NOTES ON SOME TASMANIAN AND AUSTRALIAN LEPIDOPTERA-RHOPALOCERA

By

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(With four text figures and one plate)

ABSTRACT

A ready method of separating the males of the two species of *Pelopidas, P. agna dingo* Evans and *P. lyelli lyelli* Rothschild, for long confused as one species under the name *mathias,* is described and figured. *Oreisplanus munionga larana* is described from north-west Tasmania, this is the first record of the genus in this State and of the species below a high altitude in the Australian Alps.

Candalides simplexa Tepper is shown to be the name for the collective species known as *hyacinthina* Semper, the latter is an invalid homonym, having formerly been used for another species of the same genus. Meyrick's name *cyanites* is revived for the West Australian race, and Scott's *cassythae* adopted to replace *hyacinthina* Semper. The species of *Everes* which has at various times been known in Australia as *E. parrhasius* or *E. argiades* is placed as a subspecies of *lacturnus* Godart and named *E. lacturnus australis. Zizula hylax* Fabricius is adopted as the species name of the butterfly for which *gaika* Trimen was formerly used, our species now becomes *Zizula hylax attenuata* Lucas.

The possible localities from which the original specimens of *Pseudalmenus chlorinda* Blanchard were obtained is discussed and historical and material evidence brought forward in support of my claim that Richmond, near Hobart, must be regarded as the source of Blanchard's specimens, and it is so designated as the type locality, and a neotype male and female selected.

The hitherto unknown female of *Oreixenica paludosa theddora* Couchman from the plateau area of Mt. Buffalo is described. The limits of the subspecies of *Heteronympha cordace* Geyer in Tasmania are more clearly defined as the result of further intensive collecting during the past seven years.

HESPERIIDAE.

PELOPIDAS AGNA DINGO Evans 1949 and PELOPIDAS LYELLI LYELLI (Rothschild) 1915.

When in 1951 (Trans. Roy. Soc. South Australia 74 (I) : 16-17) I discussed the confused history of these species formerly known in Australia as "*Parnara* (or *Baoris*) *mathias*" I had seen only a few specimens from Darwin and Kuranda. Evans' (1949) keys for their separation proved difficult to follow, and the earlier contradictions regarding the published figures have continued to confuse many correspondents. Having worked out a method for readily separating the males and communicated this to several friends I find this confirmed in T. Shirôzu's magnificently illustrated "Butterflies of Formosa" recently published in 1960, where similar figures are given for separating the Formosan subspecies of *P. agna* and *P. mathias.*

The males of our two Australian species may be separated as shown in the figures by checking the position of the male sex brand in relation to the origin of vein 2 and the position of the cell spots. A line drawn through the cell spots will clearly pass beyond the margin of vein 2 and cross vein 1b basad of the end of the sex brand in *agna dingo* male, while a similar line through the cell spots in *lyelli lyelli* will pass very close to or over the origin of vein 2 and clearly pass through the sex brand before crossing vein 1b.

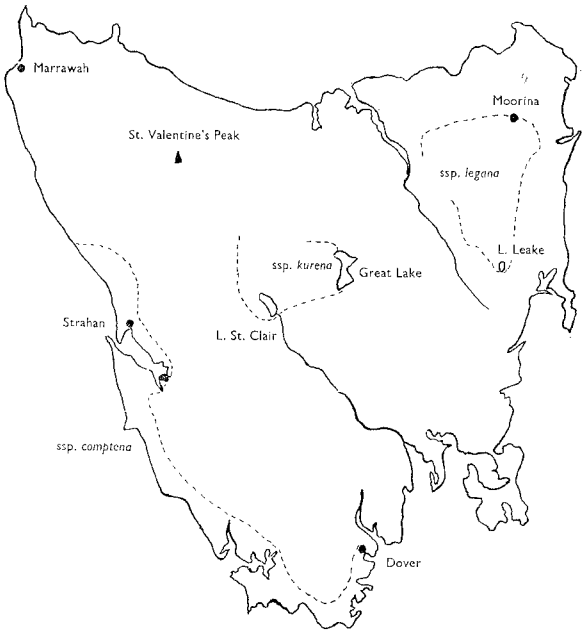
In the females, except for the absence of the sex brand, a line similarly drawn will pass the origin of vein 2 as in the males, that is, the line in *agna dingo* will pass on the basal side of the spot in area 1b, whereas in *l. lyelli* female the extended line will clearly meet the spot in area 1b. I hope the publication of these figures will help others to distinguish between these two very similar species, so long confused.

The two species seem to overlap throughout their range in Australia, I have noted specimens of both from Darwin, Kuranda, and Cairns south to Mackay, but I believe one or both may range at least occasionally to Brisbane.

OREISPLANUS MUNIONGA LARANA subsp.nov.

Nominotypical *munionga* Olliff 1890 (Proc. linn. Soc. N.S.W. (1889) (2) 4 (3) : 623-624) was described from "Moonbar (3-3550 feet), Mt. Kosciusko (5000 feet)" the former being fixed as the type locality by Waterhouse and Lyell (1914). It has subsequently been taken at several places in the Victorian Alps, especially on Mt. Hotham, but always above four thousand feet. Its occurrence at sea level, in fact almost on the shore-line in Tasmania was totally unexpected, since the species does not occur at low altitudes even in Victoria. When compared with typical *munionga* the differences in the Tasmanian race are easily recognised.

Male Upperside; Forewing, discal spots between veins 1 and 2 narrow, connecting with two spots each 1 mm. square in areas 2 and 3, three subapical spots and scattered submarginal scaling from costa to vein 4, a cell spot extending narrowly towards



Heteronympha cordace races in Tasmania

base and hindmargin almost sagittate and a few scattered scales on hindmargin half way from base, cream.

Hindwing cell band larger, 3 mm. by 1 mm., in area 5 clearly extended outwards towards termen.

Cilia of fore and hindwings broad, light cream chequered dark brown at veins 2 to 7.

Underside; forewing discal spots in areas 2 and 3 rectangular, of equal size, the spot in area I extending upwards towards spots in 2 and 3, the apical light cream area containing submarginal black streaks and marginal black spots which are distinctly smaller and narrower. Hindwing ground colour light cream, the markings narrower and submarginal spots smaller than in ssp. *munionga*.

Forewing length 11.5 mm., eight other males vary from 11 mm. (1 specimen); 11.5 (4 specimens); to 12 mm. (3 specimens).

Female. Upperside; forewing discal spots as in male, that in area 1 extending upwards towards those in area 2 and 3, cell spot clearly sagittate, and a light scaling in the post-discal areas, cream.

Hindwing central band 4 mm. by 2 mm., larger than in ssp. *munionga* female, extended towards termen in area 5 and with streaks along veins 2, 3 and 4 towards termen, orange. Cilia of fore and hindwings broad, as in male.

Underside cell spot extended along vein to base, otherwise as in the typical subspecies.

Forewing length 15 mm.

Holotype male labelled Marrawah, Tas. Sea-level. 26-Jan.-1961. L. E. Couchman. Allotype female labelled as holotype male. Types in my own collection.

Nine males and one female were taken in a dry paddock on the edge of a swampy rivulet containing a few clumps of *Carex*, which has been noted as the food-plant in Victoria. Obviously ssp. *larana* is extremely local since it has remained undiscovered till now, although occurring in a paddock in a long settled grazing district. No other specimens were seen outside the one narrow area in a single field close to the shore-line. though I should expect it to occur in similar spots bordering running water between Marrawah and Cape Grim. South of Marrawah the country quickly changes to heathland extending to the mouth of the Arthur River, so that its possible habitable area is extremely limited.

This addition to our Tasmanian lists should be placed between the genera *Anisynta* and *Hesperilla*.

LYCAENIDAE.

CANDALIDES SIMPLEXA SIMPLEXA (Tepper) 1882 n. Synon. and comb.

Cupido simplexa Tepper 1882 Trans. Roy. Soc. South Australia (1880-1) 4 : 30.2, f.10. "Monarto Co. Sturt".

Holochila erinus Fab. Miskin 1891 Annals Queensland Mus. 1 : 64-65 (part); Anderson and Spry 1894 Victorian Butt. (2) : 91 (pt.). (nec Fab. 1775).

Candalides hyacinthina Semper, Waterhouse 1903 Proc. linn. Soc. N.S.W. 28 (1) : 185 (pt); id 1903 Memoirs N.S.W. Naturalists Club 1 : 23 (pt). Rainbow 1907 Guide. . study of Aust. Butt: 127-129 (pt). (nec C. Felder 1862).

This is the earliest valid name for the collective species hitherto erroneously known as *hyacinthina* Semper 1878 (nec C. Felder 1862). Subspecies *simplexa* ranges from north-western Victoria through South Australia.

CANDALIDES SIMPLEXA CYANITES (Meyrick) 1888. n. comb.

Polyommatus cyanites Meyrick 1888 Proc. linn. Soc. N.S.W. (2) 2 (4) : 828 "Geraldton, West Australia". *Holochila cyanites* Miskin 1891 Ann. Queensland Mus. 1 : 64: *Candalides cyanites* Waterhouse 1903 Proc. linn. Soc. N.S.W. 28 (1) : 186.

This is the subspecies from West Australia, distinguished by the broader black borders, the clearer, more brilliant blue shading of the discal areas, and the darker undersides of fore and hindwing in both sexes.

CANDALIDES SIMPLEXA JOSEPHINA Harris 1952. n. comb.

Candalides hyacinthina josephina Harris 1952 North Queensland Naturalist 20 (103) : 33-34. text. figs. "Stawell, Victoria".

A population intermediate between *s. simplexa* and *s. cassythae* from a restricted area, which is very doubtfully of subspecific standing.

Specimens from Kiata, eighty miles north-west of Stawell are undoubted *s. simplexa*, while those from Gisborne one hundred miles east are of the eastern

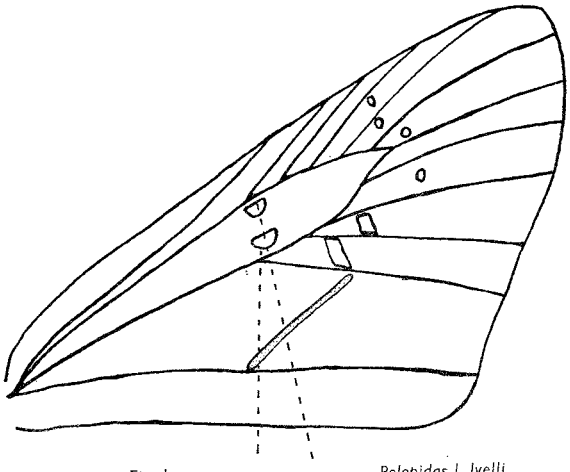


Fig. I *Pelopidas l. lyelli*

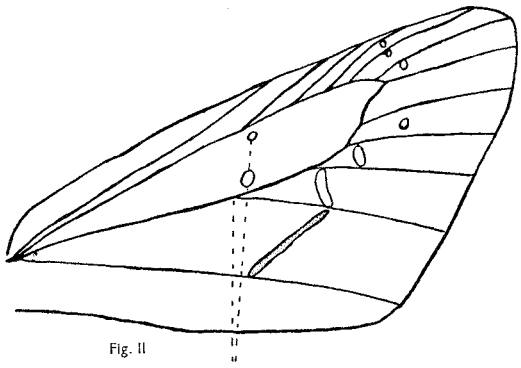


Fig. II *Pelopidas agna dingo*

subspecies *s. cassythae*. The material on which the name was based was noted by the author as so variable as to suggest a hybrid population in a fringe area where two strong subspecies meet.

CANDALIDES SIMPLEXA CASSYTHAE (Scott) 1890. n. synon.

Polycyma cassythae Scott 1890 Australian Lepidoptera and their Transformations 2 (1) : pl. 12, figs. 1 (palpi), 2 (antenna), 3 (leg), female, underside, larva, pupa.

Holochila hyacinthina Scott, Semper 1878 Journal Mus. Godeffroy 5 (14) : 162, 190 (pt). "Sidney, Rockhampton". (Scott M.S.S. nec C. Felder 1862).

Candalides hyacinthina Semper, Waterhouse 1903 Proc. linn. Soc. N.S.W. 28 (11) : 185 (pt.) 2, f.20: 3, f.3. id 1903 Mem. N.S.W. Nat. Club 1 : 23 (pt.). Rainbow 1907. Guide . . . study Austr. Butt : 127-129 (pt.) text f. 76-78 (transf.), 3, f. 8 female. Waterhouse and Lyell 1914 Butt. Australia: 80.17, f.338. 339. Grünberg 1921 in Seitz Die Gross-Schmett. der Erde 9:852 (pt.) Waterhouse 1932 What Butt. is that?: 131.18, f. 1A-1E (transf.); 19, f.6, 6A male and female.

Chrysophanus erinus Fab. Olliff and Forde 1890 in Scott Aust. Lepidoptera 2 (1) : 9(pt.) (nec Fab. 1775). *Holochila erinus* Fab. Miskin 1891 Ann. Queensland. Mus. 1 : 64-65 (pt.). Anderson and Spry 1894 Victorian Butt. (2) : 91 (pt.) text figs. *Candalides erinus* Fab. Druce 1902 Proc. zool. Soc. London 1902 : 120.

The invalid name first used for this species by Semper in 1878 has since been generally adopted by Australian authors, and its earlier use by C. Felder in 1862 for the allied species *erinus* overlooked. Felder lists "No. 169 *Holochila erinus* Fab. (*hyacinthina* Scott in litt) Ash Island" following his description of "No. 168 *Holochila absimilis* Scott in litt. Ash Island".

The name *hyacinthina* as used by Semper and subsequent authors therefore has no standing, it must be discarded and the collective species known by the earliest name, which is *simplexa* Tepper 1882. Fortunately Scott's name *cassythae* is available for the subspecies hitherto erroneously known as *hyacinthina* Semper. Scott's specimens came from Ash Island, in the Hunter River near Newcastle, which may be accepted as the type locality. The same form occurs throughout eastern Australia from central Victoria through coastal New South Wales to southern Queensland. The male above is brown tinged with purple, the termen of fore and hind wings bordered brown. Beneath the ground colour in both sexes is grey, distinctly lighter than the southern subspecies *simplexa*.

CANDALIDES SIMPLEXA EUGENIA Waterhouse and Lyell 1914. n. comb.

Candalides hyacinthina eugenia Waterhouse and Lyell 1914 Butt. Australia: 80.17, f.340, 341. "Kuranda. Atherton. Rockhampton". Seitz 1927 Die Gross-Schmett. der Erde 9 : 1114. Waterhouse 1932 What Butt. is that?: 131-132.

This, the smaller north Queensland subspecies is again lighter in tone of ground colour beneath than the eastern *s. cassythae*.

EVERES LACTURNUS AUSTRALIS nom. nov.

Pro *Everes argiades* Auct. (nec Pallas 1771); *Everes parrhasius* Semper (nec Fabricius 1793).

Lampides parrhasius Fab. Semper 1878 J. Mus. Godeffroy 5 (14) : 155-156, 190, 193 (on p. 190 Semper attributes the name *parrhasius* to Horsfield).

Lampides argiades Pallas. Miskin 1891 Ann. Queensl. Mus. 1 : 56-58.

Everes argiades Pallas. Waterhouse 1903 Proc. linn. Soc. N.S.W. 28 (1) : 219-220. id. 1903 Mem. N.S.W. Nat. Club 1 : 26. Waterhouse and Lyell 1914 Butt. Australia: 99. 17, f. 346, 347, 348. Tindale 1923 Trans. Roy. Soc. South Australia 47 : 353. Waterhouse 1932 What Butt. is that?: 166. 23, f.3, 3 A male and female.

Miskin, who seems to have been the first Australian author to use *argiades* for this species, gives a long list of names including several forms of the palaearctic species described by Pallas, as well as other species such as the American *comyntas* Godart and *lacturnus* Godart described from Timor, both now recognised as distinct. Semper, the first author to record the species in Australia, used *parrhasius* and it is difficult to understand why later authors did not follow him, but adopted the extremely unlikely South European species-name for this butterfly. Writers dealing with the species of the Indo-Malayan region (Seitz 1924 : 923; Evans 1927 : 143) had shown the distinction between *argiades* and the Indo-Australian "*parrhasius*". However, Toxopeus 1929 (Tijdschrift voor Entom. 72 : 227, 240) held that the Fabrician name could not be applied to an *Everes* species and used it for a species of *Nacaduba*. Corbet in 1938 (Trans. Roy. ent. Soc. London 1938 : 140) agreed that *parrhasius* could not be used for an *Everes*, but disagreed with its use for a *Nacaduba* species. Finally, in 1941 Corbet (Proc. Roy. ent. Soc. Lond. (B) : 102, 103) showed that *parrhasius* Fabricus, first applied to *Everes lacturnus* Godart and then to *Nacaduba nora* Felder, is to be used for a *Euchrysops* species from South India, so the name at last disappears from the Australian lists.

I have checked the 16 ribbed, elongate androconia of our species, fig. III, and find it agrees with the scales of the Indian "*parrhasius*" as described by Evans 1932 (Identification of Indian Butterflies ed. 2: 219).

The male of the Australian subspecies above is violet-blue bordered with black margins 1 mm. wide, the tornal spots of hindwing in areas 2 and 3 outlined with crescentic orange scaling. Beneath the ground colour is bluish-grey, the tornal patch of hindwing extending widely from areas 1a to 3 and sometimes to 4.

The female above is black, the tornal spots of hindwing in 2 and 3 crowned with pale orange crescentic patches. Beneath as in the male.

Both sexes differ from the Indo-Malayan subspecies *rileyi* Godfrey in their different colour above and in the broader, extended orange tornal area beneath which in subsp. *australis* is not bounded basally by a brown crescentic line.

Male forewing length 11 mm., female 12.5 mm.

Holotype male labelled Cairns, Q. Sea level. 20 April 1960. J. Kerr.

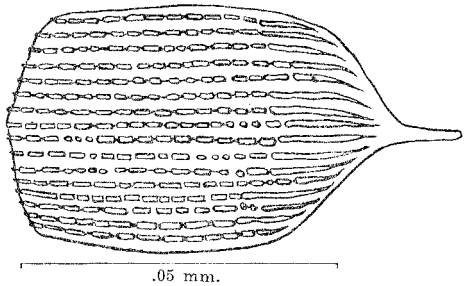
Allotype female, data as male. Types are in my collection.

This butterfly is very variable in size, I have seen a male labelled Meringa, N.Q. 3-6-26 A. N. Burns which is but 6.5 mm. in wing length, another male in the Burns collection from the same area dated 26-10-26 is 7 mm.

A female from Kuranda, Q. 17 April 1958 E. J. Harris in my collection is 9.5 mm. in wing length compared with another from the same district dated 19 April 1958 of 12.5 mm. The discal areas in northern females tend to be light grey-brown in colour compared with the black marginal areas. Male specimens from Brisbane and perhaps generally in the southern limits of its range have a lilac tinge in the blue of the upperside. A female in the Burns collection labelled Coramba, N.S.W. 26 Oct. 1947 F. P. Dodd has the area of forewing from hindmargin to disc coloured as in the male, the veins 1, 2 and 3 in the discal area of the hindwing are striated with the same bluish colour.

The subspecies ranges from Coramba in northern N.S. Wales through coastal Queensland to the Claudie River area, it has also been found on Groote Eylandt, at Darwin and in the Daly River district. I have records of it flying in the north in every month from September till June, in the south from October to April.

FIG III.—*Everes lacturnus australis.*



ZIZULA HYLAX ATTENUATA (Lucas) 1889. n. comb.

Corbet 1940 (Entomologist 73 : 276) advances evidence to show that the Fabrician *Papilio hylax* 1775, formerly wrongly applied to a species of Pithecops, replaces *gaika* Trimen as the name for the collective species.

PSEUDALMENUS CHLORINDA (Blanchard) [1848].

During the past fifty years quite a number of authors, Waterhouse and Lyell (1914), Waterhouse (1928), Burns (1948), Couchman (1948), Tindale (1953) have written more or less extensively about this unusually interesting butterfly, yet the initial problem of the origin of Blanchard's specimens continued to be unsolved. As I noted in 1948, the type specimen is no longer in the Museum d'Hist. Nat., Paris, and must be regarded as no longer in existence. Fortunately further study could be based on the very good figure of male and female upper and undersides given in the Atlas of plates to D'Urville's Voyage au Pôle Sud, the text to which gave merely "Tasmanie" as the type locality.

It has been generally agreed, since Waterhouse wrote in 1928 "I consider the types came from near Hobart," that the original specimens were taken, or acquired, during the stay of the French ships of war "Astrolabe" and "Zélée" in the Derwent between December 13, 1839 and January 2, 1840.

Again, authors from Waterhouse to date have admitted their lack of material from Hobart (I exclude Kingston and Snug specimens for reasons given later) while basing their writings on specimens from elsewhere in the island.

After years of searching for this species, the fortunate discovery by my friend A. M. Hewer of a colony near Richmond in 1954 which gave specimens matching the original figures suggested that at last the area had been found from which the French naturalists obtained their specimens.

Since at the time of the French visit, travel to Richmond and beyond to Port Arthur was more usual than in the direction of the D'Entrecasteaux Channel area, the accounts in the text of the " Histoire du Voyage " mention Richmond but have nothing of visits to the Channel districts; these reasons, with the lack of agreement between Channel area specimens and the Blanchard plate, convinced me that the French specimens had been obtained on the eastern shores of the Derwent, although no specimens from this area were to be found in any Australian collection.

HISTORICAL EVIDENCE.

The arrival of the Astrolabe, Mons. Dumont D'Urville, and the Zélée, Capt. Jacquinot, each of ten guns and out twenty-one months from Toulon is reported in the Colonial Times of December 1839, and also in the Hobart Town Courier and Van Diemen's Land Gazette of Friday evening, December 13, 1839, and their departure, on January 2, 1840, is reported in the latter newspaper of Friday evening, January 3.

The True Colonist of December 20, 1839, in its Shipping News also reports their arrival and in the Weekly Report of Ships in Harbour has the following significant comment: " The above named ships are on a voyage of discovery and have put in here to recruit the health of their crews and refit ". It is to be noted that the Astrolabe and Zélée had left Toulon on September 7 1837 and during the intervening months had crossed the Atlantic, rounded Cape Horn, crossed the Pacific, visiting many islands en route as far north as Truk, thence around the New Guinea and North Australian coasts and Java down to Hobart, so naturally the dreaded scurvy had taken its toll of the crews.

Incidentally, Murray's Review of December 31, 1839, has a note of the " meritorious conduct " of officers and men of the French ships in dealing with a fire in a sail loft, regretting the fact that " unfortunately local residents also fighting the fire directed their hose on the invalid strangers, drenching them ".

Thanks to the kindness and co-operation of the State Archivist, Mr. P. Eldershaw, my wife and I were able to see two important letters bearing on the problem. The first, in copper-plate handwriting, dated " Astrolabe 30 December, 1839 " and signed J. D'Urville, is addressed to the Governor of Van Diemen's Land, expressing thanks for " hospitality received during the visit of the Mission under my command " and " requests to leave ' quinzaire de maladies ' under the supervision of Mr. Hombron, Surgeon-Major of the Expedition, for a period of two or three months " when Captain Jacquinot would return for them.

D'Urville continues with requests for consent for the sick men to remain in his absence, for a continuation of medical treatment under the authority of Mr. Bedford, for financial assistance to Mr. Hombron during the stay of the sick men and finally (in case of D'Urville's non-return from the Antarctic), a request that the sick men be transferred to Mauritius at the first favourable opportunity, promising the expense would be paid by the " Royal Treasury of the French Navy ". The second letter, dated from Government House 10 January 1840 signed J. Franklin and addressed to the Marquis of Normanby, reports on the visit of the ships and " the 17 men left in the Colonial Hospital ", together with D'Urville's requests.

Although the official account of the voyage makes little mention of illness, other than D'Urville's direction to M.M. Hombron and Ducorps, on arrival, in Hobart Town, " to establish a provisional hospital in order to carry there our sick men ", that it was regarded very seriously by the locals is shown in the True Colonist of March 6, 1840, where in an article headed " The Fever " we read . . . " There is a great deal of murmuring among the inhabitants arising from a very general belief that the disease, typhus fever, has been introduced into the Colony by the French discovery ships, and there is a general complaint against the Government for not having placed them under quarantine in place of allowing them to establish a lazarhouse in the very centre of the town ". A further note continues . . . " It is not correct that it broke out first at Richmond, the disease was first carried there, or rather to Malcolm's Huts, by some men who had been removed from Hobart Town. All the sick have now been removed from that station, and from Richmond, to the station at Grass Tree Hill, where the chapel, a fine airy building, has been converted into a hospital for their reception ".

In the official " Histoire du Voyage ", D'Urville, on page 69 notes " On my return to Richmond I met again the men who were fully convalescent, but some had been very sick and were getting better little by little ", though the True Colonist of 28 February under a note of the sailing of the French ships says " the above ships re-embarked their invalids, left at Hobart Town ".

The clue to the evident confusion is given by the above issue of the True Colonist, where it speaks of the French Seamen " suffering from diarrhea and inflammation of the intestines ", the prison gangs from " typhus fever ", in fact it notes, during an account of the visit of Sir John and Lady Franklin to Richmond, the " great mortality from typhus fever ".

It is clear that the local inhabitants, confusing scurvy and its effects with the outbreak of typhus fever and holding the French responsible for the latter, by their clamour, forced the evacuation of J. B. Hombron and his charges from Hobart Town to Richmond and eventually to Grass Tree Hill, into the very area which today produces specimens of *c. chlorinda* comparable with the French types.

It is of course true that a number of members of the French expedition, in addition to J. B. Hombron, collected insects, as Musgrave (1932: 73-74) points out, but Hombron's prolonged stay in and near Hobart Town provided him with the opportunities for amassing the collection which he,

in collaboration with his fellow-surgeon, H. Jacquinot, were to describe when they later jointly supervised the zoological parts of the *Voyage au Pôle Sud*. The whole of the historical evidence available shows that the French naturalists were well acquainted with the eastern shore of the Derwent, particularly the Richmond district, so reinforcing the evidence provided by collected material.

COLLECTED MATERIAL.

Although Waterhouse (1928) gives a coloured figure of a male, from Launceston, which he says is "very close to the figure" of Blanchard, no specimen had been exactly matched to the original plate by any author when my attention was first directed to the species almost twenty years ago. J. R. Cunningham in 1948 and subsequent years had specimens from Kingston and he and I bred a number of specimens of both sexes from this locality, until the solitary *Eucalyptus* harbouring the butterfly was destroyed several years since. All the specimens from there were quite different from the original figures. When, however, the first Richmond specimens were bred in 1954 I immediately recognised their likeness to the Blanchard originals, and my fig. 5 is of a male which almost exactly matches the type male (Blanchard's plate 3, fig. 15, 16) above and beneath. The latter plate shows a specimen with a triangular patch of thinly scattered orange scales between the cell and discal spot, although this discal area may be thinly scaled I find it is rarely so clearly coloured as in Blanchard's fig. 15.

During the 1954 season more than thirty males were reared from the pupa or caught flying, the darkest is completely black except for a few scattered yellow scales on the forewing beyond the cell bar and in the discal area of space 1b; the deep orange-red tornal band of the hindwing extends narrowly into area 3. Average forewing length 14.5 mm.

The lightest male has three small orange spots, each 2.5 mm. square, one bordering the cell bar, the other two in the discal areas 1b and 2. This latter is indeed an unusual specimen from this area, for collecting in this and subsequent years has produced only three similar examples, the rest are without exception as dark or darker than the Pôle Sud figures on the upper side. Actually Waterhouse's claim for his 1928 figure 1 is not well founded, it lacks the two clear orange spots on the forewing, and the tornal band of the hindwing is too broad and does not taper away thinly in areas 2, 3.

The female which I figure from Richmond is again very close above and beneath to the Blanchard plate 3, figures 17, 18. Waterhouse and Lyell's figure 864, which Waterhouse (1928) claims is close to the original, has the tornal band of hindwing above extending far into area 6, quite unlike the narrow tapered band of the original figure and of my specimen. In fact all Waterhouse's figures confirm their origin, they bear the characteristics of Launceston specimens bred or caught within the past fifty years by a number of collectors, notably F. M. Littler and my friend G. H. Hardy, who has helped me with his recollections of this species in its northern habitat during the period 1913-1918.

One marking I find that has been completely overlooked by previous writers, is the sub-basal black streak extending to a variable degree along vein 1b of the underside forewing. The conventional mode of setting normally covers this marking, but I find it present in all Tasmanian specimens.

Reverting to specimens from the opposite shores of the Derwent, experience confirms Waterhouse's remarks (1928: 411) regarding his males from Snug, that the males above have the forewing broadly marked, and the hindwing with conspicuous central patch and extended tornal band. The figure given by Tindale (1953: pl. 20, f.d.) is unusual in that it does not agree with the material from this area caught and bred by J. R. Cunningham and myself over a period of years, usually males approximate to or are even more broadly banded than Waterhouse's 1928 fig. 3, with which Waterhouse compared his Snug specimens. Kingston females also have the forewing more broadly banded and the hindwing with a larger central patch and broader, more extended tornal band than any specimen from the eastern shores taken over a period of seven years.

I believe I have shown that specimens from the eastern shores of the Derwent are the only ones consistently agreeing with the original Blanchard plate, and this, together with the historical evidence I have adduced above, confirms that Richmond near Hobart is to be regarded as the type locality and I so designate it, selecting the figured examples in my collection, as neotype male and female to replace those specimens figured by the French expedition, now no longer in existence.

In other areas of east and north Tasmania from which *c. chlorinda* has been seen or obtained the specimens show rather remarkable differences. With the exception of material from two areas, one south of Orford, the other west of the Derwent, all specimens show a definite trend towards the Victorian ssp. *zephyrus*. In the majority of males the spots of the forewing upper side form a distinct band across the disc, while the tornal band of hindwing above is broader, extending at least to vein 5, frequently beyond, and does not taper off thinly as in males from Richmond. Waterhouse (1928: pl. 25, f. 3) illustrates these characters well.

Females above invariably possess a more or less conspicuous central orange patch in the hindwing (this is not true of Richmond females) while, as in the males, the tornal band extends around the hindmargin and does not taper thinly away. Waterhouse and Lyell's figure 864, a female from Launceston, is a good representation of the majority of females from eastern and northern Tasmania.

It is not very difficult to separate Richmond specimens by one constant character, the distinctly dull grey tint of the ground colour beneath. Other characters advanced by authors for separating Tasmanian specimens (Waterhouse 1928, Tindale 1953), such as the greater or lesser extent of the orange band of the forewing upperside or the presence or absence of a discal row of black spots on the hindwing beneath completely break down in both sexes now that I have been able to examine more than one hundred specimens from many localities. For example, in an unselected series of 24 males from Richmond, 12 have no trace of the discal row of spots beneath, the proportion

is even less in a smaller series of females. I find this true also of specimens taken near Launceston.

Examples drawn from the western shores of the Derwent and particularly those from a locality south of Orford complicate the distribution pattern greatly. Males from the Kingston-Snug areas are quite as clearly banded on the forewing as any in a series of forty specimens from Victoria caught and bred over a long period of years which were kindly presented by my friend C. G. L. Gooding, and the hindwing has the clear central patch and comparatively broad tornal band extending beyond vein 5 exactly as in ssp. *zephyrus*. In size both males and females from these districts closely approximate the Victorian race. In an area south of Orford, extending towards the Forestier Peninsula occurs a still larger, more extensively marked population than any Victorian *zephyrus* I have examined. The females with an average wing length of 17.5 mm. in 16 examples are notably larger and brighter, approaching, even to the ground colour beneath, the N.S. Wales race *chloris* as figured by Waterhouse and Lyell (1914: pl. (42) f. 870, 871).

Consideration of these populations and the problems they present is deferred for further study.

The life history in Tasmania differs again from the published accounts (Waterhouse (1932); Burns (1948); Tindale (1953)) in several features. For years my friends, my wife and I searched scores of *Acacia melanoxylon* for larvae or pupae of the butterfly, but not once did we find any trace. Then some twelve years since J. R. Cunningham found larvae on *Acacia dealbata* at Kingston, and subsequent experience in half a dozen areas has confirmed that either *A. dealbata* or, more rarely, *A. mollissima* are the sole food plants in Tasmania, not *A. melanoxylon*. The latter tree, whether in isolated groups in the south-east, or the extensive stands of the north-west, does not harbour the butterfly.

Further, the butterfly is always associated with the small black "stink-ant", *Iridomyrmex foetida* and again, the ant, in my experience, is usually associated with *Eucalyptus viminalis*, more rarely with *E. globulus* or *E. obliqua*. *Pseudalmenus chlorinda* has been found where the foodplant is at all stages, from a few inches to ten or fifteen feet high, the former especially where the trees have been cut down for "wattle-bark", but even if the *Acacia* be ten feet or more from the nearest ant-infested *Eucalyptus viminalis*, pupae of the butterfly have been found beneath the bark of the latter tree, always attended by numbers of *Iridomyrmex*. Ova and, of course, larvae, have been found on both species of *Acacia*, but no pupae have been detected away from the masses of ants on the *Eucalyptus*.

SATYRIDAE.

OREIXENICA PALUDOSA THEDDORA Couchman 1953.

When describing this new subspecies in 1953 (Proc. Roy. ent. Soc. Lond. 22 (5/6). 76-77) I had seen only three males, all taken by the late F. E. Wilson, near Lake Catani on Mt. Buffalo at an altitude of about 4,400 feet. Subsequently, many more males and some females have been obtained through the persistent efforts of my friend D. F. Crosby, accompanied by J. Landy and the late F. E. Wilson. A number of males was taken in February-March, 1956, but not until March 1958 were the first females secured. These, together with other specimens taken in March 1960 are now before me. All were obtained on the plateau of Mt. Buffalo and my friend informs me that it was possible to concentrate on *p. theddora* to the exclusion of the large numbers of *lathoniella herceus* since the two species prefer different types of locality: *p. theddora* occurs only on the plateau which varies from about 4,100 to 4,500 feet, and not down the slopes of the mountain as does *l. herceus*.

Female: larger, the ground colour (Capucine Yellow Ridgway 3) lighter in tone than ssp. *nama* Couchman, approaching the colour of ssp. *latialis* W. and L. female, but differing from the latter in its far greater size. Costa very slightly bowed, termen evenly rounded so that the forewing is relatively much broader than in either ssp. *nama* or *latialis*.

Upperside forewing; costal area narrowly cream, cell bar and discal band black, other markings Mummy Brown (Ridgway 15); cell bar and discal band not joined, the latter connected by a brown streak along vein 2 to terminal band, a brown streak along vein 3 from terminal band approaches discal band, the terminal band enclosing a small yellow spot in area 3; basal brown area extending along costa, as in holotype male, joining cell bar discal and terminal bands and also extending from base along dorsum to discal band; terminal band broad, leaving ground colour only as small crescentic spots in areas 3 to 7. Apical ocellus, with minute white pupil, black, 2 mm. diameter, surrounded by yellow ring.

Hindwing markings Mummy Brown (Ridgway 15) broadened and extended so that ground colour appears only as spots, one in cell based on vein 4 a curved discal series from costa to tornus and a post-discal series of crescentic spots from areas 2 to 6; tornal ocellus with minute white pupil, black 2 mm. diameter, surrounded by an orange ring and brown line.

Beneath: Forewing markings as above, but clearly defined only along costa, merging into ground colour in discal area. Costal and apical area broadly cream, post-discal crescentic silver spots extending from costa to area 3; a subapical ocellus surrounded by cream ring.

Hindwing: Basal two-thirds dusted with greenish-yellow scales, basal, discal and sub-marginal silver spots as in male, cell spot with straight upper edge based on vein; sub-apical and sub-tornal ocelli minutely white-pupilled, black, 2 mm. diameter, each surrounded by a yellow ring and brown line.

Length of forewing 18.5 mm., width 10 mm., in ten specimens measured the length varied from 17.5 mm. (2 specimens), 18 mm. (4), 18.5 (3), to 19 mm. (1 specimen).

There is some variation in marking in this series of females and in examples captured subsequently, but it follows the type of variation usual in the genus. Three specimens have a minute black dot in area 3 below sub-apical ocellus; several have an upward extension of this ocellus almost forming

an extra spot; two specimens have a sub-apical black spot on hindwing above, and in one example the ground colour is clear Orange (Ridgway 3), with costa broadly cream and with narrow brown markings. The discal band extends completely across the forewing in two specimens, being joined by an extension of the basal brown area from dorsum, reminiscent of the pattern of *O. lathoniella* f. *maweena* Couchman, but the band is not of even width as in that species and *p. theddora* can always be distinguished by the distinctive brown streaks connecting discal and terminal bands along vein 2.

Neallotype female labelled "Lake Catani, Mt. Buffalo, Vict. 10 March 1958. D. F. Crosby", with three paratypes in my own collection, six paratypes returned to the collector. The series was taken at an altitude of circa 4,300 ft.

HETERONYMPHA CORDACE (Geyer) [1832].

Further intensive collecting since my last note (1954) on the races of this species in Tasmania has added to our knowledge, several trips undertaken with the help and co-operation of my friend K. M. Dallas have helped to define the limits of the three subspecies found in the State.

H. CORDACE COMPTENA Couchman 1954.

Male specimens taken again last year at Dover confirm the limits of this western and southern race, which has not been found nearer Hobart. It was however a complete surprise to meet with this subspecies at Lunawanna on South Bruny Island. In January 1959, my wife and I were able to take six newly emerged males in an area over which we had collected for a number of years. A later visit on the 15th February produced two very worn females and a remarkable male aberration in which the forewing markings above are confined to a faint cell and discal spot on the costa, beneath all markings are faint and blurred.

A few days' survey of the Mt. Agnew area near Zeehan in January 1960 disclosed that ssp. *comptena* occurred there from near the sea shore at Trial Harbour to the site of the former Cumberland Dam at about 1300 feet altitude, in the latter area four males and a female were found at the head of a very moist gully opening out on the heathlands on the shoulder of the mountain, in the only spot sheltered somewhat from the full force of the westerly gales. The northern limit of this race on the West Coast is not known, the boundary may well be the Pieman River, but a single male seen but not captured this year north of the Arthur River remains our only knowledge of this butterfly in the north-west, an extensive search of the heathlands between the river and Marrawah failed to yield another, so that it must be very rare there.

H. CORDACE LEGANA Couchman 1954.

Again thanks to my friend K. M. Dallas who provided transport and companionship, during January 1959 a long survey of the north-eastern districts was undertaken. Ssp. *legana* was first found five miles east of Storey's Creek at an altitude of about 2000 feet, close to the water-races of abandoned tin-mining operations. On the slopes of Mt. Saddleback at about 2,500 feet a pair was taken and on the Mathinna Plains a few miles south of Ringarooma at about 2,600 feet a number of males were found. The same form was also taken near Moorina, and a single male, labelled "5 miles N. of Lilydale, Tas. 10 Jan. 1955. A. M. Hewer" extends the range of this race still further west in the direction of the Tamar River; all are clearly of the sub-species first described from Lake Leake and now known to be found in a number of localities in the north-eastern portion of the State. A worn male and two females taken almost on the roadside on the Blue Tier at about 2,100 feet north of St. Helens however, while retaining the extended light ground colour usual in ssp. *legana* in the females have the subtornal ocelli of the hindwing reminiscent of the western ssp. *comptena*.

H. CORDACE KURENA Couchman 1954.

The range of this central Tasmanian race was extended when specimens were secured at Miena and Breona, 3,400 feet, in January this year; males and females agreeing with the form described from the Cuvier River-Lake St. Clair district further west. However, passing from this area towards the north-west the opportunity was taken to collect around St. Valentine's Peak, thanks to the ready permission granted by the A.P.P.M. Co. to use their private roads.

A short series of males and three females was obtained at about 2,000 feet in company with *Heteronympha penelope panope* Waterhouse and a dwarf form of *Oreixenica lathoniella lathoniella* Westwood. These specimens, like a few males and two females from the banks of the Emu River at Hampshire, altitude 1,520 feet, which approach them closely, are by far the darkest form I have seen. The ground colour above is lighter, but restricted by the expansion of all the black markings on fore and hindwing to narrow yellow bands. Beneath, the hindwing, particularly the basal area and the dorsum, is darker than in any other specimens seen even from northern New South Wales. A single male, taken on the same day a few miles further west on the Wandle River, at about 2,000 ft., has the hindmargin of both wings completely black.

The north-western plateau area obviously contains material in this, as in other species, for further research.

ACKNOWLEDGMENTS.

My thanks go to many friends whose enthusiastic collecting continues to extend and increase our knowledge of the Australian *Rhopalocera*.

Dr. J. Kerr and Mr. E. J. Harris have greatly helped with specimens from Queensland, Messrs. K. M. Dallas and A. M. Hewer have provided transport and afforded companionship during many collecting trips to remote places in Tasmania Messrs. S. Angel and D. F. Crosby have freely loaned material for study, their frequent and frank discussions have helped clarify many lepidopterological problems, while I am particularly indebted to the latter for photographs of a number of original figures.

I am very appreciative of the fact that much of my work could not have been accomplished without the ever-ready co-operation and assistance afforded by my friends in the National Museum of Victoria and the Australian Museum, Sydney. The late

A. (Tony) Musgrave, whose recent death left a sad gap in the ranks of Australian entomologists, had an unrivalled knowledge of the literature of the subject, and for more than thirty years gave me unstinting help and inspiration. The Director of the National Museum, C. Brazenor, and the Curator of Insects, A. N. Burns, together with the staff of the Entomological Dept., have aided my research work in every way, and I am grateful indeed for their interest in the cause of scientific research.

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PLATE.

FIGS. 1, 2.—*Oreisplanus munionga larana* n. ssp. Marrawah, Tas. Sea-level. 26-Jan.-1961. Holotype male; upper and underside.

FIGS. 3, 4..—*Oreixenica paludosa theddora* Couchman. Lake Catani, Mt. Buffalo. Vict. 4,300 feet. 10-March-1958. Neallotype female, upper and underside.

FIG. 5.—*Pseudalmenus chlorinda chlorinda* Blanchard. Richmond, Tas. 200 feet. 18-Sept.-1954. Bred x pupa. Neotype male, upperside.

FIG. 6.—*Pseudalmenus chlorinda chlorinda* Blanchard. Richmond, Tas. 200 feet. 24-Sept.-1954. Bred x pupa. Neotype female, upper side.

FIGS. 7, 8.—*Everes lacturnus australis* n. ssp. Cairns, Queensland. 20-April-1960. J. Kerr. Holotype male, upper and underside.

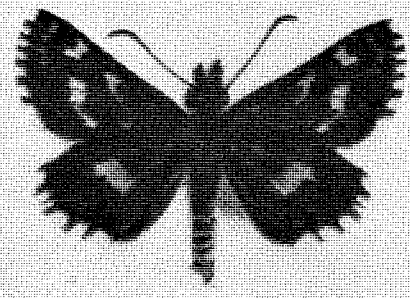

Fig. 1

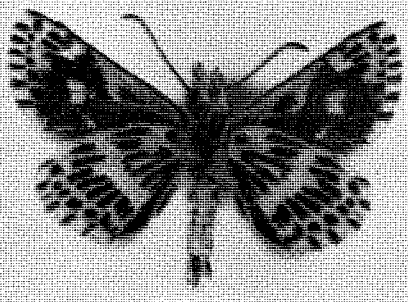

Fig. 2

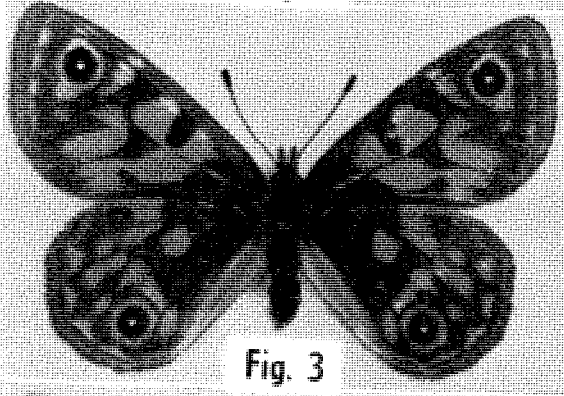

Fig. 3

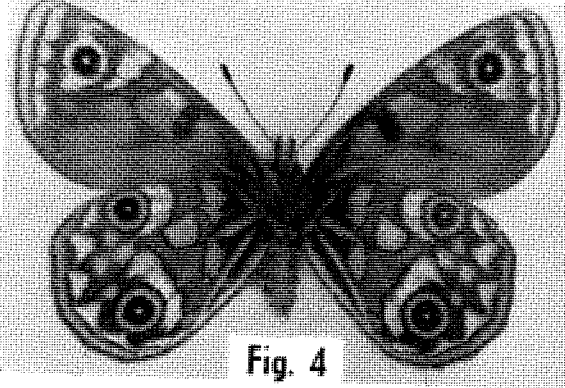

Fig. 4

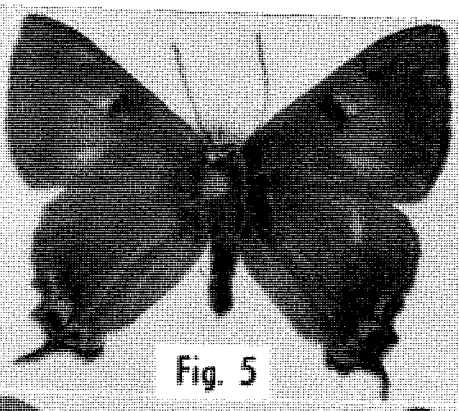

Fig. 5

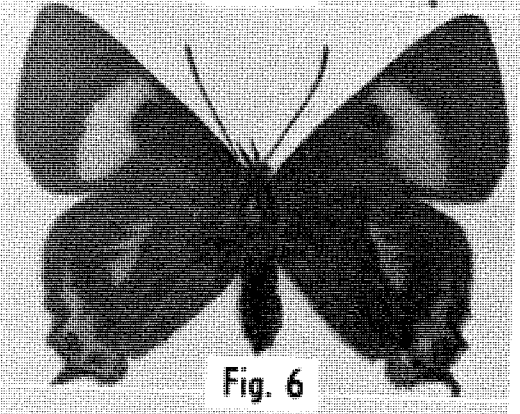

Fig. 6

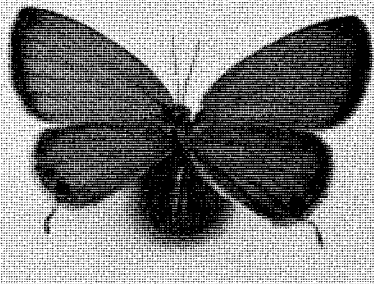

Fig. 7

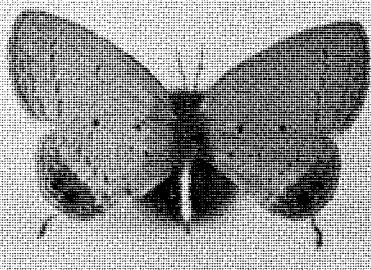

Fig. 8