

XIX. *On the butterflies of the French Pyrenees.*

By H. J. ELWES, F.L.S., F.Z.S., &c.

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It is a curious fact how little attention has been paid by English lepidopterists to the butterflies of Europe generally. It is not so in all branches of Natural History, and, as regards birds, I may say that there is hardly a country in Europe on which able ornithological memoirs are not to be found in the pages of 'The Ibis'; whilst on European butterflies there is hardly a paper of real importance in any English entomological journal. The only two general works on European butterflies by Englishmen, namely, Kirby's 'European Lepidoptera' and Lang's 'Butterflies of Europe,' are mere compilations, without much original observation or special knowledge of the subject, and only of use to beginners.

Though I cannot pretend that the present paper is anything more than a preliminary list, yet, as there is, so far as I know, no complete catalogue of Pyrenean butterflies in existence, I hope it may have some interest to the members of the Society. And, in order to make my notes more useful, I have included the names of species found by M. de Graslin, Struve, and MM. René and Charles Oberthür, who have all written on the Pyrenean Lepidoptera. To M. Charles Oberthür I am not only indebted for much kind guidance and assistance during the time I was at Vernet, but also for looking over and correcting the list I drew up, which his ten or twelve years' experience in the Pyrenees enabled him to do with some confidence in its accuracy.

The works I have consulted in writing this paper are as follows:—

A. de Graslin, 'Notice sur deux Explorations Entomologiques faites dans les Pyrénées Orientales en 1847 et en 1857.'

'Annales Soc. Ent. France,' 1862, pp. 297—372.

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This contains a long list of 87 butterflies and about 440 species of moths (excluding *Micros*), taken at Collioure, on the coast of the Mediterranean, at Vernet, and at Mont Louis, with numerous critical remarks on the localities, and on the larvæ, to which M. de Graslin appears to have paid particular attention. Some new species are figured.

Oscar Struve, 'Drei sommer in Pyrenaën.'

Stettiner 'Ent. Zeit.' 1882, pp. 398—405, 410, 429. This paper gives an account of the localities visited by the author in 1879 in the Western and Central Pyrenees, where, however, he does not seem to have got any great results, owing to frequent change of locality and bad weather, and a list of the Lepidoptera, 92 species of butterflies and 176 of moths (excluding *Micros*), found by him during 1880 and 1881 at Vernet and Mont Louis, in the Eastern Pyrenees.

Charles Oberthür, 'Lépidoptères des Pyrénées.'

'Études d'Entomologie, Huitième Livraison,' Juin 1884, Rennes. A whole part of M. Oberthür's beautifully-printed and illustrated 'Études' are devoted to Pyrenean Lepidoptera, mostly from Cauterets, in the central part of the range, and from the Picos d'Europa, an extension of the Pyrenees in Northern Spain, which MM. Oberthür were the first entomologists to visit. This paper contains no general catalogue, but notes on a number of species, and good figures of several, and has been of great use to me in making up my list.

Leaving London, with my wife, on the 28th June, I travelled, *viâ* Paris and Toulouse, direct to Vernet les Bains, a watering-place in the Department of the Pyrénées Orientales, which has been better worked than any other place in the Pyrenees, and is, on account of its situation near the shores of the Mediterranean, its warm climate, and its position close under Mont Canigou, the highest point in the eastern part of the range, perhaps the richest field for an entomologist in the South of France. Here we found comfortable quarters and excellent cooking at a very much lower rate than in the Central and Western Pyrenees, which are more frequented by tourists and bathers. Though not so easy of access as Luchon or Cauterets, Vernet is only seven miles from the railway at Prades, and a very good centre for excursions. The rainfall is much less, the weather

more settled, and the climate, though hotter, not more oppressive than that of the low valleys in the Western and Central Pyrenees. Though the elevation of the village is only 2000 feet, and the character of the immediate neighbourhood somewhat dry and arid, yet, by riding or walking up the valley, at the foot of which Vernet lies, you soon get into woods and pastures of an alpine character, and have less distance to go to the good collecting spots than at any of the other places which I visited, except Gavarnie.

The species found at Vernet are a curious mixture of Mediterranean forms, such as *Rhodocera Cleopatra*, *Anthocharis euphenoides* and *Thais medesicaste*, with purely alpine and arctic ones, such as *Colias phicomone*, *Lycæna orbitulus*, *Erebra Lappona*, and *Argynnis pales*. It would be possible to take all these in a single day by ascending about 4000 feet.

Though some of the more southern forms were over or past their best when I arrived, yet I think the month of July, or from June 15th to July 15th, is the best month all round for collecting, and, though a few species, such as *Erebia neoridas* and *E. pitho*, do not appear till later; yet I got almost all the Rhopalocera that Oberthür, Struve, and De Graslin collected in the course of several years. The Heterocera, of course, I could not hope to do much with in so short a time, though I took many interesting species, and have no doubt that much remains to be learnt of those which frequent the higher elevations, which, owing to the difficulty of getting tolerable quarters, have been comparatively neglected by all collectors. If Messrs. Oberthür carry out their intention of building a chalet at about 6000 feet, they will be well repaid both by night and by day; but, strange to say, not a single high mountain inn of the class so common in the Alps is yet to be found in the Pyrenees, and one must take one's choice of a long ride up the mountain and down again at night, or of lying out in some of the few and dirty chalets which exist at or above 5000 feet.

After spending twelve days at Vernet, we went on to Bagnères de Luchon, where the weather was very unsettled during the seven days we remained, and, though I lost no chance of working the higher ground, I had several days spoiled by heavy thunderstorms and

deluges of rain. The vegetation is here much more luxuriant, the forests larger and finer, and the climate of the higher valleys damper and less sunny than at Vernet. Directly one crosses the watershed between the Mediterranean and the Bay of Biscay, as you do in travelling by rail from Toulouse to Luchon, the change from the arid vineyards, wheat-fields, and olive-gardens of Roussillon to the green pastures, beech-woods, and maize-fields of Bearn is very marked. I have therefore marked all the species I noted which occur in the Eastern and Central Pyrenees, or both of them, with an E. or C., to show the distribution as far as I know it.

From Luchon we went on to St. Sauveur and Gavarnie, which latter I found a very charming place, both for scenery and collecting, and concluded our trip by ascending the Pic du Midi de Bigorre, where I was astonished by taking *Lycæna bætica*, *Erebia Lappona*, *Lycæna orbitulus*, and *Rhodocera rhamni*, all within a few yards of each other, at about 8000 feet elevation.

The return journey was made *viâ* Bayonne and Biarritz, where I stayed part of two days, and found common, in the marshes near the town, several species, such as *Satyrus phædra*, *Cænonympha ædipus*, *Lycænaalcon*, and *Cyclopides morpheus*, which I had never previously taken either in Germany, Switzerland, or the Pyrenees.

In the enclosed list I have given my authority for all species not taken by myself, and have marked with a ? a few which seem to have been included by others on doubtful authority. An exploration of the Spanish side of the mountains will doubtless add several species to this list. The elevations at which the various species occur are, of course, only approximate, but are in some cases interesting, as showing how high up some of the southern species occur; *Anthocharis euphenoides*, for instance, which is a vernal species on the Mediterranean coast, goes up to 6000 or 7000 feet in July, whilst *R. rhamni*, a vernal and autumnal species with us, was fresh out in July at 7000—8000 feet in the Central Pyrenees.

1. *Papilio podalirius*. E. C. To about 3000 ft.—I did not take the type, which, according to Oberthür, is found in the central and probably in the western parts of the chain. The variety *Feisthameli*, Dup., is common at Vernet in July and August, but of the first generation, which occurs in May there, some specimens given me by M. Oberthür are as yellow as the ordinary *podalirius* from Germany and Brittany, and others are as white as *Feisthameli* from Collioure and Andalusia. If these specimens are bred from the same batch of eggs it would seem that the variety is not constant. De Graslin says that the larva of *Feisthameli* is not different from that of *podalirius*.
2. *Papilio machaon*. E. C. To 5000 ft.
3. *Thais rumina*, var. *medesicaste*. E. To 2000 ft. May—July.
4. *Parnassius apollo*. E. C. 3—5000 ft. June, July.
5. *P. mnemosyne*. E. C. 4—5000 ft. June, July.—I found this common in July in the shady wooded glens on the north side of the slope at the Col du Cheval Mort, and endeavoured again without success to discover the food-plant of its larva. No species of *Corydalis* was, however, to be found in the places where it was most abundant.
6. *Aporia Cratægi*. E. C. Common at 3—4000 ft., and up to 6000 ft.
7. *Pieris brassicæ*. E. C. To 4000 ft.
8. *P. rapæ*. E. C. To 7000 ft.
9. *P. napi*. E. C. To 6000 ft.
10. *P. callidice*. E. C. 6—9000 ft. June,—July.—I found it wherever I went above 6000 ft., and see no difference between Pyrenean and Alpine specimens.
11. *P. daphnidice*. E. C. To 2000 ft. Not abundant.
12. *Anthocharis euphenoides*. E. C.? Common to 5000 ft. at Vernet. May—July.—I am almost positive that I saw this species at 7000 ft., near the Port d'Espagne, above Gavarnie, but was unable to take it.
 - A. *Belia*, var. *ausonia*, occurs at Collioure on the coast, but not as in the Alps and Himalaya in the mountains.
 - A. *tages*, var. *bellezina*.—M. Oberthür notes this on my list as occurring in the Eastern Pyrenees, but does not say whether on the coast or in the mountains.

13. *A. cardamines*. C. To 5000 ft. July.—Not observed in the Eastern Pyrenees, but found at Luchon and Caunterets.
14. *Leucophasia sinapis*, and var. *diniensis*. E. C. To 6000 ft. May—July.
15. *Colias edusa*. E. C. To 5000 ft. June, July.
16. *C. phicomone*. E. C. 6—8000 ft. July.—Very abundant above Vernet.
17. *C. hyale*. E. C. July—August.—I did not observe this, but M. Oberthür says it is common at Vernet in August.
C. chrysotheme is noted by Struve as occurring at Vernet, but I think he must mean what I took, and De Graslin notes as "*C. edusa* variety approaching *chrysotheme*." These were small pale forms of *edusa*, which occurred at the same time and place as the large brilliant ones which are typical of hot sunny climates. I am not aware that *C. chrysotheme* occurs anywhere west of the Tyrol, where, I think, it was once reported by G. Mann.
18. *Rhodocera rhamni*. E. C. 2—8000 ft. March—June, *vide* de Graslin; July, Elwes.
19. *R. Cleopatra*. E. 1—2000 ft. June, July.—Common at Vernet.
20. *Thecla betulæ*. E.—I procured a specimen of this taken at Vernet by Michel Nou. Neither de Graslin or Struve note it.
21. *T. spini*. E.—Noted by de Graslin at Villefranche, just below Vernet. I took a female of the form *Lynceus* at Vernet.
22. *T. ilicis*, and vars. *æsculi* and *cerri*. E. C. 1—3000 ft. June, July.—Common at Vernet. Neither the var. *cerri*, which, according to Oberthür, exists in both sexes in France, or the var. *æsculi*, which, according to Staudinger, is a southern variety, seem to me quite worthy of separation.
23. *T. acaciæ*. E. To 3000 ft. June, July.—Not so common as the last, but occurs early in July at Vernet.
24. *T. roboris*. E. 1—3000 ft. June, July.—This fine species is common at Vernet in several places; it settles on ash and chestnut trees, and is not difficult to catch in good condition at the beginning of July. On some of the low trees at the

head of the valley of St. Vincent it was so numerous that I caught twenty in an hour or so, and, when disturbed, it usually returns to the same perch.

25. *T. rubi*. E.—I did not observe this myself, but procured specimens from Michel Nou, taken at Vernet. De Graslin says it is very common at Collioure, and the specimens I have from there have a median line of white spots on hind wings below, which is more marked than in those from any other locality.
- ? *T. quercus*. E.—Noted by Struve at Vernet, but never seen by Oberthür, who has collected several years there.
26. *Polyommatus virgaureæ*. E. C. 3—6000 ft. June, July.—The var. *Meigii*, which differs from the type in having more or less of the black spots of the lower surface showing through the copper of the wing above, occurs in the Pyrenees, but only, I think, as an aberration, and, though it seems more abundant and well-marked in Central Spain, it can hardly be looked on even there as a constant variety.
27. *P. hippothoe*. E. C. 3—6000 ft. July.—Not uncommon in moist pastures.
28. *P. alciphron*, var. *gordius*. E. C. 2—3000 ft. June, July.—Common at Vernet; also found at Cauterets.
29. *P. dorilis*. E. C. Var. *subalpina*. E. To 6000 ft. June, July.—Not common. Those which I took, as also noted by Oberthür, are like the common form; but Struve notes also the var. *subalpina* as occurring at Vernet. I do not think this variety can be separated in the Pyrenees.
30. *P. phlæas*. E. C. To 5000 ft.
31. *Lycæna bætica*. E. C. To 8000 ft. May—July.—Not noted by De Graslin, but taken by Struve and myself at Vernet, and by me at Gavarnie and on the Pic du Midi at 8000 ft. This latter specimen had one fore wing so much crippled that it seemed hardly capable of having flown up so high from below; and, as the species occurs at considerable elevations on the Himalaya, it may be an inhabitant of the higher Pyrenees.

- L. argiades*. W.—Not noted by any one from the mountains, but, as I took it at Biarritz, it most likely occurs in the lower parts of the Western Pyrenees.
32. *L. ægon*. E. C. To 6000 ft. June, July.—Common almost everywhere.
33. *L. argus*. C. *Fide* Oberthür.—Not seen by either De Graslin or Struve, but noted at Cautarets with *ægon* by Oberthür; and I took one or two at Gavarnie, which I believe to be *argus*.
34. *L. orion*. E. 1500 ft.—Not seen by me, but noted by de Graslin at Villefranche.
35. *L. baton*. E. 1500 ft.—Not seen by me, but specimens taken at Vernet by M. Nou were intermediate between the type and the var. *panoptes*, which I have from Collioure, on the coast. Struve notes both the type and *panoptes* at Vernet.
36. *L. orbitulus*. E. C. 6—8000 ft. July.
37. *L. pyrenaica*, Bdv. C. 6—8000 ft. July. *Cf.* Ob., Et. Ent. Liv., viii. p. 16.—With regard to this species, Oberthür has cleared up some of the doubt which existed as to *pyrenaica*, and, whether it is treated as a distinct species or only as a variety, it seems to be quite easy to distinguish not only from *orbitulus* of the Alps, but also from the form found with it in the Central Pyrenees. In the eastern part of the range alone I found it at Gavarnie and on the Pic du Midi, whilst *orbitulus* was common above the forest, by the track from Vernet to the Pla Guilhelm. My collection contains a good series of the forms of this species, and, though I cannot agree with Oberthür in all points, yet I think the arrangement given in Staudinger's Catalogue may be amended as follows:—
- L. orbitulus*, Prun., Sum. Alp. Pyr. Altai, Alatau, Tarbagatai.
- ? Var. *rustica*, Edw. Colorado.
- ? Var. *podarce*, Feld., *tehama*, Reak., *nestos*, Bdl. Wash. terr., California, U.S.A.
- Var. vel. sp. *aquilo*, Bdl. Lapland. Minor ♀ *cærulescens*.
- ? Var. *Wosnesenskyii*, Men. Kamschatcha, non vidi.
- Var. vel. sp. ? *Franklini*, Curt. Labrador, Arct. Am. Subtus distincte nigro-punctatus.

Var. vel. sp. *pyrenaica*, Bdv. Cent. Pyr., N. Spain (Picos d'Europa). (*Orbitulus* and *pyrenaica*, "species valde distincta," *fide* Oberthür). ?= *Dardanus*, Frr., As. min. alp. Armenia; (Sierra Nevada, Andalusia, (*fide* Stgr.).

Var. vel. sp. *Leela*, de Nicé., J. A. S. B., 1883, p. 66, t. 1, fig. 3, 3a. Ladak.

L. Ellisi, Marsh., from the N.W. Himalaya, is an allied species nearest to *Leela*. *Pheretiades*, Ev., from the Alatau and mountains of Kuldja seems distinct. *Pheres*, Stgr., *Pheretulus*, Stgr., and *Pherulus*, Stgr., from the mountains of Khokand, seem, as far as I can judge from the few specimens I have, to be all the same species; but, in any case, the name of *Pheres* has been used by Boisduval for a Californian *Lycæna*. The Colorado form, *rustica*, Edw., is so near our alpine one that I can hardly separate it, but that found in California and Washington territory, *tehama*, Reakirt, is much more distinct, pale below, and much spotted with black. Edwards considers it distinct from *orbitulus*. The type of *Franklini* came from Arctic America, and is said by Oberthür to be almost identical with *aquilo*. Whether the Labrador form is identical with *Franklini* or not I cannot say, but it is very distinct on the under side from the form found on the fells of Lapland, which I take to be *aquilo*, Bdv. *Wosnesenskyii* I know only from the figure. *Agagrus*, Christoph, from the Alps of North Persia, is nearly allied to *orbitulus*, and may perhaps be considered only as a well-marked local form; but I have seen it only from one locality, and do not know whether it varies. The distribution of the forms of this species at many isolated points in the high alpine and arctic regions of the Palæarctic and Nearctic region is very curious, and worthy of a more detailed study.

38. *L. eros*. E. C. 4—5000 ft.—Rare in the Pyrenees, where I have not taken it myself.

Var. ♀, *cærulescens*, Ob. C.

39. *L. icarus*. E. C. To 5000 ft.

40. *L. eumedon*. E. C. 4—6000 ft. July.

41. *L. escheri*. E. C. ? 1—3000 ft. July.
42. *L. astrarche* (*medon*). E. C. 2—3000 ft. July.—
I only took it at St. Sauveur, but Struve notes it
at Vernet.
43. *L. bellargus*. E. C. 3—5000 ft. July.
44. *L. amanda*. E. C. 2—3000 ft. June, July.—
Not common and local. I took it only at the
ruined monastery of St. Martin du Canigou, near
Vernet, and at St. Sauveur.
45. *L. corydon*. E. C. 3—4000 ft. July.
46. *L. hylas*. E. C. 2—3000 ft. July.
47. *L. argiolus*. E. C. —Common at Biarritz; taken
at Vernet.
48. *L. minima*. E. C. 1—3000 ft.—Seems rare in the
Pyrenees at low elevations only. In the Alps up
to 7—8000 ft.
49. *L. semiargus*. E. C. 2—6000 ft. June, July.
50. *L. melanops*. E. 1000 ft. April.—Only mentioned
by de Graslin, who took it at Villefranche. I
have taken it at Sion, in the Valais, in May,
though it is not included in Frey's 'Lepidoptera
der Schweiz.'
51. *L. arion*. E. C. To 5000 ft. June, July.
52. *Nemeobius lucina*. E. C. ? 3000 ft. June.—I only
procured this from Michel Nou at Vernet, and
never saw it myself, probably because I was too
late.
53. *Libythea celtis*. E. 2000 ft.—Struve found this in
the valley of St. Vincent, near Vernet.
54. *Limenitis camilla*. E. C. 2—4000 ft. July.—Not
uncommon in various places on bramble flowers.
55. *Apatura iris*. C. 2000 ft. July.—Only seen by
me at Luchon, where alone Oberthür also took it.
56. *A. ilia*, var. *elytie*. C. 2000 ft. June, July.—
Common at St. Sauveur, but seen nowhere else.
57. *Vanessa c-album*. E. C. 1—3000 ft.—Common at
Vernet and Luchon in July.
58. *V. polychloros*. E. C. ? 2000 ft. July.—Only taken
at Vernet, where it was rare.
59. *V. urticæ*. E. C. To 8000 ft. July.
60. *V. io*. E. C. To 5000 ft.
61. *V. antiopa*. E. C. 2—3000 ft.
62. *V. atalanta*. E. C. To 5000 ft.
63. *V. cardui*. E. C. To 8000 ft.

64. *Melitæa aurinia*, var. *merope*. E. 6—7000 ft. July.
—Only taken above Vernet at Pla Guilhelm ; it agrees with the alpine form.
65. *M. phœbe*. E. C. To 5000 ft. — Commoner at Vernet than in the Hautes Pyrenées, whence Oberthür does not record it. I found one or two at St. Sauveur.
66. *M. didyma*. E. C. To 5000 ft. June, July.— Very variable here, as elsewhere. I do not think the very numerous varieties named in Staudinger's Catalogue can be strictly defined. Typical specimens are generally quite distinguishable, but in a very large series they run into each other.
67. *M. dejone*. E. To 3000 ft. June, July.— Commonest at St. Martin, near Vernet ; not recorded in the Hautes Pyrenées.
68. *M. athalia*. E. C. To 5000 ft. June, July.— Very numerous and variable almost everywhere.
69. *M. parthenie*. E. C. 5000 ft. July.—I only found this near the Col du Cheval Mort, above Vernet. The form seems to come nearest *varia*, Meyer Dur, of the Alps. Oberthür notes it in the Hautes Pyrenées.
70. *M. dictynna*. E. C. 2—3000 ft. June, July.— Rare at Vernet ; commoner near St. Sauveur.
71. *Argynnis euphrosyne*. E. C. 3—6000 ft. June, July.—Those found in the rhododendron region at 6000 ft. in July seem to be a transition to the Lapland form *finjal*, as are also some from the higher valleys of the Alps.
72. *A. selene*. E. C. 2—4000 ft.—I found it uncommon, but it was probably over in July.
73. *A. pales*. E. C. 5—8000 ft. July.— Common wherever I went above 5000 or 6000 ft., but I saw none of the dark females (*napæa*, Hüb.), which are so plentiful in some parts of the Alps.
74. *A. dia*. E. C. 2—3000 ft. June, July.
75. *A. daphne*. E. C. — Only taken at Vernet by M. René Oberthür, and seems rare farther west, where I did not take it myself.
76. *A. ino*. C. 4—5000 ft. July.—Not common in the Central Pyrenees. I took it in the Val du Lys only.
77. *A. lathonia*. E. C. To 5000 ft.

78. *A. aglaia*. E. C. 2—6000 ft. June, July.
79. *A. adippe*. E. C. To 5000 ft. July.
80. *A. paphia*. E. C. 2—4000 ft. July.
81. *Melanargia galathea*. C. To 3000 ft. July.
82. *M. lachesis*. E. 1—4000 ft. July.—Very abundant at Vernet, but I never saw *M. galathea* here or *lachesis* to the westward.
83. *Erebia epiphron*. E. C. 4—7000 ft. July.—The form which has been named *pyrenaica* by Herrich-Schäffer, and which is characterised by Staudinger as var. *major* ocellis magnis, seems to me too inconstant to be worthy of distinction, and, though the majority of the specimens I took at Vernet and in the Hautes Pyrenées, are certainly somewhat different, yet there occurred with them specimens hardly distinguishable from those of the Alps, which are usually *cassiope*. Staudinger notes *E. melampus* as found in the Pyrenees, but I know of no good authority for this.
84. *E. manto*?, var. *cæcilia*, Hb. C. 4500—6000 ft. July, August.—I found, in the Luchon district, a black spotless *Erebia*, associated with *æme*, which I at the time took to be a form of that species, but I find that it is referred by Staudinger and Oberthür to *manto*, which is also given by Staudinger, in his Catalogue, as an inhabitant of the Pyrenees. I never saw a specimen of *manto*, however, from these mountains, and, being also ignorant of the female of *cæcilia*, do not know if it differs as much on the under side from the male as the female of *manto* does from the male. *Cæcilia* is said to be found as an aberration in the Eastern Alps, and I have specimens from the Valais and Gadmenthal which are intermediate between *cæcilia* and *æme*.
85. *E. æme*. C. 4—6000 ft. July.—Not uncommon near Luchon in July. Struve mentions having found the var. *spodia* also in this district, but I think it is doubtfully distinguishable.
86. *E. stygne*. E. C. 3—6000 ft. June, July.—The commonest species of *Erebia* everywhere up to about 5000 ft., where it becomes mixed with *Evias* at Vernet, and some of the specimens taken here are so like *Evias* that I can hardly say to which they belong.

87. *E. Evias*. E. C. 5—7000 ft. June, July.—I found this only near Vernet at highish elevations, but de Graslin says it occurs also low down, as it does in the Valais, where I have taken it at 3000 ft. in May. My specimens are perhaps smaller, but I do not think can be separated from the Swiss *Evias*, though Staudinger, in his collection, has separated a form as var. *pyrenaica*.
88. *E. melas* forma *pyrenæa*, Ob. E. 7—9000 ft. July. Cf. Oberthür, Et. Ent., viii., pp. 20—24.—*E. melas* forma *Lefebvrei*, Boisd. C. 7—9000 ft. July. — Oberthür has written so much on the varieties of this species that I need say no more, but, if the true *Lefebvrei* of the Hautes Pyrenées was not connected by intermediate forms with that of Mt. Canigou, as Oberthür states it is, it would be better worthy of specific rank on account of the differences in both sexes than many species of *Erebia* which are looked on as distinct. It is curious that this species, which is found nowhere in the Alps west of Carniola, should reappear in great abundance in the Pyrenees, and that the form of the Eastern Pyrenees, as well as that found in the Picos d'Europa in Northern Spain, should both be much nearer to that of South-eastern Europe than the Central Pyrenean form. I found it abundant in certain places where the mountain slopes are covered with great stones and boulders. It is difficult to catch, unless a grassy spot can be found among or near these great stone-heaps, where running is impossible; but I took thirty males and two females in about two hours in one place above Vernet, and could have caught nearly as many on the Pic du Midi, if I had had time.
89. *E. lappona*. E. C. 6—9000 ft. July. — Common on the road to Pla Guilhelm, above Vernet, where the specimens do not differ from those found in the Alps; but the form taken in the Hautes Pyrenées, which has been named *sthenny* by de Graslin, differs in the absence of the brown band on the fore wings, in which the black spots are enclosed; and those which I took on the Pic du Midi and near Gavarnie also differ in the

almost total absence of the broad fascia on the hind wings below.

90. *E. Tyndarus*, var. *dromus*. E. C. 5—8000 ft. July.—Common in most parts of the mountains, and separable from the Swiss form, as far as I can judge, those found near Vernet having a more distinct fulvous band than those from the Hautes Pyrenées. Cf. Ob., Et. Ent., viii., p. 25.
91. *E. Gorge* and var. *Gorgone*, Boisd. E. C. 6—9000 ft. July, August.—I am unable at present to say whether the form which is known as *Gorgone*, and which Staudinger characterises as follows: “var. *major*, ♂ subtus unicolor, ♀ venis albicantibus,” is constantly distinct from *Gorge* or not. Struve says, Stett. Ent. Zeit., p. 403, that he found the two together at the Port de Venasque, above Luchon. He also includes both in his list of the Lepidoptera of the Eastern Pyrenees, whilst Oberthür says that in the Hautes Pyrenées *Gorgone* replaces *Gorge*. I found two varieties, one larger near the Port d’Espagne, and one smaller on the Pic du Midi, both in the Hautes Pyrenées, and came to the conclusion that they were both *Gorge*, like the form from Mt. Canigou; whilst others, of which the female is paler below than any alpine *Gorge*, and agree with Staudinger’s definition of *Gorgone*, are not quite the same as those from Cauterets, given me as *Gorgone* by Oberthür. This author also describes and figures *Gorgone*, var. *gigantea*, from Northern Spain; so I think it seems clear that the various forms are not constant, though I have certainly seen none from the Alps which resemble the typical *Gorgone*.
92. *E. neoridas*. E. 3000 ft. July, August.—This species had not appeared when I left Vernet, but Oberthür says it is common at the Monastery of St. Martin du Canigou, near Vernet, in August.
93. *E. pitho*, var. *pyrenaica*. C. August.—I did not take this species, which seems not uncommon at the end of the season in the Hautes Pyrenées; but my only specimen from the Pyrenees does not confirm Staudinger’s distinction, which is as follows: “Minor magis ocellata subtus magis variegata.”

94. *E. Euryale*. E. C. 5—6000 ft. July.—I did not find it common, and Oberthür says it is variable, as it is elsewhere.

It will be seen from the above remarks that there is still something to be done before the twelve species of *Erebia* found in the Pyrenees are thoroughly understood. Unfortunately there are no resident collectors who can accumulate long series, and see whether the supposed variations are constant; but MM. Oberthür have done much to clear up their obscurity, and we may hope for another part of the 'Études Entomologiques' to be devoted before long to the Pyrenees.

95. *Satyrus alcyone*. E. C. To 5000 ft. July.—The commonest of the genus at Vernet; rarer in the Hautes Pyrenées, where I found it as high as 5000 ft. at Gavarnie.
96. *S. circe*. E. 2000 ft. July.—Not common at Vernet, where it settles on tree-trunks and not on the ground, as most of the European *Satyrus* which I have seen habitually do. This species belongs to the group which is so well represented in the Himalaya, and which has been separated by Butler as *Aulocera*, though I do not as yet know whether there is any good generic distinction.
97. *S. Briseis*. E. To 4000 ft. (*vide* Struve).—I did not take this myself, but procured it at Vernet, and Struve notes it as found at Mont Louis.
98. *S. semele*. E. C. ? To 3000 ft. July.—I did not take this except near Vernet, but it doubtless occurs to the westward.
99. *S. arethusa*, var. *erythia*, and transitus ad *Boabdil*. E.—I insert this on the authority of M. Charles Oberthür. I doubt whether the forms distinguished as *erythia*, Hüb., *dentata*, Stgr., and *Boabdil*, Ramb., are constantly distinguishable.
100. *S. statilius*. E. July.—Not taken by myself, but occurs not uncommonly below Vernet.
101. *S. fidia*. E. July.—On the dry hot hills between Vernet and Prades.
102. *S. actæa*. E.—Taken by M. Oberthür near Vernet.
103. *Parage mæra*. E. C. Up to 6000 or 7000 ft.

- June, July.—A very common and variable species almost everywhere.
104. *P. ægeria*, var. *egerides*. C. 2000 ft.—Taken at Luchon and Biarritz.
105. *P. megæra*. E.—Not common at the season when I was in the Pyrenees, but occurred at Vernet.
106. *Epinephele lycaon*. E. 2—3000 ft. July.
107. *E. janira*, and var. *hispulla*. E. C. 2—5000 ft. July.—It seems difficult to separate the southern form *hispulla* in this part of France, where the females especially vary very much.
108. *E. ida*. E. 1—2000 ft.—Occurs on the hot dry hills below Vernet.
109. *E. pasiphae*. E. 1—2000 ft. July.—In the same places as the last, but frequenting brambles and thick bushy places near water.
110. *E. tithonus*. E. C. 2—3000 ft. July, August.—I did not take this at Vernet, though it occurs there. It was found at St. Sauveur, and very numerous at Biarritz.
111. *E. hyperanthus*. C. 2—3000 ft. — Common at Luchon, but not seen at Vernet.
- Cœnonympha ædipus*.—I do not know whether I ought to include this in the Pyrenean list, as I only found it near Biarritz, where it was found in marshy places, and probably extends into the western valleys of the hills.
112. *C. arcania*. E. C. To 5000 ft. June, July.—Common and variable. The specimens found at higher elevations were smaller than below, but I saw nothing like the alpine var. or species *satyrion*.
113. *C. dorus*. E. 1—2000 ft. July.—Common on the dry stony hills below Vernet.
114. *C. pamphilus*. E. C. To 5000 ft. June, July.
115. *C. iphis*. E.—I did not see this myself, but both Struve and de Graslin include it in their Vernet lists.
116. *Spilothyrus althææ*. E. 3000 ft. July.—Rare at Vernet.
117. *S. lavatheræ*. C. 4500 ft.—Of this species I only saw one specimen in the box of a French gentleman who took it at Gavarnie.
118. *Syricthus carthami*. E. C. To 5000 ft. July.

119. *S. alveus*. E.—De Graslin mentions also the varieties *fritillum* and *cirsii* as taken with the type in the Val d'Eyna, but I do not pretend to be able to distinguish them.
120. *S. serratulæ*. E.—Also mentioned by de Graslin as taken with the last.
121. *S. sao*. E. C. To 5000 ft. July.
122. *Nisoniades tages*. W.—Only taken by me at Biarritz, but doubtless occurs in the Western and Central Pyrenees.
123. *Hesperia thamnas*. E. { No doubt these occur in
124. *H. lineola*. E. C. { the Central and Western
125. *H. linea*. E. { Pyrenees, though I did not
take them.
126. *H. comma*. E.—Only mentioned by de Graslin. I did not see it.
127. *H. sylvanus*. E. C. To 5000 ft. July.
Cyclopides morpheus. W. July. — Perhaps not rightly included, as I only took it near Biarritz. The flight of this species is unlike that of any other lepidopterous insect I ever saw. I found the males hovering with a short jerking flight over dried-up marsh and the females settled on hedges on the adjacent hill-side. It is curious that this peculiar insect, which has no congener in the Palæarctic region (unless *C. ornatus*, Brem., which seems to me to be generically distinct, is included), and which is local and only found here and there in Europe, should extend right through Armenia and Siberia to Amurland and Corea, without, as far as I know, the slightest variation.

If to the species in this list were added those which occur in the unexplored valleys on the Spanish side of the Pyrenees, and those which a better knowledge of the western and lower part of the range would no doubt include, we should probably have at least 150 species, or within twenty of the number found, according to Frey's latest work, in the whole of Switzerland, which is perhaps the richest part of Europe in Lepidoptera, considering its size.

Of species found in the Swiss Alps, but absent in the Pyrenees, the most worthy of notice are as follows:—

Parnassius delius.

Colias palæno.
Lycæna optilete, pheretes, donzelii, sebrus.
Limenitis populi, sibilla.
Neptus lucilla.
Melitæa maturna, aurelia, asteria.
Argynnis amathusia, thore.
Erebia melampus, mnestra, pharte, ceto, medusa, glacialis, medea, ligea.
Chionobus aello.
Pararge hiera.
Cænonympha satyrion, davus.
Syricthus andromedæ.

Many of these are high northern and alpine species, or frequenters of peat-bogs, which are rare in the Pyrenees.

Of the species found in the Pyrenees, but not in the Alps, some are inhabitants of the more arid region of Southern France, such as *Melanargia lachesis*, *Erebia neoridas*, *Cænonympha dorus*, *Satyrus fidia*, and only found in the drier parts of the Eastern Pyrenees; whilst others, such as *Thecla roboris*, *Melitæa dejone*, are rather Spanish than French species. *Lycæna pyrenaica*, if really distinct from *orbitulus*, is the only one absolutely peculiar to the range, and *Erebia melas* is an inhabitant of South-eastern Europe; its variety *Lefebvrei*, however, seems to me to have quite as good a claim to be considered distinct as *L. pyrenaica*, and, were it not for the great variation which is found in the forms of *melas*, I should say that it was so.

In going through Staudinger's Catalogue, I find, among the Bombyces, the following species, which are supposed to be confined to the Pyrenees:—

Zygæna anthyllidis.
Emydia cribrum, var. *Rippertii*, which Struve thinks is a distinct species.
Hepialus pyrenaicus and *H. alticola.*
Psyche Leschenaultii.
Orygia aurolimbata, of which, however, a variety occurs in Spain.

Among the *Noctuæ* I do not find a single species recorded. Among the *Geometræ*, the following: *Cleogene peletieraria*, which differs only in the male sex from *C. niveata* of the Alps; *Ortholitha calinaria*. *Eupithecia cyneusata*, of which a single female only has been taken.

On the whole it is rather surprising that a range of mountains so extensive, so high, and so isolated as the Pyrenees should have developed so few distinct forms among the Lepidoptera, and should have so large a proportion of those inhabiting the Alps, which seem so completely separated from the Pyrenees by the great plains and low dry hills of Southern France. This is not the case among plants, of which there are, I think, a very much larger proportion of peculiar species in the Pyrenees; whilst a much greater number of common Swiss alpine plants are absent. I shall be glad to hear from entomologists whether this absence of peculiar species in the Pyrenees is also the case in other orders of insects, and how it is to be accounted for.



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