); *e.g.*, Bad Alvenen, vii. 85 (*Linn.*); Pontresina, viii. b. 01 (*Chp.*), and found singly as high as Bergün, 4500ft. (*Frey*).

Savoie, *e.g.*, nr. Geneva, Yvoire, vi. 2; Bossey, viii. 2, 3, 24; Mornex, viii. b. (*Bl.*); Bourg St. Maurice, viii. b. 98; Bourg d'Oisans, viii. m. 96; Barcelonette, viii. b. 1900; Grésy-sur-Aix, viii. m. 1900, small (*Tutt*); Digne, vi. 4, 99, ab. (*R.-Bru.*); vii. 91 (*Linn.*); Vallon Obscur, &c. (*Bru.*); Susa, viii. m. 97; Courmayeur, viii. b. 94; Pré St. Didier, viii. m. 98 (*Tutt*); Certosa di Pesio, along the river, not uncommon (*Norris*); Cortina, Tre Croce, vii. 23, 1900 (*R.-Bru.*); Mendel, vii. 95 (*Linn.*).

Directions of Var. (a.) diminution of wh., leading to :

ab. ♀ **Pythonissa**, *Millière* (? found in nature).

L. Sibylla, *L.* (*Camilla*, *Esop.*): ♂ 48mm., ♀ 54mm.

Fd. plt. honeysuckle.

Dist. Char. un.s. h.w. out. marg. 2 rows of blk. spots on or. grd.

Loc. Stated by *Frey* to be found gen. in the same locs. as *Camilla*, but to be commoner, though not mounting so high. In the Valais, however, it is even scarcer than *Camilla*, though ab. at Aigle, emerging vi. e., a little later than the other sp., and never double-brooded; nr. Geneva it is taken at Sierre, vi., and Meyrin, vii., but is not noted from the locs. given for *Camilla* (*Bl.*); in the Valais I find only 3 places mentioned, *viz.*, ft. of Mt. Chemin; Fully (*Far.*); and Pfyn, vi. 21, 97 (*Postans*); in addition to the locs. mentioned for *Camilla*, *exc.* Bergün, are given Uetliberg, vii. 84 (*Linn.*), and woods nr. the Burgenstock, vii. 18, 98, ♂ s rather worn, ♀ s fresh (*Prideaux*).

Certosa di Pesio, vii. and viii. b. 92, scarce (*Norris*); neighbourhood of Vienna, vii. 97 (*Miss Ftn.*).

Directions of Var. (a.) diminution of wh.

ab. **Angustata**, *Stgr.*: with narrower wh. band.

ab. **Stænotænia**, *Honrath*: with band broken into separate spots.

ab. **Nigrina**, *Weymer*: which is without the wh. band.

Genus, Neptis, *Fabr.*

Prevailing col. blk., with wh. spots and bands.

Dist. Char. short broad wings.

N. Lucilla, *Fabr.*: 50mm. Fd. plt. *Spiraea salicifolia*:
hyb. l.

♀ larger than ♂.

Dist. Char. h.w. up. and un.s. with only one wh. band.

Loc. Hedges and copses in the S. and S.E. (not in the S.W.) of the region, vi.-vii. Locarno, vi. b. 87, a few (*Jones*); Lugano, viii. b. (*Meissner*); Monte Bré (*Muc. Sappert-Mieg*).

Susa, vi. 26 99, just emerging (*R.-Bru.*); Torre Pellice, to right of river, vii. 01 (*Tutt*); Crevola (*Rotzer*); nr. the Inn at S. Jean, above Iselle (*de Rougemont*); Bayeno, vii. 88 (*Linn.*); Stresa, in chestnut wood, vi. b. 87 (*Jones*); Tyrol, *e.g.*, 2 miles up the Eggenthal, vi. 22 01 (*Lowe*); Styria (*Käuc*); Carinthia, *e.g.*, Wolfsberg, vii. 18 97 (*Linn.*); Mödling, vi. c. 1900 (*Lang*); bred vi. 97 from larvæ found the previous month in the park at Schönbrunn, Vienna (*Miss Ftn.*).

Fam. APATURIDÆ.

Tribe CHARAXEIDÆ.

Genus, *Charaxes*, *Ochs.*

C. Jasius, *L.* (*Jason*, *L.*; *Rhea*, *Hb.*); 70mm. Fd. pl. *Arbutus unedo*; hyb. 1.

♀ larger than ♂.

Dist. Char. 2 long tails nr. anal ang. h.w.; grd. col. deep brn.

Loc. Only in S. of the Alpes Maritimes, Nice, Cannes, &c. (*Bru.*); v. and viii.-ix.

Directions of Var. (a.) size: 62mm.-78mm.

(b.) number and size of bl. spots up.s. h.w.; sometimes almost obsolete, sometimes large, and reaching almost to disc. cell.

(c.) body of ♀, esp. in 2nd brood, sometimes brick-red.

(d.) inn. or. band up.s. f.w., in 1st brood, sometimes much enlarged and lengthened, reaching to h.w.

(e.) shape of w. differing in the 2 broods. In the 1st brood the ang. nr. lower end of outer marg. f.w. is much more prominent than in the 2nd, and the "tails" of h.w. incline towards each other, in the 2nd brood they are nearly parallel, and rather slighter and longer.

I am indebted to Mr. Powell for all my information on the variation of this sp.

Tribe APATURIDÆ.

Genus, *Apatura*, *Fabr.*; hyb. 1.

Prevailing col. blk.-brn., with wh. spots and bands.

A. Iliä, Schiff. (Iris, *Esp.*); ♂ 55mm., ♀ 68mm. Fd. plt. willows and poplars.

♂ with, ♀ without, brilliant prp. reflections.

Dist. Char. un.s. h.w. pinkish, wedge-shaped band from costa, not gen. v. conspicuous, and without external edging.

Loc. In Switz. gen. distributed in the cantons of Basle, Aargau, Zürich, Berne, Neuchâtel, Thurgau, St. Gall, Glarus, Vaud, but only in the lower parts, scarcely rising above 3000ft. (*Frey*); v. ab. in the beech forests of Jura (*Kane*); in E. Vaud and the Valais it is scarce, but found occasionally, e.g., Charpigny (*Fis.*); Aigle, vii. 5/01; Martigny, vii. 1900 (*Wh.*); Sion; St. Léonard; Granges; above Turtmann (*Far.*); Pfyn, the W. side, vi. 21/97 (*Postans*); the E. side, vii. 19/99; vii. 13/01, not v. fresh, e. (*Wh.*); nr. Geneva, Versoix, Veyrier, vii. (*Bl.*); Locarno (*Fis.*); Monte Bré (*Christ*); the lower Misoix (*Wedder*).

[Obs.—In the Valais and E. Vaud the type is the usual form, elsewhere in Switz., esp. on the Jura var. *Clytie* is more c.]

Aix-les-Bains, vii. e. 98 (*Tutt*); Digne, vi. 90 (*Nicholson*); Alpes Maritimes, and Basses Alpes along streams, the type, and vars. *Clytie* and *Eos* (*Powell*); as high as St. Martin Vésunbie (*Brm.*); Certosa di Pesio, var. *Clytie*, viii. 92, e. (*Norris*); Susa, viii. m. 97 (*Tutt*); vi. 26/99, some fresh, mostly much worn (*R.-Brn.*); Olgiate, viii. and ix. 95, and 98 (*Miss Fu.*); Meran, 80 (*Tutt*). These dates point almost conclusively to a 2nd brood in the S.

Directions of Var. (a.) loss of wh., culminating in:

ab. Iliades, Mitis; in which the wh. bands are almost unrepresented (v. scarce).

(b.) increase of tawny col. (in type, only round eye-spots and at anal ang. h.w.).

ab. (& var.) Clytie, Schiff. (*Astasia, Hb.*); in which it takes the place of wh.

ab. (& var.) Eos, Bossi (*Dilutor, Stgr.*; *Budensis, Fuchs*); in which it invades the whole surface of the ws., esp. in ♀.

ab. Astasioides, Stgr.; a tawny form corresponding to *ab. Iliades* (*v. suprâ*), v. scarce.

(c.) absence of eye-spot at anal ang. h.w.

ab. Metis, Ferr.

Loc. Alpes Maritimes (*Brm.*); Certosa di Pesio, below San Bartolomeo, viii. 30/92 (*Norris*).

[Obs.—The ♀, like that of *Iris*, seldom descends from the trees till towards 4 p.m.; the ♂ principally before 10 a.m., but may be found at other times on damp places in roads, or resting on any kind of garbage, though not to the same extent as the ♂ *Iris*.]

A. Iris, L.; ♂ 60mm., ♀ 68mm. Fd. plt. sallow.

♂ with, ♀ without deep prp. reflections.

Dist. Char. un.s. h.w. large wedge-shaped wh. band from costa, edged externally with chocolate col.

Loc. Gen. distributed in the same cantons as *Ilia* (*q.v.*), and also Schaffhausen; much commoner in E. Vaud, *e.g.*, ab. between Aigle and Sepey, vii. 5/01, &c. (*Wh.*); and in the Grisons, Coire, Prätigau, the Rhine Valley (*Killias*); sometimes at great heights, *e.g.*, top of the Rochers de Naye (*Fis.*), &c.; emerges later than *Ilia*, vii.-viii., *e.g.*, Villeneuve, viii. 9/01 (*Wh.*); sometimes, however, rather earlier, even at considerable elevations, *e.g.*, Jaman, vi. 21/01 (*Sloper*); ab. in the forests of the Jura up to 2800ft. (*Kane*).

Alpes Maritimes (*Bru.*); Val Sesia (*Kane*); Certosa di Pesio, a few in lower valley, vi. 92 (*Norris*); Villach and Wolfsberg, vii. 97 (*Linn.*).

Directions of Var. (a.) tendency of wh. to diminish, culminating in:

ab. Iole. *Schiff.* (Beroë, *Fabr.*); in which only the apical spots remain.

Loc. With type but v. scarce; Berne (*Meissner*); Burgdorf (*M.-D.*); Liestal (*Christ*); Alpes Maritimes (*Bru.*), &c.

Fam. LIBYTHEIDÆ.

Genus, *Libythea*, *Fabr.*

Prevailing col. brn. with or. blotches.

L. Celtis, *Laichharting* (*F'ssl.*); 46mm. Fd. pl. *Celtis australis*; hyb. im.

♀ rather larger than ♂.

Dist. Char. A projecting ang. on out. marg. f.w., h.w. concave on costa, and again at upper part of out. marg.

Loc. In Switz. confined to the S. From the village of Simplon down to (and beyond) the frontier to half an hour above Crevola; at the village vii. 97 (*Püngeler*), but v. rarely so high up the Pass; Lugano, iv. 16/02, mostly worn (*Fis.*); Chiasso, vi. 26/92 (*Mayer*); Roveredo, entrance to Misox Valley (*Hg.*); Brusio, vii. 13/01, some v. fresh (*Fis.*).

Digne, vi. 90, vii. 91 (*Nicholson*); Cannes, iv. c. 98 (*Tutt*); vii. (*Powell*); Thorene, vii. (*Powell*), Certosa di Pesio, vii. 92, two or three only (*Norris*); Crevola, vi. 3/99, fresh; v. 26, 1900, torn to shreds; Val Anzasca, vi. 12 and 15, 1900, fresh; Sarntal and Eggenthal, vi. c. 01, ab.; vii. 11/02, a few (*Lowr.*); Mendel, vii. 96 (*Linn.*); Susa, vi. 18/01, worn (*Lowr.*); vi. 26, c. on the Sta. Maria road, and also on the left bank of the Doria under the Mt. Cenis road (*B.-Bru.*); viii. iii. 96 (*Tutt*); nr. Sondrio, viii. 96, not c. (*Miss Flu.*).

Apparently emerges vi. vii., continues on the wing through viii., and after hibernation appears iv. v. and into vi., almost, if not quite, overlapping the new brood.

Fam. SATYRIDÆ.

Sub-Fam. SATYRINÆ.

Tribe PARARGIDI.

Genus, *Pararge*, *Hb.*: *hyb.* 1.

Dist. Char. up.s. h.w., a series of eye-spots following out. marg.

P. Mœra, *L.* (*Adrasta*, *Dup.*: *Hyglæa*, *Mabille*): 48mm.

Ed. pl. *Poa annua*, *Glyceria glutans*, *Hordeum murinum*.

♀ lighter and brighter than ♂.

Dist. Char. m.s. h.w. grd. col. *h.* brownish-gr.

Loc. Gen. distributed and usually ab. on walls, rocks, &c., throughout the region, though apparently wanting in certain flatter parts of N. Switz., e.g., Zürich (*Frey*): 2 broods in the plains, v. e. vi., and vii.-ix, but in the S. appearing iv.; in the mtns. 1 brood, vi. e--viii.

Directions of Var. (a.) size: a v. diminutive form about the size of *Tithonus* ♂ at the top of the Stelvio, vii. 13, 1900: a rather larger, but still v. small form at Cortina, vii. 20, 1900 (*R.-Bren.*).
(b.) diminution of fulvous up.s.:

ab. Obscura, *Lutt.*: rather below average size; narrow fulvous ring round apical eye-spot and v. slight traces of 2 fulvous patches below, attendant apical eye-spots v. small, f.w.; narrow fulvous marg. to eye-spots h.w.

Loc. Aix-les-Bains, v. b. 97 (*Chp.*).

ab. Monotonia, *Schilde*: in wh. it has almost, or entirely, disappeared (? ♂ only).

(c.) increase of fulvous up.s., culminating in:

ab. (& var.) Adrasta, *Hb.* (*Mœra*, *Esp.*): in wh. it is well-developed in ♂, and suffuses most of f.w. in ♀.

Obs. - This is a form of the 2nd brood and is found with type in warm places (not gen. in "cold and elevated localities" as stated by *Lang*, though in the Alpes Maritimes it is taken at St. Martin Vésubie, and Boréon (*Powell*). Digne, vi. e., and vii. all were of this var. (*Miss Ftn.*). Every intermediate form may be found.

(d.) number of eye-spots up.s. h.w. (2-4, with traces of a 5th).

(e.) eye-spot up.s. f.w.

(i.) a large apical eye-spot with one wh. pupil, with indications of a small eye-spot above.

(ii.) a 2nd wh. pupil to large eye, with or without a small one above, conspicuous or ill-defined.

(iii.) this 2nd wh. pupil becoming almost detached, with the blk. round it, from the large one: and (iv.):

ab. Triops, *Fuchs*: a large apical eye with 2 pupils, a well defined small one above, and another large single-pupilled eye in the internural space below, as in *Megara* ab. *Alberti*.

Loc. A scarce ab. of 2nd brood, with type in warmer locs.; e.g., Aigle, viii. e. 1900 (*Wh.*).

P. Hiera, *Fabr.*: 4mm. Fd. pl. *Festuca* and other grasses.

♀ lighter and brighter than ♂.

Dist. Char. m.s. h.w. dk. greyish-brn. (gen. with small lt. patch on costa).

Loc. In a few places in the lowlands; ft. of the Uetliberg (*Frey*); the Glarus Valley (*Heer*); but more usually in the lower Alps and in some places up to 6000ft. The Rigi (*Snell*); Oberhasli (*Kane*); Thalalp; Kupfernaseruns above Filzbach, vi. 1902 (*Fis.*); Weissenburg, fairly c. between 3000ft. and 3500ft., large and lt. (*Hg.*); the Jura, e.g., St. Georges, vi. e. 02, v. large and dk., getting worn (*Wh.*); Grnyère on the right bank of the Sarine, viii. 30-97 (*R.-Brn.*); on most of the mtns. on both sides of the Rhone Valley, e.g., Rochers de Naye, Dent de Moreles (*Fis.*); on the latter at about 2500ft., v. 7-88, v. fresh (*Hutchinson*); nr. the Forelaz, esp. on the road leading to the Trient glacier; Nionc, Susillon, Ponchette, Chandolin, in the Val d'Anniviers; Loèche-les-bains; Zermatt; Gondo, &c. (*Far.*); Bérisal, ab., small and dk., over by vi. m. 99, but less worn vii. 9-01 (*Wh.*); Weissenstein in the Grisons (*Zll.*); Maloya, vii. 88 (*Linn.*).

In Savoie nr. Geneva, le Coin, v. 23 and 27; Monnetier, vi. 5 (*Bl.*); Arve Valley (*Baker*); Certosa di Pesio and Val Arpi, vi. and viii. e. 92 (a few) (*Norris*); Larche (*Kane*); Val Anzascas, vi. 7/87 (*Jones*); Salzburg, vi. e. 1900 (*Lang*); Mendel, vii. 95 (*Linn.*); Mödling, v. 97 (*Miss Ftn.*); Isonzothal, vi. m. 92 (*Norris*).

Obs. Gen. 2 broods, v.b.-vi.; and viii., but sometimes only 1, e.g., Bérisal, where the 1st brood is c., but I have never seen a single specimen of a 2nd brood, though I have often hunted them in August.

Directions of Var. (a.) size: 38mm.-45mm.

(b.) brightness of grd. col. up.s.

(c.) eye-spots up.s. f.w.; same range of var. as *Mara* (*q.v.*), exc. that the double wh. pupil in an entirely unbroken blk. spot is unusual, and that there is frequently (e.g., in the Jura specimens) an indication of the extra eye in the interneural space next below the large eye-spot. This culminates in:

ab. Trinoculata, *Wh.*: in wh. it is well developed.

(d.) depth of grd. col. m.s. h.w. (the eye-spots are less conspicuous on dk. grd.).

(e.) number of eye-spots up.s. h.w. (3-5).

P. Megæra, *L.* (*Xiphia*, *Bsdr.*): 42mm. Fd. pl. *Hordeum murinum* and other grasses.

♂ with, ♀ without dk. brn. bar up.s. f.w. slanting inwards from centre of w. towards inn. marg.

Dist. Char. up.s. grd. col. brt. or.-brn.

Loc. Gen. distributed, and c., but scarcely to be seen above 4500ft.; on walls, rocks, road-sides, &c.; iv. e-vi., and vii.-x.; e.g., nr. Digne, x. 18/02, v. fresh (*L.-Bru.*); perhaps a 3rd brood.

Directions of Var. (a.) subsidiary eye-spots up.s. f.w.

(i.) often a small one above the large one, and nearer apex:

(ii.) rarely another small one below and outside; sometimes attached to the large one:

(iii.) an indication of a spot in the next interneural space, culminating in:

ab. Alberti, *Redlich*: in which it is well developed and wh.-pupilled.

Loc. In the warmer locs. with type, but gen. scarce in Switz. Martigny, v. e. /01 (*Sloper*); vi. m. /03 (*Wh.*); above Branson; Saillon (*Par.*); Sierre, v. m. /03 (*Sloper*); Charpigny, v. 15/01, &c., and transitional forms (*Fis.*); a fairly well-marked form c. in ♀, scarce in ♂, Aigle, and elsewhere in Rhone Valley, v. m. to vi. m. /03 (*Wh.*).

By no means scarce in S.-W. corner of the region, e.g., iv. 15, 18, 21, &c., ♂ and ♀ (*Sloper*).

(b.) darkening of up.s.

ab. Mediulugens, *Vuchs*: a scarce ab., with cl. area of f.w. blk.

ab. (in W. Asia, **var.**) **Transcaspica**, *Stgr.*: in wh. the base, inn. marg. and v. broad out. margl. border f.w., and almost the whole h.w. are dk. brn.

Loc. Losoue, nr. Locarno, iv. 25/02, a magnificent ♂ (*Fis.*).

(c.) lighter and greyer grd. col. un.s., culminating in:

ab. (in S.-E. Europe, **var.**) **Lyssa**, *Bsdr.*; [a transitional form closely approximating is not scarce in the hotter parts of the Rhone valley in the 2nd brood, esp. at Salqenen and Varen (*M.-D.*).]

(d.) number of eye-spots up.s. h.w.; normally 4, exceptionally 3-7.

***P. Egeria**, *L.* (Meone, *Esp.*); 40mm. 'Fd. plt. *Triticum repens*, *Poa pratensis*, &c.

♀ rather lighter and with larger spots than ♂.

Dist. Char. up.s. dk. grd. col. with fulvous or ochreous spots.

Loc. Distributed throughout the region in one or other form, and c., in woods and copses, but not gen. above 3000ft. The type, deep brn. grd. col. and brt. fulvous markings, is only found in the S. of the region, Basses Alpes, Alpes Maritimes, and on the S. slopes of the more central Alps; Val di Vedro (*Par.*), &c.

[Obs.—This is one of the earliest and latest of the butterflies that do not hibernate as imago. It has 3 or even 4 broods, and emerges in the S. as early as iii. b. (e.g., iii. 4/02. *Sloper*), and sometimes as late as xi. (*Tutt.*).]

Directions of Var. (a.) depth. of col. up.s., gradually paling in spots, deepening in grd. col.

var. Intermedia. *Tutt*: "fuscous brn. with pale fulvous markings."

Loc. The usual form in the warmer parts of the Valais; also on the E. slopes of the Jura, &c.

[Obs.—This according to *Frey* is var. *Meone*, *Esp*; if this is correct *Intermedia* must fall before *Meone*.]

var. Egerides. *Styr.*: dk. fuscous with pale yell. markings.

Loc. The usual form in the less warm part of the region. It must, however, be understood that every intermediate shade exists, and that no hard and fast line can be drawn.

ab. Pallida. *Tutt*: with whitish markings.

(b.) number of eye-spots un.s. h.w.; 3-6,
gen. 4 or 5.

(c.) extent of prp. suffusion un.s. h.w.
[This is gen. in proportion to the col. up.s., there being most in type, and least, often none, in *Egerides*.]

[Obs.—In Mr. Fison's collection is a specimen, from Lucens, with no lt. spots on basal half of f.w. and no lt. band on h.w.]

P. Achine, Scopoli (*Deianira*, *L.*); 50mm. Fd. plt.

Lolium perenne, *Poa annua*, and other grasses.

Up.s. f.w., lt. mark from nr. centre of costa more marked in ♀ than in ♂.

Dist. Char. series of large eye-spots on f. and h.w. up. and un.s., unpupilled on up.s., those on un.s. h.w. placed in a conspicuous wh. band.

Loc. Local, and preferring damp, shady woods, vi. e. and vii. Neighbourhood of Basle, e.g., Liestal, Hfenthal, &c. (*Christ*); the Bechburg (*H.-S.*); Canton of Aargau (*Meissner*); Schaffhausen (*Trapp*); Uetliberg, vii. 13/85, &c. (*Linn.*); Canton of St. Gall, but scarce (*Täschler*); Glarus (*Heer*); Lungern; Aarberg; Worb; Lake of Biemme (*M.-D.*); Lattrigen, vi. 79 (*Tutt*); Neuveville (*Coulern*); the pine woods of the Dôle, ab. (*Baker*); Bois de Veyrier, vi. 24; Bois de Bay, vi. 24 and 26; Hermance, vi. 25; Onex, vii. 11 (*Bl.*); Veytaux, vi. 13/97 and /99, scarce; Aigle, vii. /01, ab. (*Wh.*); thence to Sépey, vii. 2/98 (*Jones*); Bex; Martigny (*Far.*).

Mendel, vii. /95 (*Linn.*); Pejo, vii. /95 (*Chp.*); Berchtesgaden, vi. 27, 1900 (*Lang*).

Directions of Var. (a.) un.s. h.w. presence or absence of a small eye-spot immediately above the 3rd from anal ang.

(b.) number of eye-spots un.s. f.w. containing wh. pupils.

[In all examples I have seen the lowest is pupilled and the next blind: the others vary.]

Tribe SATYRIDÆ.

Genus, Satyrus, Latr. Fd. pl. grasses : *hyb. l.*

Prevailing col. v. dk. brn.

S. Hermione, L. (*Hermione major, Esp.*) : 70mm.

♀ with much more conspicuous band up.s. than ♂.

Dist. Char. Uninterrupted band extending across f. and h.w. up.s.

Loc. [I have given the locs. as I find them recorded for *Hermione* and *Aleyone* respectively, but with regard to the Swiss forms, esp. those of the Jura, Vaud, and the Valais, *v. infra.*] Basle: Liestal (*Christ*): Schaffhausen, *c.* (*Trapp*): Oberutzwyl (*Täschler*): the Bechburg (*R.-S.*): Aargau (*Wschl.*): the Jura, *e.g.*, nr. Basle (*Christ*): above Neuchâtel, viii. 26, v. worn (*R.-Bru.*): Vallorbe, viii. 9, &c. 02, rather worn (*Wh.*): St. Cergues, vii. 20 (*Bl.*): throughout Vaud and the Valais, *e.g.*, Lausanne (*M.-D.*): above Montreux, viii. 5 96 (*R.-Bru.*): Aigle, and thence to Sépey, v. ab., vi. e.-viii. m. (*Wh.*): Martigny, vi. 14/01 (*Stoper*): all along the Rhone Valley and the lateral valleys (*Far.*): on the Simplon Road up to the 1th Refuge (its extreme altitude, I think), vii. m. 98, v. ab., usually v. worn by viii. m. (*Wh.*): in the Grisons only in the 3 S. Valleys, Misox, Bergell, and Poschiavo (*Frey*): Lugano (*R.-S.*): San Stefano, vi. 29 (*Mayer*).

Mt. de Sion, nr. Geneva, vii. 20 (*Bl.*): &c.; throughout the S. alpine valleys of France, N. Italy, the Tyrol, &c.

Directions of Var. (a.) decrease in size, culminating in :

var. Aleyone, Schiff. (*Hermione, Btkh.*; *Hermione minor, Esp.*): 55mm.-58mm.

[Obs.—After much correspondence and the comparison of many specimens from various locs. I feel convinced, esp. as there is nothing v. distinctive in the earlier stages, that *Aleyone* is merely the extreme form in one direction of the same sp. of wh. *Hermione* from the Riviera is the other extreme. It would be easy to form a series in wh. each insect would scarcely differ from those on each side of it, but the extremes of wh. should be the most pronounced forms of *Hermione* and *Aleyone*. In districts where both are found, as on the Riviera, they are distinct enough, and the separation into 2 sp. may be almost complete, *Hermione* inhabiting the lowlands, *Aleyone* also the higher grd.; *Hermione* resting on tree trunks, *Aleyone* on rocks; the lt. band of *Aleyone*, up.s., being narrower and more suffused than in *Hermione*, &c., but in Vaud and the Valais, the specimens are intermediate in size, markings and habitat, and on one side of the Aigle valley rest chiefly on trees, on the other side on rocks. None of the usual distinctions hold good in the average Swiss specimens. To take a few links in the chain the following are representative:—(i.) *Hermione* from the Riviera; (ii.) *Hermione* from S. Grisons; (iii.) *Hermione*, so-called, from the Jura; (iv.) *Hermione*, so-called, from the Rhone Valley; (v.) *Aleyone* from the Riviera; (vi.) *Aleyone* from Saxony. *Frey* treats both as one sp.]

Loc. The Bechburg (*R.-S.*): Veyrier, vii. 13; viii. 3 and 24 (*Bl.*): singly throughout the Rhone Valley (*Far.*); *i.e.*, specimens wh. more nearly approach typical *Aleyone*: nr. Fiesch, 2/95; Bérisal, vii. 30/97, &c. (*R.-Bru.*).

Bourg St. Maurice, viii. b. 98; St. Michel-de-Maurienne, vii. e. 97; Bourg d'Oisans, viii. m. 96; Bourg d'Aru, viii. m. 96; La Grave, viii. b. 96; below Abriès, viii. 9, 1900 (*Futt*): Alpes

Maritimes, from sea level to 5000ft. (*Powell*); above Bobbie, viii. m. 01 (*Tutt*); Stelvio, below Spondinig, vii. 17 02 (*R.-Bru.*); Mödling and Baden nr. Vienna, viii. 97 (*Miss Fu.*).

(b.) greater or less amount of smoky suffusion over lt. band in ♂.

(c.) greater or less amount of mottling on lt. band un.s. h.w.; sometimes, esp. in *Hermione* from the S., almost obliterating the band.

(d.) greater or less amount of mottling on base, un.s. h.w.

(e.) frequently a 2nd spot on lt. band f.w. up. and un.s. ♂, as in ♀.

S. Circe, *Fabr.* (Proserpina, *Schiff.*); 70mm.

♀ larger than ♂.

Dist. Char. wh. band up.s. f.w. and h.w., broken on f.w. below apical spot.

Loc. In Switz., only in the W. and in the S. of the Grisons; vii. m., viii.; in the Canton of Berne, between the Oberland and the Jura, e. at Aarberg, Schüpfen, Burgdorf (*Frey*); Berne (*Meissner*); the Bechburg (*R.-S.*); Basle, scarce (*Christ*); St. Beatenberg (*Snell*); St. Blaise, &c. (*Couleru*); v. scarce in Vaud and the Valais; St. Cergues, viii. 4. (*Bl.*); Gilon, vii. 8 01 (*Sloper*); Mt. Pélérin, viii. 30 01 (*Keynes*); e. in the neighbourhood of Vevey and Montreux, vii.-viii., 01, though not seen in the district for many years previously, and scarce since; between Aigle and Scëpy; between Visp and Zermatt (*Tasker*); Versoix, viii. (*Bl.*).

Much commoner further S.; Digne, vii. 99 (*Miss Fu.*); Annot, vii. 17 99, v. e. (*Lang*); Vallon Obscur, St. Martin Vésabie, &c. (*Bru.*); La Bocca, Cannes, vii. 13-16 91, e. (*Nicholson*); Certosa di Pesio, among chestnut trees above Chiusa, vii. viii. 92 (*Norris*); Val Muerta, x. 9 02 (*R.-Bru.*); Baden, nr. Vienna, viii. 97 (*Miss Fu.*).

Directions of Var. (a.) diminished breadth of wh. band up.s., esp. f.w., culminating in:

(2) **ab. Silenus.** *Styr.*: which has no wh. bands.

(b.) a 2nd spot just below centre of band f.w.

S. Statilinus, *Hufn.* (Fauna, *Sulzer*; *Arachne*, *Esp.*);

16mm.

♀ with more traces of lt. band up.s., esp. f.w., than ♂.

Dist. Char. up.s. f.w. 2 eye-spots with 2 wh. spots between them; un.s. h.w. dk. edge of basal half not jutting in long sharp ang. into lighter band.

Loc. Mtns. of Alpes Maritimes, vii.-viii. (*Powell*); Certosa di

Pesio, at and above Chiusa, viii. 14. &c. 92 (*Norris*) ; Botzen, vii. 18, 1900 (*R.-Brn.*).

Directions of Var. (a.) increase of size :

var. Allionia, *Fabr.* (*Fauna, Hb.* : *Fauna var., Esp.* : var. *Martiani*, *H.-S.*) ; 54mm., and with base un.s. gr. instead of brn.

Loc. In Switz. only from Martigny to Brig (or a mile or two on each side) ; v. ab. at Follatterre and the Tour de la Bâtiâz, *esp.*, viii. 21, ix. 1,99 ; viii. 27, 1900 ; also Sierre, viii. 18,99 ; Brig, ix. 7,98 (*Hh.*), &c. ; also at Lugano (*Hg.*).

Susa, viii. m. 97 ; Aosta, viii. m. 94 (*Tutt*) ; in the lower parts of the Alpes Maritimes (*Powell*).

(b.) absence of pupils in the eye-spots ; in both on f.w. up.s., and in the lower one on un.s. ♂, and in the latter on both sides in ♀ ; also in the small one at anal ang. h.w. on both sides, ♂ and ♀ ; v. usually.

(c.) up.s. h.w. wh. spots (1-4), forming ante-margl. row above eye-spot at anal ang. (as in *Fidia*).

(d.) traces of same wh. spots un.s.

(e.) amount of mottling un.s. h.w. ; sometimes almost unicolorous in ♀ (as in *Fatua*).

(f.) amount of angulation in dk. cl. line, sometimes approaching *Fidia*.

(g.) amount of yell. band in ♀, f. and h.w. up.s. and f.w. un.s.

[Obs.—This insect in the Rhone Valley varies so much in detail, and approaches so closely to *Fidia* and *Fatua*, that I feel some doubt whether all are not local races of the same sp.]

* S. *Fidia*, *L.* : 56mm.

♀ larger than ♂, and with more conspicuous markings.

Dist. Char. up.s. f.w. with 2 eye-spots, and 2 wh. spots between them ; un.s. h.w. with dk. cl. line jutting in the middle into the lt. band in a long sharp ang.

Loc. Digne, vii. m. 98, not c. and difficult to obtain (*R.-Brn.*) ; Levens ; St. Martin Vésubie (*Powell*) ; Spondinîg, viii. 18, 1900 (*R.-Brn.*)

Directions of Var. (a.) diminution in size, culminating in :

ab. Monticola, *Thierry-Mieg* : wh. is also darker.

* S. *Actæa*, *Esp.* : 48mm.

♀ with a 2nd eye-spot up.s. f.w. and traces of a band.

Dist. Char. *one* wh.-centred apical spot in ♂, on v. dk. unicolorous grd. (♀ *v. suprà*).

Loc. Digne, vii. 99 (*B.-Bru.*); fairly c. in dry places on limestone in the Basses Alpes and Alpes Maritimes, vi.-vii., Thorenc, &c. (*Powell*); Susa, vi. 27 99, just emerging (*B.-Bru.*); Campiglio, vii. 95; Innsbruck, vii. 97 (*Linn.*).

[Obs.—I agree with Mr. Nicholson that the fact that *Cordula* is c. rather earlier in the season, on the same banks at Digne on wh. *Actea* is ab. vii. e., is conclusive as to their being 2 distinct sp.; I have therefore treated them as such.]

S. *Cordula*, *Fabr.* (*Hippodice*, *Hb.*): 52mm.

♀ with distinct lighter band, up.s., esp. f.w.

Dist. Char. at least 2 wh.-centred eye-spots up.s. f.w. in ♂, and 3 or more in ♀, on v. dk. grd.

Loc. Gen. c. and often ab. in the Rhone Valley from Aigle to Brig, and thence in small numbers to the Rhone Glacier, also in the S. side valleys from the Val d'Hérens to the Simplon and at Loèche-les-bains (*Far.*); v. ab. on the road from Aigle to Sépey, vii. and viii. 01, &c., the ♂ s. with 4 wh. spots at the lower elevations, and 2 higher up; Giornico and Cresciano (*Trapp*); Brusio (*Tajlich*).

Bourg St. Maurice, vii. e. 98; St. Michel-de-Maurienne, vii. e. 97; La Grave, viii. m. 96; Bourg d'Oisans, viii. m. 96; Larehe to Barcelonette, viii. b. 1900; Abriès, viii. m. 1900 (*Tutt*); Digne, vii. 99, e. (*B.-Bru.*); St. Martin Vésubie, &c. (*Bru.*); Annot, Thorenc (*Powell*); Pré St. Didier, viii. b. 98; Cogne Valley, viii. 8 94; Susa, viii. m. 97 (*Tutt*); Orta, vi. m. 1900; Botzen, vi. e. 01 (*Lourc*).

Directions of Var. (a.) size: 48mm.-58mm.

(b.) number of eye-spots up.s. f.w.: 2-4, rarely 3, in ♂, occasionally a 5th minute one nearer apex; 4 in ♀, sometimes forming a band.

(c.) depth of grd. col. esp. in ♂, varying from nearly blk. to sooty-brn.

(d.) extent and depth of col. of band up.s. in ♀, varying from dull or.-brn. to pale ochreous, sometimes scarcely visible, sometimes forming a conspicuous band f. and h.w., the extreme form being:

ab. ♀ **Pœas**, *Hb.*: wh. is also lighter un.s.

(e.) eye-spots (or blk. dots) h.w., gen. 1 up.s., 2 un.s. in ♂; 2 up. and un.s. in ♀; but sometimes absent, and in ♀ sometimes 3 up.s.

(f.) more or less distinctness in band un.s. h.w.

(g.) lightening of col. un.s. h.w., culminating in :

ab. Bryce, *Ill.* : in wh. they are whitish and almost unicolorous.

Loc. Not uncommon at Bourg d'Oisans, viii. m. /96 (*Tutt*).

Genus, *Enodia*, *Ill.*

E. Dryas, *Scopoli* (*Phædra, L.* ; *Briseis, Esp.* ; *Athene, Brkh.*) ; 52mm. Fd. plt. grasses ; hyb. l.

♀ lighter and with more conspicuous eye-spots than ♂ ; gen. larger.

Dist. Char. up.s. f.w. 2 blk. eye-spots with *ppp.* centres on dk. brn. grd. col.

Loc. Basle ; Zürich, nr. the Trichtenshaus Mill (*Snell*) ; Goldau (*Zll.-Dolder*) ; round St. Gall and in the Toggenburg (*Täschler*) ; nr. the Lake of Thun, *c.g.*, Gunten ; Aarberg and Worb (*Frey*) ; the Jura (*Jäggi*), *c.g.*, St. Blaise and Neuveville (*Frey*) ; Weissenburg, in marshes (*Hg.*) ; Sierne, viii. 3 ; Versoix, viii. 18 (*Bl.*) ; Aigle, v. ab., viii. m.-e., 1900 ; between Chillon and Villeneuve, viii. /01, ab. (*Wh.*) ; the Rhone Valley, from Martigny to Fiesch (*Far.*) ; *c.g.*, the Pfynwald, viii. b. /99, ab. (*Wh.*) ; Lucerne, viii. 95 (*Tutt*) ; the Grisons (*Killias*), *c.g.*, Thusis (*Nicholson*) ; Bad Alveneu, vii. /85 (*Lmn.*) ; San Stefano, viii. 7 (*Mayer*).

Chavoire, vii. e. 02 ; Grésy-sur-Aix, viii. e., 1900, v. ab. ; above Lac Bourget, viii. e. 94, v. ab., but not fully out, vii. 25/96 (*Tutt*) ; Digne ; St. Martin Vésubie (*Powell*) ; Venanson, v. ab. on Nice road, 53 kilomètres from Nice (*Bru.*) ; Lago di Loppio, vii. 31, 1900, v. e., but worn (*Jones*).

Directions of Var. (a.) size : v. variable. [My smallest is 47mm., my largest 62mm., both ♀ s.]

(b.) depth of grd. col. up.s., esp. in ♂ .

(c.) col. of un.s. h.w. esp. in ♀ . in wh. it varies from dk. to golden brn.

(d.) loss of distinctness in markings un.s. h.w., culminating in :

ab. (in Asia var.) Sibirica, *Styr.* : in wh. they are unicolorous, ♂ and ♀ .

Tribe HIPPARCHIDI.

Genus, *Hipparchia*, *Fabr.*

Prevailing col. brn. Fd. plt. grasses ; hyb. l.

Dist. Char. a broken macular band f.w. and h.w. up.s. ; *gen.* 2 eye-spots f.w. and 1 h.w.

H. Briseis, *L.* (*Ianthe major, Esp.* ; *Ianthe minor, Brkh.*) ; 52mm.

Dist. Char. band whitish; un.s. h.w. 2 dk. blotches nr. base.

Loc. In Switz., chiefly on the Jura, *e.g.*, nr. Basle (*Christ*); the Bechburg (*B.-S.*); Biemme (*M.-D.*); Bözingen (*Benteli*); St. Cergues, viii. 29 (*Bl.*); v. scarce in the Valais; Mt. Ravoire, vii. m. 02 (*Wschl.*); Naters (*Far.*); c. round Geneva, *e.g.*, Veyrier, viii. 8 (*Bl.*); Val Bregaglia (*Mengelbir*).

C. in Savoie, *e.g.*, Annécý (*Fis.*); Grésý-sur-Aix, viii. e. 91; vii. 25-96, just appearing, viii. 19, 1900, c. (*Tutt*); Monmetier, viii. 10, v. large; Bossey, viii. 3; le Coin, viii. 16; Mornex, viii. 24 and 31 (*Bl.*); Barcelonette, viii. b. 1900, small (*Tutt*); c. at Digne in dry stony places, esp. towards the Dourbes, vii. 19-29 91 (*Nicholson*); vii. 11-16 89 (*Mrs. Nicholl*); &c.; almost everywhere on dry rocky grd. in the Alpes Maritimes, vii. viii. (*Porcell*); Spönding, vii. 17 02 (*R.-Brn.*); Mödling, viii. 97 (*Miss Ftn.*).

Directions of Var. (a.) increase of size, culminating in:

ab. Major, *Obth.*: with broader lt. band, esp. h.w.

(b.) col. of band up.s.

ab. Pirata, *Esp.*: with smoky reddish-yell. band.

Loc. The French Alps.

H. Semele, *L.*: 50mm.

♀ larger, and with far more conspicuous and lighter markings up.s. f.w. than ♂.

Dist. Char. up.s., band ochreous (often indistinct in ♂, esp. f.w.); un.s. h.w. dk. cl. line much waved and angulated (often forming a profile).

Loc. Basle; Aarberg; Burgdorf (*Frey*); St. Gall, scarce (*Fischler*); Hütten: Goldau (*Zll.-Dolder*); Zürich (*Frey*); Veyrier, &c., vii. c. (*Bl.*); c. on the Jura, also in the cantons of Vaud, the Valais and the Grisons, exc. in the upper Engadine and the upper part of the Val Bregaglia; Chiasso, vi. e.-vii. b. (*Mayer*); Guarda, vii. e. 1900 (*Chp.*); found up to 6000ft., vi. e.-ix., according to latitude and elevation.

Gen. distributed through the rest of the region, *e.g.*, Grésý-sur-Aix, viii. m. 1900; St. Michel-de-Maurienne, vii. e. 97; Petit St. Bernard, vii. e. 94; La Grave, viii. m. 95; Abriès, &c., viii. m. 1900. ♂ s v. dk.; La Thuile, viii. b. 98; Pré St. Didier, viii. b. 98; Bobbie, viii. m. 01; Susa, viii. m. 96, un.s. h.w., ♂ with wh. band, ♀ covered with gr. marbling (*Tutt*); Digne, vi. 90; vii. 91 (*Lmn.*); Alpes Maritimes (*Brm.*); Cademabbia, vii. 84 (*Lmn.*); the Tyrol, *e.g.* Mendel, vii. 95 (*Lmn.*), Campiglio, vii. m. 95 (*Chp.*), &c.

Directions of Var. (a.) col. of band.

ab. ♂ Suffusa, *Tutt*: in wh. the band is scarcely visible f.w., and consists of 4 or. spots h.w.

var. Aristæus, *Bonelli* (*Semele, Itb.*); with large reddish-or. band, of large size.

Loc. The more usual form of the S.; not uncommon as ab. in

the Valais; the more usual form at Bérisal, vii. 98, but not viii. 97. The form of the ♀ only at Susa, viii. m. 96 (*Tutt*), &c.

ab. Pallidor, *Tutt*: with pale straw-col. band.

[Obs.—The name was originally (*British Butterflies*, p. 300) applied to the ♀ only, but the ♂ of the cl. Jura, and some other places has a broad pale band f. and h.w., and to this I have ventured to extend the name.] Vallorbe, viii. b. 92 (*Wh.*); Obergurmigel (*Frey*).

(b.) distinctness of lt. band un.s. h.w.

(c.) eye-spots, up.s. f.w.

ab. ♂ Cæca, *Tutt*: in wh. they are unpupilled.

ab. Addenda, *Tutt*: in wh. extra spots appear in the band.

H. *Arethusa*, *Esp.*: 44mm.

♀ rather larger and with more pronounced band than ♂.

Dist. Char. up.s. band tawny; un.s. h.w. dk. cl. line not angulated in the middle.

Loc. Reported from Val d'Anniviers (*Ménét*).

Grésy-sur-Aix, viii. m. 97; above Lac Bourget, on rough grd., viii. 22, 1900, ab. (*Tutt*); Digne, vii. 91 (*Linn.*); on dry hills Basses Alpes and Alpes Maritimes, vii.-viii. b.; Castellane, &c. (*Powell*); Susa, viii. m. 97 (*Tutt*); S. Tyrol (*Spuler*).

Directions of Var. (a.) col. of band up.s.

ab. Obsoleta, *Wh.*: with band scarcely visible.

var. Erythia, *Ill.*: with tawny band redder and more pronounced.

var. Boabdil, *Rubr.*: band and grd. col. darker; larger; v. distinctly marked fringe.

Loc. Susa (*Kaw*); Grésy-sur-Aix (*Tutt*).

(b.) distinctness of lt. cl. band un.s. h.w.,
culminating in:

var. Dentata, *Styr.*: with wh. neuration and band, and blackish dentate line between band and out. marg.

Loc. A v. usual form in S. France; Grésy-sur-Aix, viii. m. 97; between Barcelonnette and Prunières, viii. b. 1900 (*Tutt*); Digne (*Powell*); Alpes Maritimes (*Brm.*).

Sub-Fam. EPINEPHILINÆ.

Tribe EPINEPHILIDI.

Genus, *Epinephile*, *Ill.*

Prevailing col. brn. and tawny-or. Fl. pl. grasses: hyb. l.

Dist. Char. borders of all ws. dk. brn.; gen. followed, at least on f.w. by or. (v. slightly represented in *Jurtina* ♂ and *Lycæon* ♂).

E. *Jurtina*, *L.* (*Janira*, *L.*: *Pamphilus*, *Hufn.*; *Hyperanthus*, *Wilkes*; *Myrtillus*, *Fourcroy*; *Lemur*, *Schrank*); 45mm.

Dk. brn., ♂ without, ♀ with conspicuous or.-brn. patch up.s. f.w.

Dist. Char. f.w. up. and un.s. blk. apical spot with one wh. pupil.

Loc. Gen. ab. in meadows, grassy road-sides, open woods, &c., mounting to about 4000ft., and somewhat higher in the S. Alps; vi.-viii. e.

Directions of Var. (a.) col. of up.s.

ab. ♂ **Suffusa**, *Tutt*: without trace of or. even round eye-spot.

ab. ♀ **Pallens**, *Thierry-Mieg*: or. replaced by pale yell.

ab. **Semi-alba**, *Bruand*: the dk. col. giving place to pale whitish brn.

ab. **Brigitta**, *Ljungh*: an extreme form of above, in wh. all the ws. are of the pale tint, with reddish base and inn. margl.

var. **Hispulla**, *Hb.*: with more or. f.w. ♂, and with or. disc f.w. and with a partial or. band h.w. ♀: larger than type.

Loc. The regular form in the S.; an intermediate form occurs in the Valais and other hot locs., becoming var. *Hispulla* in the S. Grisons.

(b.) col. of un.s. h.w. ♀. At Aigle it has a range of col. in the lt. band (wh. is normally ochreous), corresponding with that of *E. Ethiops*:

ab. ♀ **Grisea**, *Tutt*: with gr. band.

ab. ♀ **Violacea**, *Wh.*: with band strongly tinted with heliotrope.

(c.) number of blk. dots un.s. h.w., 0-5; normally 2; sometimes developed into ocellated spots, e.g., Ginel, vi. 27 03 (*Wh.*).

(d.) sometimes a small spot f.w., esp. un.s., attached below apical spot, occasionally showing a 2nd wh. pupil.

(e.) occasional traces of additional eye-spots f.w.:

ab. **Erymanthea**, *Esp.* (Addenda, *Mousley*); v. rare.

E. *Lycaon*, *Rott.* (*Eudora*, *Esp.*); 38mm.

Dk. yell.-brn.: ♂ without, ♀ with conspicuous or.-brn. disc and lighter ante-margl. band f.w.

Dist. Char. f.w. up. and un.s. apical eye unpupilled.

Loc. St. Gall (*Täschler*); Schaffhausen (*Trapp*); Löstorf, scarce (*Stehlin-Luhoff*); Jura, Bienne and Neuveville (*M.-D.*); v. e. in the warmer parts of the Valais from Martigny and Follatterre to Huteggen and Bérisal, vii.-viii. (*Far.*); e.g., Sierre, vii. 99; Bérisal, vii. 13 01; viii. m. 97, ♂ s worn, ♀ s still good (*Wh.*); Saas, vii. e. 85, c. (*Jones*); St. Nicholas, vii. 23, 1900 (*Blkm.*);

Sépey road, above Aigle, vii. m. 01 (*Wh.*); lower Engadin, Zernetz (*Schenk*); Bergell (*Killias*).

Bossey, vii. 25; viii. 2-15 (*Bl.*); Grésy-sur-Aix, viii. m. 1900; Bourg St. Maurice, vii. e. 94; St. Michel-de-Maurienne, vii. e. 97; Bourg d'Oisans, viii. m. 96; Larche, vii. e. 1900; Barcelonnette, viii. b. 1900; Abriès, viii. m. 1900 (*Tutt*); Digne, vii. 91 (*Lmn.*); c. in mtns. of Basses Alpes, and Alpes Maritimes, but not occurring nr. coast, v.-viii., *v.g.*, Beauvêzer, Allos (*Powell*); Courmayeur, viii. 5 94; Pré St. Didier, viii. b. 98; Cogne Valley, viii. m. 94; Bobbie, viii. m. 01, v. scarce (*Tutt*); Macugnaga, vii. m. 1900 (*Chp.*); Certosa di Pesio, vii. 30, 92, v. ab., 2800ft.-4500ft. (*Norris*); Tyrol, Mendel, &c., vii. 95 &c., (*Lmn.*).

- Directions of Var.** (a.) up.s. shade of grd. col., and extent of traces of or.-brn. in ♂.
- (b.) up.s. f.w., shade of or.-brn. on disc, ♀, making lt. band more or less conspicuous.
- (c.) ♂, f.w. up. and un.s., presence of a 2nd unpupilled spot towards anal ang., as in ♀.

(Obs.—In Mr. Fison's collection is a ♂ with 3 spots f.w., and another with 2 spots in yell. patches; also a ♀ with f.w. and band of h.w. pale yell.)

E. Tithonus, L. (*Amaryllis, Brkh.*; *Herse, Ill.*; *Phædra, Esp.*); 38mm.

♂ with, ♀ without, dk. brown patch across or.-brn. disc f.w. up.s.

Dist. Char. f.w. double-pupilled apical eye-spot, in connection with absence of wh. (exc. dots), un.s. h.w.

Loc. Gen. v. local in Switz., though ab. in the few places where it occurs. Basle (*Christ*); Wyl (*Eisenring*); Schüpfen and Aarberg (*Frey*); Lucerne (*Wschl.*); on the Jura nr. Neuchâtel (*Smell*); round Geneva, v. c., Bernex, vii.; Meyrin, vii. 26; Versoix, viii.-ix., &c. (*Bl.*); Les Avants, viii. 5 96 (*R.-Brn.*); Charpigny, vii. m. 01; viii. m. 1900, ab.; Aigle, same dates, v. scarce (*Wh.*); Val Leventina (*Trapp*); the Misoix valley, *v.g.*, Roveredo (*Hg.*).

Gen. c. S. of the Alps, and from Geneva to the Alpes Maritimes, but not beyond v. moderate heights.

- Directions of Var.** (a.) extra eye-spots up.s. (and un.s.) f.w.
- ab. Excessa, Tutt:** "2, 3 or 4 extra spots, usually small and blind, sometimes larger and ocellated."
- (b.) occasionally in ♂, apical eye v. small and unpupilled.
- ab. Cæca, Tutt.**
- (c.) number of wh. points un.s. h.w.; 0-6; gen. 3 or 4.
- (d.) lighter grd. col. up.s., culminating in:

ab. Mincki, *Sibold* : in wh. the band is yell.

(e.) darkening of up.s. ; v. rarely the base of f.w. is dk. brn. and the lt. band h.w. obsolescent.

E. Ida, *Esp.* : 40mm.

♂ with, ♀ without dk. brn. patch across disc, up.s. f.w.

Dist. Char. un.s. h.w. lt. cl. band *narrow* and *wh.* : brn. androconial patch in ♂ up.s. f.w. much divided up by or. nervures.

Loc. Locarno, viii. (*Hg.*).

Nice, Val des Fleurs ; Vallon Obscur ; Cannes, &c. (*Brm.*) ; nr. Grasse, on the road to Castellane, vii. 16 91 (*Nicholson*) ; Iselle ; S. slopes of the Tyrolese Alps (*Kaut.*).

Directions of Var. (a.) size : ♂ s occasionally v. small (*Powell*).
(b.) un.s. h.w. intensity of col. and markings.

E. Pasiphaë, *Esp.* (*Bathseba*, *Godart*) : 40mm.

♀ with basal half up.s. f.w. or.-brn. ; dk. brn. in ♂.

Dist. Char. un.s. h.w. broadish wh. band, coming out towards border between the 2 costal and the 3 anal eye-spots.

Loc. Only in the S. part of the Alpes Maritimes : not a mtn. sp.

Directions of Var. (a.) occasionally the eye-spot nr. apex f.w. up.s. has only one pupil.
(b.) a 1th spot up.s. h.w., scarce (*Powell*).

Obs.—In Col. Agassiz's collection are several specimens, from Angers, with the or. replaced by yell., almost of a lemon col.]

ab. Flava, *Wh.* : this form may possibly occur also within our range in the Alpes Maritimes.

Tribe CENOXYPHIDI.

Genus, Aphantopus, *Wallengren*.

A. Hyperanthus, *L.* (*Polymeda*, *Scopoli*) : 42mm. Fd. pl. *Poa*, *Millium*, &c. : hyb. l.

♂ v. dk., ♀ rather lighter, sooty-brn.

Dist. Char. un.s., series of yell.-ringed eye-spots, normally 3 f.w., 5 h.w., with no other markings.

Loc. Gen. distributed and c., often ab. ; but not usually above 3500ft. : vi.-vii. and sometimes viii.

Directions of Var. (a.) great diminution of size, culminating in :

ab. Minor, *Fuchs* : ♂ 17mm., ♀ 20mm. : ♂ un.s. olive-gr., ♀ yellowish olive.

(b.) loss of eye-spots un.s.

ab. Arete, *Millière* : with wh. centres and yell. rings.

ab. Cæca, *Fuchs* : with wh. points only.

ab. Obsoleta, *Tutt*: with no trace of eye-spots.

(c.) number of eye-spots un.s.; f.w. 0-3,
h.w. 4-6.

(d.) arrangement of eye-spots un.s.

ab. Vidua, *Müller*: f.w. 2, h.w. 5 (no spots up.s.).

ab. Octoculata, *Göze*: f.w. 4, h.w. 4 (no spots up.s.).

(e.) shape of eye-spots.

ab. Lanceolata, *Shipp*: in wh. they are elongated and somewhat wedge-shaped.

(f.) presence or absence of eye-spots up.s. ♂
(always present in ♀).

(g.) v. rarely, traces of transverse lines un.s.
h.w. (*Tutt*).

Genus, *Cænonympha*, *Hb.*

Prevailing col. dk. brn. and lt. or dk. tawny: hyb. 1.

Dist. Char. un.s. h.w., a series of ante-margl. eye-spots, sometimes difficult to distinguish, preceded by, or enclosed in a lt. band, represented in many sp. only by one or two patches; sp. of small size.

C. *Ædipus*, *Fabr.* (*Geticus*, *Esp.*; *Pylarge*, *Hb.*); 35mm.

Fd. pl. *Poa*, *Carex*, *Iris pseudacorus*.

♀ with broader metallic line un.s. h.w. and more conspicuous eye-spots un.s. f.w. than ♂.

Dist. Char. un.s. h.w. lt. band, containing eye-spots, yell., broad, and reaching to marg. ; up.s. dk. brn.

Loc. Said to have been found on a moor at Dübendorf, nr. Zürich, between 1820 and 30, by *Bremi* (? was it *Hero*).

S. side of Simplon nr. Domo d'Ossola (*Far.*); Cadenabbia on grassy slopes at back of vineyards, vii. '88, fairly c. (*Lamm.*).

Directions of Var. (a.) tint of grd. col. up.s.

(b.) number and size of eye-spots; v. variable.

C. *Hero*, *L.*; 30mm. Fd. pl. *Elymus Europæus*, &c.

♀ lighter than ♂, and eye-spots up.s. more conspicuous.

Dist. Char. un.s. h.w. lt. band narrow, wh., and irregular; up.s. dk. brn.

Loc. Bonfol (*Kundig*): nr. Mühlen (*Müller*); vi.-vii. v. scarce.

Directions of Var. (a.) number of eye-spots.

(i.) often a 3rd up.s. f.w. in ♀.

(ii.) up.s. h.w. 2-4; gen. 3 in ♂, 4 in ♀.

(iii.) altogether absent, constituting:

(? ♀) **ab. Aretioides**, *Fologne*: rare.

C. Iphis, *Schiff.*: 3.4mm. Fd. plt. grasses, esp. *Brachypodium*.

♀ f.w. up.s. much lighter than ♂.

Dist. Char. up.s. f.w. slightly (in ♀ much) lighter than dk. brn. h.w.; un.s. h.w. lt. band represented by 2 *wh.* patches.

Loc. Schaffhausen (*Trapp*): the Beeburg (*H.-S.*); Aargau (*Wschl.*); the Jura, nr. Basle (*Christ*); Twann and Prêles (*Rothembach*); St. Georges, vi. 30 02 (*Wh.*); St. Cergues, vi. 26 (*Bl.*); not uncommon in Vaud, *e.g.*, Veytaux, v. 26 97; vi. 10 01; Villeneuve; Caux, vi. e. 03, ab. (*Wh.*); Aigle, vi. 16, 1900 (*Bkm.*); e. in the Valais; in the Rhone Valley, *e.g.*, under the cliffs between Vernayaz and Martigny; Fully; Saillon; Sion; Sierre; Loèche; Visp; Brig (*Far.*); and in some places in the mtns., *e.g.*, Montana, vii. 11 99 (*Wh.*); Zermatt (*Far.*); the Furka, viii. 1 94 (*H.-Brn.*); Pont de Nant, vii. 20 (*Bl.*); Weissenburg, behind the Old Baths, not c. (*Hg.*); the Moléson (*Laharpe*); Mt. Barry, vi. 29, 1900 (*Bkm.*); Pfäfers (*Zll.-Holder*); Tarasp, c., and Val Bregaglia (*Bazzigher*).

Le Lautaret, vii. e. 96; La Grave, viii. m. 96; above Lanslebourg, viii. b. 97; Larche, viii. b. 1900; Abriès, viii. m. 1900 (*Tutt*); Allos, vii.-viii. (*Powell*); Barcelonette, vii. 92 (*Norris*); St. Martin Vésubie nr. top of Mt. Balme de la Fréma (*Brm.*); mtns. of Carinthia, 5000ft.-6000ft. vii., c. (*Lann.*); Kor Alp, vii. 97; Lölling, vii. 9 97 (*Chp.*).

Directions of Var. (a.) shade of grd. col. up.s. f.w., esp. in ♂.
 (b.) size of *wh.* patches un.s. h.w. sometimes v. small, sometimes almost confluent.
 (c.) obsolescence of eye-spots un.s. h.w., leading to:

ab. Anaxagoras, *Assmuss*: in *wh.* there are 5 v. small ones and no metallic line.

ab. Carpathica, *Hornuzaki*: in *wh.* they are nearly (or quite) obsolete.

(d.) eye-spots on up.s. h.w.

C. Arcania, *L.*: 3.3mm. Fd. plt. grasses, esp. *Melica ciliata*.

♀ f.w. up.s. rather lighter than ♂.

Dist. Char. up.s. f.w. or. brn. with dk. border; un.s. h.w. conspicuous broad *wh.* band, preceding eye-spots, exc. costal spot.

Loc. The type mainly at low elevations, probably not above 3000ft.; slopes of the Jura, nr. Basle (*Christ*); the Beeburg (*H.-S.*); Neuveville (*Coulter*); Canton St. Gall, Rorschach; Oberutzwyl; Degersheim; Bernek (*Fäschler*); Weissenburg, not scarce (*Hg.*); Berne, vii. 7 98 (*Fis.*); Veytaux, v. 26 97, vi. 6 01, &c. (*Wh.*); Glion, vii. 29 01 (*Sloper*); Lausanne, c. (*M.-D.*); Veyrier, vi. 17 and 21; Hermance, vi. 25 (*Bl.*); e. in the Valais

on bushy slopes; neighbourhood of Martigny; Sion; Loèche; Visp; Brig, &c. (*Far.*); in the Grisons, Malans (*Amstein*); Misox (*Wedow*); Val Bregaglia (*Bazzi*); Pontresina, vii. 84 (*Lmn.*); Locarno, vi. m. 87 (*Jones*).

The Dôle (*Baker*); Bossey, vii. 25, c. (*Bl.*); Grésy-sur-Aix, vii. 25 96; Bourg d'Aru, viii. m. 96 (*Tutt*); Digne, vi. 90, vii. 91 (*Lmn.*); St. Martin Vesubie; Castellane; Thorenc, vi.-vii. (*Powell*); Susa, vi. 18 02 (*Lowé*); Prê St. Didier, viii. b. 98; Courmayeur, vii. b. 94; Bobbie, viii. b. 01, over (*Tutt*); Chiavenna, vii. 6. 1900; Cortina, vii., 1900 (*R.-Brn.*); Botzen, vi. e. 01 (*Lowé*); Mendel Pass, viii. 1 95 (*Tutt*), &c.

[Obs.—There must be a *partia*' 2nd brood in the S. as it is noted from the Col di Tenda, x. 7 02 (*R.-Brn.*.)]

Directions of Var. (a.) narrowing of wh. band un.s. h.w.

var. Insubrica, *Rätzer*: gen. rather larger than type, with broad dk. border, and 2 or 3 eye-spots showing on up.s. h.w.; costal spot un.s. h.w. placed as in type.

Loc. Laquinthal (*Far.*); Brusio, vii. 12, 13 01 (*Fis.*); Crévola (*Rätzer*); Bisbinno, vii. 12 92 (*Mayer*).

var. Darwiniana, *Styr.*: smaller than type; wh. band un.s. h.w. of more uniform breadth, more or less enclosing costal spot; v. variable.

Loc. V. c. and gen. distributed over the high Alps from Chamonix to Cortina (*R.-Brn.*); in swarms on the Simplon, vii. 11 01, &c. (*Wh.*); in some places as low as 2000ft., e.g., Glion, vi. b. 99, &c. (*Wh.*).

ab. Philea, *Frr.*: smaller and approximating more closely to *Satyrion*, esp. eye-spots un.s. h.w.

Loc. Often with *Darwiniana* at high elevations; also with *Satyrion*, e.g., Pont de Nant, vii. 4 and 20 (*Bl.*).

(b.) darkening of grad. col. up.s. f.w., culminating in:

ab. Obscura, *Ruhl*: in wh. it is entirely suffused with dk. brn.

Loc. Zermatt; Mayenwand (*Far.*).

(c.) disappearance of apical spot un.s. f.w.

ab. Obsoleta, *Tutt*.

Loc. Orta, esp. Sacro Monte, vi. b. 1900 (*Lowé*); &c.

C. Satyrion, *Esp.* (*Philea*, *Hb.*) ? var. of *Arcania*, or perhaps of *Iphis*; 30mm. Fd. plt. grasses.

♀ up.s., esp. f.w., lighter than ♂.

Dist. Char. un.s. h.w. conspicuous regular wh. band containing series of small eye-spots.

Loc. V. widely spread over the Alps, commonest from 6000ft. to 7000ft., but found higher, and sometimes as low as 2400ft., e.g., Gimel, vi. 27 03, c. (*Wh.*); vii.-viii. Throughout Switz.; the Tyrol; Piedmont; Savoie; and at Gedessart, Basses Alpes.

Directions of Var. (a.) ♂, darkening of grad. col. up.s. f.w.,
culminating in:

var. Unicolor, *Wh.*; in wh. all ws. are of a uniform dk. brn. with
greenish tint; 28mm.

Loc. The Engadine; *e.g.*, Schafberg, vii. 24, 01 (*Fis.*); Campfer,
c. (*Jones*).

(b.) absence of border (sometimes v. distinct),
up.s. f.w.

(c.) breadth of band un.s. h.w.

(d.) reduction in size of eye-spots, un.s. h.w.,
culminating in:

ab. Cæca, *Wh.*, in wh. they are absent.

Loc. Les Plans, above Bex (*Bl.*).

***C. Dorus**, *Esp.* (Dorion, *Hb.*); 32mm. Fd. pl.
Agrostis, &c.

♀ up.s., esp. f.w., lighter than ♂; ♀ also larger.

Dist. Char. un.s. h.w. series of eye-spots, not including costal
spot, in wh. the 2nd from the top is much nearer out. marg.
than those on each side of it.

Loc. The S.E. part of the region; Digne, vi. e. 90 (*Jones*);
vii. 91 (*Lmn.*); Barcelonette, viii. b. 1900 (*Tutt*); between Barcelo-
nette and Prunières, vi. 25 92, *c.* (*Norris*); almost everywhere in
dry places in Basses Alpes, Alpes Maritimes, and Var, vi.-vii.; as
fine in mtns. as at low elevations (*Powell*).

Directions of Var. (a.) size of eye-spots.

(b.) un.s. rather lighter in the mtns. (*Powell*).

C. Pamphilus, *L.* (Menalcas, *Poda*; Nephelè, *Hufn.*);
28mm. Fd. pl. *Cynosurus cristata*, *Poa*.

♀ paler and with less marked border than ♂.

Dist. Char. up.s. f.w. and h.w. of same shade of brt. yell.-brn.,
un.s. lt. band or patches tinged with yell.

Loc. Distributed over the whole region and gen. ab.; found up to
about 6500ft.; 1, 2, or 3 broods according to altitude; in lowlands
from iii. e. to ix., in mtns. vi.-viii. My earliest date is Veytaux,
iii. 27, 99.

Directions of Var. (a.) distinctness of apical spot f.w.

ab. Bipupillata, *Cosmoci*: in wh. it is large and (esp. un.s.) dis-
tinctly double-pupilled.

ab. Obsoleta, *Tutt*: in wh. it is absent.

(b.) increase of distinctness of dk. border.

var. (& ab.) Lyllus, *Esp.*: in wh. there is a distinct dk. border f.
and h.w.

[Obs.—It would seem that this is the characteristic of Esper's *Lyllus*, and
that the form gen. so called really belongs to—]

***ab. (& var.) Marginata**, *Rühl*: larger, with broader border, un.s. lighter with margl. row of metallic bl. spots.

Loc. Only in the hottest parts of the region, as ab.; transitional forms not uncommon in hot seasons.

(c.) loss of markings un.s. h.w., culminating in:

ab. Unicolor, *Tutt*: in wh. it is entirely reddish-brn.

(d.) a distinct row of eye-spots un.s. h.w.

ab. Ocellata, *Tutt*: (the type has only traces of this).

(e.) loss in depth of grd. col. up.s. culminating in:

ab. Pallida, *Tutt*: pale yellowish-tawny, with pale gr. out. margl.

C. Typhon (Tiphon) *Rott.* (*Davus*, *Fabr.*): 35mm. F'd. plt.

Carce, *Festuca*, *Rhynchospora*, *Eriophorum*.

♀ up.s. f.w. rather lighter than ♂.

Dist. Char. un.s. h.w. lt. band represented by 2 or more patches of *dirty wh.*: 2nd eye-spot from anal ang. the largest, exc. sometimes the costal spot: further distinguished from *Iphis* by lighter up.s., and from *Pamphilus* by absence of gr. border up.s.

Loc. Confined to marshy places, and v. local. Schaffhausen, only on the "Scharrensumpf" (*Trapp*); Zurich on the Katzensee (*Frey*); Uznach, vii. 5 01; Weesen marsh, vii. 8 01, rather worn (*Fis.*); Gais and Weissbad (*Peyer-Imhof*); Lake of Hallwyl (*Schl.*); Berne (*Meissner*); Schüpfen and Val Travers (*Rothenbach*); Glarus (*Heer*): Weissenburg marshes, not uncommon (*Hg*); Gimmel-sur-Rolle, a sloping marshy field on the left of the road to St. Georges, vii. 1 02, fresh and ab. (*Wh.*); Leuk (*M.-D.*); Mt. Barry, vi. 30, 1900 (*Bkm.*); Brunnen, vi. 6 86 (*Jones*); Ragatz (*Austein*); Splügen, below Andeer, vii. 5, 1900 (*H.-Bru.*).

Osterwitz, Carinthia, vii. 97 (*Lamm*).

Directions of Var. (a.) darker grd. col., and more and larger eye-spots, culminating in:

var. Philoxenus, *Esp.* (*Rothliebi*, *H.-S.*); un.s. also dk. red.-brn., with ante-margl. band of eye-spots; up.s. 0-5 f.w., 1-6 h.w.

(b.) paler grd. col., fewer and smaller eye-spots, culminating in:

var. Laidion, *Brkh.*: not gen. *much* lighter than type, but up.s. ocellation reduced to small dots, gen. 1 on f.w. and 1 on h.w.; un.s. basal area h.w. much darker than border, as in type, but with only traces of eye-spots; gen. 1 apical eye-spot f.w.

ab. Isis, *Thunberg*: the extreme form as to paleness of col.

ab. Obsoleta, *Tutt*: the extreme form as to absence of ocellation, there being only one dot, h.w.

[Obs.—Unfortunately v. little information is forthcoming as to the different

forms in various localities; the Utnach and Weesen specimens are, however, more or less typical, a few verging towards *Philovenus*; those from Gimmel are much nearer to *Laidion*; the Brunnen specimen is reported as *Laidion*, and that from the Splügen as *Isis*.]

Sub-Fam. EREBINÆ.

Tribe (ENEIDI.

Genus, *Æneīs*, *Hb.* (*Chionobas*, *Bsdr.*).

Æ. *Aëllo*, *Hb.* (*Norna*, *Hb.*; *Glacialis*, *Schrank*); 5.2mm.

Fd. pl. grasses: hyb. l.

♂ dk., rather washed-out brn., with tawny ante-margl. band;

♀ rather washed-out tawny.

Dist. Char. Conspicuous wh. veining and small transverse streaks on dk. h.w. m.s.

Loc. Gen. at high elevations, from 5500ft. to 8000ft., but occasionally in plains, *e.g.*, at ft. of Mt. D'Autan (*Far.*), &c.; in N. Switz. only reported from the Schäfli in Appenzell (*Täschler*), and Pilatus (*Knecht*); gen. distributed in the Bernese Oberland and the mtns. of Vaud, the Valais, and the Grisons; *e.g.*, the Briener Rothhorn and Männlichen (*Fis.*); Engstlen and Tannen Alps (*Baker*); S. side of Rochers de Naye (*Fis.*); Glacier de Trient; Bovine; Arpilles; Grand St. Bernard; Gemmi; Grimsel; Laquinthal, &c. (*Far.*); Arolla, vii. 11. 1900; Turtmannthal, vi. 20 99 (*Bkm.*); Zinal, viii. 1 98, worn (*R.-Brn.*); Simplon Pass, 4th Refuge, vii. m. 98, c. (*Wh.*); Steinenthal, vii. b. 02 (*Sheldon*); Maloya, vi.; Pontresina, vii. 95, worn (*Miss Ftn.*); Campfer, rather c., just below tree-limit (*Jones*), &c.

Eastwards to the extremity of the region; *e.g.*, Brenner, Postalp, vii. 28. 1900, worn (*R.-Brn.*); Campiglio and Pejo, vii. 95; Heiligenblut, vii. 25 97 (*Lmn.*); also to the S.W.; Le Reculet in the Jura, vii. 24 (*Bl.*); St. Rémy (*Baker*); St. Martin Vésudie, vi. c., vii. b. (*Powell*); Pepiori; Balme de la Fréma; Madone des Fenêtres (*Brm.*).

[Obs.—The little fiction that this sp. occurs only every two years, alternately in the Bernese Oberland and the Valais (such a convenient arrangement for collectors!) is disproved by the above dates; it is, however, very likely that in cold seasons and at great elevations the l. hibernates twice.]

Directions of Var. (a.) depth of grd. col. and consequent distinctness of band, up.s. ♂.

(b.) number of spots: (gen. 2 f.w. and 1 h.w., but sometimes only 1 f.w., and often 2 h.w.; frequently on up.s. h.w. traces of 2 more).

Genus, *Erebia*, *Dalm.*

Prevailing col. dk. (gen. v. dk.) brn., usually with red-brn. or or.-brn. bands or spots, gen. containing pupilled or unpupilled eye-spots.

♀ gen. with lighter markings and often with more eye-spots than ♂.

[Obs.—The ♀ in most cases comes out, or, at any rate, shows itself, considerably later than the ♂; the former is gen. to be found among flowers or grass, the latter has a predilection for roads and rocks.]

The following remarks include the genus *Melampias*, *Hb.*, for the erection of wh. no adequate excuse appears to me to exist (v. introduction).

This genus is in many cases v. local, and in all has more or less definite limits of altitude; these I have endeavoured to tabulate, the figures, in English ft., being mostly founded on those given by *Frey* (who uses Parisian, not English, ft.), but altered in many cases in accordance with subsequent experience. It must be understood that "plain" does not mean sea-level, but the general valley level of the districts in wh. the sp. occur, and of course the figures are only approximate. *Epistygne*, plain to 4000ft.; *Medusa*, plain to 4500ft.; *Æthiops* and *Stygne*, plain to 5500ft.; *Ligea*, plain to 4500ft., and with var. *Adyte* to 6000ft. or more; *Evias*, plain to 7000ft.; *Neoridas*, 2000ft. to 6000ft.; *Ceto*, 2700ft. to 5500ft.; *Nerine*, 3300ft. to 5000ft.; *Æme*, 3000ft. to 6000ft. (but at *Glion* at 2000ft.); *Euryale*, 3000ft. to 6500ft.; *Scipio*, 3000ft. to 7500ft.; *Manto*, 4000ft. to 6500ft.; *Goante*, 4000ft. to 7000ft.; *Melampus*, 4500ft. to 6500ft. (exceptionally 3500ft. to 8000ft.); *Pharte*, *Eriphyle*, and *Tyndarus*, 4500ft. to 6500ft.; *Christi*, 4500ft. to 7000ft.; *Mnestra*, 5000ft. to 8000ft.; *Arete*, 5500ft. to 6000ft. (*Lmn.*); *Pronoe*, 5500ft. to 6500ft.; *Epiphron* vars., 6000ft. to 8000ft. (exceptionally 4500ft. to 9000ft.); *Lappona* and *Gorge*, 5500ft. to 9000ft.; *Flavofasciata*, 7000ft. to 8000ft.; *Alecto*, 7000ft. to about 10000ft.

* **E. Epiphron**, *Knoch* (*Egea*, *Brkh.*; *Ianthe*, *Hb.*);
28mm.-34mm. Fl. pl. *Aira praeor.* and *A. caspitosa*.

♀ with more distinct markings than ♂.

Dist. Char. a slight ang. in h.w. about half-way down out. marg.

Loc. Not on the Jura, but in one form or other distributed over the high Alps of the whole region. Unfortunately, in many, indeed in most cases, the special forms from different localities are not mentioned in books, letters, or lists, and in many collections the locs. of the specimens are not attached; hence a great difficulty arises in giving, what is most desirable, the exact habitat of the different vars. Speaking roughly, it may be said that the type is only reported from above *Certosa di Pesio*, vi.-vii. (*Norris*); that var. *Vallesiana* is to be found on the S. slopes of the Valaisian alps, the *Mayenwand*, the *Pierre-à-voir*, and the *Simplon*; that var. *Cassiope* is the more usual form on the S. French, Piedmontese and Valaisian alps, and round *Engelberg*; vars. *Nelamus* and *Mnemon* in the Bernese Oberland, the Grisons and the Tyrol; though *Nelamus* is to be found as an ab. throughout the region; ab. *Obsoleta* appears to come chiefly from the Grisons; vii. and viii. are the usual months of appearance, according to altitude, but also vi. in the S.

The type has the band continuous, with large eye-spots, pupilled in ♀.

Directions of Var. (a.) decrease in size and distinctness of markings.

var. Valesiana, *M.-D.*: 34mm.; a large form with continuous band and large spots.

var. Cassiope, *Fabr.*: band continuous on f.w.; but on h.w. only 3 or 4 blk. dots in fulvous rings.

var. (& ab.) Nelamus, *Bsdv.* (*Bernensis*, *M.-D.*); band reduced on f.w. and obsolescent on h.w., blk. dots almost (or quite) absent.

var. Mnemon, *Haworth*: band broken up into rings; gen. 4 f.w., 2 h.w.

ab. Obsoleta, *Tutt*: bands and spots alike obsolete.

Obs.—Many intermediate forms occur.]

(b.) great variation in number and size of spots.

E. Melampus, *F'ssl.*: 32mm. Fd. pl. *Poa annua*, &c. ♀ with longer and narrower ws. than ♂, markings gen. more pronounced and yellower.

Dist. Char. blk. unpupilled spots in red-brn. macular band f.w., and rings h.w., up.s. and un.s., in connection with small size (*v. Eriphyle*).

Loc. One of the most widely distributed and ab. of the mtn. *Erebias*: in the fir zone, and in high pastures and meadows throughout the region; vii.-viii. according to elevation and latitude. Occasionally found considerably lower than its normal range, *v.g.*, as low as 3300ft. at Weissenburg (*Hg.*); Brusio, vii. 12 01 (*F'ss.*).

Directions of Var. (a.) tendency to stronger marking, culminating in:

ab. Sudetica, *Stgr.*: wh. has also somewhat lighter and yellower spots.

Loc. Prätigau (*Zll.-Dolder*).

(b.) diminution in size of reddish patches and blk. spots.

(c.) number of blk. spots (the normal number is: up.s. f.w. 4, h.w. 2, the lowest spot on f.w. and the top one on h.w. being without blk.; un.s. f.w. 2, h.w. 3 or 4).

Obs.—An example taken at Randa by *Frey* with a wh. spot on each w. up.s. is recorded as:

ab. Randæ, *Fav.*

E. Flavofasciata, *Hepp*: 30mm. Fd. pl. (and l.) unknown.

♀ with larger spot than ♂.

Dist. Char. un.s. h.w. broad ante-margl. band yell. with blk. spots.

[Obs.—This sp., the smallest *Erebia*, closely resembles some forms of *Epiphron* on up.s., but without ang. in h.w.]

Loc. Val Maggia, “grassy slopes above Fusio, in close association with the outcrop of a wh. rock of dolomitic composition,” vii. 1-12 99 (*Chp.*); Alpe Pianascio, vii. 12-13 99 (*Müller*); Bernhardin Pass, vi. 96, 1 ♂ (*Maag*); 2 places nr. Pontresina, viz., Schafberg, above 1st restaurant, vii. 24 01; and Tscherva Glacier, behind restaurant, 1 ♂, vii. 10 01 (*Fis.*).

Directions of Var. (a.) un.s. h.w., breadth, regularity and depth of col. of yell. band.

[Obs.—The Tscherva Glacier specimen has a slightly broken band, with v. irregular inn. edge.]

(b.) number of spots f.w. up. and un.s. (normally 5).

[Obs.—I have a specimen from the Alpe Pianascio with 4 on up.s. and 6 on un.s.]

***E. Arete**, *Fabr.*; 32mm. Fd. plt. ? *Aira caespitosa* (not successfully reared).

♂ with dk., ♀ with yell.-gr. h.w. un.s.

Dist. Char. ante-margl. row of tiny wh. spots un.s. h.w., just visible on up.s.

Loc. Styrian and Carinthian Alps, e.g., Stelzing, vii. 11 97, v. local, on San Alp, but not on Kor Alp (*Lmn.*); Salzburg, vii.-viii. (*Spuler*).

Directions of Var. (a.) increase in size of wh. spots, esp. in ♀, culminating in:

***ab.** ♀ **Albofasciata**, *Höfner*: in wh. they are confluent.

E. Eriphyle, *Frr.* (Tristis. H.-S.): 33mm. Fd. plt. grasses (*Far.*).

♀ with eye-spots, esp. up.s. f.w. more marked than in ♂.

Dist. Char. reddish-brn. (in ♀ yell.-brn.) markings up. and un.s., f. and h.w.; but the 2nd spot from costa h.w., esp. un.s., noticeably nearest the base. Differs also from *Melampus* in absence of blk. dots in the spots of h.w., and from *Pharte* in having gen. blk. dots in the 2nd and 3rd red brn. patches in ♂ f.w., and in more in ♀.

Loc. V. local, and gen. scarce, occurring in Central and E. Switz., in the Styrian and Carinthian Alps, and again in S. Piedmont; vi. e. to viii. The Niesen (*Jaggi*); Kandersteg and the Gemni, small and dk. (*Lothenbach*); ft. of the Furka, to right of Rhone Glacier; Mayenwand; Grimsel; Alpes de Lens (*Far.*); Trübseealp, vii. m. 01 (*Lowe*); Devil's Bridge (*Frey*); from the

Bernhardin Pass to the Hinterrheinthal (*Rothenbach*): Dischmatal, vi. 27, and vii. 2 01 (*Fis.*); Sertigthal and Fluelathal, viii. 82 (*R.-S.*); Flimserstein (*Capfisch*): below the village of Simplon (*Far.*).

Innsbruck, viii. 1 97; St. Anton, viii. 1 97 (*Chp.*); Stelzing, vii. 11 97; Sau Alp and Kor Alp, vii. m. 97 (*Linn.*); Certosa di Pesio, v. ab. at head of Val Arpi, in Val Marguareis, and under the summit of Monte Costa Rossa, vii. 11, &c., 92 (*Norris*).

Directions of Var. (a.) increase in amount of red-brn. up.s.

ab. Intermedia, *Frey*: in wh. the spots are larger.

(b.) loss of blk. dots f.w.

ab. Impunctata, *Hüfner*: wh. has also v. large red-brn. spots up.s.

(c.) lighter border and reddish suffusion
un.s. f.w.

E. Pharte, *Hb.*: 37mm. Fd. plt. grasses (*Far.*).

♂ with dk., ♀ with yellowish un.s.

Dist. Char. *oblong* or *wedge-shaped* red-brn. (in ♀ yell.-brn.) spots up.s. f.w.; none of the spots, up. or un.s., f. or h.w., containing blk. points.

Loc. Wide-spread, but somewhat local, and not gen. c.; vii.-viii. Obergurnigel (*Meissner*); Kandersteg, vii. 9 91 (*Rosa*); both sides of the Gemmi, on the N. at the entrance to the Gasterthal, and on the slopes of the Kienthal; the Grimsel, above the Handeck falls, &c. (*M.-D.*); Gadmenthal (*Rätzer*); Little Scheideck (*Fis.*); the Surenen (*Christ*); Trübseealp, vii. m. 01 (*Lowr.*); Pilatus (*Paul*); Mühlebachalp, above Engi; Kalfeseralp (*Eisinger*); about a mile down the Gsteig side of the Col de Pillon, viii. b. 98 (*Jones*); the Diablerets (*Fis.*); la Vare, above Pont de Nant, vii. 11 (*Bl.*); Dent du Midi, viii. 6 02 (*Fis.*); Glacier de Trient; Forclaz; Arolla; Alpes de Lens; above Obergesteln; between Béréal and the Simplon Pass; Rosshodenalp, &c. (*Far.*); Flimserstein (*Capfisch*); Dischmatal, viii. 2 01 (*Fis.*); Maloja, vii. 88 (*Linn.*); Fluelathal (*R.-S.*); Val Tuoi, vii. m. 1900 (*Chp.*).

Le Lantaret, vii. 30, viii. 5 96 (*Tutt*); Cortina, woods about Tre Croce, vii. 23. 1900, not c. (*R.-Brn.*); Stelvio, Eppelsheim; Innsbruck, viii. 1 97; Kor Alp; St. Anton, vii. m. 97 (*Linn.*).

Directions of Var. (a.) diminution in size and number of spots, esp. f.w., culminating in:

ab. Phartina, *Stgr.*: in wh. they sometimes scarcely appear.

Loc. Dent du Midi, viii. 6 02 (*Fis.*); Trübseealp, vii. m. 01, not uncommon; Gemmi (*Lowr.*); Val Tuoi, vii. m. 1900; Fusio, vii. b. 99 (*Chp.*), &c.

(b.) increase in conspicuousness of red-brn., culminating in:

var. (& ab.) Fasciata, *Spuler*: in which they become a band (always, however, divided by the dk. nervures), red-brn. in ♂, yell.-brn. in ♀.

Loc. Styrian and Carinthian Alps (*Spuler*): some specimens from the Trübseealp approach this form closely.

Guarda, vii. 22-31, 1900: Fusio, vii. b. 99.

E. Christi, *Rätzer*: 32mm.-38mm. Fd. plt. (and l.) unknown.

♀ up.s. f.w. band lighter and less broken than in ♂.

Dist. Char. up.s. f.w. band containing eye-spots (unpupilled) follows curve of w.; un.s. h.w. cl. band inconspicuous, but with out. edge always distinguishable; differs, further, from *Epiphron* and vars. by absence of ang. in h.w.; from *Mnestra* by band of f.w. being much nearer to out. marg.; by band un.s. f.w. being always distinguishable from cl. suffusion (wh. in *Christi* does not exist on up.s.), and gen. by the ante-marg. blk. spots un.s. h.w.; from *Melampus* and *Eriphyle*, by absence of all rust col. or yell. un.s. h.w.

Loc. Laquinthal, and thence occasionally to Simplon Hospice (*Fav.*); 1st half of July (*Fav.*, *Fis.*, *Obth.*, &c.).

Directions of Var. (a.) relative length and breadth of f.w., always more or less long and narrow.

(b.) col. of band, wh. varies from rich red-brn. to rich yell.-brn.

(c.) number of spots f.w., 2-4.

[Obs.—So far as I know no specimen has yet been taken without eye-spots f.w., but I should expect this ab. to occur, as they are sometimes v. inconspicuous.]

(d.) conspicuousness of spots h.w., esp. up.s.

(e.) visibility of cl. band un.s. h.w. (*v. suprà*).

[Obs.—In spite of criticisms to the contrary, there is really no doubt of this being a good species. It resembles to some extent 4 others (*v. suprà*), but, though itself a variable sp., it has always characteristics wh. do not disappear, and wh. render it distinguishable from any other. I have never found any great difficulty in identifying specimens, and in every case my judgment has been independently corroborated by Chne. Favre, who has had much experience of the sp. There is nothing impossible, nor, indeed, contrary to what might naturally be expected in this local genus, in the limitation, so far as is at present known, of its range; it is not so very much more restricted than *Flavofasciata*, *Zapateri*, or even *Arcte*, *Scipio*, *Neoridas*, &c., and may very likely yet be found in other neighbouring, or perhaps more distant, localities.]

E. Mnestra, *Ill.*: 35mm. Fd. plt. grasses (*Fav.*).

♀ with just visible ante-margl. band un.s. h.w., wh. in ♂ is unicolorous.

Dist. Char. up.s. f.w. broad red-brn. band, almost equidistant throughout from out. marg.; gen. suffused on inn. edge, sometimes almost to base of w., and continued more or less on h.w. (The squarest of the smaller *Erebias*.)

Loc. La Vare, above Pont de Nant, vii. 11 (*Bl.*); mtns. round Martigny, Arpillles, Bovine, Trient, Alpe-de-Fully, Pierre-à-voir;

also above Mayens de Sion; Evolena; Val d'Anniviers; Loècheles-bains, &c. (*Far.*); Ferpèche, viii. m. 99; Col du Torrent, viii. b. 99 (*Tutt*); Arolla, vii. 11-16, 1900; Riffelalp, vii. 10 99 (*Bkm.*); Saasthal, vii. 94 (*Miss Ftu.*); Findelen, v. small (*Fis.*); Steinalp, vii. 3 99; Simplon Village, vii. 10 01; viii. 3 99 (*Wh.*); Laquinthal, vii. 30 99 (*Thp.*); Belalp (*Beutl.*); the Grimsel, nr. the Aar Glacier (*Meissner*); Meienthal (*Wschl.*); Furka, vii. 189 (*Lmn.*); Mayenwand (*Frey*); the Grisons, e.g., Rosegg Glacier, viii. 3 01 (*Fis.*); Pontresina, vii. 95 (*Miss Ftu.*); Maloja, vii. 188 (*Lmn.*); Davos, viii. 2, 1900; Guarda, vii. 22-31, 1900; above Fusio, vii. b. 99 (*Thp.*), &c.

Alps round Chamonix, c. (*Meissner*); the Brévent, viii. 18 02; Le Lautaret, viii. b. 96 (*Tutt*); Allos; Colmars; Beauvèzer; St. Martin Vésunbie (*Powd.*); top of Stelvio Pass, vii. 12, 1900 (*R.-Bru.*); Petit St. Bernard, viii. b. 98; The Grammont, viii. b. 94 (*Tutt*); Pejo, vii. 95 (*Lmn.*).

- Directions of Var.** (a.) presence or absence of 2 apical eye-spots, up.s. f.w.
 (b.) presence or absence of wh. pupils to these eyes when existing.
 (c.) extent of red-brn. suffusion up.s. f.w.

E. Alecto, *Illb.* ; 48mm. F'd. pl. grasses (*Far.*).

♀ h.w. up.s. and un.s. slightly less unicolorous than in ♂; in type 2 v. small apical eye-spots up.s. f.w.

Dist. Char. large size, in connection with dk., nearly unicolorous, h.w.

Loc. Distributed over all the highest Alps of the region, in one form or other, the type (as given above) being the usual form E. of Switz., the form without eye-spots, *Glacialis*, being more usual in Switz. and to the W., though in many places both occur together; vii.-viii.: Mr. Rowland-Brown remarks that on the Swiss side of the Stelvio he found only *Glacialis*, on the Austrian side only *Alecto*, viii. 1 97. *Laharpe*, as quoted by *Frey*, was mistaken in supposing the sp. to be absent from the Vaudois Alps; e.g., Dent de Morcles, vii. 10; Grand Moveran, vii. 21; *Alecto*, *Glacialis* and *Pluto* (*Bl.*). Mr. Norris observes that, at Godessart, *Alecto* and *Pluto* were attracted by his blk. net, and that he thus took a good series. Mr. Buckmaster took *Glacialis* on the moraine of the Allalin Glacier as early as vi. 21 94. In Switz. it does not usually occur in large numbers, but in some localities further E. in the Alps, e.g., the E. side of the Stelvio it is ab. Mr. Rowland-Brown speaks of the E. Stelvio specimens as much larger than the Swiss, but Mr. Fison has taken v. large ones with fine blk. grd. col. on the Piz Languard, viii. 5 01.

Directions of Var. (a.) absolute disappearance of mahogany suffusion.

ab. ♀ Persephone, *Esp.* : the apical eye-spots remaining.

[? Is this the supposed *E. Melas* from Campiglio taken by Mrs. Nicholl in 190, and afterwards vii. 25 92 by Mr. Elwes, and in vii.

95 by Mr. Lemann and Dr. Chapman, the latter of whom afterwards wrote (*Entomologist*, xxxiv., 17) that these specimens had been proved by Calberla to be *Glacialis*.]

(b.) disappearance of apical eyes in ♀, with increase of mahogany suffusion in both sexes.

var. Glacialis, *Esp.* (Alecto, *Frr.*); wh. has the suffusion broad but inconspicuous.

Loc. The more usual form in Switz., and the W. and S.-W. alps; occurring also in the E. Alps; *e.g.*, Heiligenblut, vii. 25 97 (*Lmn.*).

(c.) tendency of all markings to disappear, culminating in :

ab. ♂ Pluto, *Esp.* (Alecto, *Bsdr.* : Duponcheli, *Obth.*); almost blk. up. and un.s.

Loc. More c. in the W. than in the E. of the region; Briener Rothhorn, vii. 16 92; Anthémoz on the Dent du Midi, vii. 29 02 (*Fis.*); Gornergrat, viii. 10 01 (*Sloper*); &c.

On the Dourbes, Digne, vii. 11-16 89 (*Mrs. Nicholl*); nr. Certosa di Pesio, on Monte Faschia, 7000ft. to 8000ft., and at Gias del Ortiga (*Norris*); &c.

E. Manto, *Esp.* (*Pyrrha*, *Fabr.*); 40mm. Fd. plt. grasses (*Far.*).

♂ with mahogany or dull fulvous, ♀ with ochreous-yell. spots un.s. h.w.

Dist. Char. ♀, col. of spots un.s. h.w., ♂ 2 small unpupilled apical eye-spots up.s. f.w. in connection with more or less oblong blotches un.s. h.w., the largest being nr. costa; differs from *Pharte* by having blk. spots on the red-brn. patches up.s. f.w., and from *Ceto* var. *Obscura* by absence of wh. pupils in these spots.

Loc. Gen. distributed over the Bernese, Vaudois and Valaisian Alps, though gen. in small numbers in the latter canton; *e.g.*, Weissenburg, v. ab. (*Hg.*); Mürren, vii. 24-viii. 12, 1900 (*Wh.*); Diablerets, c. and v. fine, viii. 85 (*Jones*); Tour d'Ai, viii. 7 97 (*Tunaley*); Caux, vii. 01 (*Lmn.*); Val d'Anniviers, Ponchette to Chandolin; Loèche-les-bains; Riffelalp; Simplon, &c. (*Far.*); Engelberg, on wooded slopes (*Christ*); Pilatus (*Paul*); Alps of Appenzell (*Täschler*), and St. Gall (*Eisenring*); Oberalp, viii. 26 95 (*Chp.*); scarce in the Grisons; Engadine, in the valley, and Alp Tschitta above Bergün (*Zll.*).

Brenner on the top of the pass, and on Postalp, vii. 27, 1900, v. c. (*R.-Bru.*); Innsbruck, viii. 1 97 (*Lmn.*); St. Anton, viii. 4 97 (*Chp.*); reported from the Basses Alpes by *Millière* and *Danzel*.

Directions of Var. (a.) tendency to diminish in size, culminating in :

var. Pyrrhula, *Frey*: 32mm.: with spots and eyes obsolescent.

Loc. Only in the highest haunts of the sp., e.g., on the Albula Pass, high above the tree limit, vii.-viii. often c. (*Frey*); Gurgaltetsch, above Parpan (*Caplisch*). A transitional form not quite so small and with better marked spots and eyes is found at somewhat lower elevations, e.g., Davos (*Frey*); Männlichen, W. of top, vii. 24, 1900; Dent du Midi, viii. 6 02; Mythen, viii. 25 02, rather worn (*Fis.*.)]

(b.) spots of un.s. becoming lighter in ♂.

ab. Bubastis, *Meissner* (Pyrrha Maccabæus, *Frr.*); in wh. they are whitish; ♀ with chequered fringe.

Loc. The Schinberg in Aargau (*R.-S.*); Gadmén (*Zll.-Dolder*); Pilatus (*Wschl.*); Engelberg (*Christ*); Loèche-les-Bains (*Meissner*); Glacier de Trient (*Wschl.*).

(c.) tendency of spots, esp. un.s. h.w., to diminish in size and number, culminating in:

ab. Cæcilia, *Hb.*: in wh. they have almost disappeared on up.s., and only show traces of the largest on un.s. h.w. (enough, however, to distinguish from *Eme* ab. *Lugens*).

Loc. Mürren, vii. 24, &c., 1900 (*Wh.*); Sefinenthal; Männlichen; Dent du Midi (*Fis.*); Engelberg (*Christ*); on the Joch Pass (*Zll.-Dolder*); Gadmén (*Rätzer*); Guarda, vii. 1900 (*Chp.*).

Brenner Pass, vii. 27, 1900 (*R.-Bru.*).

E. Ceto, *Hb.*: 40mm. Fd. pl. *Pou annua*, &c.

♀ macular band lighter and more conspicuous than in ♂.

Dist. Char. ante-margl. band of brt. brn. spots, almond-shaped, with blk. centres, f. and h.w., up. and un.s. (*v. Medusa*).

Loc. Local, and in Switz. chiefly in the Valais and the Grisons: possibly, however, it may be overlooked, as its flight is confined to the 1st fortnight or 3 weeks of July. Outside the 2 Cantons named, I find: Dent de Corjeon, Fribourg (*Kawc*); les Ormonts, Vaud (*M.-D.*); Fusio, Tessin, vii. b. 99 (*Chp.*); Kandersteg, Berne, vii. 4 97 (*Postaus*); in many locs. in the Valais, and when found gen. ab.; Mt. Ravoire; Arpillés: from Martigny Combe to the Forclaz; Bovine; Fully; Sembrancher; Grand St. Bernard; nr. Levron on the Alpe du Lens; Evolena; Inden; Loèche-les-bains, &c. (*Far.*); Turtmannthal, vi. 20, St. Nicholas and Zermatt, vi. 29 99 (*Bkm.*); the Riffel, vii. 01 (*Lmn.*); Ganterthal, vii. b. 01, v. ab. (*Wh.*); Zinal, viii. b. 98, v. worn (*R.-Bru.*), &c.; in the Grisons, the Schafberg, vii. 88 (*Lmn.*); Promontogno, vi. 95 (*Miss Ftu.*); above Vicosoprano, and at Samaden (*Meugelbir*); Ardetz and Tarasp (*Killias*); Fusio, vii. 1-12 99 (*Chp.*).

The Brévent, viii. 18 02; Le Lautaret, vii. e. 96 (*Tutt*); Seyne; Allos (*Powell*); Ozglosse, Malmorte, &c. (*Kawc*); St. Martin Vésubie (*Powell*); Certosa di Pesio, v. e. (*Norris*); Susa, vi. 24 99, v. fine (*R.-Bru.*); Courmayeur, vii. b. 02 (*Lowé*); Chiesa, vii. 9, 1900, worn (*R.-Bru.*); Macugnaga, vii. 96 (*Miss Ftu.*); Trafoi, vii. 14, 1900,

v. ab. (*R.-Brn.*); Mendel, vii. 95 (*Lmn.*); Campiglio, vii. m. 95; Pejo, vii. e. 95 (*Chp.*).

Directions of Var. (a.) decrease in number and size of spots, culminating in:

var. Obscura, *Lützer*: in wh. they are v. small, even in ♀.

Loc. Glacier de Trient; Val de Bagnes; Laquinthal (*Far.*); just below Simplon Village, vii. 10 01, v. ab. (*Wh.*).

Le Lautaret, viii. 196 (*Tutt.*); Macugnaga (*Far.*).

ab. Caradjæ, *Caplisch*: in wh. the spots have almost (or quite) disappeared, and wh. is also smaller.

Loc. In the highest parts of the range of the sp.

(b.) tendency to lighter col. of spots, culminating in:

ab. Phorcys, *Frr.*: in wh. they are whitish with brn. centres.

Loc. St. Martin Vésubie; Balme de la Fréma; Madone; Berthemont. scarce (*Brn.*).

E. Medusa, *Fabr.* (*Ligea*, *Esp.*: *Medea*, *Brkh.*); 42mm.

Fd. pl. *Panicum sanguinale*, &c. (*Far.*).

Br. rich brn.; ♀ rather larger, and grd. col. un.s. considerably lighter than ♂.

Dist. Char. band of deep yell.-brn. spots, most of wh. bear wh.-pupilled eyes, f. and h.w., up. and un.s. Differs from *Ethiops* in absence of bands un.s. h.w.; from *Ceto* in the spots, esp. un.s. h.w., being wh.-pupilled in more or less circular rings instead of being unpupilled in almond-shaped dashes.

Loc. Gen. distributed throughout Switz. in the lowlands and hills, v.-vi., in the mtns., vi.-vii., but rarely in any considerable numbers exc. at moderate altitudes, and much commoner in N. than in S. Switz.; ab. however, at Caux, v. e. and vi. 97 (*Wh.*); distinctly scarce in the Valais, though found throughout the canton.

Susa, vi. 24 99 (*R.-Brn.*); Lölling, vii. 9 97, worn (*Chp.*); Stelzing, vii. 11 97, worn (*Lmn.*); (reported from high mtns. of the Basses Alpes and Alpes Maritimes, but doubtful).

Directions of Var. (a.) decrease in number and size of eye-spots, culminating in:

var. Hippomedusa, *Ochs.* (*Subalpina*, *Gummpenberg*); wh. is also smaller, and in ♂ has the brn. blotches v. small.

Loc. Basle and Liestal (*Christ*); the crests and high grass slopes of the Jura, e.g., Weissenstein, v. e. (*M.-D.*); the Bechburg, v. e. (*R.-S.*); (lower down, e.g., at St. Georges, specimens do not greatly differ from the type (*Wh.*)); between Lauterbrunnen and Wengen; Nairs and the Gurgaletsch (*Caplisch*); Tarasp (*Kauc*); Fusio, vii. 1-12 99 (*Chp.*).

The Stelvio, but not reaching to Franzenhöhe (*Frey*); Stelzing (*Lmn.*).

ab. ♀ **Procopiani**, *Hormuzaki*: an extreme form in wh. the eye-spots are unpupilled.

(b.) increase in size and number of eye-spots, culminating in:

var. Psodea, *Hb.* (Eumenius, *Frr.*); wh. has the band lighter, and nearly (often quite) continuous.

Loc. Usually an E. form; reported from E. Switz. and also (most curiously) from Pontarlier (*Kane*).

Macugnaga, not scarce (*Lötzer*); Styria (*Kane*).

[Obs.—The usual range in number of eye-spots is: ♂, up.s. f.w. 3-5, h.w. 3-4; un.s. f.w. 3-5, h.w. 3-6; ♀, up.s. f.w. 4-6, h.w. 4-5; un.s. f.w. 4-5, h.w. 4-6.]

E. Œme, *Hb.*: 39mm. Fd. plt. grasses (*Var.*).

♂ v. dk. brn., ♀ lighter and eye-spots more distinct.

Dist. Char. up.s. f.w. 2 v. small, wh.-pupilled, blk. apical eye-spots, in small, dk., red-brn. patches: 3 on up.s. h.w. in rings of same col. (in ♀ gen. 4, and often an extra one on f.w.); differs from *Pitho* in absence of bands un.s. h.w.; from *Medusa* in red-brn. patches being dk. and inconspicuous; from *Ceto*, var. *Obscura*, in the patches being red-brn., and not almond-shaped; from *Manto* in the eye-spots un.s. being pupilled, and being placed in much smaller and rather darker patches; from *Stygne* var. *Valesiaca*, in the absence of the long mahogany patch un.s. f.w.

Loc. Local; above Einsiedeln; in the upper Sihlthal (*Knecht*); Bryschalp in the Weggithal (*Frey*); Trübseealp and Surenen (*Christ*); Gadmenthal (*Lötzer*); Weissenburg, large and lt. (*Hg.*); Mt. Barry, vi. 29, 1900; Rossinières, vii. 5, 1900 (*Bkm.*); Mühlebachalp, above Engi (*Frey*); gen. distributed in the Bernese Alps; e.g., Gurnigel, v. ab. (*M.-D.*); Mürren, vii. e., viii. b. 1900, e. (*Wh.*); Kandersteg, and the Gemmi, not uncommon, vii. 99 (*Rosa*); not uncommon in the Vaudois Alps; e.g., Pont de Nant, vii. 11 (*Bl.*); Caux, vi. m. 97; Glion, vi. b. 99 (*Wh.*); not e. in the Valais, Anzeindaz, Col de Cheville; Laquinthal (*Var.*); Dent du Midi, v. small, viii. 6 02 (*Fis.*).

Le Reculet, vi. 21 and 26 (*Bl.*); Cortina, vii. 1900, not e. (*Jones*).

Directions of Var. (a.) tendency to disappearance of eye-spots, culminating in:

var. Lugens, *Styr.*: in wh. they have totally disappeared.

Loc. Mürren, vii. e., viii. b., 1900 (*Wh.*); Trümletenthal, vii. 10 01 (*Fis.*); Einsiedeln (*Frey*); Glacier de Trient (*Var.*).

(b.) tendency to increase in size of red-brn. blotches containing eye-spots, culminating in:

var. Spodia, *Styr.* (*Psodea*, *Frr.*); wh. is also of greater size;

eye-spots still small, but in more conspicuous blotches than *Melusa* var. *Hippomedusa*.

Loc. Gemmi and Laquinthal (*Far.*).

Gen. the form of the E. Alps, Austria, Styria and Carinthia; e.g., Pejo, and Mendel Pass, vii. 95 (*Lmn.*).

E. Stygne, *Ochs.* (Pirene, *Hb.*): 42mm. F'd. plt. grasses (*Far.*).

♀ lighter, with eye-spots more conspicuous than ♂.

Dist. Char. un.s. f.w. more or less wedge-shaped mahogany (in ♀ more fulvous) patch with 2 wh.-pupilled eyes.

Loc. The whole length of the Jura, with conspicuous bands and eye-spots (*Frey*); e.g., Vallorbe, vii. 2 03 (*Wh.*); Pilatus and the ft. of the Mythen (*Paul*); Engelberg (*Christ*); Pont de Nant, vii. (*Bl.*); the lower alps of cantons Berne, Unterwalden, Glarus, Appenzell, St. Gall, and the Valais (*Frey*); sometimes in the plain, e.g., under the cliffs at Martigny towards Vernayaz, vi. 27 02 (*Sheldon*); same date 1900, worn, vi. m. 03, fresh (*Wh.*); Brunnen, vi. b. 97, a few (*Jones*); later at higher elevations, e.g., Arolla, vii. 11, 1900 (*Bkn.*); Saas, viii. b. 97 (*R.-Brn.*); in the Grisons at Churwalden (*Hg.*); Bergün (*Zll.*); Splügen road above Thusis, vii. 5, 1900 (*R.-Brn.*).

La Flégère, viii. b. 97, a few (*Jones*); The Brévent, viii. 18/02; Petit St. Bernard, viii. b. 98; La Gaave, viii. b. 96; Larche, viii. b. 1900; Abriès, viii. m. 1900 (*Tutt*); Digne, vii. 91 (*Lmn.*); mtns. of Basses Alpes, vii., ♂ s v. dk. with 3 or 4 eye-spots un.s. h.w. (*Powell*); Crissolo, viii. b. 01 (*Tutt*); Via Mala, vii. 5, 1900; Susa, vi. 24 99, large, with large eye-spots; Bormio and Trafoi (*R.-Brn.*).

Directions of Var. (a.) tendency to obsolescence of mahogany patches containing the eye-spots, f.w. and h.w. up.s. culminating in:

var. Valesiaca, *Elves*: in wh. they are v. slight, the eye-spots also, but not the pupils, being smaller.

Loc. Murren, vii. e. 1900 (*Wh.*); Dent du Midi, viii. 6 02 (*Fis.*); Simplon (*Far.*).

An intermediate form is known as:

var. Pyrenaïca, *Bühl*: with less mahogany col. than type but more than *Valesiaca*.

Loc. The usual form in the Alpes Maritimes (*Brm.*); probably the form at Zinal (*R.-Brn.*).

(b.) number of eye-spots; ♀ has gen. a small one above the double one at apex up.s. f.w.; those on un.s. h.w. are often scarcely visible.

ab. ♀ Aboculata, *Far.*: without spots f.w. up. and un.s.; h.w. with 2 blk. dots in place of eye-spots.

Loc. Plateau de Trient, nr. le Peuty (*Far.*).

[Obs.—In Mr. Fison's collection is a specimen with the apical eye-spot containing 3 wh. pupils.]

E. Evias, *Godart* (Bonellii, *Hb.*) ; 44mm. F'd. pl. grasses (*Far.*).

♀ lighter grd. col. and bands up. and un.s., f. and h.w.

Dist. Char. up.s. f.w. long apical eye-spot with 3 wh. pupils ; differs from *Gorge* var. *Triopes*, by its far greater size ; from *Epistygne* (*q. v.*), by col. of band f.w.

Loc. In Switz. only in the S. cantons, the Valais, the Grisons, and Tessin : v.-vii. b. according to altitude. On all the slopes round Martigny, from the foot of the cliffs to the Forelaz, and on the other side of the Rhone Valley ; Saillon ; Sion ; Hérémence ; Evolena ; Niove, Susillon and Chandolin in the Val d'Anniviers ; Baltschieder Valley ; Gamsen ; Brig ; Mörel ; Fiesch ; Grengiols, &c. (*Far.*) ; Pfynwald, vi. 24 98 ; Saas Valley towards Almagell, vi. 24 91 (*Bkm.*) ; Bérisal, vii. b. 01, c., but worn (*Wh.*) ; Zermatt, vii. 01 (*Lmn.*) ; Tiefenkasten (*Cajlich*) ; nr. St. Moritz, vii. 81, c. (*Nicholson*) ; Davos (*R.-S.*) ; Monte Generoso (*Kaw.*).

Digne, iv. 20 97 (*Tutt*) ; v. 22 02 (*Sloper*) ; nearly over vi. 5 99 (*R.-Bru.*) ; Cascade de Boréon ; St. Martin Vésubie ; Madone des Fenêtres, &c. (*Bru.*) ; Certosa di Pesio from 2800ft. to 6000ft., vi.-vii. 92 (*Norris*) ; Courmayeur, vii. b. 02 (*Lowr.*) ; nr. Aosta, v. 95 (*Miss Ftn.*).

Directions of Var. (a.) depth of grd. col. up.s.
 (b.) number of eye-spots : sometimes the spot below the triple eye-spot is absent, or represented by a dot ; sometimes the lower one is also reduced to a dot ; sometimes a 5th, pupilled on un.s., appears nr. costa of h.w. in ♂, and in ♀ there are sometimes as many as 6 pupilled spots on each w. up.s. (counting the triple spot as 3).
 (c.) distinctness of bands un.s. h.w.

* **E. Nerine**, *Frr.* (Goante, *H.-S.*) ; 48mm. F'd. pl. (and l.) unknown.

♀ un.s. lighter than ♂.

Dist. Char. oblique position of apical eyes, and deep grd. col. f.w. contrasting strongly with band, in connection with definite ante-margl. band un.s. h.w. (*v. Scipio*).

Loc. The E. part of the region only (vi.), vii.-viii. Riva, on lake of Garda, from 500ft. to 5000ft. (*Elwes*) ; Lago di Loppio, vii. 31, 1900, c. (*Jones*) ; a mtn. stream above Esino, viii. 02, v. ab. (*Miss Ftn.*) ; Cortina district—Croda di Lago, viii. 7-14 95 ; Sorapiss, viii. 12 95 ; Val Bigontina, viii. 6 95 (*Tutt*) ; Mendel Pass, vii. c. 95, ab. (*Lmn.*) ; Isozonthal, nr. Tolmein, vi. 12 92 (*Norris*).

Directions of Var. (a.) tendency to loss of brt. colouring, culminating in :

var. Reichlini, *H.-S.* (Styx, *Frr.*); larger, duller, bands un.s. f.w. and h.w. less conspicuous, and without eye-spots un.s. h.w.

Loc. S. Tyrol, *e.g.*, Stelvio, New Baths of Bormio, vii. 11, 1900, ab. (*It.-Brr.*).

An intermediate form between *Reichlini* and the type exists.

var. (? ab.) Stelviana, *Curro* (1871), (*Italica*, *Frey*, 1880.)

Loc. The Swiss form: an hour behind Zernetz, at Champlong (*Curro*); nr. Cierfs (*Zll.-Dolder*); in the Val da Fraele and Val Murauza (*Zll.-Dolder*); Monte Grigna, above Lecco (*Christ*).

(b.) diminution of size, together with increased darkness of col.

var. Morula, *Spr.*: with un.s. f.w. unicolorous, but somewhat lighter well-defined band un.s. h.w.

Loc. High meadows in S. Tyrol; Grödner Joch; Seisseralp (*Kane*).

[Obs.—In the Museum at Sion are 2 specimens identified by *Standfuss* as this var., wh. were taken on the Gemmi by M. Paul.]

***E. Scipio**, *Bsdv.*: 42mm. F'd. pl't. (and l.) unknown.

♂ with dk., ♀ with lt., h.w. un.s.

Dist. Char. un.s. h.w. nearly unicolorous in connection with lt. chestnut disc un.s. f.w., and large wh.-pupilled apical eye-spot f.w. up. and un.s.

Loc. Basses Alpes, vii. m., viii.; Digne, the Dourbes, vii. 91 (*Lmn.*); Draix; Beauvêzer; Seyne; Allos (*Powell*); Larche, viii. 1-4, 1900 (*Tutt*); Barcelonette; Ozglosse; Malmorte (*Kane*).

Directions of Var. (a.) presence of eye-spots, 2 or 3, up.s. h.w.
 (b.) occasional presence of eye-spots un.s. h.w. in ♂.
 (c.) presence or absence of blk. dots representing eye-spots un.s. h.w. in ♀.
 (d.) un.s. h.w. cl. band occasionally just visible.

E. Euryale, *Esp.*: 40mm. F'd. pl't. a great variety of grasses (*Far.*).

[Obs.—The number of conflicting descriptions of *Euryale* and *Adyte*, including those which make *Adyte* a var. of *Euryale*, and those which make *Euryale* and its vars. to be vars. of *Ligea*, and the way in which most of these descriptions fail to fit in with facts, are positively distracting. On the whole, the preponderance of *opinion* seems to be in favour of regarding *Euryale* as a distinct sp., though I am not sure that this is correct. The whole matter requires further investigation, and the arrangement here adopted is merely tentative.]

♀ with much more conspicuous lt. ante-margl. band un.s. h.w. than ♂.

Dist. Char. lt. ante-margl. band, or traces of it, un.s. h.w., with a tooth cutting deeply into the middle of the dk. centre.

Loc. Gen. ab. in the Jura and the Alps, vii.-viii., extending in the S. to the Alpes Maritimes, and in the E. to the Styrian and Carinthian Alps.

Directions of Var. (a.) entire absence of wh. pupils in eye-spots.
(b.) diminution of red-brn. band up.s., culminating in :

ab. Ocellaris, *Styr.* : in wh. it is reduced to small patches.

Loc. Canton Glarus (*Christ*); Larche, viii. b. 1900, as ab. (*Tutt*); Heiligenblut, with type, vii. 28.97, c. (*Linn.*)

(c.) obsolescence of blk. spots on red. band, culminating in :

ab. Euryaloïdes, *Tengström* : in wh. they are almost extinct up.s. f.w.

Loc. Toblach, viii. 4.95; Cortina district—Croda di Lago, viii. 5-15.95; Cristallo, viii. 8.95; Falzarego Pass, viii. 6.95; Val Bigonina, viii. 11.95 (*Tutt*); Heiligenblut, vii. 24.97 (*Chp.*).

(d.) presence or absence of eye-spots un.s. h.w.

(e.) distinctness of lighter ante-margl. band un.s. h.w. in ♂; gen. v. inconspicuous, exc. the "tooth."

(f.) col. of lt. ante-margl. band in ♀ un.s. h.w., gen. whitish, but sometimes yell., forming :

ab. ♀ Ochracea, *Wh.* : Dr. Spuler speaks of this as if it were a v. scarce form; on the Simplon it is the usual one.

(g.) un.s. dusted with wh.

ab. Philomela, *Esp.* : wh. is without eye-spots un.s. h.w.

Loc. Gurnigel, ab. at about 4500ft. (*Frey*).

[Obs.—Frey mentions a fine hermaphrodite, left side ♂, right ♀, wh. he took on the Maloja, vii. 165.]

E. Ligea, *L.* (*Alexis*, *Esp.*); 47mm. F'd. pl't. *Millium*, &c.

♀ with much more conspicuous series of eye-spots un.s. h.w. than ♂.

Dist. Char. un.s. h.w. a wh. curved wedge about middle of costa (v. conspicuous on dk. grd. col.) often continued as a broken band more or less across the w.

Loc. Distributed throughout Switz. and Savoie at low elevations but commoner in the N. than the S. In some places it is to be found at over 5000ft., e.g., Mürren, vii. c. viii. b. 1900 (*Wh.*); in the lowlands it emerges vi. m.

Less c. and more local S. of Switz., Bourg d' Oisans, viii. m. 96; Abriès, viii. m. 1900 (*Tutt*); Digne; St. Martin Vésubie (*Powell*); Pré St. Didier, viii. b. 198 (*Tutt*); Certosa di Pesio, not uncommon,

vii. m., &c. (*Norris*); Trafoi, scarce (*Frey*); Croda di Lago, viii. 9-13.95; Sorapiss, viii. 10.95 (*Tutt*).

- Directions of Var.** (a.) size and number of eye-spots.
 (b.) extent of wh. band un.s. h.w.
 (c.) conspicuousness of lt. band containing eye-spots, un.s. h.w.
 (d.) breadth of red-brn. band up.s. esp. h.w.

The diminution of all these characters, exc. sometimes the 3rd, culminates in :

var. Adyte, *Hb.*: the small mtn. form, in wh. the eye-spots are often unpupilled up.s. on f.w.; always exc. at anal on h.w.

Loc. Gen. distributed over the higher alps, but not, as a rule, so c. as *Euryale*, vii.-viii.

[Obs.—The confusion existing with regard to these 2 sp. make locs. unreliable but both are widely distributed, and gen. occur together.]

E. Æthiops, *Esop.* (*Medea*, *Hb.*: *Blandina*, *Fabr.*); 44mm. Fd. pl. *Poa annua*, *Dactylis glomerata*, *Agrotis canina*.

♀ lighter than ♂, esp. un.s.; band up.s. f.w. red-brn. in ♂, or.-brn. in ♀.

Dist. Char. broad bands un.s. h.w. in connection with conspicuous eye-spots up.s.; differs also from *Pronoi* in having chestnut band un.s. f.w. well defined interiorly.

Loc. Probably the commonest and most widely spread *Erebia*, both in latitude and altitude; vii. e.-ix. m. Throughout the region, exc. possibly the S. French Alps. It is reported as c. from Thorenc and Taulanne by *Millière*, and also from St. Martin Vésubie; and though some doubts have been expressed on the subject, it seems unlikely to be incorrect, esp. as it is certainly to be taken on the E. slopes of the S. Alps; Certosa di Pesio, viii. 92 (*Norris*).

- Directions of Var.** (a.) size: 38mm. (Jura), 50mm. (Aigle).
 (b.) size, distinctness, and number of eye-spots. The form of the ♂ in wh. the band up.s. h.w. becomes obsolete is called :

ab. Obsoleta, *Tutt.* The other forms are unnamed. They are : ♂, up.s. f.w. 2-5, gen. 3 or 4; h.w. 0-5, gen. 3; un.s. f.w. 3-5, gen. 3; h.w. 2-5, gen. 3; ♀ up.s. f.w. 3-6, gen. 3 or 4; h.w. 3-6, gen. 3 or 4; un.s. f.w. 3-5, gen. 3; h.w. 3-5, gen. 3 or 4. The spots un.s. h.w. are often v. indistinct.

ab. Inæqualis, *Monsley*: in wh. the number of spots on right and left ws. is different.

† Note. In the only specimen I possess with 6 spots up.s. h.w. the top spot is red-brn., wh.-pupilled, but without any blk. ring. It was taken at Aigle.

(c.) tendency of band up.s. to break up into rings, forming :

ab. ♂ **Nigra**, *Mousley* : the grd. col. being v. dk.

[Obs.—One suspects this to be a duplication of *Ethiops*.]

ab. ♀ **Pallida**, *Mousley* : the grd. col. being lighter and greyer.

(d.) tendency to become lighter in band up.s. ♀, culminating in :

ab. ♀ **Flavescens**, *Tutt* : in wh. it is pale yellowish.

(e.) distinctness of bands un.s. h.w. Specimens from hot locs. such as Aigle (*Wh.*) ; Susa (*Tutt*) ; Certosa di Pesio (*Norris*), have the bands strikingly developed in the ♀ but less so in the ♂ ; specimens from the Jura (*Vallorbe*), though small, have the bands v. strongly developed even in the ♂ . On the other hand the bands are almost obsolete in specimens from the highest mtn. locs., constituting :

ab. **Stricta**, *Mousley* : wh. has also the band un.s. f.w. indistinct, and the spots v. small.

Loc. Bérisal, Zermatt, Mürren, &c. (*Wh.*).

(f.) tint of grd. col. un.s. h.w., wh. varies immensely even in the dk. bands ; the normal tint of the lt. bands is gr., this, however, is often replaced by other cols., esp. in ♀ .

ab. **Leucotænia**, *Stgr.* (*Neoridas*, *Frr.*) ; bands almost wh.

ab. **Ochracea**, *Tutt* : bands ochreous yell. ; a v. common form in ♀ .

ab. **Violacea**, *Wh.* : bands various shades of heliotrope, e. in a darkish shade in ♂ , and a pale shade in ♀ , e.g., at Aigle, and sometimes in the Jura in a pale shade in ♂ also.

E. Neoridas, *Bsdr.* ; 40mm. Fd. plt. *Pou. annua*, *Panicum sanguinale*.

♀ lighter than ♂ , esp. un.s. h.w., and with larger and more conspicuous eye-spots.

Dist. Char. curiously truncated appearance of f.w. (otherwise not unlike *Ethiops*).

Loc. Dauphiné Alps—Sassenage, viii. 21 95 ; La Grave, viii. b. 95 ; Bourg d'Oisans, viii. m. 95 ; Bourg d'Arn, viii. m. 95 (*Tutt*) ; throughout the Hautes Alpes, Basses Alpes, and Alpes Maritimes, from about 2000ft., vii. e. and viii., gen. ab. (*Powell*) ; Larche, viii. b. 1900 ; Barcelonette, viii. b. 1900 ; Abriès, viii. m. 1900 ; Piedmont—Susa, viii. 5-17 97 (*Tutt*).

Directions of Var. (a.) occasional extra eye-spot between the twin apical spot and that nr. anal. ang. up.s. f.w.

(b.) conspicuousness of eye-spots up.s. h.w.; sometimes almost absent.

[Obs.—Specimens from Digne are larger, lighter, and rather less strongly marked than those from mtus. (*Powell*).]

* **E. Pronoë**, *Esp.* (*Arachne*, *Illb.*); 42mm. Fd. plt. *Poa*, &c.

V. dk. brn., with 2 wh.-pupilled apical eye-spots, and one small one nr. anal. ang. in chestnut band, up.s. f.w.; ♀ un.s., esp. h.w., lighter than ♂, and with yell. tint in lt. bands f. and h.w.

Dist. Char. a purplish tinge nr. apex f.w. and all over h.w. un.s. in ♂; on costa, nr. apex f. and h.w., and on nervures h.w. in ♀.

Loc. The E. form, Austrian and Styrian Alps (reported also from Mt. Cenis, *Kanc*). [Specimens taken by Mr. Fison at the Fiesch Glacier approach v. closely to the type.] vii. e. and viii.

Directions of Var. (a.) number of eye-spots up.s. h.w.; 3 or 4, occasionally more in ♀.

(b.) un.s. f.w. presence or absence of 3rd spot.

(c.) depth of grd. col. un.s. h.w. and consequent conspicuousness, or the reverse, of bands.

(d.) tendency to disappearance of eye-spots and bands, culminating in:

var. Pitho, *Illb.*: gen. with 2 inconspicuous apical eyes up.s. f.w.

Loc. Gen. distributed over the higher Alps of cantons St. Gall, Appenzell, Berne, Vaud, the Valais, and the Grisons (*Frey*); e.g., Weissenburg, v. e. (*Hg.*); Mürren, vii. 189 (*Lmn.*); Rochers de Naye, ix. 7, 1900; Steinalp, vii. e. 99, and above 5th Refuge on the Simplon Road, viii. m. 98 (*Illb.*); Pont de Nant, vii. 27, and viii. 1 (*Bl.*); road S.W. of Chalet Richard, above les Plans, viii. 10, 91, ab. (*Fis.*); Pilatus (*Kanc*); &c.

Dôle and S.-W. Jura (*Frey*); Toblach, viii. 2, 95; Cortina district Sorapiss, viii. 12, 95; Croda di Lago (with more typical forms), viii. 5-13, 95; Nonvallo, viii. 7, 95; Falzarego Pass, viii. 6, 95 (*Tutt*); Cortina, vii. 1900 (*Jones*); the Stelvio, vii. e., and Brenner, vii. 27, 1900, v. ab. (*R.-Brn.*); Campiglio, vii. 95 (*Lmn.*).

[Obs.—There is a marked difference between specimens from the Simplon and from the Rochers de Naye; the ♂s from the Simplon have much more distinct patches up.s. f.w., and sometimes traces of them on h.w.; bands f. and h.w. un.s. v. marked, and 2 wh.-pupilled apical eyes un.s. f.w. with often a 3rd unpupilled; those from the Rochers de Naye have far less conspicuous bands un.s., and are often without apical eye-spots, or only one, up. and un.s.; the bands and eye-spots of ♀s are, however, v. distinct.]

E. Epistygne, *Ill.* (*Stygne, Ferr.*): 42mm. Fd. plt. (and l.) unknown.

♀ lighter than ♂.

Dist. Char. *ochreous* band, and small costal blotch nr. base.

Loc. The S.E. Alps of France. Hautes Alpes (*Kanc*): Digne, iv. e. 97, worn; had been ab. on the Dourbes iv. b. (*Tutt*): iii. 20 94, and a few worn specimens v. b. (*Jones*); Montagne de St. Vincent, iv. 98, e. (*Lang*); iv. 7 02, scarce (*R.-Brn.*); between vi. 9, and vii. 2 89 (*Mrs. Nicholl*). Alpes Maritimes, Thorenc, v. (*Powell*): above Grasse, iii. m. 97, but not out at that time in 1900 and 01 (*Chp.*); iv. 5 03 (*Tutt*): above Draguignan, iii. 30 03 (*Bentall*).

Obs.—This is not the only record for July; there must, at any rate in some years, be a partial 2nd brood; this with an insect of such early emergence is only to be expected.

Directions of Var. (a.) 2 or 3 pupils to apical eye-spot.
(b.) number and distinctness of other eye-spots.
(c.) more or less marked bands un.s. h.w.

E. Goante, *Esp.* (*Sceea, Ill.*); 44mm. Fd. plt. grasses (*Far.*).

♀ lighter than ♂, esp. un.s. h.w. in which the markings are brn. the nervures wh.

Dist. Char. un.s. h.w. dk. mottled basal half, gen. followed by lighter edging towards out. marg.; distinguished from *Gorge* by greater size and by lt. band un.s. f.w. being more conspicuous.

Loc. The Alps of cantons Berne, Glarus, St. Gall, Appenzell, the Valais and the Grisons, vii.-viii.: e.g., Adelboden, viii. 10, 1900 (*Fis.*); Mürren, vii. 89 (*Linn.*); Weissenburg, fairly e. (*Hq.*); Forclaz, viii. 19 01 (*Sloper*); Arolla, vii. 11, 1900; St. Nicholas, vii. 1, 1900 (*Blm.*); Gornergrat, viii. 10 01 (*Sloper*); Bérisal, viii. 97; vii. 98, &c., v. e. (*Wh.*); below Simplon village, v. e.: viii. b. 99 (*Tutt*); Oberalp, viii. 26 95; Fusio, viii. 12 99 (*Chp.*); Pontresina, vii., Thusis, viii. 95 (*Miss Ftn.*).

Chamonix, viii. e. 01 (*Sloper*); Megève, viii. b. 02; The Brévent, viii. m. 02; Bourg d'Oisans, viii. m. 96; above Lanslebourg, viii. b. 97 (*Tutt*); in the Basses Alpes: Draix, Beauvêzer, Seyne, Allos, Faillefen, vii. e., viii. (*Powell*); Certosa di Pesio, v. ab. on the Passo Babane, and in the Val Marguareis, viii. 92 (*Norris*); Courmayeur, viii. b. 94; Val Vény, viii. m. 98; Cogne, viii. b. 94; Bobbie, viii. m. 01; Au Pra, viii. e. 01, small (*Tutt*); Stelvio, from below Trafoi to Gomagoi, vii. 1900; Brenner, vii. 27, 1900 (*R.-Brn.*).

Directions of Var. (a.) size: from 37mm.-50mm.
(b.) conspicuousness of band un.s. f.w.
(c.) occasional extra eye-spot both above and below the normal 3 up.s. h.w.

- (d.) amount and clearness of markings un.s.
h.w.
- (e.) number and clearness of eye-spots un.s.
h.w. : 3-5 ; gen. 4.

[Obs.—The un.s. h.w. is v. variable; in some ♂s almost unicolorous; in some with v. pronounced lt. band; in some ♀s with v. brn. sheen on out. marg., and v. broad wh. band; in some the eye-spots are v. distinct, in others almost invisible.]

E. Gorge, *Esp.* : 36mm. F'd. plt. grasses (*Var.*).

♀ slightly larger and rather lighter than ♂, esp. un.s. h.w., wh. is also rather more marked.

Dist. Char. un.s. h.w. mottled v. dk. brn. or blk. with cl. band (*v. Goante*).

Loc. In Switz. with the same range as *Goante*, but at higher elevations and coming rather further W., *e.g.*, Grand Meveran, vii. 11 (*Bl.*); above Engelberg (*Christ*); Arpilles; Bovine; Glacier-de-Trient; above Fully; and other heights round Martigny; between Loèche-les-bains and the Gemmi; Mayenwand; Aletsch Glacier; Bortelalp, &c. (*Var.*); Arolla, vii. m. 1900 (*Blm.*); top of Val d'Anniviers, viii. h. 01; Saasthal, viii. b. 97 (*Il.-Bru.*); Simplon Pass, above 5th Refuge, vii. 13 01 (*Wh.*); the Furka and the Faulhorn, vii. 89 (*Lmn.*); Fluelathal, vi. 28 01 (*Fis.*); Andermatt, viii. 19 95; Guarda, vii. e., 1900; Pontresina, vii. 7-21, 1900 (*Chp.*); nr. Bernina Hospice, vii. 9 01 (*Fis.*); Heuthal, c. (*Nicholson*).

Extending to extreme S. of region outside Switz., *e.g.*, Le Lautaret, vii. e. viii. b. 96; Crête de Reyehasse and Pointe de Lauze, viii. m. 1900 (*Tutt*); Certosa di Pesio, vii. 92, e. (*Norris*); St. Martin Vésubie; Faillefen, &c., vi-viii. (*Powell*); The Grammont, viii. b. 94; Cortina district—Novallo (Nuovalo), viii. 13 95; Croda di Lago, viii. 9 95; Falzarego Pass, viii. 6 95 (*Tutt*); Campiglio, vii. m. 96 (*Chp.*).

Directions of Var. (a.) tint and conspicuousness of markings un.s. h.w.

(b.) tendency to disappearance of eye-spots up.s. f.w., culminating in:

ab. Erinnys, *Esp.*: in wh. even the apical eyes have almost (or quite) disappeared.

Loc. Gen., but not exclusively, in the W. part of the region, with type; high above 5th Refuge on the Simplon, viii. 5 99, rather worn (*Wh.*); Rossboden Pass, Saas side, viii. 7 97 (*Il.-Bru.*); Rosegg Glacier, viii. 3 01 (*Fis.*); Andermatt, viii. e. 95; Guarda, vii. e. 1900, a few (*Chp.*); Gornergrat vii. 10 95 (*Fis.*); viii. 10 01 (*Sloper*).

Basses Alpes and Alpes Maritimes (*Powell*): The Grammont, viii. b. 94; Croda di Lago, viii. 9 95; Falzarego Pass, viii. 6 95 (*Tutt*).

[Obs.—In intermediate forms the eye-spots below the apical, and the 2nd apical spot are wanting.]

(c.) elongation of apical spot, in which is a 3rd wh. pupil.

var. (& ab.) Triopes, *Spz.*, in wh. the other eye-spots f. and h.w. are gen. more conspicuous also.

Loc. The usual form of the E. part of the region; Piz Languard and Alp Grüm, vii. m. 1900 (*Chp.*); Campfer, just above tree limit, ab. (*Jones*); Pontresina, vii. 95 (*Miss Ftn.*); Rosegg Glacier, viii. 9; Bernina Pass, viii. 30 01; Fluelathal, vi. 28 01 (*Fis.*). In the last the type was much more usual.

Stelvio from top to Franzenhöhe, v. e., vii. 12, 1900; Brenner, vii. 28, 1900 (*R.-Bru.*); Campiglio, vii. 95 (*Linn.*); &c.

E. Tyndarus, *Esp.*: 32mm. Fd. pl. grasses.

♀ lighter than ♂, gen. with un.s. h.w. much more conspicuously marked.

Dist. Char. up.s. v. strongly marked with metallic sheen of grn. and prp. This occurs also to some extent in other sp., e.g., *Lappona*, *Gorge*, *Alecto*, but not nearly so conspicuously.

Loc. Absent from the Jura, but otherwise c. throughout the region from the Alpes Maritimes (*Powell*), and Certosa di Pesio (*Norris*) to Heiligenblut in Carinthia (*Linn.*): often v. ab; vii.-viii.

Directions of Var. (a.) tendency of the 2 small apical eyes to lose the pupils, and
(b.) to disappear, culminating in:

ab. Cæcodromus, *Guénée*: wh. is entirely without.

Loc. Zermatt; Thion-sur-Sion (*Chrét.*); Bérisal, vii. 99 (*Wh.*); Arolla, viii. m. 99 (*Tutt*); Oberalp, viii. 25 95 (*Chp.*)

Mont de la Saxe, viii. b. 94; Penegal, viii. 1 95 (*Tutt*).

(c.) tendency of apical eyes to become larger and more conspicuous, culminating in:

var. (& ab.) Dromus, *H.-S.* (Pyrenaïca, *Heguer*); wh. has also an ante-margl. row of wh.-pupilled eye-spots in dk. mahogany rings up.s. h.w.; it is larger than the type.

Loc. Cliffs at the Rochers des Vents above Gryon (*Knecht*); the Gemmi (*Lowe*); Pierre-à-voir, Grand St. Bernard, Grand Ferrex, Gornergrat (*Far.*); in these locs. as an ab.; Mürren, viii. b. 1900, here the only form (*Wh.*).

Le Lautaret, viii. b. 96; Mont de la Saxe, viii. b. 94; Val Vénî, viii. m. 98; Au Pra, viii. m. 01 (*Tutt*); Heiligenblut, vii. 24 97 (*Chp.*); St. Martin Vesubie (*Bru.*).

Obs.—In Switz. the chestnut markings are not so brt. as in the Spanish specimens.]

var. Caucasica, *Led.*: with a 3rd small eye-spot up.s. f.w. in ♂; h.w. like *Dromus*.

Loc. Mt. Buot (*Rätzer*).

[Obs.— I have a ♀ from Mürren with a 3rd spot up.s. f.w.]

(d.) distinctness of markings un.s. h.w.

[Obs.—Var. *Dromus* ♀ often has un.s. h.w. almost unicolorous lt. gr., only dusted with yell.-brn.]

E. Lappona, *Esp.* (Manto, *Fabr.*); 41mm. Fd. pl. grasses (*Fav.*).

♀ rather smaller than ♂, and lt. band up.s. f.w. more conspicuous.

Dist. Char. up.s. f.w. 4 blk. dots on inconspicuous lighter band; grd. col. un.s. h.w. gr.

Loc. Like *Tyndarus* absent from the Jura, but otherwise distributed over all the higher alps, though not gen. nearly so ab. as *Tyndarus*: it is reported from all parts of the region from the Alpes Maritimes, vi. e. and vii. (*Powell*); and Certosa di Pesio, vii. (*Norris*); to Stelzing vii. 11, and Heiligenblut, vii. 25 (*Linn.*); vi. to viii., according to altitude, e.g., Rochers de Naye, vi. 3, 1900; Simplon Pass, vii. m. 98; above Wasen, viii. b. 98 (*Wh.*).

Directions of Var. (a.) tendency of dk. transverse lines un.s. h.w. to obsolescence, culminating in:

ab. Pollux, *Esp.*: which is without them.

Loc. Rochers de Naye, vi. 3, 1900, the usual form (*Wh.*); Rossinières, summit of Mt. Cray, vii. 6, 1900 (*Bkm.*); Anthémoz, Dent du Midi, vii. 29 02 (*Fis.*), &c.

Basses Alpes and Alpes Maritimes (*Powell*); S. Tyrol, vii. 95 (*Linn.*).

[Obs.—On the other hand these dk. transverse lines sometimes include a darker band. In Mr. Fison's collection in a female wh. he took on the Grimsel, with v. dk. cl. band un.s. h.w.]

(b.) tendency to lose in addition the darker transverse lines up.s. f.w., culminating in:

ab. Sthenny, *Grashin*: wh. has only the blk. dots in chestnut rings.

(c.) Loss of the blk. dots, v. frequent on un.s. h.w., and culminating in:

ab. Cæca, *Fav.*: in wh. they are absent f. and h.w., up. and un.s.

Loc. Corne de Sorrebois (*Wschl.*); v. scarce.

Sub-Fam. MELANARGINÆ.

Genus, *Melanargia*, *Meigen* (*Arge*, *nomen praeoccupatum*, *Ill.*).

Prevailing col. blk. and wh. marbling; hyb. .

M. Galatea, *L.* (*Leucomelanus*, *Fourcroy*); 17mm. f.d.
 pl. *Phlomis pratense*, and other grasses.

♀ up.s. whiter, un.s. yellower than ♂.

Dist. Char. un.s. h.w. cl. band filled in with dk. col.; eye-spots
 up.s. f.w. quite inconspicuous.

Loc. Ab. in one or other of its forms throughout the whole
 region in the lowlands and on the lower slopes, and mounting in
 some places to a height of 6000ft.; v. m.-viii., but in N. Switz.
 not appearing before vi. m. In many locs. it does not reach above
 3500ft.

Directions of Var. (a.) decrease in amount of blk. up.s.

(i.) apex f.w., sometimes allowing the blk. apical spot to show
 conspicuously.

(ii.) out. marg. h.w., sometimes allowing the eye-spots to show
 distinctly.

(b.) entire absence of eye-spots.

ab. Galene, *Ochs.* (*Stgr., Cat.*, 1901, gives it without loc., implying
 "anywhere with type." I have never come across it.)

(c.) increase of blk. up.s.

var. Galaxæra, *Esp.*: wh. spots in border much decreased in size.

Loc. A v. usual form in the hotter parts of Switz., the Rhone
 Valley, Tessin, and the S. of the Grisons.

var. Procida, *Hbst.*: still more blk.; the other blk. markings
 encroaching on the wh. as well as the border.

Loc. In Switz. only as an occasional ab., e.g., Lugano, v. 25 96
 (*Vis.*), but replacing the type in the Basses Alpes and Alpes Mari-
 times; also found in the Tyrol, e.g., Botzen, vi. e. 01 (*Lowc.*).

(d.) col. of un.s.

ab. ♀ Flava, *Tutt.*: with brt. or.-yell. grd. col.

ab. Leucomelas, *Esp.*: wh. grd. col., and markings only slightly
 darker.

(e.) blk., even of antennæ, replaced by rich
 tawny-brn.

ab. Fulvata, *Lowc.*: with grd. col. warm primrose-yell.; un.s.
 lighter.

Loc. Martigny, vi. 25, 1900 (*Lowc.*); in this specimen the lt.
 and dk. are disposed much as in *Procida*.

M. Lachesis, *Hb.*: 52mm.

Dist. Char. h.w. with single blk. line along fringe, in connection
 with absence of blk. at bases up.s. exc. along inn. marg. f.w.

Loc. Reported from Bex in the *Bulletin de la Société Entomolo-
 gique Suisse*, vol. ix., no. 2.

Obs. Two specimens were taken by M. Borel, one of wh. I have seen. It is undoubtedly *Lachesis*; M. Borel's collection consists only of a few cases of insects taken by himself in the neighbourhood of Bex, so that there is no possibility of mistake as to loc. He has frequently searched the same spot since, but in vain. His own view is that the specimens had been bred in captivity, and had either escaped or been set free.]

M. (*Iapygia*, *Cyprilli*); **var. Cleanthe**, *Bsdv.*: lighter than type; 58mm. Fd. pl. *Lamarkia aurea*, and various grasses.

Dist. Char. un.s. h.w., cl. band outlined in v. dk. col.

Loc. Digne, viii. c. (*Mrs. Nicholl*).

M. Syllius, *Hbst.* (*Psyche*, *Hb.*: *Argo occitanica*, *Esp.*): 52mm. Fd. pl. *Brachypodium pinnatum*.

♀ slightly larger than ♂.

Dist. Char. un.s. h.w., nervures, and deep margl. dog-toothing, yell.-brn.

Loc. Alpes Maritimes. Villefranche, Gorge of St. André, &c. (*Brm.*); S. side of Simplon Pass (*Kaar*); v.-vi. [At Hyères as early as iv. 29 02 (*Sloper*).]

Directions of Var. (a.) number of eye-spots h.w.; normally 5.

ab. Ixora, *Bsdv.*: is entirely without.

Sometimes a small spot appears in the usually empty interneural space above the 3 lower eye-spots, up.s. or un.s. or both. In

ab. Sexoculata, *Sloper*: this is replaced on un.s. by a large eye-spot.

Obs.—Mr. Fison possesses one of 2 specimens wh. purport to have been taken at Château d'Oex. After making such enquiries as were possible, it seems that the only possible alternative was that they were received from Greece. If this is correct, Château d'Oex is probably the less unlikely loc., but the evidence is quite insufficient to admit it to the Swiss list.]

ERRATA.

Page 3, line 14, for "*Militata*" read "*Melitata*."

Page 9, line 26, delete "Entomologist."

Page 12, line 3, for "I can find no later date" read "nr. Locarno vii. n. 103 (*Fis.*).

Page 13, line 27, for "Werneburg" read "Werneberg."

Page 20, line 12, for "Leuk" read "Leuk."

Page 54, line 29, for "hyb. l." read "hyb. p."

Page 72, line 16, for "Fische" read "Fiesch."

Page 87, line 13, for "broods" read "larvae."

Page 120, line 27, for "Leuk" read "Leuk."

ADDENDUM.

Page 54, line 19, add "hyb. ov. containing developed l."

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GEOGRAPHICAL INDEX OF LOCALITIES.

The following index does not profess in any way to replace "Baedeker," which is essential, but will, it is hoped, serve two purposes: 1st that of giving a general idea of the geographical position of most of the localities mentioned under the different species, and 2ndly by means of the page references, that of a guide to the scarcer insects of a given locality, and to the insect or insects for which a locality (of otherwise merely ordinary interest) is worth a visit.

The following abbreviations are used: A. Mar., Alpes Maritimes (Fr. French; It. Italian); B.A., Basses Alpes; B. Ob., Bernese Oberland; Car., Carinthia; H.A., Hautes Alpes; Pdm., Piedmont; Riv., Riviera (Fr. French, It. Italian); Sav., Savoie; Switz., Switzerland; Tyr., Tyrol (Aus., Austrian; It., Italian); also Ctn., Canton; Gl. Glacier; L., Lake; Mt., Mountain; P., Pass; R., River; V., Valley; and btwn., between; nr. near; opp. opposite.

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